Topock Project Executive Abstract

Document Title: Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, First Half 2014 (PGE20140715A) Submitting Agency: DOI Final Document? ☒ Yes ☐ No	Date of Document: July 15, 2014 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) – PG&E
Priority Status: ☐ **HIGH** ☐ **MED** ☒ **LOW** Is this time critical? ☐ Yes ☒ No Type of Document: ☐ Draft ☒ Report ☐ Letter ☐ Memo ☐ Other / Explain:	Action Required: ☒ Information Only ☐ Review & Comment Return to: _____ By Date:_____ ☐ Other / Explain:
What does this information pertain to? ☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) ☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) ☐ Corrective Measures Study (CMS)/Feasibility Study (FS) ☐ Corrective Measures Implementation (CMI)/Remedial Action ☐ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) ☒ Interim Measures ☐ Other / Explain:	Is this a Regulatory Requirement? ☒ Yes ☐ No If no, why is the document needed?
What is the consequence of NOT doing this item? What is the consequence of DOING this item? Submittal of this report is a compliance requirement under DOI's enforcement as an ARARs beginning August 2011.	Other Justification/s: ☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

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 2014, wells that exhibit water quality consistent with the injected water quality include all the middle- and deep-zone observation wells, two out of three shallow observation wells and five of the eight middle- and all deep-zone compliance wells. Only one well (a shallow-zone observation well) has not yet shown any characteristics indicative of injected water quality.

This report presents groundwater analytical results and groundwater level data collected from the First Half 2014 CMP monitoring event conducted in April 2014. During the First Half 2014 monitoring event, no samples exceeded the water quality objectives for Cr(VI), chromium, pH, or total dissolved solids. The next CMP event is scheduled to occur in October 2014.

Written by: PG&E

Recommendations:
This report is for your information only.

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

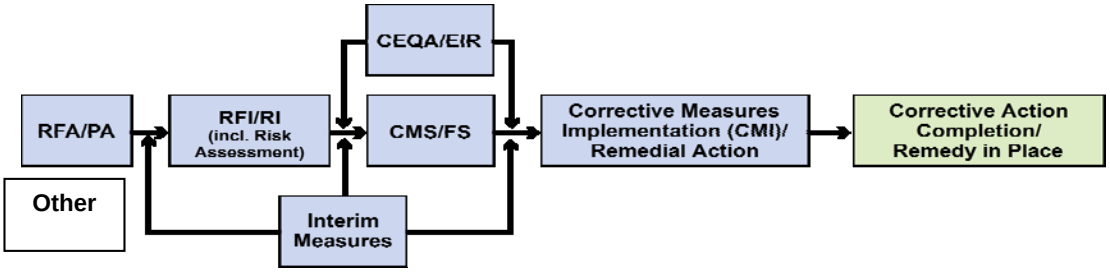
Submittal of this report is a compliance requirement under DOI enforcement's as ARARs beginning August 2011.

Other requirements of this information?

None.

Related Reports and Documents:

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



Legend
RFA/PA – RCRA Facility Assessment/Preliminary Assessment
RFI/RI – RCRA Facility Investigation/CERCLA Remedial Investigation (including Risk Assessment)
CMS/FS – RCRA Corrective Measure Study/CERCLA Feasibility Study
CEQA/EIR – California Environmental Quality Act/Environmental Impact Report

Version 9

Pacific Gas and Electric Company

Yvonne J. Meeks
Manager

Environmental Remediation

Mailing Address
4325 South Higuera Street
San Luis Obispo, CA 93401

Location
6588 Ontario Road
San Luis Obispo, CA 93405

805.234.2257
E-Mail: YJM1@pge.com

July 15, 2014

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

Subject: *Interim Measures No. 3, Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, First Half 2014, PG&E Topock Compressor Station, Needles, California* (PGE20130715A)

Dear Ms. Innis:

Enclosed is the *Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, First Half 2014* for the Interim Measures No. 3 at the Pacific Gas and Electric Company [PG&E] Topock Compressor Station. This monitoring report presents the results of the First Half 2014 Compliance Monitoring Program groundwater monitoring event and has been prepared in accordance with the United States Department of the Interior's August 18, 2011 letter stating that the Interim Measures No. 3 Waste Discharge Requirements are applicable or relevant and appropriate requirements.

The current contingency plan specifies the concentrations and values for hexavalent chromium [Cr(VI)], chromium, total dissolved solids (TDS), and pH to be used to determine whether contingency plan actions are necessary based on sample results. The water quality objectives concentrations used to trigger the contingency plan are Cr(VI) greater than 32.6 micrograms per liter (µg/L), chromium greater than 28.0 µg/L, TDS greater than 10,800 milligrams per liter, and pH outside of the range of 6.2 to 9.2.

No samples exceeded the water quality objectives for Cr(VI), chromium, pH, or TDS during the First Half 2014 sampling event. The next Compliance Monitoring Program event is scheduled to occur in October 2014.

Please contact me at (805) 234-2257 if you have any questions on the Compliance Monitoring Program.

Sincerely,

Yvonne Meeks
Topock Remediation Project Manager

Cc: Robert Perdue, Water Board
Jose Cortez, Water Board
Aaron Yue, DTSC
Christopher Guerre, DTSC

Enclosure

ES061814003139BAO

Final Report

Compliance Monitoring Program Semiannual Groundwater Monitoring Report, First Half 2014, Interim Measure No. 3, PG&E Topock Compressor Station, Needles, California

Document ID: PGE20140715A

Prepared for

United States Department of the Interior

On behalf of

Pacific Gas and Electric Company

July 15, 2014

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

Compliance Monitoring Program
Semiannual Groundwater Monitoring Report, First Half 2014,

PG&E Topock Compressor Station,
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This report was prepared under the supervision of a California Professional Geologist

Serena Panzar

Serena Panzar
Professional Geologist, P.G. #8259

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Acronyms and Abbreviations

µg/L	micrograms per liter
ARAR	applicable or relevant and appropriate requirement
CMP	Compliance Monitoring Program
Cr(VI)	hexavalent chromium
CW	compliance well
DOI	United States Department of the Interior
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
IM	Interim Measure
IM-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 Requirement
WQO	water quality objective

SECTION 1

1 Introduction

Pacific Gas and Electric Company (PG&E) is implementing an Interim Measure (IM) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The IM consists of groundwater extraction in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems are collectively referred to as Interim Measure No. 3 (IM-3). Currently, the IM-3 facilities include a groundwater extraction system, conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. Figure 1 shows the location of the IM-3 extraction, conveyance, treatment, and injection facilities. (All figures and tables are provided at the end of this report.)

The *Groundwater Compliance Monitoring Plan for Interim Measures No. 3 Injection Area, Topock Compressor Station, Needles, California* (CH2M HILL, 2005a) (herein referred to as the Compliance Monitoring Plan) 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. The Compliance Monitoring Plan and its addendum (CH2M HILL, 2005b) provide the objectives, proposed monitoring program, data evaluation methods, and reporting requirements for the Compliance Monitoring Program (CMP). Several modifications of the sampling and reporting procedures have been approved since 2005, as outlined in Exhibit 1.

EXHIBIT 1
Historical Modifications to the Compliance Monitoring Program
PG&E Topock Compliance Monitoring Program

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

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

PG&E is currently performing the CMP as authorized by the United States Department of the Interior (DOI) waste discharge applicable or relevant and appropriate requirements (ARARs). The Waste Discharge Requirements (WDR Order No. R7-2006-0060) expired on September 20, 2011 and was replaced by DOI enforcement of the ARARs, as documented in correspondence among the Water Board, DOI, and PG&E during the summer of 2011. Specifically, the letter agreement issued July 26, 2011 from the Water Board to DOI (Water Board, 2011) requested:

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

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

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

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 provides a summary of the history of injection for IM-3.

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 provides a summary of information on well construction and sampling methods for all wells in the CMP.

As of April 2014, samples are collected from OWs and CWs, shown on Figure 2, according to the following schedule:

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

For semiannual events, laboratory analyses include total dissolved solids (TDS), turbidity, specific conductance, a reduced suite of metals, and several inorganic cations and anions. Annual and triennial sampling events for CWs and select OWs include dissolved chromium, hexavalent 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 2014 CMP groundwater monitoring event.

SECTION 2

2 First Half 2014 Activities

This section provides a summary of the monitoring and sampling activities completed during the First Half 2014. The First Half 2014 event was a semiannual event conducted from April 7 through 8, 2014 and consisted of the following:

- 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-3M 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.

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, 2005c) and addendums.

CMP groundwater samples were analyzed by Truesdail Laboratories, Inc. in Tustin, California and CH2M HILL Applied Sciences Laboratory in Corvallis, Oregon, 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, 2005c) and addendums. Data validation and management were conducted in accordance with the *PG&E Program Quality Assurance Project Plan* [QAPP] (CH2M HILL, 2012) and QAPP addendum (CH2M HILL, 2008).

SECTION 3

3 First Half 2014 Results

This section is a summary of the results of the CMP groundwater sampling conducted during the First Half 2014. Figure 2 presents the locations of the CMP groundwater wells.

The data presented include results for Cr(VI), chromium, specific conductance, metals, TDS, turbidity, and major inorganic cations and anions. Laboratory data quality review, water level measurements, and water quality field parameter data are also presented in this section. The laboratory reports and field data sheets for the First Half 2014 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 2014 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 last updated on August 8, 2006, when PG&E submitted a revised contingency plan flowchart for groundwater quality changes associated with the injection system. The contingency plan specifies the concentrations and values for Cr(VI), chromium, TDS, and pH to be used to determine if contingency plan actions were necessary based on sample results. A modification of the CMP contingency plan pH range was approved by the Water Board and DTSC in 2008 (Water Board, 2008; DTSC, 2008b).

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 2014 CMP sampling event. For shallow wells, the maximum detected Cr(VI) concentration was 19.8 micrograms per liter (µg/L) in well OW-2S on April 8, 2014. For the middle wells, the maximum detected Cr(VI) concentration was 7.0 µg/L in well CW-3M on April 8, 2014. For the deep wells, Cr(VI) was not detected [ND (1.0)] in any samples. During the First Half 2014 sampling event, no Cr(VI) sample result exceeded the WQO trigger level of 32 µg/L.

For shallow wells, the maximum detected chromium concentration was 20.2 µg/L in well OW-2S on April 8, 2014. For the middle wells, the maximum detected chromium concentration was 7.9 µg/L in well CW-3M on April 8, 2014. For the deep wells, the maximum detected chromium concentration was 1.1 µg/L in well CW-1D on April 7, 2014. During the First Half 2014 sampling event, no chromium sample result exceeded the WQO trigger level of 28 µg/L. Therefore, the contingency plan was not triggered for Cr(VI) or chromium.

3.1.2 Other Metals and General Chemistry

Table 4 presents the metals and general chemistry results for the CMP groundwater wells sampled during the First Half 2014. Metals and ions detected in the First Half 2014 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 2014 sampling event are similar to those detected in previous sampling events.

Table 4 presents other inorganic analyte results from the CMP wells. During the First Half 2014, the sampling results from all wells were within the WQOs for TDS (less than 10,800 milligrams per liter [mg/L]) and pH (between 6.2 and 9.2). Sampling results for TDS varied from 1,140 mg/L in well OW-2S to 5,420 mg/L in well CW-3M. Field pH varied from 7.2 in well OW-1S to 7.7 in wells CW-2D, CW-3D, CW-4D and OW-2S.

3.2 Analytical Data Quality Review

The laboratory analytical data generated from the First Half 2014 CMP monitoring event were independently reviewed by project chemists to assess data quality and identify deviations from analytical requirements. The quality assurance and quality control requirements are outlined in the QAPP (CH2M HILL, 2012) and QAPP addendum (CH2M HILL, 2008). A detailed discussion of data quality for CMP sampling data is presented in the data validation reports, which are kept in the project file and are available upon request.

3.2.1 Matrix Interference

Matrix interference can affect the sensitivity for Cr(VI) when using Method E218.6 and result in elevated reporting limits for nondetect samples. Five nondetect samples exhibited a matrix interference issue that required a dilution to achieve satisfactory matrix spike recovery, resulting in elevated reporting limits. No flags were applied.

3.2.2 Matrix Spike Samples

All 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

All Environmental Protection Agency recommended holding-times were met.

3.2.5 Field Duplicates

All field duplicate acceptance criteria were met.

3.2.6 Method Blanks

All method blank acceptance criteria were met.

3.2.7 Equipment Blanks

All equipment blank acceptance criteria were met.

3.2.8 Laboratory Duplicates

All laboratory duplicate acceptance criteria were met.

3.2.9 Laboratory Control Sample

All laboratory control sample acceptance criteria were met.

3.2.10 Calibration

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

3.2.11 Conclusion

For the First Half 2014 CMP sampling event, the completeness objectives were met for all method and analyte combinations. The analyses and data quality met the QAPP and laboratory method quality control criteria. 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. Originally, under WDR No. R7-2006-0060 for the IM-3 groundwater treatment system and now the DOI's affirmation of the WDR as an ARAR, PG&E is required to submit semiannual monitoring reports regarding operation of the system. These reports contain the analytical results of treated water effluent sampling and, as such, the reports are useful in determining the baseline water quality of the treated water being injected into the IM-3 injection well field. Table 5 provides selected effluent water analytical results from three of the monthly reports: August 29, 2005, April 7, 2010, and April 8, 2014. 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, dissolved molybdenum, nitrate/nitrite as nitrogen, sulfate, and TDS. The consistency of these seven constituents provide a characterization of the effluent that 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 2014 effluent characteristics):

- Cr(VI): typically nondetect (or below 1.0 µg/L)
- Chromium: typically nondetect (or below 1.0 µg/L)
- Fluoride: approximately 2 mg/L
- Molybdenum: approximately 15 µg/L
- Nitrate/nitrite as nitrogen: approximately 3 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) contained 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 2014 sampling event). These samples were collected after approximately 8.7 years 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 2014 sample results show a marked similarity to the treated water results. Based on past and current sample 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, OW-5S, CW-2M, CW-3M, and CW-4M have chemical characteristics approaching that of treated water. To date, shallow observation well OW-2S shows little or no water quality effects due to injection of treated water, indicating that injected water has not yet reached the screened intervals at this location.

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-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, lab pH, sodium, sulfate, TDS, and vanadium. Water quality hydrographs (time-series plots) of these 11 analytes in each OW and CW sampled during First Half 2014 within the IM-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 similar shift in water quality. The water quality change brought on by the arrival of the treated water injection front can be either gradual (OW-5M) or step-wise (OW-2M), with most affected wells showing a pattern of change somewhere between the two. Based on the variability in response, it is inferred that the movement of treated water is nonuniform laterally between wells. This variability in lateral movement can be inferred from differences in the water quality hydrographs in both the mid-depth and deep wells. The OW shallow-depth well OW-2S shows little

water quality variation over time. Sodium, chloride, vanadium, and molybdenum are particularly consistent with baseline pre-injection concentrations and show that the local groundwater quality at these shallow depths is not being affected by injection of treated water or outside water sources.

Compliance well water quality hydrographs are presented in Figures 3D and 3E. Wells CW-1M, CW-1D, CW-2D, CW-3D, and CW-4D show trends in TDS, sulfate, nitrate/nitrite as nitrogen, chromium, molybdenum, and Cr(VI) similar to the treated water. Wells CW-2M and CW-4M show decreasing trends in Cr(VI) and chromium, and increasing trends in sulfate. These changes are attributed to the arrival of treated injection water. Similarly, CW-3M is showing a more subtle decrease in Cr(VI) and a rise in sulfate that both suggest the influence of treated water beginning to arrive at this well.

3.4 Water Level Measurements

Table 7 presents the manual water level measurements and groundwater elevations from First and Second Quarter 2014 per the DOI ARAR requirements (DOI, 2011). In compliance with Condition No. 2 of DTSC's 2009 conditional approval letter (DTSC, 2009), confirmation was obtained from the IM-3 Plant Manager that the IM-3 plant was operating normally on both the day before and the days of CMP water level collection, with no backwash or unplanned shutdowns.

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 2014 reporting period at specified 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 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, as shown on Figure 2. Overall sitewide water level contour maps for shallow wells are prepared annually under a separate report, with flow consistently being shown to move to the east/northeast across the uplands portions of the site (CH2M HILL, 2014).

The effects of injection in the IM-3 injection well field are superimposed on the more regional Topock site flow system and, as expected, a groundwater mound can be seen around the injection wells. This mound is centered on the active injection wells IW-2 and IW-3. The potentiometric surfaces in prior CMP reports mapped the growth of the groundwater mound over time and show that, after 8.7 years 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 snapshot groundwater elevation of the mound within the middle and deep wells using June 5, 2014 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-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 5, 2014 groundwater elevations. The magnitude of the vertical gradients is similar between clusters and between the depth intervals, indicating that the vertical gradient is generally of the

same order of magnitude throughout the injection area. A component of the vertical gradients calculated in the vicinity of the IM-3 injection well field is likely related to the injection of treated water in the lower portions of the aquifer. The observed groundwater gradients in the IM-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 2014 monitoring event. Field data sheets for the First Half 2014 event are presented in Appendix B.

3.6 ARAR Monitoring Requirements

Table 10 identifies the laboratory that performed each analysis and lists the following information as required by the ARARs for the First Half 2014 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

SECTION 4

4 Status of Monitoring Activities

4.1 Semiannual Monitoring

The next semiannual monitoring event will occur in October during the second half of 2014. This CMP monitoring event will include the sampling and analysis scope presented in Attachment A of DOI November 18, 2011 letter (DOI, 2011). The groundwater monitoring report for this CMP monitoring event will be submitted by January 15, 2015.

4.2 Annual Monitoring

The next annual monitoring event, which is also a semiannual event, will occur in October during the second half of 2014. The groundwater monitoring report for this CMP monitoring event will be submitted by January 15, 2015.

SECTION 5

5 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.

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SECTION 6

6 Certification

PG&E submitted a signature delegation letter to the DOI and the Water Board on July 9, 2014 (PG&E, 2014). The letter delegated PG&E signature authority to Mr. Kevin Sullivan, Ms. Yvonne Meeks, and Mr. Curt Russell for correspondence regarding required ARARs.

Certification Statement:

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

Signature: 

Name: Yvonne J. Meeks

Company: Pacific Gas and Electric Company

Title: Topock Environmental Remediation Project Manager

Date: July 15, 2014

Tables

TABLE 1
Operational Status of Interim Measures No. 3 Injection Wells From July 2005 through June 2014
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 December 18, 2008 through January 21, 2009 at which time both wells were offline.
Second Quarter 2009	Injection continued at IW-3 until April 20, 2009. Injection ceased from April 20, 2009 to April 27, 2009 due to routine maintenance after which injection continued at IW-3 until May 26, 2009 when it transitioned to IW-2. Injection continued at IW-2 until June 9, 2009 when it switched to IW-3. Injection returned to IW-2 on June 24, 2009.
Third Quarter 2009	IM-3 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, IM-3 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

TABLE 1
Operational Status of Interim Measures No. 3 Injection Wells From July 2005 through June 2014
PG&E Topock Compliance Monitoring Program

Time Period	Injection Status
	wells approximately every two weeks. Backwashing was performed periodically during the intervals when each injection well was offline.
Second Half 2010	Injection occurred primarily at IW-2 with the exception of the following periods when it primarily occurred at IW-3: July 22 - August 25, August 30 - September 7, September 16 - October 15, November 5 -18, and December 17- 31, 2010.
First Half 2011	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: January 27 - February 10, February 23 - March 7, March 30 - April 20, May 6 – June 7, and June 22-28, 2011. Backwashing was performed periodically during the intervals when each injection well was offline. A planned shutdown occurred April 25-29 and June 28-30.
Second Half 2011	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: July 14 through August 3, August 10 through 13, September 11 through 22, October 6 through10; and October 27 Through December 31. Backwashing was performed periodically during the intervals when each injection well was offline.
First Half 2012	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: January 1 through January 6, 2012; February 2 through February 16, 2012; March 2 through April 5, 2012; May 10 through May 21, 2012; May 29 through June 1, 2012, June 14,2012 and June 21 through June 27, 2012.
Second Half 2012	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: July 18 through July 25, 2012; August 1 through August 13, 2012; August 17 through August 22, 2012; August 31 through September 26, 2012; and September 29 through October 9, 2012.
First Half 2013	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: March 5 through March 14, 2013; April 8 through May 22, 2013, June 24 through June 25, 2013, and June 29 through June 30, 2013.
Second Half 2013	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: July 1 - 9, 2013; July 31 through August 12, 2013, October 22 through November 6, 2013, November 26 through December 12, 2013, and December 28 - 31, 2013.
First Half 2014	Injection occurred primarily at IW-2 with the exception of the following periods when it primarily occurred at IW-3: January 6, 2014, January 16 through January 29, 2014, April 17 - 23, 2014, and May 10 through June 22, 2014, and June 25, 2014.

TABLE 2

Well Construction and Sampling Summary for Groundwater Samples, First Half 2014

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)	190.0	108.2	Temp Redi-Flo AR	2	42	165		
CW-01D	East Mesa	566.46	250 - 300	2 (PVC)	300.2	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)	355.0	91.3	Temp Redi-Flo AR	3	134	159		
CW-03M	East Mesa	534.10	172 - 222	2 (PVC)	222.0	76.6	Temp Redi-Flo AR	2	74	180		
CW-03D	East Mesa	534.14	270 - 320	2 (PVC)	340.0	76.0	Temp Redi-Flo AR	3	134	143		
CW-04M	East Mesa	518.55	119.5 - 169.5	2 (PVC)	169.8	60.5	Temp Redi-Flo AR	2	56	160		
CW-04D	East Mesa	518.55	233 - 283	2 (PVC)	303.0	60.4	Temp Redi-Flo AR	3	124	134		
IM Observation Wells												
OW-01S	East Mesa	550.21	83.5 - 113.5	2 (PVC)	113.5	92.6	Temp Redi-Flo AR	1	10.2	100	Active	
OW-01M	East Mesa	550.36	165 - 185	2 (PVC)	185.8	92.4	Temp Redi-Flo AR	3	48	109.6		
OW-01D	East Mesa	550.36	257 - 277	2 (PVC)	277.3	92.1	Temp Redi-Flo AR	3	94	111.4		
OW-02S	East Mesa	548.88	71 - 101	2 (PVC)	103.6	91.3	Temp Redi-Flo AR	1	15	100	Active	
OW-02M	East Mesa	548.52	190 - 210	2 (PVC)	210.3	90.6	Temp Redi-Flo AR	2	61	111.4		
OW-02D	East Mesa	549.01	310 - 330	2 (PVC)	340.0	90.6	Temp Redi-Flo AR	2	127	110.3		
OW-05S	East Mesa	551.83	70 - 110	2 (PVC)	110.3	94.1	Temp Redi-Flo AR	1	8	100	Active	
OW-05M	East Mesa	551.81	210 - 250	2 (PVC)	250.3	93.1	Temp Redi-Flo AR	2	80	112.5	Active	
OW-05D	East Mesa	552.41	300 - 320	2 (PVC)	350.0	93.8	Temp Redi-Flo AR	3	131	113.2	Active	

Notes:

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

Depth to water for each well was collected on June 2014.
All wells were purged and sampled using 3 well-volume method.

TABLE 3
Chromium Results for Groundwater Samples, First Half 2014
PG&E Topock Compliance Monitoring Program

			Method:	E218.6	E200.8
Location ID	**Sample Date**			**Hexavalent Chromium (µg/L)**	**Chromium (µg/L)**
CW-01M	4/7/2014			ND (1.0)	1.1
CW-01D	4/7/2014			ND (1.0)	1.1
CW-02M	4/7/2014			2.2	2.5
CW-02D	4/7/2014			ND (1.0)	ND (1.0)
CW-03M	4/8/2014			6.4	7.9
CW-03M	4/8/2014	(FD)		7.0	7.9
CW-03D	4/8/2014			ND (1.0)	ND (1.0)
CW-04M	4/8/2014			4.9	4.9
CW-04D	4/8/2014			ND (1.0)	ND (1.0)
OW-01S	4/8/2014			5.8	6.7
OW-02S	4/8/2014			19.8	19.4
OW-02S	4/8/2014	(FD)		19.8	20.2
OW-05S	4/8/2014			15.4	15.7

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 2014

PG&E Topock Compliance Monitoring Program

	Method:	E120.1	Field	SM2540C	SM2130B	E300.0	E300.0	E300.0	SM4500NH3D	SM4500NO3	E200.7	E200.8
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)**	**Ammonia as Nitrogen (mg/L)**	**Nitrate/Nitrite as Nitrogen (mg/L)**	**Dissolved Sodium (mg/L)**	**Dissolved Molybdenum (µg/L)**
CW-01M	4/7/2014	6680	7.6	4400	0.101	2060	2.13	468	ND (0.5)	3.08	---	---
CW-01D	4/7/2014	6850	7.5	4520	0.107	2140	2.36	480	ND (0.5)	3.15	---	---
CW-02M	4/7/2014	6820	7.5	4340	0.165	2390	2.99	477	ND (0.5)	3.11	---	---
CW-02D	4/7/2014	6810	7.7	4390	0.852	2400	2.44	472	ND (0.5)	3.26	---	---
CW-03M	4/8/2014	8220	7.5	4540	ND (0.1)	3020	2.93	451	ND (0.5)	1.73	---	---
CW-03M	4/8/2014 (FD)	8260	FD	5420	ND (0.1)	3010	2.93	464	ND (0.5)	1.71	---	---
CW-03D	4/8/2014	6910	7.7	4400	0.157	2080	3.66	486	ND (0.5)	3.20	---	---
CW-04M	4/8/2014	6510	7.5	4120	ND (0.1)	2250	1.88	448	ND (0.5)	2.93	---	---
CW-04D	4/8/2014	6800	7.7	4740	0.102	2340	3.21	483	ND (0.5)	3.14	---	---
OW-01S	4/8/2014	5810	7.2	4240	1.100	2020	1.48	410	---	3.27	774	4.8
OW-02S	4/8/2014	2050	7.7	1140	0.483	526	4.07	98.5	---	3.73	374	29.0
OW-02S	4/8/2014 (FD)	2050	FD	1170	0.565	587	4.30	95.2	---	3.69	362	28.8
OW-05S	4/8/2014	3890	7.3	2590	0.317	1330	1.67	233	---	3.35	486	14.4

Notes:

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

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)	Molybdenum (µg/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Treated Water	8/29/2005	ND (1.0)	ND (2.1)	1.95	8.3	3.70	450	3,620
Treated Water	4/7/2010	0.29	ND (1.0)	1.82	18.6	2.87	512	4,270
Treated Water	4/8/2014	ND (0.2)	ND (1.0)	1.98	18.7	2.38	478	4,440
CW-01M	9/15/2005	18.1	17.8	2.34	21.6	1.11	318	2,990
CW-01D	9/15/2005	ND(1.0)	1.6	0.951	32.1	0.972	379	6,230
CW-02M	9/15/2005	15.8	15.5	2.3	23.1	0.908	342	3,500
CW-02D	9/15/2005	ND(1.0)	1.6	0.982	41.6	0.28	601	8,770
CW-03M	9/15/2005	8.8	8.1	2.57	24.2	0.642	464	4,740
CW-03D	9/15/2005	ND(1.0)	ND(1.0)	1.4	29.2	0.304	672	9,550
CW-04M	9/15/2005	19.2	19	1.5	12.3	1.18	240	3,310
CW-04D	9/15/2005	ND(1.0)	ND(1.0)	1.01	26	0.188	534	7,470
OW-01S	7/28/2005	19.4	23.5	2.45	17.2	3.2	114	1,320
OW-01M	7/27/2005	16.3	18.9	2.31	27	1.01	311	3,450
OW-01D	7/27/2005	ND(1.0)	ND(1.3)	1.14	46.1	0.321	441	6,170
OW-02S	7/28/2005	15.3	14.8	3.79	35.6	3.81	126	1,090
OW-02M	7/28/2005	5.4	5.7	2.19	32.4	0.735	342	4,380
OW-02D	7/28/2005	ND(1.0)	ND(1.2)	0.966	51.2	0.1	616	9,550
OW-05S	7/28/2005	23.4	25.6	2.3	17.1	3.55	105	1,060
OW-05M	7/28/2005	8.6	8.8	2.74	35.4	0.621	417	5,550
OW-05D	7/28/2005	ND(1.0)	ND(1.2)	1.11	57	0.151	480	8,970

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 2014 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	4/3/2012	ND (0.2)	ND (1.0)	2.11	18.9	3.06	564	4,430
Treated Water	4/1/2013	ND (0.2)	ND (1.0)	2.14	17.2	2.84	501	4,230
Treated Water	4/8/2014	ND (0.2)	ND (1.0)	1.98	18.7	2.38	478	4,440
CW-01M	4/7/2014	ND (1.0)	1.1	2.13	---	3.08	468	4,400
CW-01D	4/7/2014	ND (1.0)	1.1	2.36	---	3.15	480	4,520
CW-02M	4/7/2014	2.2	2.5	2.99	---	3.11	477	4,340
CW-02D	4/7/2014	ND (1.0)	ND (1.0)	2.44	---	3.26	472	4,390
CW-03M	4/8/2014	6.4	7.9	2.93	---	1.73	451	4,540
CW-03M	4/8/2014 (FD)	7.0	7.9	2.93	---	1.71	464	5,420
CW-03D	4/8/2014	ND (1.0)	ND (1.0)	3.66	---	3.20	486	4,400
CW-04M	4/8/2014	4.9	4.9	1.88	---	2.93	448	4,120
CW-04D	4/8/2014	ND (1.0)	ND (1.0)	3.21	---	3.14	483	4,740
OW-01S	4/8/2014	5.8	6.7	1.48	4.8	3.27	410	4,240
OW-02S	4/8/2014	19.8	19.4	4.07	29.0	3.73	98.5	1,140
OW-02S	4/8/2014 (FD)	19.8	20.2	4.30	28.8	3.69	95.2	1,170
OW-05S	4/8/2014	15.4	15.7	1.67	14.4	3.35	233	2,590

Notes:

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

All hexavalent chromium samples were analyzed with Method E218.6.

All chromium and molybdenum samples were analyzed with Method E200.8. 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 E300.0.

All total dissolved solid samples were analyzed with Method SM2540C.

TABLE 7

Manual Water Level Measurements and Elevations, First Half 2014

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	190.0	566.07	21-Jan-14	11:36 AM	110.36	0.49	455.65
			05-Jun-14	9:21 AM	108.23	0.49	457.78
CW-01D	300.2	566.46	21-Jan-14	11:38 AM	110.43	0.50	455.91
			05-Jun-14	9:23 AM	108.34	0.50	458.00
CW-02M	208.3	549.45	21-Jan-14	11:41 AM	94.02	0.53	455.36
			05-Jun-14	9:27 AM	91.74	0.53	457.64
CW-02D	355.0	549.43	21-Jan-14	11:44 AM	93.50	0.53	455.75
			05-Jun-14	9:30 AM	91.35	0.53	457.90
CW-03M	222.0	534.10	21-Jan-14	11:46 AM	78.90	0.60	455.20
			05-Jun-14	9:33 AM	76.57	0.60	457.53
CW-03D	340.0	534.14	21-Jan-14	11:48 AM	78.19	0.53	455.76
			05-Jun-14	9:35 AM	75.98	0.53	457.96
CW-04M	169.8	518.55	21-Jan-14	11:53 AM	62.74	0.49	455.74
			05-Jun-14	9:41 AM	60.52	0.49	457.96
CW-04D	303.0	518.55	21-Jan-14	11:54 AM	62.53	0.51	455.82
			05-Jun-14	9:43 AM	60.37	0.51	457.98
OW-01S	113.5	550.21	21-Jan-14	11:58 AM	94.97	0.32	455.21
			05-Jun-14	9:48 AM	92.63	0.32	457.54
OW-01M	185.8	550.36	21-Jan-14	12:00 PM	94.65	0.49	455.63
			05-Jun-14	9:50 AM	92.44	0.49	457.84
OW-01D	277.3	550.36	21-Jan-14	12:02 PM	94.27	0.51	455.96
			05-Jun-14	9:52 AM	92.12	0.51	458.11
OW-02S	103.6	548.88	21-Jan-14	12:04 PM	93.62	0.13	455.23
			05-Jun-14	9:54 AM	91.26	0.13	457.58
OW-02M	210.3	548.52	21-Jan-14	12:06 PM	92.79	0.49	455.62
			05-Jun-14	9:57 AM	90.59	0.49	457.82
OW-02D	340.0	549.01	21-Jan-14	12:08 PM	92.84	0.52	455.98
			05-Jun-14	9:59 AM	90.62	0.52	458.20
OW-05S	110.3	551.83	21-Jan-14	12:10 PM	96.40	0.27	455.40
			05-Jun-14	10:01 AM	94.13	0.27	457.66
OW-05M	250.3	551.81	21-Jan-14	12:12 PM	95.27	0.50	456.53
			05-Jun-14	10:04 AM	93.08	0.50	458.62
OW-05D	350.0	552.41	21-Jan-14	12:14 PM	95.95	0.52	456.53
			05-Jun-14	10:06 AM	93.85	0.52	458.39

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, First Half 2014
PG&E Topock Compliance Monitoring Program

Well Pairs	Vertical Gradient (ft/ft)[a]
CW-01D to CW-01M	0.0020
CW-02D to CW-02M	0.0020
CW-03D to CW-03M	0.0044
CW-04D to CW-04M	0.0002
OW-01M to OW-01S	0.0039
OW-01D to OW-01M	0.0029
OW-02M to OW-02S	0.0021
OW-02D to OW-02M	0.0032
OW-05M to OW-05S	0.0069

[a] Positive value signifies an upward gradient.

Gradients calculated using June 5, 2014 groundwater levels.

TABLE 9

Field Parameter Measurements for Groundwater Samples, First Half 2014

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 (%)	Depth To Water (feet btoc)
CW-01M	4/7/2014	6,776	29.29	7.6	110	7.76	1	0.44	108.85
CW-01D	4/7/2014	6,913	28.21	7.5	108	7.02	1	0.45	108.91
CW-02M	4/7/2014	6,744	30.45	7.5	69	7.60	1	0.44	91.98
CW-02D	4/7/2014	6,820	30.45	7.7	22	7.33	1	0.44	91.70
CW-03M	4/8/2014	9,282	30.37	7.5	41	3.47	1	0.60	76.89
CW-03D	4/8/2014	7,757	30.49	7.7	63	6.96	1	0.50	76.31
CW-04M	4/8/2014	7,272	29.99	7.5	58	7.17	1	0.47	61.05
CW-04D	4/8/2014	7,627	30.66	7.7	50	8.26	1	0.49	59.94
OW-01S	4/8/2014	6,647	29.56	7.2	47	7.39	2	0.43	93.73
OW-02S	4/8/2014	2,288	29.70	7.7	26	8.11	2	0.15	92.35
OW-05S	4/8/2014	4,458	29.57	7.3	23	6.74	1	0.29	94.44

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
btoc	below top of polyvinyl chloride (PVC) casing

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

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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-031	Barry Collom	4/7/2014	10:17:00 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6850	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	1.1	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	ND (1.0)	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2140	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	2.36	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	480	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.15	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.107	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4520	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-01M	CW-01M-031	Barry Collom	4/7/2014	10:57:00 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6680	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	1.1	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	ND (1.0)	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2060	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	2.13	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	468	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.08	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.101	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4400	125	1.76

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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-01M	CW-01M-031	Barry Collom	4/7/2014	10:57:00 AM	TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-02D	CW-02D-031	Barry Collom	4/7/2014	2:20:00 PM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6810	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	ND (1.0)	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	ND (1.0)	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2400	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	2.44	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	472	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.26	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.852	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4390	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-02M	CW-02M-031	Barry Collom	4/7/2014	3:07:00 PM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6820	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	2.5	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	2.2	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2390	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	2.99	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	477	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.11	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.165	0.1	0.014

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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-02M	CW-02M-031	Barry Collom	4/7/2014	3:07:00 PM	TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4340	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-03D	CW-03D-031	Barry Collom	4/8/2014	7:37:45 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6910	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	ND (1.0)	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	ND (1.0)	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2080	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	3.66	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	486	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.20	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.157	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4400	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-03M	OW-90-031	Barry Collom	4/8/2014	6:50:00 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	8260	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	7.9	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	7.0	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	3010	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	2.93	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	464	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	1.71	0.04	0.0112

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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-03M	OW-90-031	Barry Collom	4/8/2014	6:50:00 AM	TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	5420	250	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-03M	CW-03M-031	Barry Collom	4/8/2014	8:55:45 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	8220	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	7.9	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	6.4	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	3020	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	2.93	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	451	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	1.73	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4540	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-04D	CW-04D-031	Barry Collom	4/8/2014	10:57:00 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6800	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	ND (1.0)	1.0	0.14
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	ND (1.0)	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2340	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	3.21	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	483	25.0	1.54

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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-04D	CW-04D-031	Barry Collom	4/8/2014	10:57:00 AM	CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.14	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.102	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4740	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
CW-04M	CW-04M-031	Barry Collom	4/8/2014	11:42:00 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	6510	2.0	0.606
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	4.9	1.0	0.14
					TLI	EPA 218.6	CR6	4/16/2014	Naheed Eidinejad	µg/L	4.9	1.0	0.03
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2250	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	1.88	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	448	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	2.93	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4120	125	1.76
					TLI	SM4500NH3D	NH3N	4/16/2014	Himani Viashnav/Maksim Gorbunov	mg/L	ND (0.5)	0.5	0.0318
OW-01S	OW-01S-031	Barry Collom	4/8/2014	3:03:00 PM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	5810	2.0	0.606
					TLI	EPA 200.7	NAD	4/10/2014	Ethel Suico	mg/L	774	50.0	5.98
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	6.7	1.0	0.14
					TLI	EPA 200.8	MOD	4/10/2014	Ethel Suico	µg/L	4.8	2.0	0.25
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	5.8	1.0	0.03

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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
OW-01S	OW-01S-031	Barry Collom	4/8/2014	3:03:00 PM	TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	2020	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	1.48	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	410	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.27	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	1.100	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	4240	125	1.76
OW-02S	OW-91-031	Barry Collom	4/8/2014	10:42:00 AM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	2050	2.0	0.606
					TLI	EPA 200.7	NAD	4/10/2014	Ethel Suico	mg/L	362	50.0	5.98
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	20.2	1.0	0.14
					TLI	EPA 200.8	MOD	4/10/2014	Ethel Suico	µg/L	28.8	2.0	0.25
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	19.8	0.2	0.006
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	587	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	4.30	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	95.2	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.69	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.565	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	1170	50.0	1.76
OW-02S	OW-02S-031	Barry Collom	4/8/2014	2:32:00 PM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	2050	2.0	0.606
					TLI	EPA 200.7	NAD	4/10/2014	Ethel Suico	mg/L	374	50.0	5.98

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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
OW-02S	OW-02S-031	Barry Collom	4/8/2014	2:32:00 PM	TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	19.4	1.0	0.14
					TLI	EPA 200.8	MOD	4/10/2014	Ethel Suico	µg/L	29.0	2.0	0.25
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	19.8	0.2	0.006
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	526	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	4.07	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	98.5	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.73	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.483	0.1	0.014
					TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	1140	50.0	1.76
OW-05S	OW-05S-031	Barry Collom	4/8/2014	1:38:00 PM	TLI	EPA 120.1	SC	4/14/2014	Jenny Tankunakorn	µmhos/cm	3890	2.0	0.606
					TLI	EPA 200.7	NAD	4/10/2014	Ethel Suico	mg/L	486	50.0	5.98
					TLI	EPA 200.8	CRTD	4/9/2014	Ethel Suico	µg/L	15.7	1.0	0.14
					TLI	EPA 200.8	MOD	4/10/2014	Ethel Suico	µg/L	14.4	2.0	0.25
					TLI	EPA 218.6	CR6	4/10/2014	Naheed Eidinejad	µg/L	15.4	0.2	0.006
					TLI	EPA 300.0	CL	4/9/2014	Giawad Ghenniwa	mg/L	1330	50.0	17.4
					TLI	EPA 300.0	FL	4/9/2014	Giawad Ghenniwa	mg/L	1.67	0.5	0.104
					TLI	EPA 300.0	SO4	4/9/2014	Giawad Ghenniwa	mg/L	233	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	4/22/2014	Katie O'Dell	mg/L	3.35	0.04	0.0112
					TLI	SM2130B	TRB	4/8/2014	Felipe Mendoza	NTU	0.317	0.1	0.014

TABLE 10

ARAR Monitoring Information for Groundwater Samples, First Half 2014

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
OW-05S	OW-05S-031	Barry Collom	4/8/2014	1:38:00 PM	TLI	SM2540C	TDS	4/14/2014	Jenny Tankunakorn	mg/L	2590	50.0	1.76

NOTES:

MDL	method detection limit corrected for sample dilution
RL	reporting limit corrected for sample dilution
ND	parameter not detected at the listed reporting limit
µmhos/cm	micro-mhos per centimeter
NTU	Nephelometric Turbidity Unit
mg/L	milligrams per liter
µg/L	micrograms per liter
J	concentration estimated by laboratory or data validation
ARAR	applicable or relevant and appropriate requirements
TLI	Truesdail Laboratories, Inc.
CHMC	Advanced Sciences, Corvallis, OR

ALKC	alkalinity, as carbonate	HGD	mercury, dissolved
ALKT	alkalinity, total as CaCO3	KD	potassium, dissolved
ALKB	alkalinity, bicarbonate as CaCO3	MGD	magnesium, dissolved
ALD	aluminum, dissolved	MND	manganese, dissolved
AGD	silver, dissolved	MOD	molybdenum, dissolved
ASD	arsenic, dissolved	NAD	sodium, dissolved
BD	boron, dissolved	NID	nickel, dissolved
BAD	barium, dissolved	NH3N	ammonia (as Nitrogen)
BED	beryllium, dissolved	NO3NO2N	nitrate/nitrite (as Nitrogen)
CAD	calcium, dissolved	PBD	lead, dissolved
CDD	cadmium, dissolved	SBD	antimony, dissolved
CL	chloride	SC	specific conductance
COBD	cobalt, dissolved	SED	selenium, dissolved
CRTD	chromium, dissolved	SO4	sulfate
CR6	hexavalent chromium	TLD	thallium, dissolved
CUD	copper, dissolved	TDS	total dissolved solids
FE	iron	TRB	turbidity
FETD	iron, dissolved	VD	vanadium, dissolved
FL	fluoride	ZND	zinc, dissolved

Figures

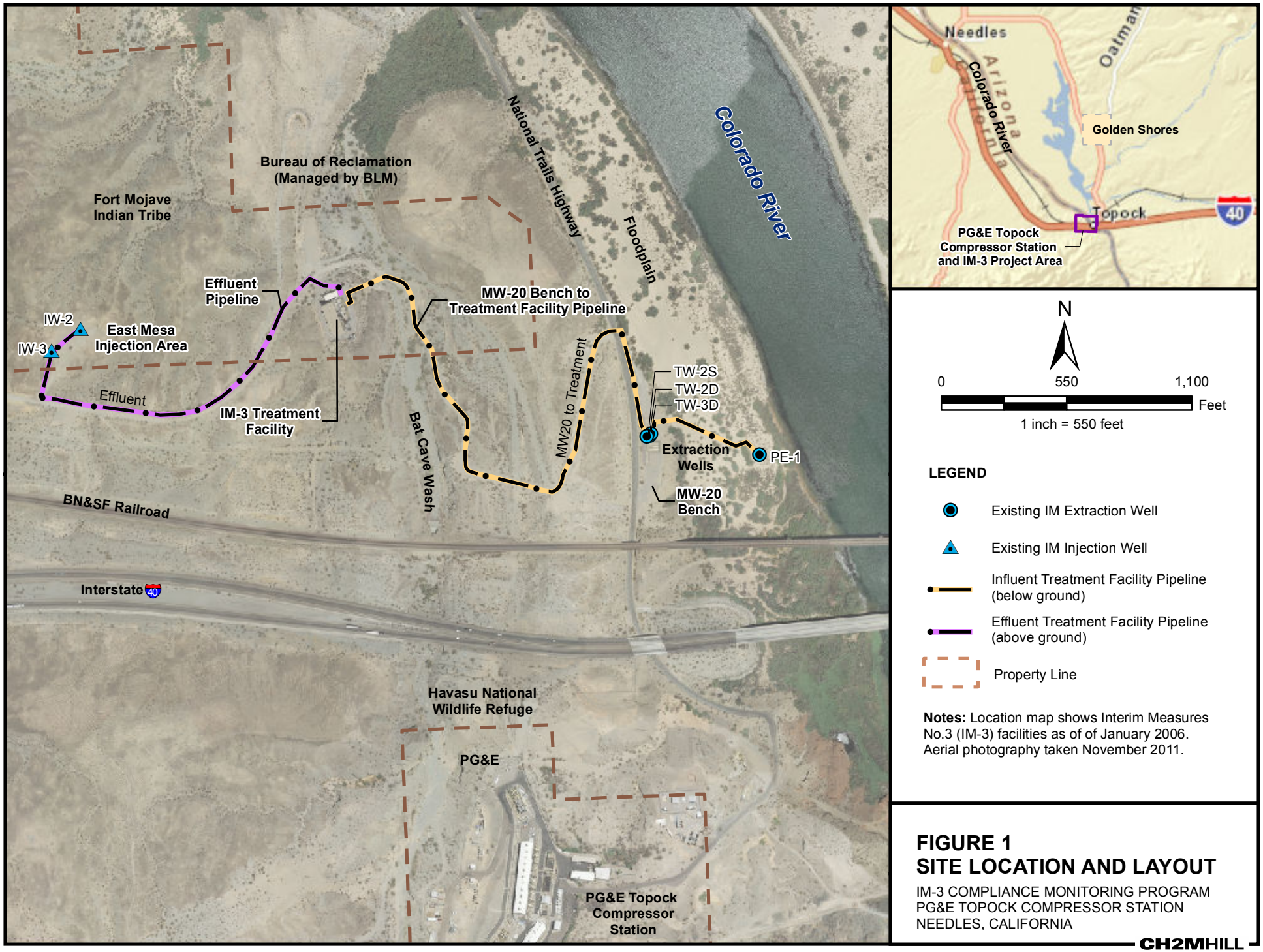

FIGURE 1
SITE LOCATION AND LAYOUT

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

CH2MHILL

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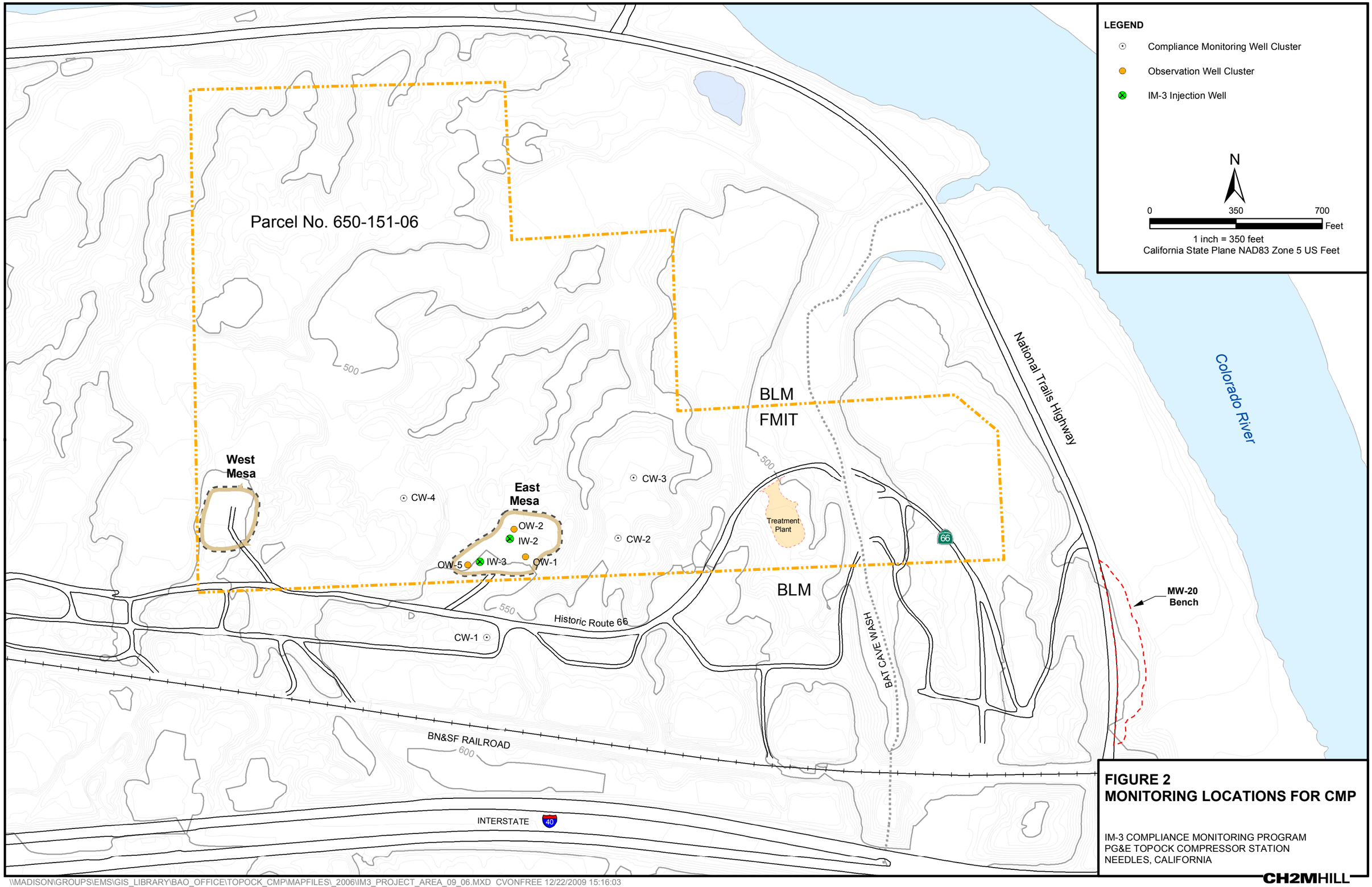

FIGURE 2
MONITORING LOCATIONS FOR CMP

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

CH2MHILL

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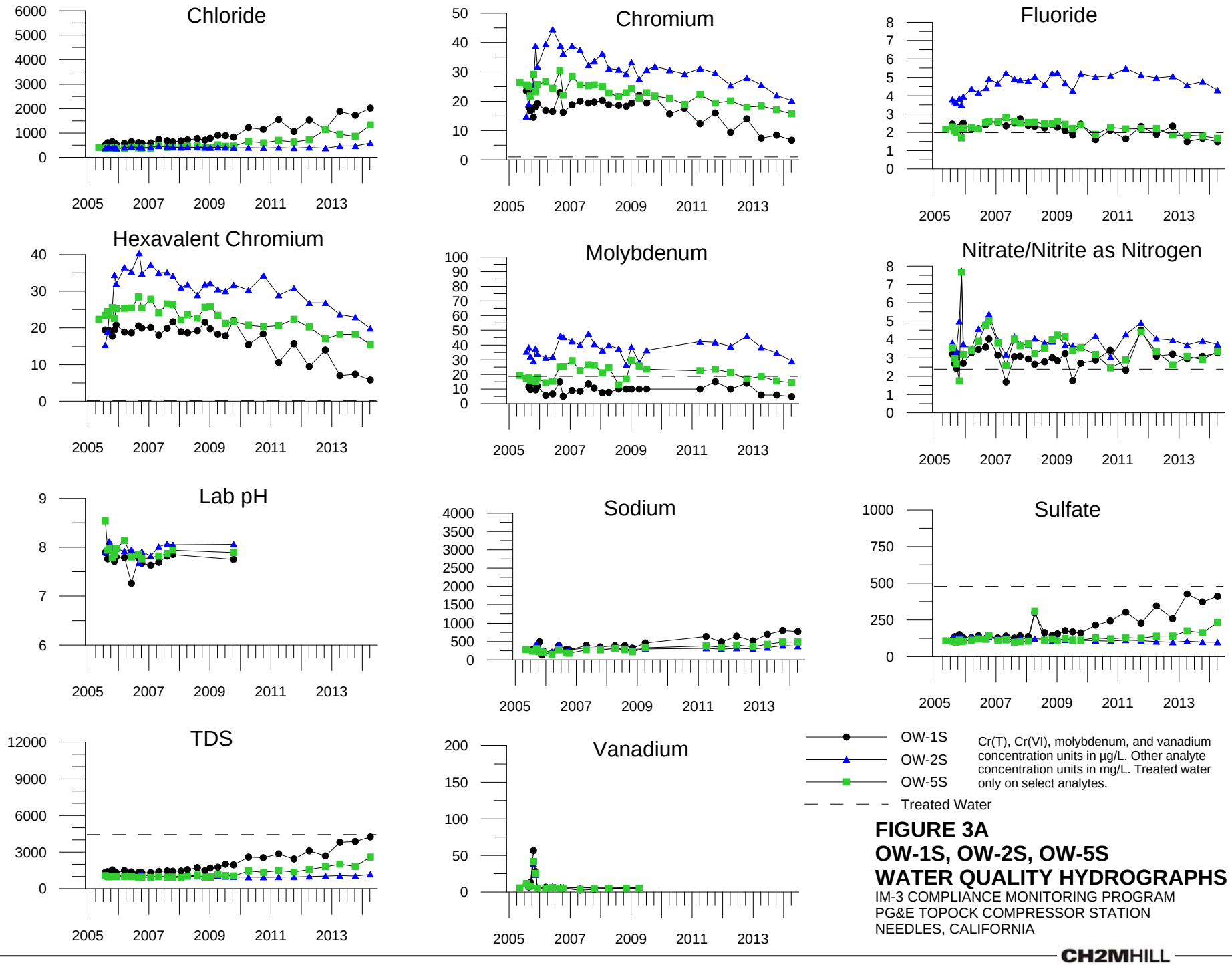

FIGURE 3A
OW-1S, OW-2S, OW-5S
WATER QUALITY HYDROGRAPHS
IM-3 COMPLIANCE MONITORING PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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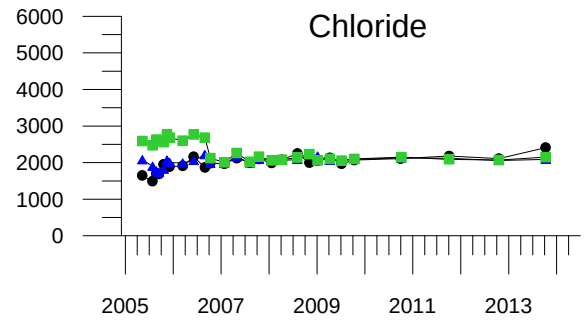

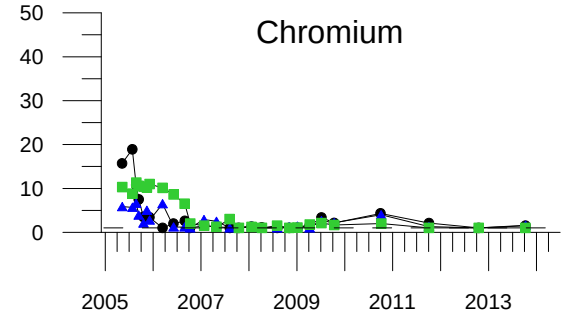

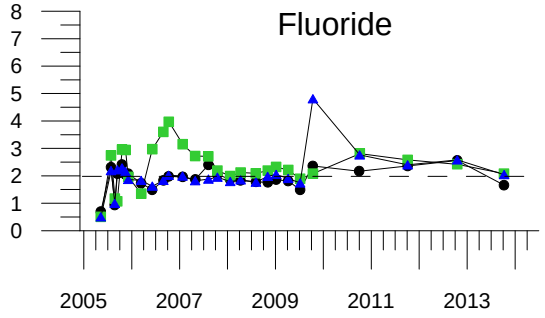

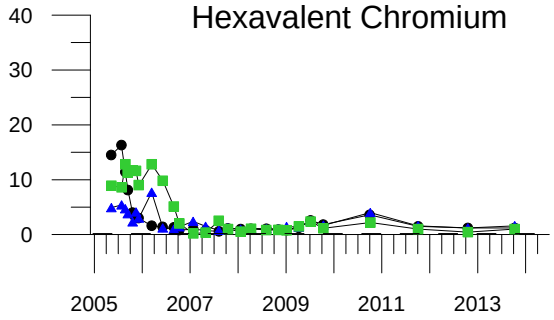

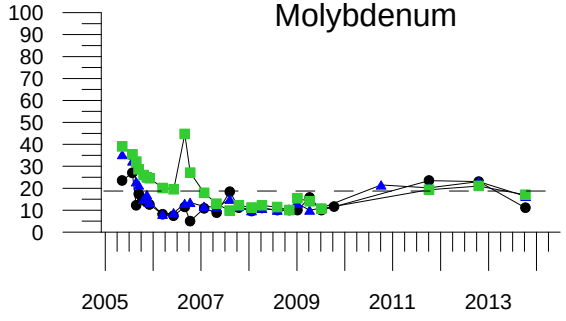

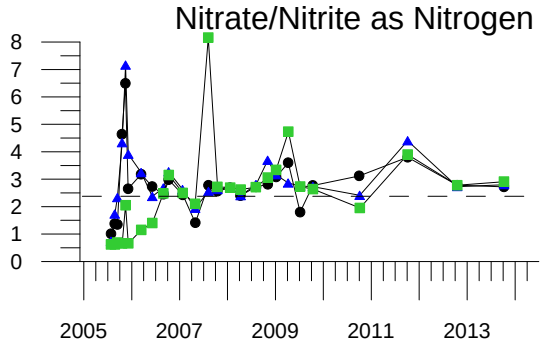

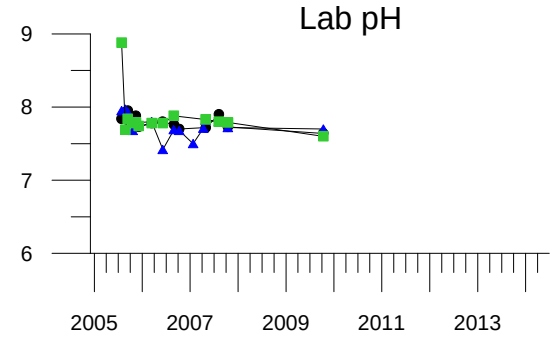

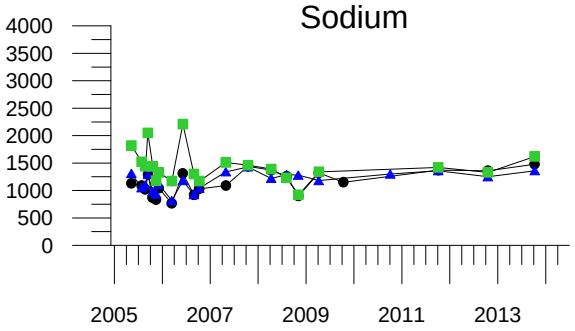

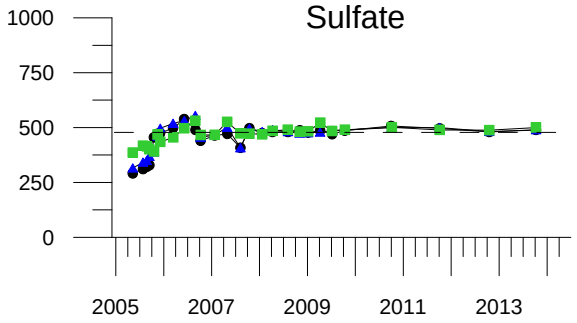

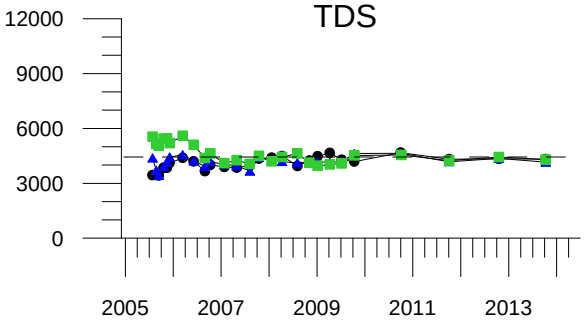

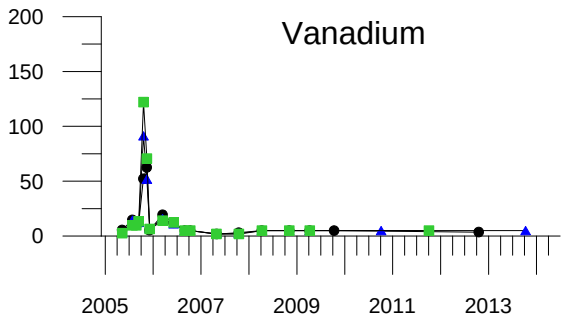

OW-1M
OW-2M
OW-5M
Treated Water

Cr(T), Cr(VI), molybdenum, and vanadium concentration units in µg/L. Other analyte concentration units in mg/L. Treated water only on select analytes

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

CH2MHILL

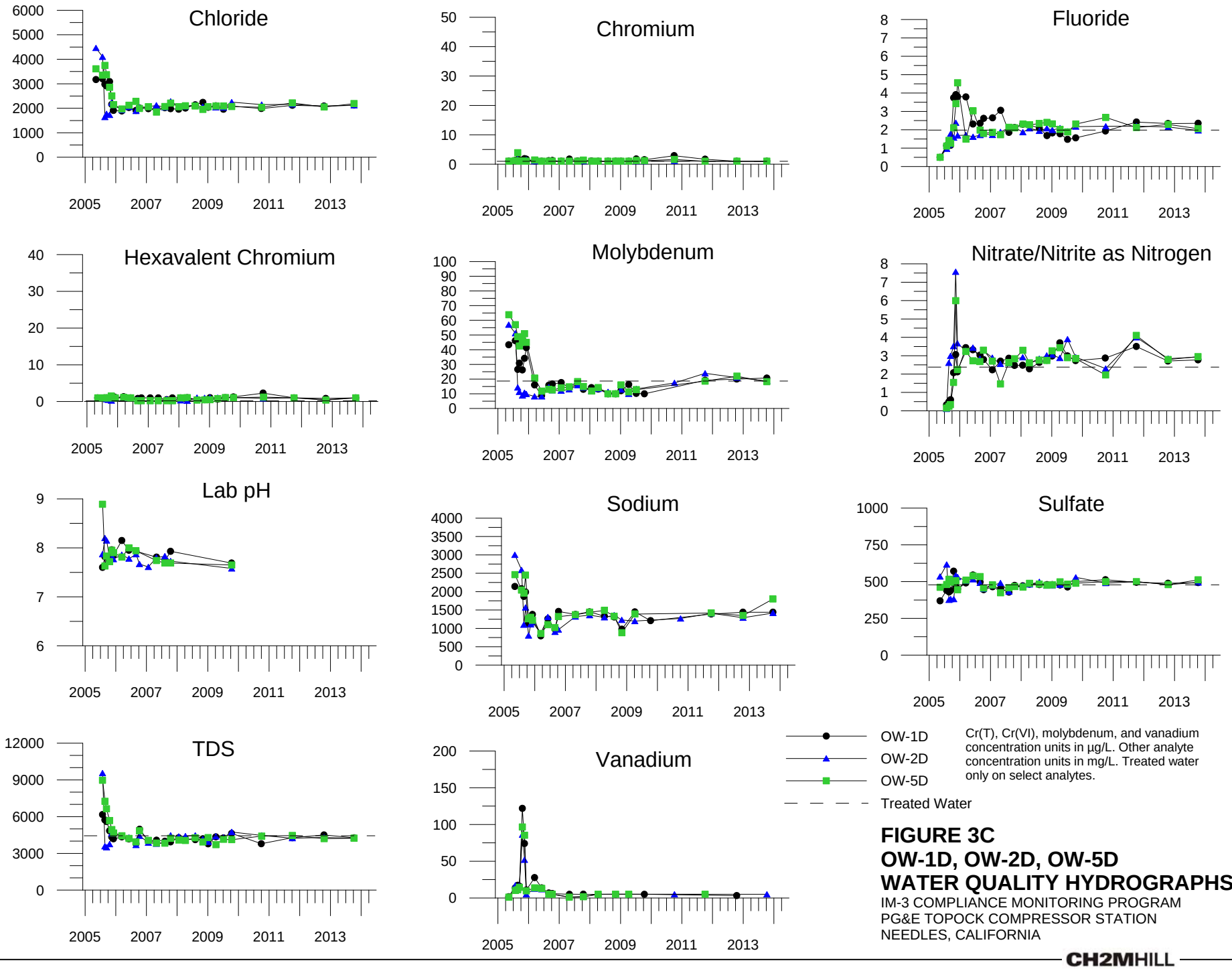

FIGURE 3C
OW-1D, OW-2D, OW-5D
WATER QUALITY HYDROGRAPHS
IM-3 COMPLIANCE MONITORING PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

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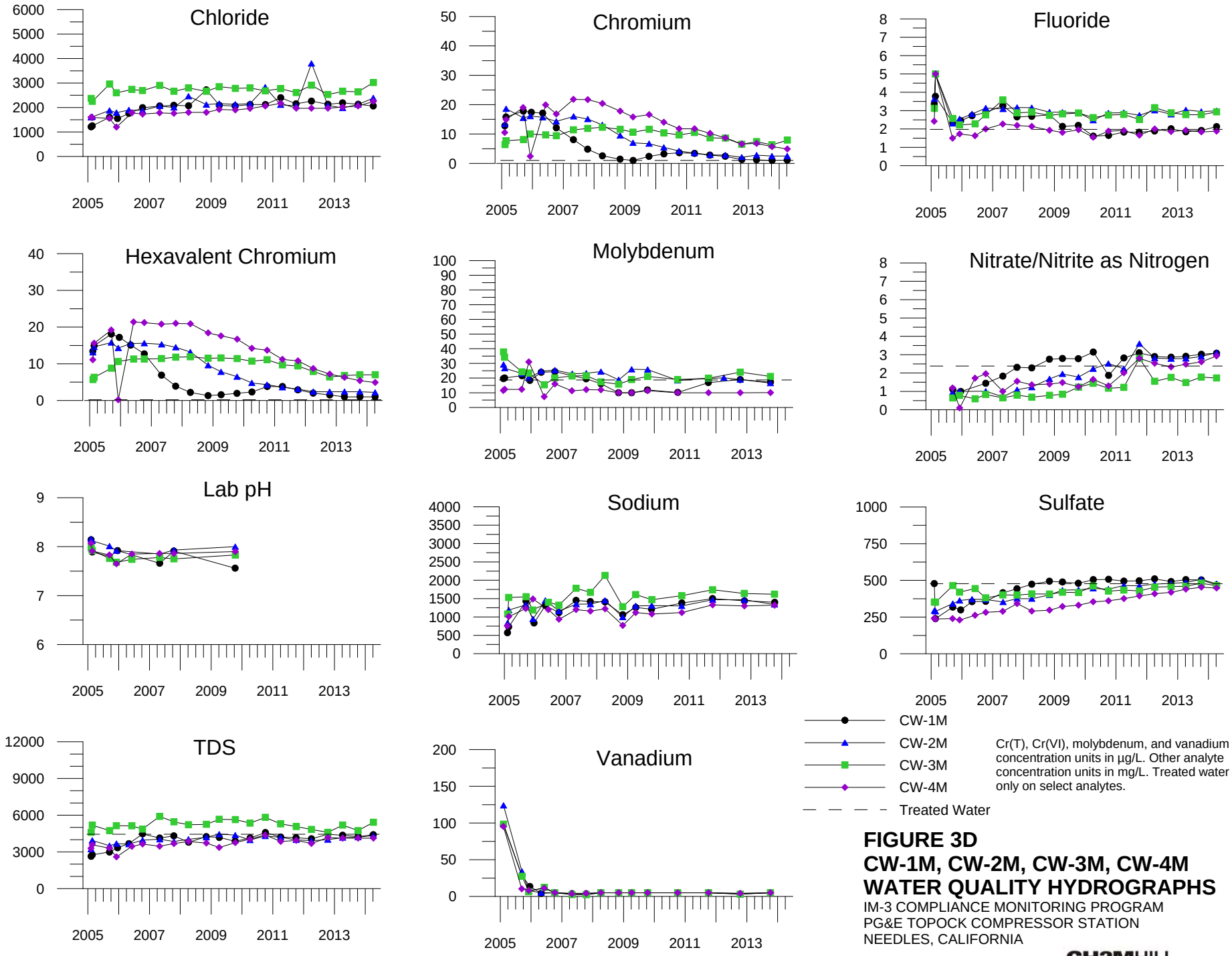
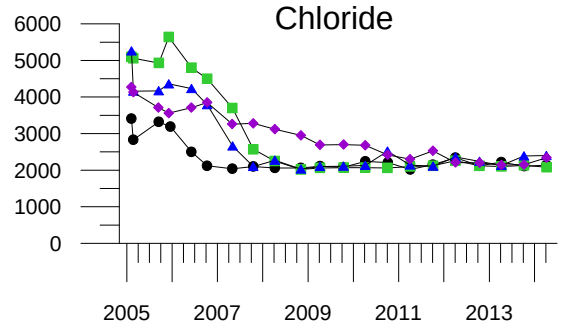
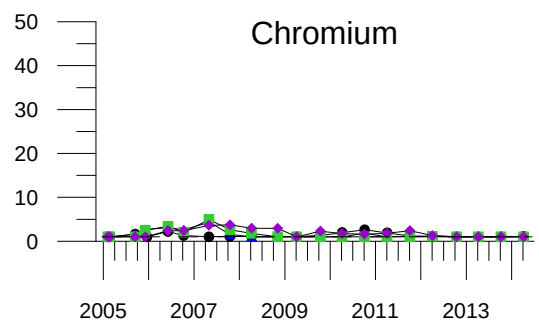
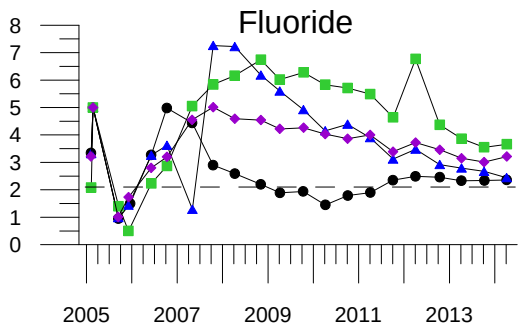


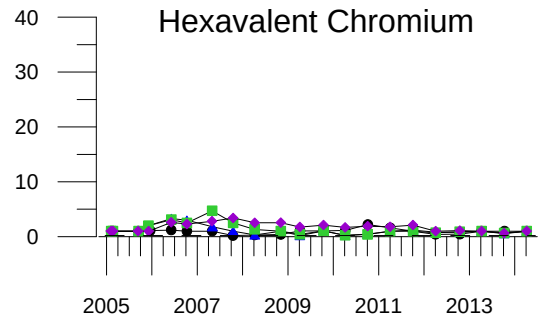
FIGURE 3D
CW-1M, CW-2M, CW-3M, CW-4M
WATER QUALITY HYDROGRAPHS
IM-3 COMPLIANCE MONITORING PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

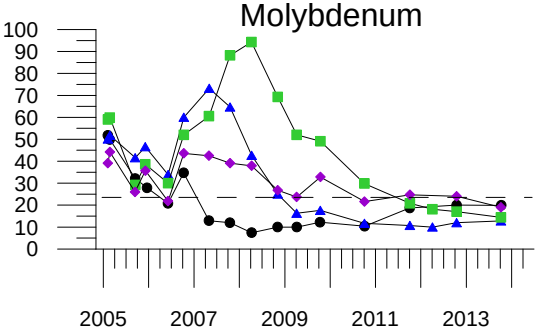
CH2MHILL

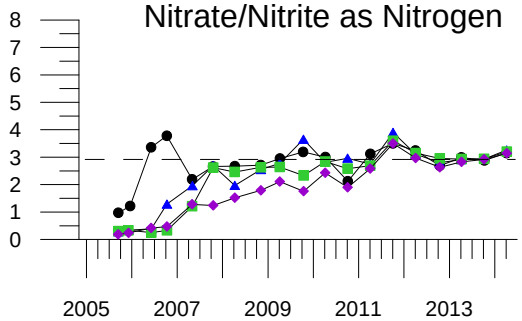


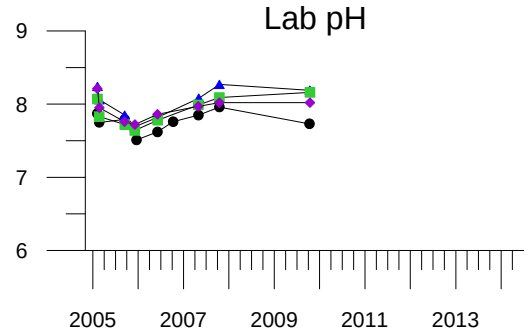


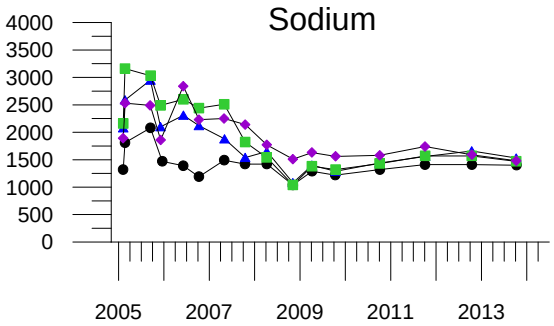


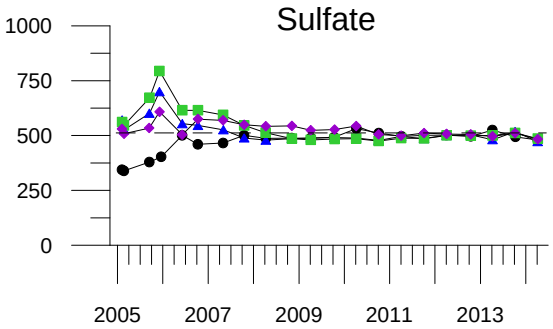


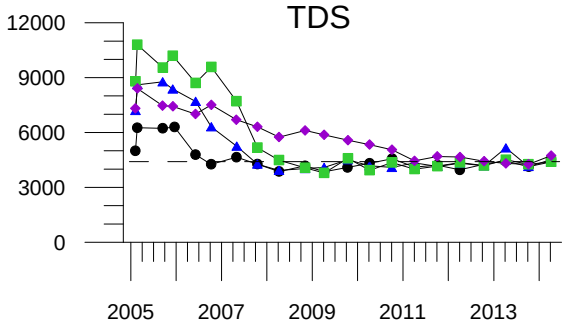


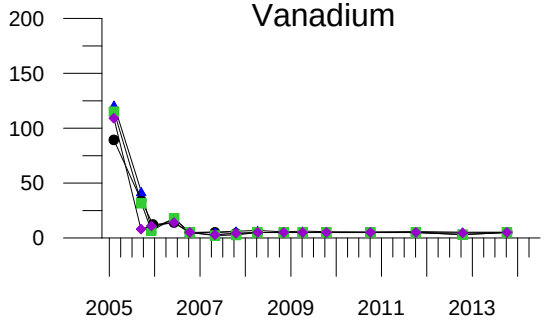












Cr(T), Cr(VI), molybdenum, and vanadium concentration units in µg/L. Other analyte concentration units in mg/L. Treated water only on select analytes.

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

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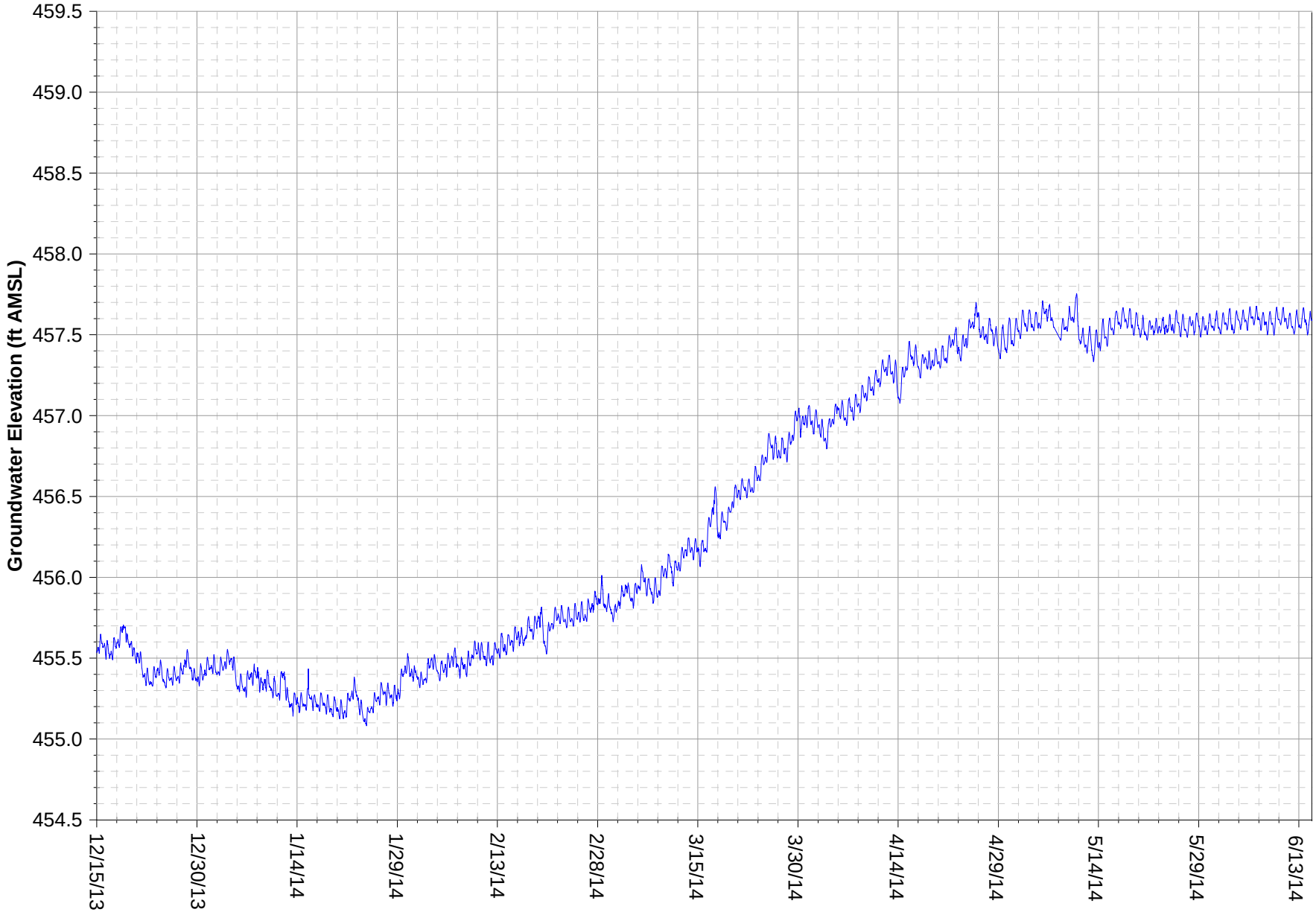
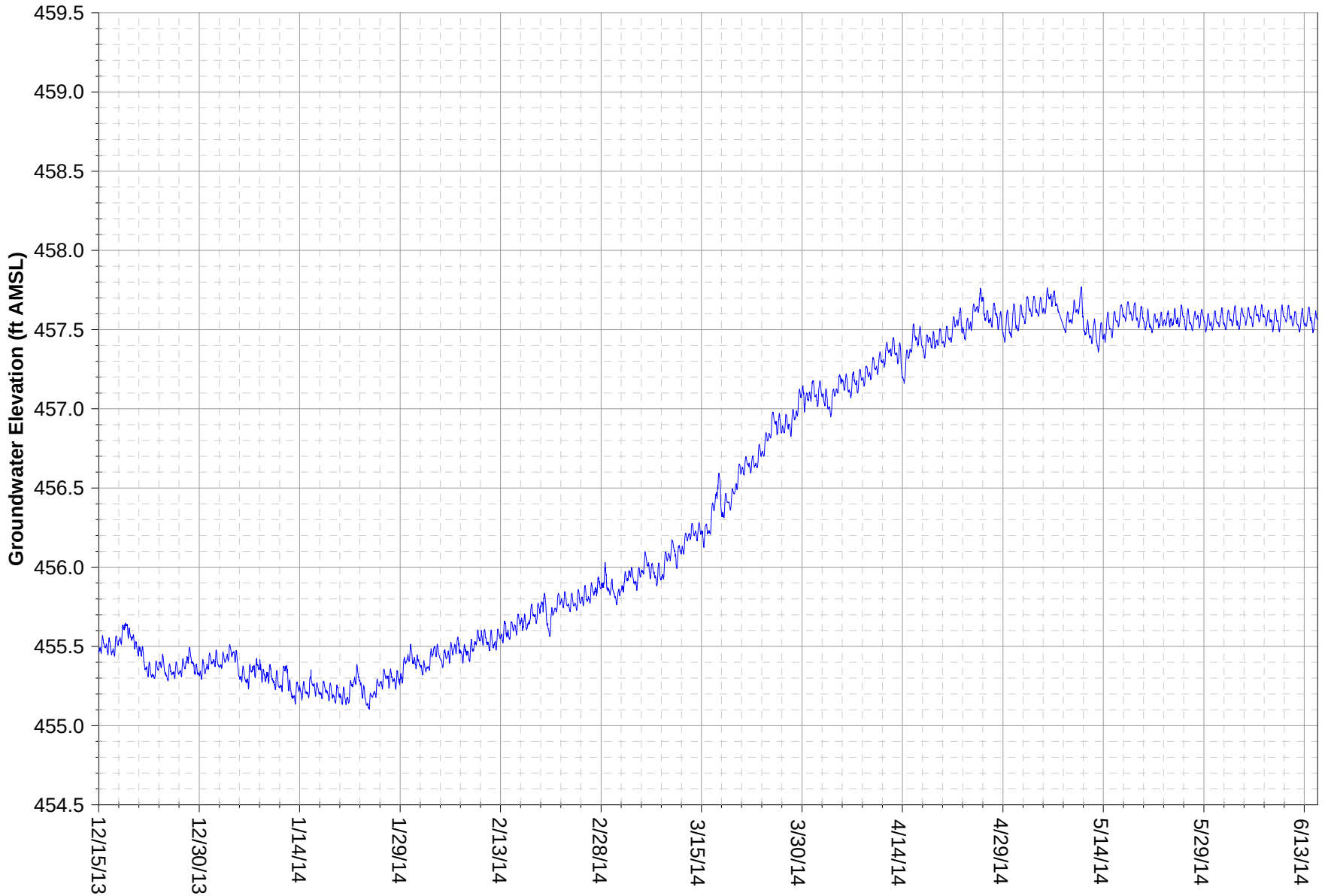


Notes:
Data subject to review.
Refer to Table 1 for injection well status.

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

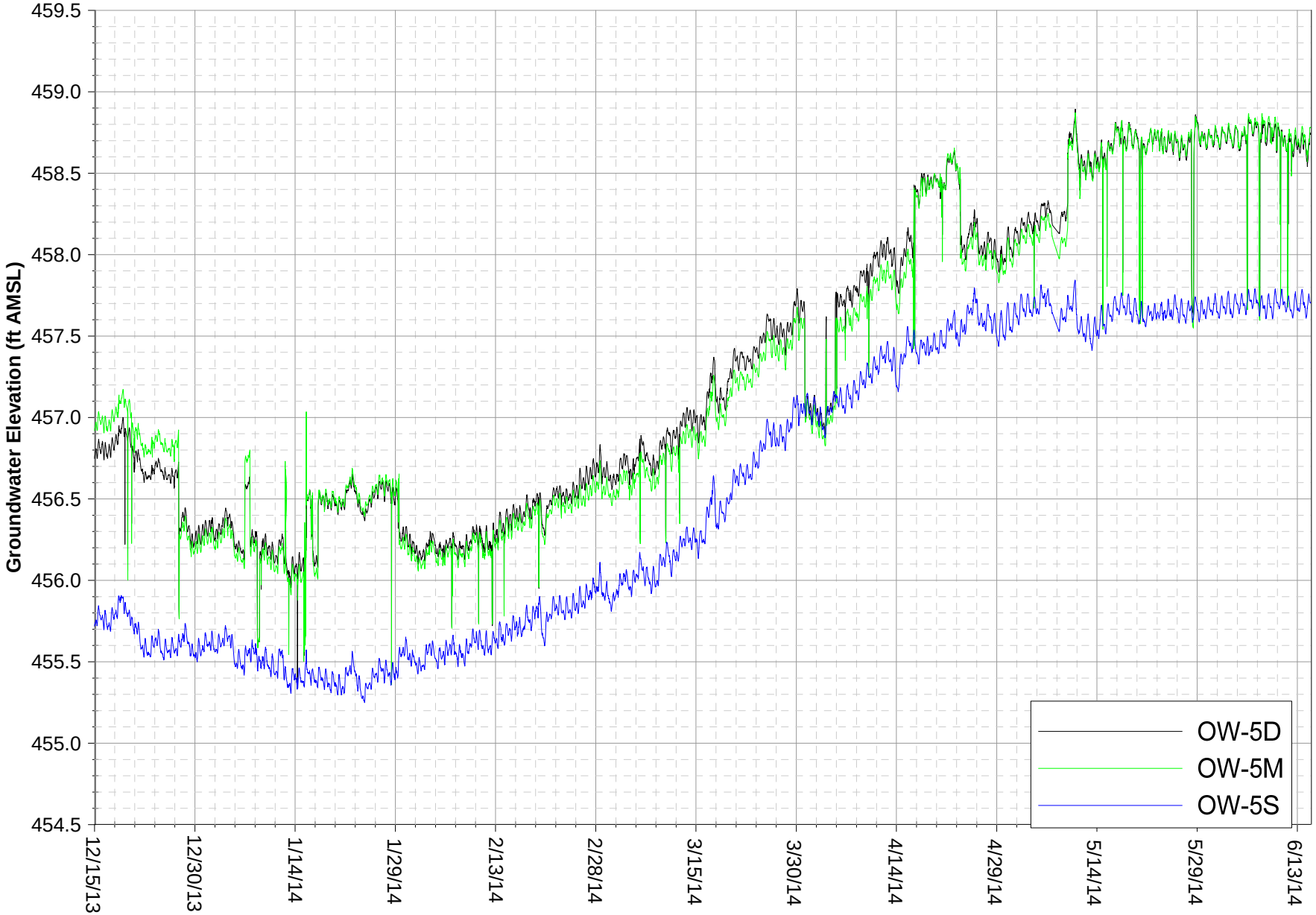
CH2MHILL



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

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

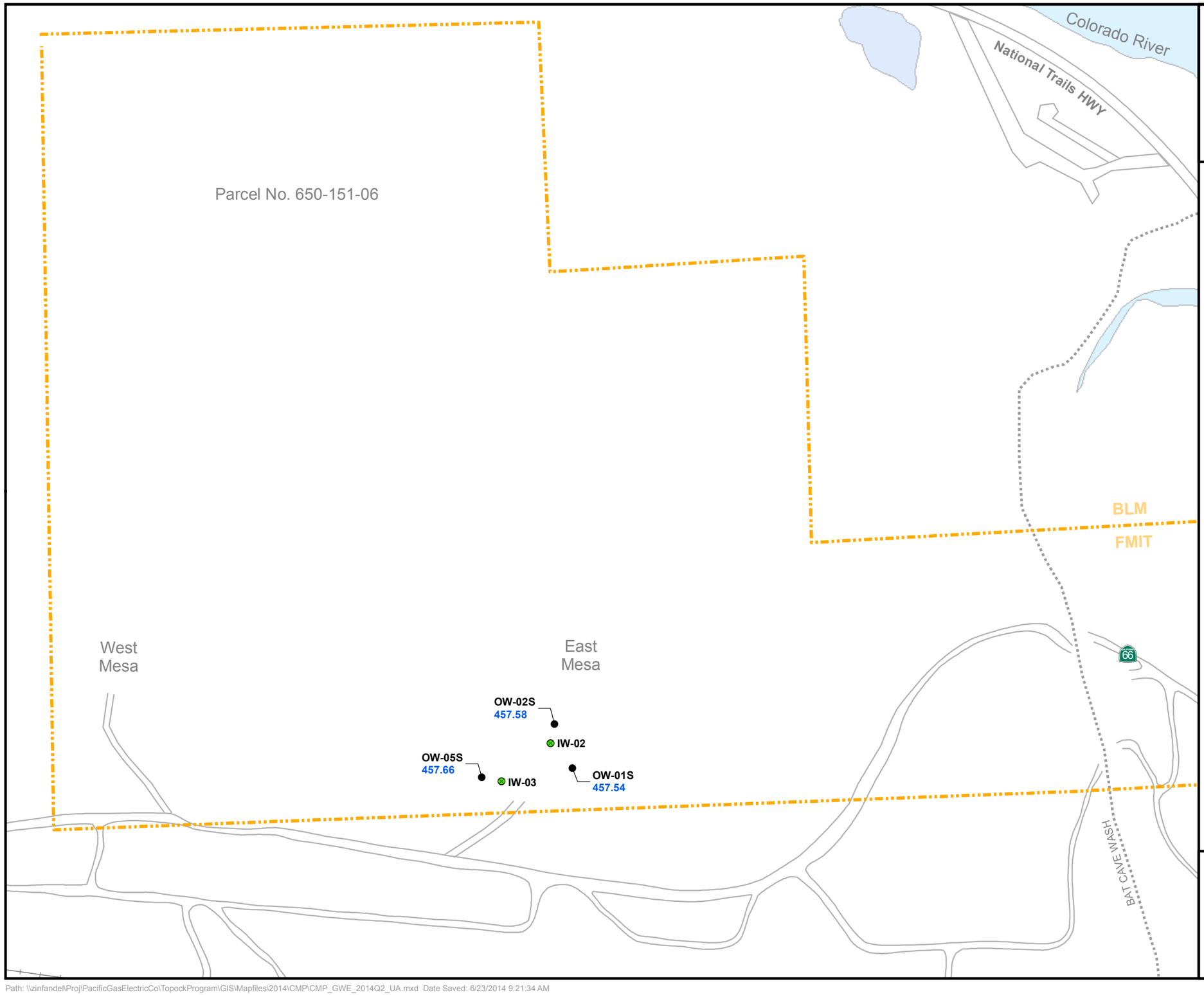
CH2MHILL



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

FIGURE 4C
OW-5 GROUNDWATER ELEVATION HYDROGRAPHS
IM-3 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 Elevations for Shallow Wells in IM-3 Injection Area

- **OW-02S** 457.48 — Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL).
- Groudwater elevation contour in feet above MSL (0.2 foot interval). Dashed where inferred.

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

FIGURE 5A
AVERAGE GROUNDWATER ELEVATIONS FOR SHALLOW WELLS, JUNE 5, 2014

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

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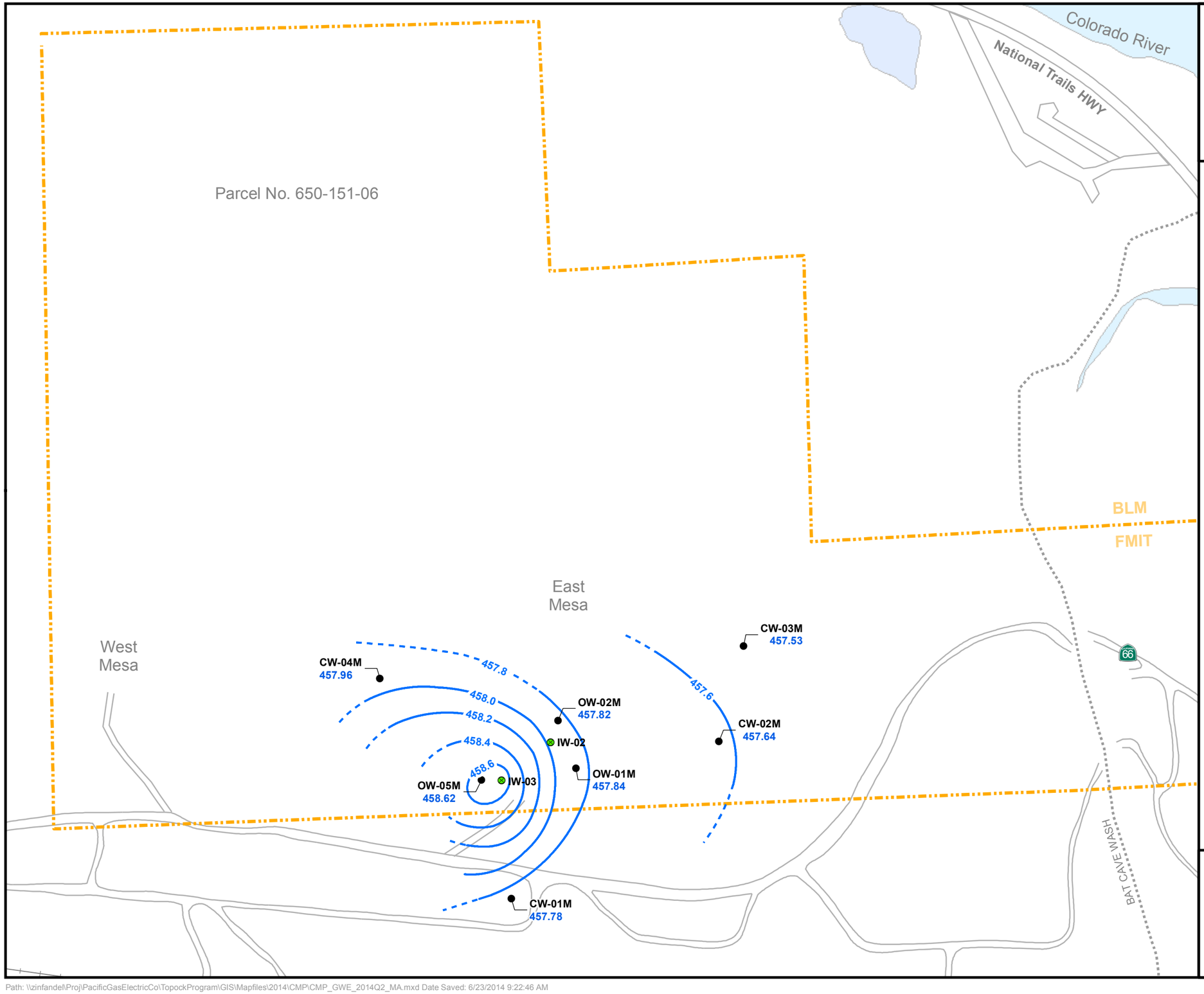

N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

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

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

OW-05M 457.68 — Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL).

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

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

FIGURE 5B
AVERAGE GROUNDWATER ELEVATION CONTOURS FOR MID-DEPTH WELLS, JUNE 5, 2014

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

CH2MHILL

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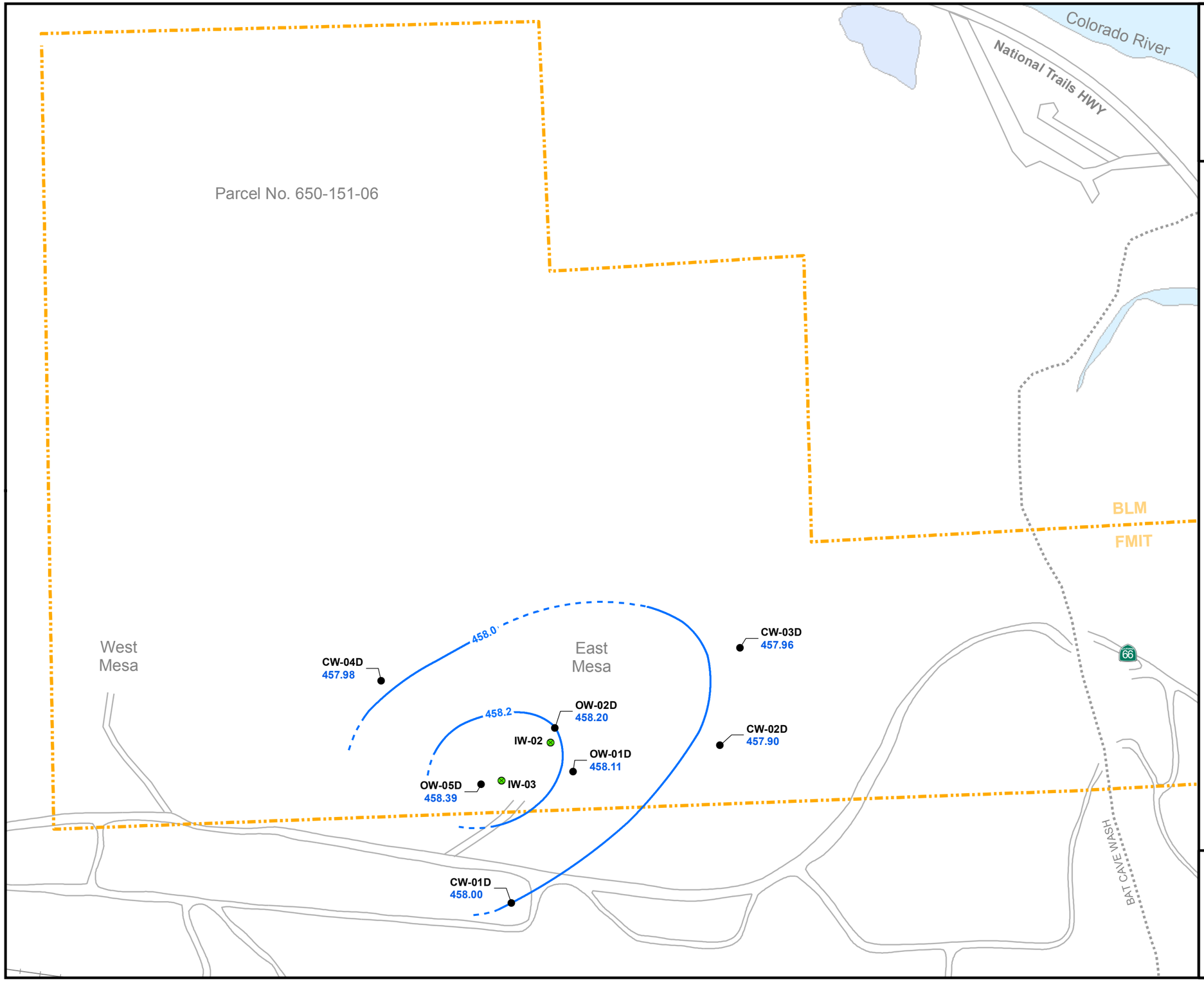

N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

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

Groundwater Elevations for Deep Wells in IM-3 Injection Area

OW-05D 458.05 — Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL).

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

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

FIGURE 5C
AVERAGE GROUNDWATER ELEVATION CONTOURS FOR DEEP WELLS, JUNE 5, 2014

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

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Appendix A
Laboratory Reports, First Half 2014

E2 Consulting Engineers, Inc.
PG&E Topock Project

Laboratory Number: 812967
Received: April 8, 2014

2014-CMP-031
Project No.: 423575.MP.02.CM
P.O. No.: 423575.MP.02.CM

Prepared for:

E2 Consulting Engineers, Inc.
Attn: Shawn Duffy
2525 Airpark Dr.
Redding, CA 96001

Prepared by:

TRUESDAIL LABORATORIES, INC.
TUSTIN, CALIFORNIA

Table of Contents
TLI Laboratory Data Package

For Laboratory Number: 812967

Section 1.0

Case Narrative

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

April 22, 2014

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2014-CMP-031, GROUNDWATER MONITORING PROJECT, TLI NO.: 812967

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2014-CMP-031 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 April 8, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING
Established 1931
14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

Client: E2 Consulting Engineers, Inc.
155 Grand Ave. Suite 1000
Oakland, CA 94612
Attention: Shawn Duffy
Sample: Fifteen (15) Groundwater Samples
Project Name: PG&E Topock Project
Project No.: 423575.MP.02.CM

Laboratory No.: 812967
Date: April 22, 2014
Collected: April 7 - 8, 2014
Received: April 8, 2014

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Felipe Mendoza
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Himanai Vaishnav / Maksim Gorbunov
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

Section 2.0

Summary Table of Final Results

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING
Established 1931
14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

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

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

Laboratory No.: 812967
Date Received: April 8, 2014

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
812967-001	CW-01D-031	E120.1	NONE	4/7/2014	10:17	EC	6850	umhos/cm	2.00
812967-001	CW-01D-031	E200.8	FLDFLT	4/7/2014	10:17	Chromium	1.1	ug/L	1.0
812967-001	CW-01D-031	E218.6	FLDFLT	4/7/2014	10:17	Chromium, Hexavalent	ND	ug/L	1.0
812967-001	CW-01D-031	E300	NONE	4/7/2014	10:17	Chloride	2140	mg/L	50.0
812967-001	CW-01D-031	E300	NONE	4/7/2014	10:17	Fluoride	2.36	mg/L	0.500
812967-001	CW-01D-031	E300	NONE	4/7/2014	10:17	Sulfate	480	mg/L	25.0
812967-001	CW-01D-031	SM2130B	NONE	4/7/2014	10:17	Turbidity	0.107	NTU	0.100
812967-001	CW-01D-031	SM2540C	NONE	4/7/2014	10:17	Total Dissolved Solids	4520	mg/L	125
812967-001	CW-01D-031	SM4500NH3D	NONE	4/7/2014	10:17	Ammonia-N	ND	mg/L	0.500
812967-002	CW-01M-031	E120.1	NONE	4/7/2014	10:57	EC	6680	umhos/cm	2.00
812967-002	CW-01M-031	E200.8	FLDFLT	4/7/2014	10:57	Chromium	1.1	ug/L	1.0
812967-002	CW-01M-031	E218.6	FLDFLT	4/7/2014	10:57	Chromium, Hexavalent	ND	ug/L	1.0
812967-002	CW-01M-031	E300	NONE	4/7/2014	10:57	Chloride	2060	mg/L	50.0
812967-002	CW-01M-031	E300	NONE	4/7/2014	10:57	Fluoride	2.13	mg/L	0.500
812967-002	CW-01M-031	E300	NONE	4/7/2014	10:57	Sulfate	468	mg/L	25.0
812967-002	CW-01M-031	SM2130B	NONE	4/7/2014	10:57	Turbidity	0.101	NTU	0.100
812967-002	CW-01M-031	SM2540C	NONE	4/7/2014	10:57	Total Dissolved Solids	4400	mg/L	125
812967-002	CW-01M-031	SM4500NH3D	NONE	4/7/2014	10:57	Ammonia-N	ND	mg/L	0.500

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
812967-003	CW-02D-031	E120.1	NONE	4/7/2014	14:20	EC	6810	umhos/cm	2.00
812967-003	CW-02D-031	E200.8	FLDFLT	4/7/2014	14:20	Chromium	ND	ug/L	1.0
812967-003	CW-02D-031	E218.6	FLDFLT	4/7/2014	14:20	Chromium, Hexavalent	ND	ug/L	1.0
812967-003	CW-02D-031	E300	NONE	4/7/2014	14:20	Chloride	2400	mg/L	50.0
812967-003	CW-02D-031	E300	NONE	4/7/2014	14:20	Fluoride	2.44	mg/L	0.500
812967-003	CW-02D-031	E300	NONE	4/7/2014	14:20	Sulfate	472	mg/L	25.0
812967-003	CW-02D-031	SM2130B	NONE	4/7/2014	14:20	Turbidity	0.852	NTU	0.100
812967-003	CW-02D-031	SM2540C	NONE	4/7/2014	14:20	Total Dissolved Solids	4390	mg/L	125
812967-003	CW-02D-031	SM4500NH3D	NONE	4/7/2014	14:20	Ammonia-N	ND	mg/L	0.500
812967-004	CW-02M-031	E120.1	NONE	4/7/2014	15:07	EC	6820	umhos/cm	2.00
812967-004	CW-02M-031	E200.8	FLDFLT	4/7/2014	15:07	Chromium	2.5	ug/L	1.0
812967-004	CW-02M-031	E218.6	FLDFLT	4/7/2014	15:07	Chromium, Hexavalent	2.2	ug/L	1.0
812967-004	CW-02M-031	E300	NONE	4/7/2014	15:07	Chloride	2390	mg/L	50.0
812967-004	CW-02M-031	E300	NONE	4/7/2014	15:07	Fluoride	2.99	mg/L	0.500
812967-004	CW-02M-031	E300	NONE	4/7/2014	15:07	Sulfate	477	mg/L	25.0
812967-004	CW-02M-031	SM2130B	NONE	4/7/2014	15:07	Turbidity	0.165	NTU	0.100
812967-004	CW-02M-031	SM2540C	NONE	4/7/2014	15:07	Total Dissolved Solids	4340	mg/L	125
812967-004	CW-02M-031	SM4500NH3D	NONE	4/7/2014	15:07	Ammonia-N	ND	mg/L	0.500
812967-005	CW-03D-031	E120.1	NONE	4/8/2014	7:37	EC	6910	umhos/cm	2.00
812967-005	CW-03D-031	E200.8	FLDFLT	4/8/2014	7:37	Chromium	ND	ug/L	1.0
812967-005	CW-03D-031	E218.6	FLDFLT	4/8/2014	7:37	Chromium, Hexavalent	ND	ug/L	1.0
812967-005	CW-03D-031	E300	NONE	4/8/2014	7:37	Chloride	2080	mg/L	50.0
812967-005	CW-03D-031	E300	NONE	4/8/2014	7:37	Fluoride	3.66	mg/L	0.500
812967-005	CW-03D-031	E300	NONE	4/8/2014	7:37	Sulfate	486	mg/L	25.0
812967-005	CW-03D-031	SM2130B	NONE	4/8/2014	7:37	Turbidity	0.157	NTU	0.100
812967-005	CW-03D-031	SM2540C	NONE	4/8/2014	7:37	Total Dissolved Solids	4400	mg/L	125
812967-005	CW-03D-031	SM4500NH3D	NONE	4/8/2014	7:37	Ammonia-N	ND	mg/L	0.500
812967-006	CW-03M-031	E120.1	NONE	4/8/2014	8:55	EC	8220	umhos/cm	2.00
812967-006	CW-03M-031	E200.8	FLDFLT	4/8/2014	8:55	Chromium	7.9	ug/L	1.0
812967-006	CW-03M-031	E218.6	FLDFLT	4/8/2014	8:55	Chromium, Hexavalent	6.4	ug/L	1.0
812967-006	CW-03M-031	E300	NONE	4/8/2014	8:55	Chloride	3020	mg/L	50.0
812967-006	CW-03M-031	E300	NONE	4/8/2014	8:55	Fluoride	2.93	mg/L	0.500
812967-006	CW-03M-031	E300	NONE	4/8/2014	8:55	Sulfate	451	mg/L	25.0
812967-006	CW-03M-031	SM2130B	NONE	4/8/2014	8:55	Turbidity	ND	NTU	0.100
812967-006	CW-03M-031	SM2540C	NONE	4/8/2014	8:55	Total Dissolved Solids	4540	mg/L	125
812967-006	CW-03M-031	SM4500NH3D	NONE	4/8/2014	8:55	Ammonia-N	ND	mg/L	0.500

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
812967-007	CW-04D-031	E120.1	NONE	4/8/2014	10:57	EC	6800	umhos/cm	2.00
812967-007	CW-04D-031	E200.8	FLDFLT	4/8/2014	10:57	Chromium	ND	ug/L	1.0
812967-007	CW-04D-031	E218.6	FLDFLT	4/8/2014	10:57	Chromium, Hexavalent	ND	ug/L	1.0
812967-007	CW-04D-031	E300	NONE	4/8/2014	10:57	Chloride	2340	mg/L	50.0
812967-007	CW-04D-031	E300	NONE	4/8/2014	10:57	Fluoride	3.21	mg/L	0.500
812967-007	CW-04D-031	E300	NONE	4/8/2014	10:57	Sulfate	483	mg/L	25.0
812967-007	CW-04D-031	SM2130B	NONE	4/8/2014	10:57	Turbidity	0.102	NTU	0.100
812967-007	CW-04D-031	SM2540C	NONE	4/8/2014	10:57	Total Dissolved Solids	4740	mg/L	125
812967-007	CW-04D-031	SM4500NH3D	NONE	4/8/2014	10:57	Ammonia-N	ND	mg/L	0.500
812967-008	CW-04M-031	E120.1	NONE	4/8/2014	11:42	EC	6510	umhos/cm	2.00
812967-008	CW-04M-031	E200.8	FLDFLT	4/8/2014	11:42	Chromium	4.9	ug/L	1.0
812967-008	CW-04M-031	E218.6	FLDFLT	4/8/2014	11:42	Chromium, Hexavalent	4.9	ug/L	1.0
812967-008	CW-04M-031	E300	NONE	4/8/2014	11:42	Chloride	2250	mg/L	50.0
812967-008	CW-04M-031	E300	NONE	4/8/2014	11:42	Fluoride	1.88	mg/L	0.500
812967-008	CW-04M-031	E300	NONE	4/8/2014	11:42	Sulfate	448	mg/L	25.0
812967-008	CW-04M-031	SM2130B	NONE	4/8/2014	11:42	Turbidity	ND	NTU	0.100
812967-008	CW-04M-031	SM2540C	NONE	4/8/2014	11:42	Total Dissolved Solids	4120	mg/L	125
812967-008	CW-04M-031	SM4500NH3D	NONE	4/8/2014	11:42	Ammonia-N	ND	mg/L	0.500
812967-009	OW-01S-031	E120.1	NONE	4/8/2014	15:03	EC	5810	umhos/cm	2.00
812967-009	OW-01S-031	E200.7	FLDFLT	4/8/2014	15:03	Sodium	774000	ug/L	50000
812967-009	OW-01S-031	E200.8	FLDFLT	4/8/2014	15:03	Chromium	6.7	ug/L	1.0
812967-009	OW-01S-031	E200.8	FLDFLT	4/8/2014	15:03	Molybdenum	4.8	ug/L	2.0
812967-009	OW-01S-031	E218.6	FLDFLT	4/8/2014	15:03	Chromium, Hexavalent	5.8	ug/L	1.0
812967-009	OW-01S-031	E300	NONE	4/8/2014	15:03	Chloride	2020	mg/L	50.0
812967-009	OW-01S-031	E300	NONE	4/8/2014	15:03	Fluoride	1.48	mg/L	0.500
812967-009	OW-01S-031	E300	NONE	4/8/2014	15:03	Sulfate	410	mg/L	25.0
812967-009	OW-01S-031	SM2130B	NONE	4/8/2014	15:03	Turbidity	1.10	NTU	0.100
812967-009	OW-01S-031	SM2540C	NONE	4/8/2014	15:03	Total Dissolved Solids	4240	mg/L	125
812967-010	OW-02S-031	E120.1	NONE	4/8/2014	14:32	EC	2050	umhos/cm	2.00
812967-010	OW-02S-031	E200.7	FLDFLT	4/8/2014	14:32	Sodium	374000	ug/L	50000
812967-010	OW-02S-031	E200.8	FLDFLT	4/8/2014	14:32	Chromium	19.4	ug/L	1.0
812967-010	OW-02S-031	E200.8	FLDFLT	4/8/2014	14:32	Molybdenum	29.0	ug/L	2.0
812967-010	OW-02S-031	E218.6	FLDFLT	4/8/2014	14:32	Chromium, Hexavalent	19.8	ug/L	0.20
812967-010	OW-02S-031	E300	NONE	4/8/2014	14:32	Chloride	526	mg/L	50.0
812967-010	OW-02S-031	E300	NONE	4/8/2014	14:32	Fluoride	4.07	mg/L	0.500
812967-010	OW-02S-031	E300	NONE	4/8/2014	14:32	Sulfate	98.5	mg/L	25.0
812967-010	OW-02S-031	SM2130B	NONE	4/8/2014	14:32	Turbidity	0.483	NTU	0.100
812967-010	OW-02S-031	SM2540C	NONE	4/8/2014	14:32	Total Dissolved Solids	1140	mg/L	50.0

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
812967-011	OW-05S-031	E120.1	NONE	4/8/2014	13:38	EC	3890	umhos/cm	2.00
812967-011	OW-05S-031	E200.7	FLDFLT	4/8/2014	13:38	Sodium	486000	ug/L	50000
812967-011	OW-05S-031	E200.8	FLDFLT	4/8/2014	13:38	Chromium	15.7	ug/L	1.0
812967-011	OW-05S-031	E200.8	FLDFLT	4/8/2014	13:38	Molybdenum	14.4	ug/L	2.0
812967-011	OW-05S-031	E218.6	FLDFLT	4/8/2014	13:38	Chromium, Hexavalent	15.4	ug/L	0.20
812967-011	OW-05S-031	E300	NONE	4/8/2014	13:38	Chloride	1330	mg/L	50.0
812967-011	OW-05S-031	E300	NONE	4/8/2014	13:38	Fluoride	1.67	mg/L	0.500
812967-011	OW-05S-031	E300	NONE	4/8/2014	13:38	Sulfate	233	mg/L	25.0
812967-011	OW-05S-031	SM2130B	NONE	4/8/2014	13:38	Turbidity	0.317	NTU	0.100
812967-011	OW-05S-031	SM2540C	NONE	4/8/2014	13:38	Total Dissolved Solids	2590	mg/L	50.0
812967-012	OW-80-031	E218.6	FLDFLT	4/8/2014	6:00	Chromium, Hexavalent	ND	ug/L	0.20
812967-013	OW-81-031	E218.6	FLDFLT	4/8/2014	15:30	Chromium, Hexavalent	ND	ug/L	0.20
812967-014	OW-90-031	E120.1	NONE	4/8/2014	6:50	EC	8260	umhos/cm	2.00
812967-014	OW-90-031	E200.8	FLDFLT	4/8/2014	6:50	Chromium	7.9	ug/L	1.0
812967-014	OW-90-031	E218.6	FLDFLT	4/8/2014	6:50	Chromium, Hexavalent	7.0	ug/L	1.0
812967-014	OW-90-031	E300	NONE	4/8/2014	6:50	Chloride	3010	mg/L	50.0
812967-014	OW-90-031	E300	NONE	4/8/2014	6:50	Fluoride	2.93	mg/L	0.500
812967-014	OW-90-031	E300	NONE	4/8/2014	6:50	Sulfate	464	mg/L	25.0
812967-014	OW-90-031	SM2130B	NONE	4/8/2014	6:50	Turbidity	ND	NTU	0.100
812967-014	OW-90-031	SM2540C	NONE	4/8/2014	6:50	Total Dissolved Solids	5420	mg/L	250
812967-014	OW-90-031	SM4500NH3D	NONE	4/8/2014	6:50	Ammonia-N	ND	mg/L	0.500
812967-015	OW-91-031	E120.1	NONE	4/8/2014	10:42	EC	2050	umhos/cm	2.00
812967-015	OW-91-031	E200.7	FLDFLT	4/8/2014	10:42	Sodium	362000	ug/L	50000
812967-015	OW-91-031	E200.8	FLDFLT	4/8/2014	10:42	Chromium	20.2	ug/L	1.0
812967-015	OW-91-031	E200.8	FLDFLT	4/8/2014	10:42	Molybdenum	28.8	ug/L	2.0
812967-015	OW-91-031	E218.6	FLDFLT	4/8/2014	10:42	Chromium, Hexavalent	19.8	ug/L	0.20
812967-015	OW-91-031	E300	NONE	4/8/2014	10:42	Chloride	587	mg/L	50.0
812967-015	OW-91-031	E300	NONE	4/8/2014	10:42	Fluoride	4.30	mg/L	0.500
812967-015	OW-91-031	E300	NONE	4/8/2014	10:42	Sulfate	95.2	mg/L	25.0
812967-015	OW-91-031	SM2130B	NONE	4/8/2014	10:42	Turbidity	0.565	NTU	0.100
812967-015	OW-91-031	SM2540C	NONE	4/8/2014	10:42	Total Dissolved Solids	1170	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.

Section 3.0

Final Reports

Truesdail Laboratories, Inc.
Metals Analysis Report

Sample Name	Acq. Date-Time	DF	V	%RSD	Cr	%RSD	Mn	%RSD	Ni	%RSD	As	%RSD
MRCCS	4/9/2014 5:15 PM	1.0	19.243	0.760	19.032	1.083	19.109	4.041	18.858	1.447	19.313	1.247
CB	4/9/2014 5:35 PM	1.0	-0.154	N/A	-0.021	N/A	0.002	351.546	-0.061	N/A	-0.046	N/A
ICSA	4/9/2014 5:51 PM	1.0	-0.152	N/A	-0.015	N/A	0.018	196.825	-0.056	N/A	-0.040	N/A
ICSA+B	4/9/2014 5:57 PM	1.0	-0.023	N/A	19.162	0.828	18.974	1.413	19.314	3.173	19.070	0.945
MB	4/9/2014 6:03 PM	1.0	-0.135	N/A	-0.031	N/A	-0.029	N/A	-0.067	N/A	-0.057	N/A
LCS 040914B 2x	4/9/2014 6:10 PM	2.0	49.015	0.564	48.945	1.686	47.846	0.690	47.452	0.749	48.655	2.323
%LCS RECOVERY			**98.03**		**97.89**		**95.69**		**94.90**		**97.31**	
MB 040914B	4/9/2014 6:16 PM	1.0	0.031	78.075	-0.009	N/A	-0.028	N/A	-0.044	N/A	-0.009	N/A
812966-1 TOT 040914B 2x	4/9/2014 6:23 PM	2.0	0.480	15.156	0.205	20.191	4.185	4.314	1.352	9.955	0.156	19.769
812966-1DUP TOT 040914B 2x	4/9/2014 6:29 PM	2.0	0.566	28.514	0.214	29.689	3.921	4.901	1.626	10.280	0.185	21.089
%RPD							**6.516**					
812966-1MS TOT 040914B 2x	4/9/2014 6:36 PM	2.0	47.569	2.782	46.218	3.428	49.013	1.962	46.717	5.100	47.738	3.253
%MS RECOVERY			**95.14**		**92.44**		**89.66**		**93.43**		**95.48**	
812966-1MSD TOT 040914B 2x	4/9/2014 6:42 PM	2.0	47.407	4.010	45.468	5.279	47.503	3.888	43.938	4.256	47.243	4.581
MRCVS	4/9/2014 6:55 PM	1.0	20.304	2.337	20.604	1.459	20.070	3.291	20.073	1.690	20.390	2.066
CB	4/9/2014 7:02 PM	1.0	-0.137	N/A	-0.046	N/A	-0.026	N/A	-0.066	N/A	-0.052	N/A
812966-2 TOT 040914B 2x	4/9/2014 7:14 PM	2.0	8.095	4.239	611.390	2.310	6.418	5.170	0.285	16.701	3.375	5.560
812966-2 TOT 040914B 10x	4/9/2014 7:21 PM	10.0	8.099	13.881	642.613	2.644	6.747	4.950	2.134	17.778	3.373	19.028
812966-2 TOT 040914B 50x	4/9/2014 7:27 PM	50.0	6.532	12.133	640.683	3.425	6.249	30.511	5.135	36.571	2.368	15.000
%RPD FOR 5 FOLD					**0.301**							
812966-3 TOT 040914B 2x	4/9/2014 7:34 PM	2.0	1.838	5.468	1.597	8.294	32.995	4.884	9.358	8.019	0.811	0.863
812966-3 TOT 040914B 10x	4/9/2014 7:40 PM	10.0	1.562	9.475	2.512	8.344	35.605	6.341	15.650	3.601	0.895	16.120
%RPD FOR 5 FOLD							**7.611**					
812967-1 040914B 2x	4/9/2014 7:47 PM	2.0	2.222	7.080	1.109	10.026	-0.050	N/A	0.094	82.854	1.097	7.488
812967-2 040914B 2x	4/9/2014 7:53 PM	2.0	2.617	3.747	1.111	4.576	0.030	242.519	0.087	65.990	1.228	5.909
812967-3 040914B 2x	4/9/2014 8:00 PM	2.0	4.827	1.691	0.764	1.846	0.481	14.519	0.368	19.639	3.163	3.904
812967-4 040914B 2x	4/9/2014 8:06 PM	2.0	3.534	4.043	2.541	4.127	-0.011	N/A	0.266	69.449	1.750	4.298
MRCVS	4/9/2014 8:19 PM	1.0	21.138	0.796	20.905	1.939	20.426	1.373	20.287	2.004	20.178	0.648
CB	4/9/2014 8:25 PM	1.0	-0.176	N/A	-0.005	N/A	0.006	605.663	-0.029	N/A	-0.042	N/A
812967-5 040914B 2x	4/9/2014 8:32 PM	2.0	2.683	3.444	0.826	8.056	0.037	74.487	0.237	17.016	1.371	3.418
812967-6 040914B 2x	4/9/2014 8:38 PM	2.0	2.621	8.183	7.917	1.891	0.066	148.554	0.462	16.984	1.131	2.485
812967-7 040914B 2x	4/9/2014 8:45 PM	2.0	3.785	5.818	0.813	10.136	-0.012	N/A	0.195	18.563	3.262	2.076
812967-8 040914B 2x	4/9/2014 8:51 PM	2.0	3.382	3.850	4.865	2.539	-0.012	N/A	0.210	47.326	2.040	9.929
812967-9 040914B 2x	4/9/2014 8:58 PM	2.0	2.281	8.275	6.670	6.170	0.291	24.087	3.076	1.531	0.637	16.394
812967-10 040914B 2x	4/9/2014 9:11 PM	2.0	4.917	2.624	19.377	1.475	0.586	3.102	0.401	14.227	1.863	2.773
812967-11 040914B 2x	4/9/2014 9:17 PM	2.0	2.472	6.585	15.672	1.652	0.159	4.552	1.565	9.093	0.673	8.464
812967-14 040914B 2x	4/9/2014 9:23 PM	2.0	2.684	3.964	7.869	2.097	-0.014	N/A	0.854	8.418	1.125	0.602
812967-15 040914B 2x	4/9/2014 9:30 PM	2.0	4.989	2.480	20.159	1.845	0.634	8.546	0.460	9.325	1.781	1.790
MRCVS	4/9/2014 9:43 PM	1.0	21.731	0.729	21.435	1.934	20.828	2.572	20.935	2.298	20.604	1.247
CB	4/9/2014 9:49 PM	1.0	-0.170	N/A	-0.017	N/A	-0.051	N/A	-0.002	N/A	-0.049	N/A
MRCVS	4/9/2014 11:00 PM	1.0	21.162	2.257	21.279	2.921	19.986	3.800	21.615	2.089	20.815	1.685
CB	4/9/2014 11:07 PM	1.0	-0.174	N/A	-0.024	N/A	-0.015	N/A	-0.007	N/A	-0.056	N/A
LCS LAB.FILTERES 040914B	4/9/2014 11:13 PM	1.0	50.188	1.128	50.038	0.426	48.098	1.000	50.709	1.573	48.996	0.380
%LCS RECOVERY					**100.08**		**96.20**					
MB LAB.FILTERED 040914B	4/9/2014 11:20 PM	1.0	-0.100	N/A	0.012	79.627	0.000	4516.207	0.140	39.517	0.003	471.280
812969-1 LAB.FILTERED 040914B 2x	4/9/2014 11:26 PM	2.0	7.015	3.142	4.250	3.932	66.289	0.742	0.918	13.580	3.245	0.533
812969-1DUP LAB.FILTERED 040914B 2x	4/9/2014 11:33 PM	2.0	6.798	0.871	3.905	1.436	63.035	1.857	1.448	20.642	3.316	2.228
%RPD					**8.451**		**5.033**					
812969-1MS LAB.FILTERED 040914B 2x	4/9/2014 11:39 PM	2.0	56.452	3.368	51.522	2.043	112.326	2.698	47.632	3.977	53.445	1.886
%MS RECOVERY					**94.544**		**92.074**					
812969-1MSD LAB.FILTERED 040914B 2x	4/9/2014 11:46 PM	2.0	57.326	1.290	52.690	1.305	111.600	3.250	48.101	4.138	53.258	1.463
812969-2 LAB.FILTERED 040914B 2x	4/9/2014 11:52 PM	2.0	7.939	1.760	766.454	1.334	7.012	5.932	0.356	39.573	3.257	1.829
812969-2 LAB.FILTERED 040914B 10x	4/9/2014 11:58 PM	10.0	7.269	3.744	772.367	2.162	6.594	16.800	1.077	3.392	3.906	7.549
MRCVS	4/10/2014 12:24 AM	1.0	20.994	2.697	21.561	2.691	19.761	0.839	21.617	2.076	20.456	4.100
CB	4/10/2014 12:31 AM	1.0	-0.166	N/A	0.007	424.265	-0.006	N/A	0.023	312.676	-0.049	N/A
0.2 LLCV	4/10/2014 12:37 AM	1.0	0.135	32.585	0.297	17.665	0.182	19.792	0.287	21.840	0.218	1.720
0.5 LLCV	4/10/2014 12:50 AM	1.0	0.486	14.063	0.532	7.250	0.383	10.628	0.507	6.566	0.465	9.223
1.0 LLCV	4/10/2014 1:09 AM	1.0	1.006	7.541	1.064	9.126	0.842	1.785	1.121	2.919	0.968	3.500
ICSA	4/10/2014 1:29 AM	1.0	-0.160	N/A	-0.009	N/A	-0.040	N/A	-0.020	N/A	-0.061	N/A
ICSA+B	4/10/2014 1:35 AM	1.0	-0.048	N/A	19.842	0.768	18.398	1.735	20.751	3.581	19.063	2.904

Internal Std within QC Control? (70-130%)

Instrument: Agilent 7700X ICPMS
Method: EPA 200.8/6020A
Reporting Limit: 1 ppb
Client Specific Reporting Limit: Hg = 0.2 ppb
As, Be, Mn = 0.5 ppb; Cr, Cd, Pb, Tl, U = 1 ppb
Sb, Mo, Ni = 2 ppb
Ba, Co, Cu, Se, Ag, V = 5 ppb
Al, Zn = 10 ppb
Unit for sample: ppb
Batch : 040914A
Analyst: ETHEL S.
Reviewer: KATIA K.

TV for:
MRCCS, MRCVS = 20 ppb ± 10%
Digested LCS = 50 ppb ± 15%
Digested MS/MSD = 50 ppb ± 25%
ICS A+B =20ppb ± 20%
LLCV = 0.2 ppb ± 30%; 0.5 ppb ± 30%
LLCV = 1.0 ppb ± 30%

Internal Standard Reference:
Ge / 72 [He] for V,As,Cr,Ni, Cu,Mn,Se,Ti 29326

Truesdail Laboratories, Inc.
Metals Analysis Report

Sample Name	Acq. Date-Time	DF	72 Ge[He]	%ISREC
MRCCS	4/9/2014 5:15 PM	1.0	28914.15	98.60
CB	4/9/2014 5:35 PM	1.0	29092.37333	99.20
ICSA	4/9/2014 5:51 PM	1.0	29643.17667	101.08
ICSA+B	4/9/2014 5:57 PM	1.0	28546.61333	97.34
MB	4/9/2014 6:03 PM	1.0	29104.84333	99.25
LCS 040914B 2x	4/9/2014 6:10 PM	2.0	28001.78667	95.49
%LCS RECOVERY				
MB 040914B	4/9/2014 6:16 PM	1.0	28478.6	97.11
812966-1 TOT 040914B 2x	4/9/2014 6:23 PM	2.0	28003.86	95.49
812966-1DUP TOT 040914B 2x	4/9/2014 6:29 PM	2.0	28087.38	95.78
%RPD				
812966-1MS TOT 040914B 2x	4/9/2014 6:36 PM	2.0	28327.19667	96.60
%MS RECOVERY				
812966-1MSD TOT 040914B 2x	4/9/2014 6:42 PM	2.0	28398.19333	96.84
MRCVS	4/9/2014 6:55 PM	1.0	28764.85333	98.09
CB	4/9/2014 7:02 PM	1.0	29066.91667	99.12
812966-2 TOT 040914B 2x	4/9/2014 7:14 PM	2.0	28284.57333	96.45
812966-2 TOT 040914B 10x	4/9/2014 7:21 PM	10.0	28533.03	97.30
812966-2 TOT 040914B 50x	4/9/2014 7:27 PM	50.0	28635.39	97.65
%RPD FOR 5 FOLD				
812966-3 TOT 040914B 2x	4/9/2014 7:34 PM	2.0	26781.58333	91.32
812966-3 TOT 040914B 10x	4/9/2014 7:40 PM	10.0	30130.83	102.75
%RPD FOR 5 FOLD				
812967-1 040914B 2x	4/9/2014 7:47 PM	2.0	31710	108.13
812967-2 040914B 2x	4/9/2014 7:53 PM	2.0	31590.88667	107.72
812967-3 040914B 2x	4/9/2014 8:00 PM	2.0	31931.10667	108.88
812967-4 040914B 2x	4/9/2014 8:06 PM	2.0	31021.35667	105.78
MRCVS	4/9/2014 8:19 PM	1.0	32659.52333	111.37
CB	4/9/2014 8:25 PM	1.0	33015.25333	112.58
812967-5 040914B 2x	4/9/2014 8:32 PM	2.0	31026.93333	105.80
812967-6 040914B 2x	4/9/2014 8:38 PM	2.0	30320.28333	103.39
812967-7 040914B 2x	4/9/2014 8:45 PM	2.0	30433.00667	103.78
812967-8 040914B 2x	4/9/2014 8:51 PM	2.0	31168.47	106.28
812967-9 040914B 2x	4/9/2014 8:58 PM	2.0	30635.91667	104.47
812967-10 040914B 2x	4/9/2014 9:11 PM	2.0	30167.76	102.87
812967-11 040914B 2x	4/9/2014 9:17 PM	2.0	30294.92333	103.31
812967-14 040914B 2x	4/9/2014 9:23 PM	2.0	29345.30333	100.07
812967-15 040914B 2x	4/9/2014 9:30 PM	2.0	30362.88	103.54
MRCVS	4/9/2014 9:43 PM	1.0	30181.01667	102.92
CB	4/9/2014 9:49 PM	1.0	30857.43667	105.22
MRCVS	4/9/2014 11:00 PM	1.0	25618.65667	87.36
CB	4/9/2014 11:07 PM	1.0	26089.83333	88.97
LCS LAB.FILTERES 040914B	4/9/2014 11:13 PM	1.0	25206.31333	85.95
%LCS RECOVERY				
MB LAB.FILTERED 040914B	4/9/2014 11:20 PM	1.0	25965.23667	88.54
812969-1 LAB.FILTERED 040914B 2x	4/9/2014 11:26 PM	2.0	25414.8	86.66
812969-1DUP LAB.FILTERED 040914B 2x	4/9/2014 11:33 PM	2.0	25918.13	88.38
%RPD				
812969-1MS LAB.FILTERED 040914B 2x	4/9/2014 11:39 PM	2.0	26717.12333	91.10
%MS RECOVERY				
812969-1MSD LAB.FILTERED 040914B 2x	4/9/2014 11:46 PM	2.0	26954.09667	91.91
812969-2 LAB.FILTERED 040914B 2x	4/9/2014 11:52 PM	2.0	28370.63	96.74
812969-2 LAB.FILTERED 040914B 10x	4/9/2014 11:58 PM	10.0	29945.96667	102.12
MRCVS	4/10/2014 12:24 AM	1.0	26799.75333	91.39
CB	4/10/2014 12:31 AM	1.0	26908.97333	91.76
0.2 LLCV	4/10/2014 12:37 AM	1.0	26612.66667	90.75
0.5 LLCV	4/10/2014 12:50 AM	1.0	26043.38333	88.81
1.0 LLCV	4/10/2014 1:09 AM	1.0	25536.46333	87.08
ICSA	4/10/2014 1:29 AM	1.0	25794.74	87.96
ICSA+B	4/10/2014 1:35 AM	1.0	24980.63667	85.18
Internal Std within QC Control? (70-130%)				Y

Instrument: Agilent 7700X ICPMS
Method: EPA 200.8/6020A
Reporting Limit: 1 ppb
Client Specific Reporting Limit: Hg = 0.2 ppb
As, Be, Mn = 0.5 ppb; Cr, Cd, Pb, Tl, U = 1 ppb
Sb, Mo, Ni = 2 ppb
Ba, Co, Cu, Se, Ag, V = 5 ppb
Al, Zn = 10 ppb
Unit for sample: ppb
Batch : 040914A
Analyst: ETHEL S.
Reviewer: KATIA K.

TV for:
MRCCS, MRCVS = 20 ppb ± 10%
Digested LCS = 50 ppb ± 15%
Digested MS/MSD = 50 ppb ± 25%
ICS A+B =20ppb ± 20%
LLCV = 0.2 ppb ± 30%; 0.5 ppb ± 30%
LLCV = 1.0 ppb ± 30%

Internal Standard Reference:
Ge / 72 [He] for V,As,Cr,Ni, Cu,Mn,Se,Ti

29326

Truesdail Laboratories, Inc.

Metals Analysis Report

Sample Name	Acq. Date-Time	DF	Be	%RSD	Mn	%RSD	Co	%RSD	Cu	%RSD	Se	%RSD	Mo	%RSD
MRCCS	4/10/2014 12:18 PM	1.00	19.555	1.200	18.658	1.918	19.173	0.855	19.169	2.145	18.290	5.191	18.550	2.197
CB	4/10/2014 12:24 PM	1.00	0.006	42.760	0.042	92.275	0.004	12.082	-0.064	N/A	-0.018	N/A	0.017	24.392
ICSA	4/10/2014 12:37 PM	1.00	0.014	42.478	0.014	171.164	0.009	6.020	-0.028	N/A	-0.254	N/A	0.366	2.836
ICSA+B	4/10/2014 12:43 PM	1.00	0.002	205.684	19.095	1.030	19.239	0.549	19.154	0.609	-0.035	N/A	0.377	2.947
MB	4/10/2014 12:50 PM	1.00	0.003	100.817	0.038	135.432	0.003	41.689	-0.069	N/A	-0.194	N/A	0.003	49.138
LCS 040914B 2x	4/10/2014 12:56 PM	2.00	47.188	0.418	46.591	1.603	46.871	0.857	50.480	1.889	47.379	5.077	46.879	0.294
%LCS RECOVERY			94.4		93.2		93.7		101.0		94.8		93.8	
MB 040914B	4/10/2014 1:03 PM	1.00	0.009	37.769	0.009	311.459	0.008	13.382	0.134	6.813	-0.259	N/A	0.017	13.838
812966-1 TOT 040914B 2x	4/10/2014 1:09 PM	2.00	0.042	47.351	4.308	1.307	0.279	4.964	0.934	2.100	4.202	6.440	18.732	2.499
812966-1D TOT 040914B 2x	4/10/2014 1:29 PM	2.00	0.040	34.366	4.369	2.466	0.298	0.669	0.979	9.520	2.491	27.480	18.144	1.781
%RPD					1.411								3.189	
812966-1MS TOT 040914B 2x	4/10/2014 1:35 PM	2.00	40.714	0.813	47.978	2.221	45.520	0.229	45.995	2.027	47.831	4.581	63.185	0.918
%MS RECOVERY			81.4		87.3		91.0		92.0		95.7		88.9	
812966-1MSD TOT 040914B 2x	4/10/2014 1:42 PM	2.00	40.271	0.551	48.653	4.257	44.390	1.083	47.605	4.612	46.426	3.263	62.042	0.912
MRCVS	4/10/2014 1:55 PM	1.00	20.044	0.530	19.836	4.429	20.363	0.270	20.041	2.579	19.629	1.873	19.111	0.683
CB	4/10/2014 2:01 PM	1.00	0.011	12.331	-0.023	N/A	0.005	29.906	0.051	139.476	-0.383	N/A	0.017	39.213
812966-2 TOT 040914B 2x	4/10/2014 2:08 PM	2.00	0.009	143.943	6.632	5.172	0.309	0.738	0.565	22.475	3.957	27.483	18.745	6.122
812966-2 TOT 040914B 10x	4/10/2014 2:14 PM	10.00	0.001	2835.603	6.557	12.831	0.308	8.620	2.484	18.766	3.245	34.928	19.311	1.510
%RPD FOR 5 FOLD														
812966-3 TOT 040914B 20x	4/10/2014 2:21 PM	20.00	-0.058	N/A	31.257	2.977	1.415	4.594	5.416	47.001	18.714	60.960	117.833	1.618
MRCVS	4/10/2014 2:40 PM	1.00	20.074	2.063	20.092	3.916	20.384	0.305	20.377	1.998	20.220	6.017	19.034	0.695
CB	4/10/2014 2:46 PM	1.00	-0.001	N/A	0.001	3495.586	0.004	46.732	0.027	208.006	-0.457	N/A	0.017	18.748
MRCVS	4/10/2014 3:46 PM	1.00	20.602	6.363	20.298	3.255	21.142	6.317	20.812	2.033	20.230	5.157	20.173	8.132
CB	4/10/2014 3:52 PM	1.00	0.005	77.043	-0.004	N/A	0.004	31.461	0.043	97.558	-0.542	N/A	0.020	26.220
812967-9 040914B 5x	4/10/2014 3:58 PM	5.00	0.057	64.189	0.217	102.861	1.688	3.709	3.458	7.288	4.231	62.500	4.843	4.252
812967-10 040914B 5x	4/10/2014 4:05 PM	5.00	0.006	97.166	0.582	18.421	0.095	12.438	2.918	6.059	0.935	108.282	28.968	0.657
812967-10 040914B 25x	4/10/2014 4:11 PM	25.00	0.081	113.993	-0.362	N/A	0.131	35.437	4.938	14.707	6.350	170.535	29.095	2.381
%RPD FOR 5 FOLD													0.437	
812967-11 040914B 5x	4/10/2014 4:18 PM	5.00	0.004	666.226	-0.022	N/A	0.495	2.097	0.649	17.012	1.173	159.472	14.432	2.413
812967-15 040914B 5x	4/10/2014 4:24 PM	5.00	0.020	198.960	0.670	15.924	0.097	11.814	0.208	113.862	2.071	43.007	28.812	0.777
MRCVS	4/10/2014 4:43 PM	1.00	19.745	1.595	20.287	2.242	20.120	0.612	20.509	1.955	19.940	3.834	18.932	1.356
CB	4/10/2014 4:50 PM	1.00	0.005	81.068	-0.028	N/A	0.003	80.690	0.069	76.788	-0.118	N/A	0.024	24.012
0.2 LLCV	4/10/2014 4:56 PM	1.00	0.220	11.506	0.171	14.579	0.203	4.618	0.388	5.196	-0.005	N/A	0.193	2.841
0.5 LLCV	4/10/2014 5:09 PM	1.00	0.499	3.213	0.433	5.020	0.494	1.850	0.625	9.900	0.036	557.143	0.475	5.598
1.0 LLCV	4/10/2014 5:22 PM	1.00	0.993	4.905	0.914	10.698	0.998	1.728	1.015	0.267	0.810	42.752	0.921	5.206
2.0 LLCV	4/10/2014 5:41 PM	1.00	1.970	5.671	1.953	6.472	1.937	1.538	2.131	3.714	2.117	9.397	1.858	3.367
ICSA	4/10/2014 5:54 PM	1.00	0.006	102.283	-0.034	N/A	0.005	16.860	-0.001	N/A	-0.409	N/A	0.350	1.086
ICSA+B	4/10/2014 6:01 PM	1.00	0.003	114.960	20.947	13.469	19.031	0.508	19.353	0.455	0.446	154.355	0.383	5.317
812966-3 TOT 040914B 2x	4/10/2014 6:20 PM	2.00	-0.004	N/A	31.765	2.319	1.614	1.929	4.852	5.793	24.558	1.930	119.800	0.642
812966-3 TOT 040914B 10x	4/10/2014 6:27 PM	10.00	0.137	32.792	32.848	4.540	2.008	1.942	11.304	3.342	23.231	17.421	120.365	1.265
MRCVS	4/10/2014 6:40 PM	1.00	18.676	0.768	20.802	3.253	20.704	0.857	19.536	3.516	21.060	6.893	18.353	0.565
CB	4/10/2014 6:46 PM	1.00	0.007	113.685	-0.029	N/A	0.004	29.132	0.094	39.853	-0.199	N/A	0.027	30.736
0.2 LLCV	4/10/2014 6:59 PM	1.00	0.189	8.202	0.167	17.808	0.205	3.355	0.465	22.368	0.321	66.205	0.185	2.371
0.5 LLCV	4/10/2014 7:12 PM	1.00	0.530	10.690	0.483	12.269	0.477	1.719	0.721	6.028	0.096	476.015	0.458	1.626
1.0 LLCV	4/10/2014 7:25 PM	1.00	0.959	2.713	0.875	7.007	0.968	1.658	1.205	6.612	1.093	25.627	0.971	3.073
2.0 LLCV	4/10/2014 7:31 PM	1.00	1.844	3.569	1.893	8.694	1.931	0.502	2.094	2.182	1.516	8.267	1.930	3.855
ICSA	4/10/2014 7:51 PM	1.00	0.001	774.065	-0.032	N/A	0.005	40.834	-0.007	N/A	-0.169	N/A	0.358	0.627
ICSA+B	4/10/2014 7:57 PM	1.00	-0.003	N/A	18.665	0.883	18.914	0.146	19.477	3.776	-0.100	N/A	0.364	4.871

Internal Std within QC Control? (70-130%)

Instrument: Agilent 7700X ICPMS
Method: EPA 200.8/6020A
Reporting Limit: 1 ppb
Client Specific Reporting Limit: Hg = 0.2 ppb
As, Be, Mn = 0.5 ppb; Cr, Cd, Pb, Tl, U = 1 ppb
Sb, Mo, Ni = 2 ppb
Ba, Co, Cu, Se, Ag, V = 5 ppb
Al, Zn = 10 ppb
Unit for sample: ppb
Batch : 041014A
Analyst: ETHEL S. EC
Reviewer: KATIA K. KK

TV for:
MRCCS, MRCVS = 20 ppb ± 10%
Digested LCS = 50 ppb ± 15%
Digested MS/MSD = 50 ppb ± 25%
ICS A+B =20ppb ± 20%
LLCV = 0.2 ppb ± 30%; 0.5 ppb ± 30%
LLCV = 1.0 ppb ± 30% ;2.0 ppb ± 30%

Internal Standard Reference:

Ge / 72 [He] for V,As,Cr,Ni, Cu,Mn,Se,Ti	25874
Ge / 72 [NoGas] for , Zn, Co, Al	455636
Y / 89 [No Gas] for Mo, Ag, Cd, Sn, Sr	3312570
Tb / 159 [No Gas] for Sb, Ba, Tl,Pb, Hg, U	5476996
Li / 6 [No Gaas] for Be	679689

Truesdail Laboratories, Inc.

Metals Analysis Report

Sample Name	Acq. Date-Time	DF	6 Li[No Gas]	%ISREC	72Ge [No Gas]	%ISREC	72Ge[He]	%ISREC	89Y[No Gas]	%ISREC	159Tb[No Gas]	%ISREC
MRCCS	4/10/2014 12:18 PM	1.00	614155.7533	90.36	447568.54	98.2	24987.84333	96.6	3236633.743	97.7	5797562.637	**105.9**
CB	4/10/2014 12:24 PM	1.00	670801.29	98.69	469165.6267	103.0	24344.61333	94.1	3437716.503	103.8	5807488.083	**106.0**
ICSA	4/10/2014 12:37 PM	1.00	679044.1667	99.91	469182.7267	103.0	25963.42667	100.3	3437879.31	103.8	5802566.287	**105.9**
ICSA+B	4/10/2014 12:43 PM	1.00	623072.4967	91.67	448563.5167	98.4	23620.68	91.3	3181067.127	96.0	5748314.047	**105.0**
MB	4/10/2014 12:50 PM	1.00	681142.1367	100.21	473444.0967	103.9	24733.16667	95.6	3470742.72	104.8	5918998.357	**108.1**
LCS 040914B 2x	4/10/2014 12:56 PM	2.00	585245.6133	86.10	438921.38	96.3	24108.51667	93.2	3135544.207	94.7	5783696.4	**105.6**
%LCS RECOVERY												
MB 040914B	4/10/2014 1:03 PM	1.00	623521.4533	91.74	452810.71	99.4	24345.88333	94.1	3271355.867	98.8	5650910.127	**103.2**
812966-1 TOT 040914B 2x	4/10/2014 1:09 PM	2.00	794845.1667	116.94	468124.4767	102.7	23939.36	92.5	3364562.117	101.6	5703266.72	**104.1**
812966-1D TOT 040914B 2x	4/10/2014 1:29 PM	2.00	804088.4233	118.30	482522.0667	105.9	24155.13667	93.4	3532753.607	106.6	5788723.21	**105.7**
%RPD												
812966-1MS TOT 040914B 2x	4/10/2014 1:35 PM	2.00	746582.8467	109.84	468649.33	102.9	24002.75667	92.8	3387138.01	102.3	5759733.737	**105.2**
%MS RECOVERY												
812966-1MSD TOT 040914B 2x	4/10/2014 1:42 PM	2.00	733326.6767	107.89	460933.21	101.2	25124.47	97.1	3373822.67	101.8	5731529.023	**104.6**
MRCVS	4/10/2014 1:55 PM	1.00	665660.64	97.94	486976.7367	106.9	25124.05667	97.1	3569426.883	107.8	6165474.877	**112.6**
CB	4/10/2014 2:01 PM	1.00	710043.36	104.47	498811.06	109.5	25332.65333	97.9	3670960.273	110.8	6183388.1	**112.9**
812966-2 TOT 040914B 2x	4/10/2014 2:08 PM	2.00	763369.2533	112.31	465891.6	102.3	24841.44	96.0	3415679.967	103.1	5678130.33	**103.7**
812966-2 TOT 040914B 10x	4/10/2014 2:14 PM	10.00	699717.89	102.95	499372.4733	109.6	24456.04	94.5	3632587.33	109.7	6154473.693	**112.4**
%RPD FOR 5 FOLD												
812966-3 TOT 040914B 20x	4/10/2014 2:21 PM	20.00	752116.12	110.66	491566.58	107.9	24576.35	95.0	3611792.457	109.0	6018460.72	**109.9**
MRCVS	4/10/2014 2:40 PM	1.00	659798.5767	97.07	486117.99	106.7	24852.55333	96.1	3580362.733	108.1	6183473.23	**112.9**
CB	4/10/2014 2:46 PM	1.00	704487.87	103.65	500047.09	109.7	26916.73667	104.0	3665442.307	110.7	6159550.75	**112.5**
MRCVS	4/10/2014 3:46 PM	1.00	611481.94	89.97	451398.4167	99.1	24060.76667	93.0	3294326.933	99.4	5776175.673	**105.5**
CB	4/10/2014 3:52 PM	1.00	660487.0733	97.17	465791.45	102.2	25860.63667	99.9	3406676.147	102.8	5806738.227	**106.0**
812967-9 040914B 5x	4/10/2014 3:58 PM	5.00	646067.5733	95.05	463925.4767	101.8	23860.12667	92.2	3462091.897	104.5	5893798.66	**107.6**
812967-10 040914B 5x	4/10/2014 4:05 PM	5.00	645089.03	94.91	478606.7	105.0	24372.42667	94.2	3507771.65	105.9	6086602.223	**111.1**
812967-10 040914B 25x	4/10/2014 4:11 PM	25.00	628491.8767	92.47	470872.0967	103.3	24664.37	95.3	3469923.61	104.8	6064925.26	**110.7**
%RPD FOR 5 FOLD												
812967-11 040914B 5x	4/10/2014 4:18 PM	5.00	628445.32	92.46	461080.89	101.2	24118.64	93.2	3350783.213	101.2	5927093.623	**108.2**
812967-15 040914B 5x	4/10/2014 4:24 PM	5.00	636138.4667	93.59	477291.0967	104.8	24011.46333	92.8	3500241.14	105.7	6045683.24	**110.4**
MRCVS	4/10/2014 4:43 PM	1.00	619017.66	91.07	462276.9	101.5	23660.88333	91.4	3426602.907	103.4	5991243.34	**109.4**
CB	4/10/2014 4:50 PM	1.00	676434.4	99.52	482808.0733	106.0	24619.76667	95.2	3558422.29	107.4	6065714.607	**110.7**
0.2 LLCV	4/10/2014 4:56 PM	1.00	616558.4267	90.71	454072.4167	99.7	23324.50667	90.1	3326581.157	100.4	5912921.147	**108.0**
0.5 LLCV	4/10/2014 5:09 PM	1.00	619013.9833	91.07	460991.6767	101.2	23632.86667	91.3	3440060.03	103.8	6049457.743	**110.5**
1.0 LLCV	4/10/2014 5:22 PM	1.00	616716.9567	90.74	462721.38	101.6	23425.78333	90.5	3433637.677	103.7	6050318.193	**110.5**
2.0 LLCV	4/10/2014 5:41 PM	1.00	611191.03	89.92	456858.1833	100.3	22901.29667	88.5	3348498.397	101.1	5933370.937	**108.3**
ICSA	4/10/2014 5:54 PM	1.00	681729.2467	100.30	482107.5333	105.8	24620.74667	95.2	3548752.537	107.1	5994308.543	**109.4**
ICSA+B	4/10/2014 6:01 PM	1.00	619961.9133	91.21	451496.1367	99.1	23497.22	90.8	3297481.703	99.5	5864284.983	**107.1**
812966-3 TOT 040914B 2x	4/10/2014 6:20 PM	2.00	1418740.93	208.73	422745.48	92.8	24131.99	93.3	2951802.467	89.1	4827198.99	**88.1**
812966-3 TOT 040914B 10x	4/10/2014 6:27 PM	10.00	1068769.66	157.24	542218.1733	119.0	27373.58	105.8	3923715.473	118.4	5960502.097	**108.8**
MRCVS	4/10/2014 6:40 PM	1.00	1023095.82	150.52	622986.89	136.7	26660.6	103.0	4461733.797	134.7	6936894.667	**126.7**
CB	4/10/2014 6:46 PM	1.00	985879.78	145.05	608101.82	133.5	26998.04667	104.3	4339056.093	131.0	6782772.38	**123.8**
0.2 LLCV	4/10/2014 6:59 PM	1.00	838049.1433	123.30	558061.06	122.5	24701.12667	95.5	4049938.46	122.3	6618575.533	**120.8**
0.5 LLCV	4/10/2014 7:12 PM	1.00	630579.1867	92.77	464931.0667	102.0	22931.41	88.6	3481083.683	105.1	6011645.253	**109.8**
1.0 LLCV	4/10/2014 7:25 PM	1.00	579380.8667	85.24	439577.35	96.5	22809.93333	88.2	3116647.54	94.1	5891427.9	**107.6**
2.0 LLCV	4/10/2014 7:31 PM	1.00	576513.4833	84.82	440347.6733	96.6	22752.04333	87.9	3169630.277	95.7	5886599.38	**107.5**
ICSA	4/10/2014 7:51 PM	1.00	608986.3633	89.60	453819.73	99.6	23600.59667	91.2	3313103.28	100.0	5817673.54	**106.2**
ICSA+B	4/10/2014 7:57 PM	1.00	586431.6167	86.28	443686.7767	97.4	22669.54667	87.6	3210660.437	96.9	5911701.81	**107.9**
Internal Std within QC Control? (70-130%)				Y		Y		Y		Y		Y

Instrument: Agilent 7700X ICPMS
Method: EPA 200.8/6020A
Reporting Limit: 1 ppb
Client Specific Reporting Limit: Hg = 0.2 ppb
As, Be, Mn = 0.5 ppb; Cr, Cd, Pb, Tl, U = 1 ppb
Sb, Mo, Ni = 2 ppb
Ba, Co, Cu, Se, Ag, V = 5 ppb
Al, Zn = 10 ppb
Unit for sample: ppb
Batch : 041014A
Analyst: ETHEL S.
Reviewer: KATIA K.

TV for:
MRCCS, MRCVS = 20 ppb ± 10%
Digested LCS = 50 ppb ± 15%
Digested MS/MSD = 50 ppb ± 25%
ICS A+B =20ppb ± 20%
LLCV = 0.2 ppb ± 30%; 0.5 ppb ± 30%
LLCV = 1.0 ppb ± 30% ;2.0 ppb ± 30%

Internal Standard Reference:

Ge / 72 [He] for V,As,Cr,Ni, Cu,Mn,Se,Ti	25874
Ge / 72 [NoGas] for , Zn, Co, Al	455636
Y / 89 [No Gas] for Mo, Ag, Cd, Sn, Sr	3312570
Tb / 159 [No Gas] for Sb, Ba, Tl,Pb, Hg, U	5476996
Li / 6 [No Gaas] for Be	679689

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Truesdail Laboratories, Inc.
Metals Analysis Report

SAMPLE	DATE/TIME	DF	Na5895	%RSD	Y_3710-2	%ISREC
MRCCS	4/10/2014 11:49:51AM	1.0	5.176	*0.5152*	547930.	101.13
CB	4/10/2014 12:03:13PM	1.0	<.0000	*69.13*	560120.	103.38
LCS	4/10/2014 12:09:04PM	1.0	5.192	*4.747*	538830.	99.45
ICSA	4/10/2014 12:14:53PM	1.0	2.039	*1.976*	571650.	105.51
ICSA+B	4/10/2014 12:20:41PM	1.0	2.029	*0.4029*	569010.	105.02
MB	4/10/2014 12:26:22PM	1.0	.0128	*5.486*	569090.	105.04
LCS 040914B	4/10/2014 12:36:33PM	1.0	2.127	*1.015*	578080.	106.70
%LCS RECOVERY			**106.4**			
MB 040914B	4/10/2014 12:42:09PM	1.0	.0122	*9.979*	567650.	104.77
812966-2 TOTAL 500x	4/10/2014 1:03:26PM	500	1464.	*0.1599*	569100.	105.04
812966-2D TOTAL 500x	4/10/2014 1:09:18PM	500	1433.	*0.2320*	581200.	107.27
%RPD			**2.140**			
812966-2MS TOT 500x	4/10/2014 1:15:13PM	500	1598.	*1.486*	573460.	105.84
%MS RECOVERY			6700			
812966-2PMS TOT 500x	4/10/2014 1:21:04PM	500	2427.	*1.353*	567960.	104.83
%PMS RECOVERY			**96.3**			
MRCVS	4/10/2014 1:28:11PM	1.0	4.967	*0.3485*	563080.	103.93
CB	4/10/2014 1:35:33PM	1.0	.0028	*171.1*	588680.	108.65
812967-9 100x	4/10/2014 1:41:25PM	100	773.7	*1.070*	572160.	105.60
812967-10 100x	4/10/2014 1:47:16PM	100	373.9	*1.097*	579290.	106.92
812967-11 100x	4/10/2014 1:53:08PM	100	486.2	*0.1366*	580730.	107.19
812967-15 100x	4/10/2014 1:59:00PM	100	361.8	*0.5688*	583820.	107.76
MRCVS	4/10/2014 2:06:22PM	1.0	4.883	*1.016*	567770.	104.79
CB	4/10/2014 2:13:45PM	1.0	.0098	*26.15*	580980.	107.23
ICSA	4/10/2014 2:19:36PM	1.0	1.940	*1.350*	579870.	107.03
ICSA+B	4/10/2014 2:25:25PM	1.0	1.962	*0.6300*	577820.	106.65
Internal Std within QC Control? (70-130%)						Y

Instrument: Thermo iCap ICP 6000
Method: EPA 200.7/6010BorC
Reporting Limit: B;Fe;Zn= 0.02 ppm
Na = 0.500 ppm x DF
Unit for sample: ppm
Digestion Batch : 040914B
Analysis Batch : 041014A-Th1
Analyst: ETHEL S
Reviewer: KATIA K.

TV for:
MRCCS, MRCVS = 5 ppm (± 10%)
LCS = 5 ppm (± 15%)
MS/MSD(3010A) = 2 ppm (± 25%)
;PMS(3010A) = 2 ppm x DF(± 25%)
LCS(3010A) = 2 ppm (± 15%)
ICSA,ICSA+B=2ppm (+/-20%)

Internal Std Reference:
Y_371-2 for Ag, Al, Ba, Ca,K,Na,Sr,Ti 541800

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

Laboratory No. 812967

Printed 4/22/2014

Samples Received on 4/8/2014 8:05:00 PM

Field ID	Lab ID	Collected	Matrix
CW-01D-031	812967-001	04/07/2014 10:17	Water
CW-01M-031	812967-002	04/07/2014 10:57	Water
CW-02D-031	812967-003	04/07/2014 14:20	Water
CW-02M-031	812967-004	04/07/2014 15:07	Water
CW-03D-031	812967-005	04/08/2014 07:37	Water
CW-03M-031	812967-006	04/08/2014 08:55	Water
CW-04D-031	812967-007	04/08/2014 10:57	Water
CW-04M-031	812967-008	04/08/2014 11:42	Water
OW-01S-031	812967-009	04/08/2014 15:03	Water
OW-02S-031	812967-010	04/08/2014 14:32	Water
OW-05S-031	812967-011	04/08/2014 13:38	Water
OW-80-031	812967-012	04/08/2014 06:00	Water
OW-81-031	812967-013	04/08/2014 15:30	Water
OW-90-031	812967-014	04/08/2014 06:50	Water
OW-91-031	812967-015	04/08/2014 10:42	Water

Anions By I.C. - EPA 300.0 Batch 04AN14H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Chloride	mg/L	04/09/2014 15:17	500	17.4	50.0	2140
Fluoride	mg/L	04/09/2014 13:34	5.00	0.104	0.500	2.36
Sulfate	mg/L	04/09/2014 21:04	50.0	1.54	25.0	480
812967-002 Chloride	mg/L	04/09/2014 15:29	500	17.4	50.0	2060
Fluoride	mg/L	04/09/2014 13:50	5.00	0.104	0.500	2.13
Sulfate	mg/L	04/09/2014 21:17	50.0	1.54	25.0	468
812967-003 Chloride	mg/L	04/09/2014 15:54	500	17.4	50.0	2400
Fluoride	mg/L	04/09/2014 15:42	5.00	0.104	0.500	2.44
Sulfate	mg/L	04/09/2014 21:29	50.0	1.54	25.0	472
812967-004 Chloride	mg/L	04/09/2014 16:19	500	17.4	50.0	2390

812967-004	Fluoride	mg/L	04/09/2014 16:07	5.00	0.104	0.500	2.99
	Sulfate	mg/L	04/09/2014 22:06	50.0	1.54	25.0	477
812967-005	Chloride	mg/L	04/09/2014 17:09	500	17.4	50.0	2080
	Fluoride	mg/L	04/09/2014 16:31	5.00	0.104	0.500	3.66
	Sulfate	mg/L	04/09/2014 22:19	50.0	1.54	25.0	486
812967-006	Chloride	mg/L	04/09/2014 17:33	500	17.4	50.0	3020
	Fluoride	mg/L	04/09/2014 17:21	5.00	0.104	0.500	2.93
	Sulfate	mg/L	04/09/2014 22:31	50.0	1.54	25.0	451
812967-007	Chloride	mg/L	04/09/2014 17:58	500	17.4	50.0	2340
	Fluoride	mg/L	04/09/2014 17:46	5.00	0.104	0.500	3.21
	Sulfate	mg/L	04/09/2014 22:44	50.0	1.54	25.0	483
812967-008	Chloride	mg/L	04/09/2014 18:23	500	17.4	50.0	2250
	Fluoride	mg/L	04/09/2014 18:11	5.00	0.104	0.500	1.88
	Sulfate	mg/L	04/09/2014 22:56	50.0	1.54	25.0	448
812967-009	Chloride	mg/L	04/09/2014 18:48	500	17.4	50.0	2020
	Fluoride	mg/L	04/09/2014 18:35	5.00	0.104	0.500	1.48
	Sulfate	mg/L	04/09/2014 23:08	50.0	1.54	25.0	410
812967-010	Chloride	mg/L	04/09/2014 19:37	500	17.4	50.0	526
	Fluoride	mg/L	04/09/2014 19:00	5.00	0.104	0.500	4.07
	Sulfate	mg/L	04/09/2014 23:21	50.0	1.54	25.0	98.5
812967-011	Chloride	mg/L	04/09/2014 20:02	500	17.4	50.0	1330
	Fluoride	mg/L	04/09/2014 19:50	5.00	0.104	0.500	1.67
	Sulfate	mg/L	04/09/2014 23:33	50.0	1.54	25.0	233
812967-014	Chloride	mg/L	04/09/2014 20:27	500	17.4	50.0	3010
	Fluoride	mg/L	04/09/2014 20:15	5.00	0.104	0.500	2.93
	Sulfate	mg/L	04/09/2014 23:46	50.0	1.54	25.0	464
812967-015	Chloride	mg/L	04/09/2014 20:52	500	17.4	50.0	587
	Fluoride	mg/L	04/09/2014 20:40	5.00	0.104	0.500	4.30
	Sulfate	mg/L	04/09/2014 23:58	50.0	1.54	25.0	95.2

Method Blank

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

Duplicate — Lab ID = 812942-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	25.0	84.2	86.2	2.37	0 - 20

Duplicate — Lab ID = 812966-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	2.27	2.30	1.44	0 - 20
Sulfate	mg/L	100	511	523	2.28	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.84	4.00	96.1	90 - 110
Fluoride	mg/L	1.00	3.97	4.00	99.2	90 - 110
Sulfate	mg/L	1.00	19.3	20.0	96.4	90 - 110

Matrix Spike — Lab ID = 812942-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	25.0	185	186(100)	98.9	85 - 115

Matrix Spike — Lab ID = 812966-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	21.8	22.3(20.0)	97.4	85 - 115
Sulfate	mg/L	100	1480	1520(1000)	95.4	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	4.02	4.00	100	90 - 110
Fluoride	mg/L	1.00	4.14	4.00	103	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	100	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.26	3.00	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.87	3.00	95.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.94	3.00	98.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.12	3.00	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.03	3.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.03	3.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.05	3.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.04	3.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.08	3.00	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.05	3.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.05	3.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.6	15.0	97.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.5	15.0	96.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.7	15.0	97.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.8	15.0	98.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.6	15.0	97.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.6	15.0	97.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.4	15.0	96.2	90 - 110

Specific Conductivity - EPA 120.1

Batch 04EC14C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6850
812967-002 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6680
812967-003 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6810
812967-004 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6820
812967-005 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6910
812967-006 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	8220
812967-007 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6800
812967-008 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	6510
812967-009 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	5810
812967-010 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	2050
812967-011 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	3890
812967-014 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	8260
812967-015 Specific Conductivity	umhos/cm	04/14/2014	1.00	0.606	2.00	2050

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 812967-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	2010	2050	1.97	0 - 10

Lab Control Sample

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

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	697	706	98.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	973	1000	97.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	945	1000	94.5	90 - 110

Chrome VI by EPA 218.6

Batch 04CrH14 A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Chromium, Hexavalent	ug/L	04/10/2014 15:57	5.00	0.0300	1.0	ND
812967-002 Chromium, Hexavalent	ug/L	04/10/2014 16:07	5.00	0.0300	1.0	ND
812967-003 Chromium, Hexavalent	ug/L	04/10/2014 16:18	5.00	0.0300	1.0	ND
812967-004 Chromium, Hexavalent	ug/L	04/10/2014 16:28	5.00	0.0300	1.0	2.2
812967-005 Chromium, Hexavalent	ug/L	04/10/2014 16:38	5.00	0.0300	1.0	ND
812967-006 Chromium, Hexavalent	ug/L	04/10/2014 16:49	5.00	0.0300	1.0	6.4
812967-007 Chromium, Hexavalent	ug/L	04/10/2014 17:20	5.00	0.0300	1.0	ND
812967-009 Chromium, Hexavalent	ug/L	04/10/2014 17:41	5.00	0.0300	1.0	5.8
812967-010 Chromium, Hexavalent	ug/L	04/10/2014 13:52	1.00	0.00600	0.20	19.8
812967-011 Chromium, Hexavalent	ug/L	04/10/2014 14:02	1.00	0.00600	0.20	15.4
812967-012 Chromium, Hexavalent	ug/L	04/10/2014 14:10	1.00	0.00600	0.20	ND
812967-013 Chromium, Hexavalent	ug/L	04/10/2014 14:23	1.00	0.00600	0.20	ND
812967-014 Chromium, Hexavalent	ug/L	04/10/2014 14:34	5.00	0.0300	1.0	7.0
812967-015 Chromium, Hexavalent	ug/L	04/10/2014 14:44	1.00	0.00600	0.20	19.8

Method Blank

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

Duplicate

Lab ID = 812967-015

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	19.8	19.8	0.00707	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.198	0.200	99.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.04	5.00	101	90 - 110

Matrix Spike

Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.35	5.10(5.00)	105	90 - 110

Matrix Spike

Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.17	1.12(1.00)	105	90 - 110

Matrix Spike — Lab ID = 812966-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1260	1240(625)	104	90 - 110

Matrix Spike — Lab ID = 812966-003

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

Matrix Spike — Lab ID = 812966-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.86	5.96(5.00)	98.1	90 - 110

Matrix Spike — Lab ID = 812966-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	11.6	10.8(10.0)	107	90 - 110

Matrix Spike — Lab ID = 812967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.83	1.76(1.00)	107	90 - 110

Matrix Spike — Lab ID = 812967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.94	5.63(5.00)	106	90 - 110

Matrix Spike — Lab ID = 812967-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	6.24	5.85(5.00)	108	90 - 110

Matrix Spike — Lab ID = 812967-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	2.02	1.92(1.00)	110	90 - 110

Matrix Spike — Lab ID = 812967-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.30	5.34(5.00)	99.3	90 - 110

Matrix Spike — Lab ID = 812967-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.55	1.48(1.00)	107	90 - 110

Matrix Spike — Lab ID = 812967-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	7.59	7.24(5.00)	107	90 - 110

Matrix Spike — Lab ID = 812967-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.44	7.40(5.00)	101	90 - 110

Matrix Spike — Lab ID = 812967-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.66	1.61(1.00)	105	90 - 110

Matrix Spike — Lab ID = 812967-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.84	5.49(5.00)	107	90 - 110

Matrix Spike — Lab ID = 812967-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	33.7	31.4(25.0)	109	90 - 110

Matrix Spike — Lab ID = 812967-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	17.3	17.3(10.0)	99.7	90 - 110

Matrix Spike — Lab ID = 812967-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.96	5.62(5.00)	107	90 - 110

Matrix Spike — Lab ID = 812967-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.71	1.67(1.00)	104	90 - 110

Matrix Spike — Lab ID = 812967-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.51	9.53(5.00)	99.6	90 - 110

Matrix Spike — Lab ID = 812967-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	9.91	9.30(5.00)	112	90 - 110

Matrix Spike — Lab ID = 812967-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.9	15.8(10.0)	101	90 - 110

Matrix Spike — Lab ID = 812967-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	31.3	30.8(25.0)	102	90 - 110

Matrix Spike — Lab ID = 812967-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	39.8	39.8(20.0)	100.	90 - 110

Matrix Spike — Lab ID = 812967-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	35.6	35.4(20.0)	101	90 - 110

Matrix Spike — Lab ID = 812967-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.06	1.00(1.00)	106	90 - 110

Matrix Spike — Lab ID = 812967-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.08	1.00(1.00)	108	90 - 110

Matrix Spike — Lab ID = 812967-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	17.4	17.3(10.0)	101	90 - 110

Matrix Spike — Lab ID = 812967-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	32.6	32.0(25.0)	103	90 - 110

Matrix Spike — Lab ID = 812967-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	39.7	39.8(20.0)	99.6	90 - 110

Matrix Spike — Lab ID = 812969-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.10	9.02(5.00)	102	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.04	5.00	101	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	10.1	10.0	101	95 - 105

MRCVS - Primary

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

MRCVS - Primary

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

MRCVS - Primary

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

MRCVS - Primary

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

Chrome VI by EPA 218.6

Batch 04CrH14 C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-008 Chromium, Hexavalent	ug/L	04/16/2014 16:36	5.00	0.0300	1.0	4.9

Method Blank

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

Duplicate Lab ID = 813068-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.123	0.123	0.162	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.199	0.200	99.3	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.03	5.00	101	90 - 110

Matrix Spike Lab ID = 812967-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	9.52(5.00)	110	90 - 110

Matrix Spike Lab ID = 812967-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	10.2	9.94(5.00)	104	90 - 110

Matrix Spike Lab ID = 813068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.18	1.12(1.00)	106	90 - 110

Matrix Spike Lab ID = 813068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.24	5.12(5.00)	102	90 - 110

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.87	10.0	98.7	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	10.0	100	95 - 105

Total Dissolved Solids by SM 2540 C Batch 04TDS14C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4520
812967-002 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4400
812967-003 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4390
812967-004 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4340
812967-005 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4400
812967-006 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4540
812967-007 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4740
812967-008 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4120
812967-009 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	125	4240
812967-010 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	50.0	1140
812967-011 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	50.0	2590
812967-014 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	250	5420
812967-015 Total Dissolved Solids	mg/L	04/14/2014	1.00	1.76	50.0	1170

Method Blank

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

Duplicate — Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4330	4440	2.51	0 - 10

Duplicate — Lab ID = 812966-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	27900	27500	1.32	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	499	500	99.8	90 - 110

Ammonia Nitrogen by SM4500-NH3D

Batch 04NH314A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-002 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-003 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-004 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-005 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-006 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-007 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-008 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND
812967-014 Ammonia as N	mg/L	04/16/2014	1.00	0.0318	0.500	ND

Method Blank

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.72	8.00	109	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.32	8.00	104	90 - 110

Matrix Spike

Lab ID = 812967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.80	10.0(10.0)	98.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.98	6.00	99.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.17	6.00	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.42	6.00	107	90 - 110

Metals by EPA 200.8, Dissolved Batch 040914A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Chromium	ug/L	04/09/2014 19:47	2.00	0.142	1.0	1.1
812967-002 Chromium	ug/L	04/09/2014 19:53	2.00	0.142	1.0	1.1
812967-003 Chromium	ug/L	04/09/2014 20:00	2.00	0.142	1.0	ND
812967-004 Chromium	ug/L	04/09/2014 20:06	2.00	0.142	1.0	2.5
812967-005 Chromium	ug/L	04/09/2014 20:32	2.00	0.142	1.0	ND
812967-006 Chromium	ug/L	04/09/2014 20:38	2.00	0.142	1.0	7.9
812967-007 Chromium	ug/L	04/09/2014 20:45	2.00	0.142	1.0	ND
812967-008 Chromium	ug/L	04/09/2014 20:51	2.00	0.142	1.0	4.9
812967-009 Chromium	ug/L	04/09/2014 20:58	2.00	0.142	1.0	6.7
812967-010 Chromium	ug/L	04/09/2014 21:11	2.00	0.142	1.0	19.4
812967-011 Chromium	ug/L	04/09/2014 21:17	2.00	0.142	1.0	15.7
812967-014 Chromium	ug/L	04/09/2014 21:23	2.00	0.142	1.0	7.9
812967-015 Chromium	ug/L	04/09/2014 21:30	2.00	0.142	1.0	20.2

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 812966-001

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.532	0.500	106	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.00	48.9	50.0	97.9	85 - 115

Matrix Spike — Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	46.2	50.0(50.0)	92.4	75 - 125

Matrix Spike Duplicate — Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.00	45.5	50.0(50.0)	90.9	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	95.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	21.3	20.0	106	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	21.6	20.0	108	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.6	20.0	103	90 - 110

MRCVS - Primary

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

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	95.8	80 - 120

Metals by EPA 200.8, Dissolved Batch 041014A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-009 Molybdenum	ug/L	04/10/2014 15:58	5.00	0.250	2.0	4.8
812967-010 Molybdenum	ug/L	04/10/2014 16:05	5.00	0.250	2.0	29.0
812967-011 Molybdenum	ug/L	04/10/2014 16:18	5.00	0.250	2.0	14.4
812967-015 Molybdenum	ug/L	04/10/2014 16:24	5.00	0.250	2.0	28.8

Method Blank

Parameter	Unit	DF	Result
Molybdenum	ug/L	1.00	ND

Duplicate — Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Molybdenum	ug/L	2.00	18.1	18.7	3.02	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	0.193	0.200	96.5	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	46.9	50.0	93.8	85 - 115

Matrix Spike — Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Molybdenum	ug/L	2.00	63.2	68.7(50.0)	89.0	75 - 125

Matrix Spike Duplicate — Lab ID = 812966-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Molybdenum	ug/L	2.00	62.0	68.7(50.0)	86.7	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	18.6	20.0	92.8	90 - 110

MRCVS - Primary

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

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	19.1	20.0	95.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	19.0	20.0	95.2	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

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

Interference Check Standard AB

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

Serial Dilution — Lab ID = 812967-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Molybdenum	ug/L	25.0	29.1	29.0	0.327	0 - 10

Metals by 200.7, Dissolved

Batch 041014A-Th1

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-009 Sodium	ug/L	04/10/2014 13:41	100	5980	50000	774000
812967-010 Sodium	ug/L	04/10/2014 13:47	100	5980	50000	374000
812967-011 Sodium	ug/L	04/10/2014 13:53	100	5980	50000	486000
812967-015 Sodium	ug/L	04/10/2014 13:59	100	5980	50000	362000

Method Blank

Parameter	Unit	DF	Result
Sodium	ug/L	1.00	ND

Duplicate

Lab ID = 812966-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sodium	ug/L	500	1430000	1460000	1.87	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	2130	2000	106	85 - 115

Matrix Spike

Lab ID = 812966-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sodium	ug/L	500	2430000	2460000(10000(	96.7	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	5180	5000	104	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	4880	5000	97.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	4970	5000	99.3	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	1940	2000	97.0	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	2040	2000	102	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	1960	2000	98.1	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	2030	2000	101	80 - 120

Turbidity by SM 2130 B Batch 04TUB14F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-001 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.107
812967-002 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.101
812967-003 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.852
812967-004 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.165
812967-005 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.157
812967-006 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	ND
812967-007 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.102

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate Lab ID = 812956-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.141	0.158	11.4	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.16	8.00	102	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.22	8.00	103	90 - 110

Turbidity by SM 2130 B Batch 04TUB14G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
812967-008 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	ND
812967-009 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	1.10
812967-010 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.483
812967-011 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.317
812967-014 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	ND
812967-015 Turbidity	NTU	04/08/2014	1.00	0.0140	0.100	0.565

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 812967-015

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.597	0.565	5.51	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.22	8.00	103	90 - 110

Lab Control Sample Duplicate

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

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

812967

CH2MHILL **CHAIN OF CUSTODY RECORD** 4/8/2014 3:20:24 PM Page 1 OF 2

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.CM
Task Order
Project 2014-CMP-031
Turnaround Time 10 Days
Shipping Date:
COC Number: TLI-CMP031

Rec'd 04/08/14
812967

	DATE	TIME	Matrix	Container:	250 ml Poly	500 ml Poly	500 ml Poly	2 x Liter Poly	2 x Liter Poly	2 x Liter Poly	2 x Liter Poly	1 Liter Poly	Number of Containers	COMMENTS
				Preservatives:	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C		
				Filtered:	Field	Field	Field	NA	NA	NA	NA	NA		
				Holding Time:	28	180	180	2	2	2	2	28		
					Cr6 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Chromium	Metals (E200.7-E200.8) Field Filtered Cr,Mo,Na	Anions (E300.0) Cl, Fl, SO4	Specific Conductance (E120.1)	Turbidity (SM2130)	TDS (SM2540C)	Ammonia (SM4500NH3)		
1	CW-01D-031	4/7/2014	10:17	Water	X	X		X	X	X	X	X	~~4~~ 5	
2	CW-01M-031	4/7/2014	10:57	Water	X	X		X	X	X	X	X	~~4~~ 5	
3	CW-02D-031	4/7/2014	14:20	Water	X	X		X	X	X	X	X	~~4~~ 5	
4	CW-02M-031	4/7/2014	15:07	Water	X	X		X	X	X	X	X	~~4~~ 5	
5	CW-03D-031	4/8/2014	7:37	Water	X	X		X	X	X	X	X	~~4~~ 5	
6	CW-03M-031	4/8/2014	8:55	Water	X	X		X	X	X	X	X	~~4~~ 5	
7	CW-04D-031	4/8/2014	10:57	Water	X	X		X	X	X	X	X	~~4~~ 5	
8	CW-04M-031	4/8/2014	11:42	Water	X	X		X	X	X	X	X	~~4~~ 5	
9	OW-01S-031	4/8/2014	15:03	Water	X		X	X	X	X	X		~~3~~ 4	
10	OW-02S-031	4/8/2014	14:32	Water	X		X	X	X	X	X		~~3~~ 4	
11	OW-05S-031	4/8/2014	13:38	Water	X		X	X	X	X	X		~~3~~ 4	
12	OW-80-031	4/8/2014	6:00	Water	X								1	
13	OW-81-031	4/8/2014	15:30	Water	X								1	
14	OW-90-031	4/8/2014	6:50	Water	X	X		X	X	X	X	X	~~4~~ 5	

ALERT !! For Sample Conditions
Level III QC See Form Attached

Signatures	Date/Time
Approved by	4-8-14 1600
Sampled by	
Relinquished by	4-8-14 1600
Received by	
Relinquished by	4-8-14 2000
Received by	4/9/14 0005

Shipping Details
Method of Shipment: ~~FedEx~~ Bell courier
On Ice: (yes) / no
Airbill No: N/A
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:
April 7-9, 2014

Report Copy to
Shawn Duffy
(530) 229-3303

812967

CH2MHILL **CHAIN OF CUSTODY RECORD** 4/8/2014 3:20:25 PM Page 2 OF 2

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.CM
Task Order
Project 2014-CMP-031
Turnaround Time 10 Days
Shipping Date:
COC Number: TLI-CMP031

	DATE	TIME	Matrix	Container	Preservatives	Filtered	Holding Time	Cr6 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Chromium	Metals (E200.7-E200.8) Field Filtered Cr,Mo,Na	Anions (E300.0) Cl, Fl, SO4	Specific Conductance (E120.1)	Turbidity (SM2130)	TDS (SM2540C)	Ammonia (SM4500NH3)	Number of Containers	COMMENTS
				250 ml Poly	(NH4)2SO4/NH4OH, 4°C	Field	28										
				500 ml Poly	HNO3, 4°C	Field	180										
				500 ml Poly	HNO3, 4°C	Field	180										
				2 x Liter Poly	4°C	NA	2										
				2 x Liter Poly	4°C	NA	2										
				2 x Liter Poly	4°C	NA	2										
				2 x Liter Poly	4°C	NA	2										
				1 Liter Poly	H2SO4, pH<2, 4°C	NA	28										
5 OW-91-031	4/8/2014	10:42	Water					X		X	X	X	X	X		~~3~~	4 pH<2 PEL
															TOTAL NUMBER OF CONTAINERS	~~50~~	63

Rec'd 04/08/14
S216 812967

ALERT !!
Level III QC

For Sample Conditions See Form Attached

Signatures	Date/Time
Approved by	4-8-14
Sampled by	1600
Relinquished by	4-8-14
Received by	1600
Relinquished by	4-8-14 2000
Received by	4/9/14 0005

Shipping Details
Method of Shipment: ~~FedEx~~ BAC Courier
On Ice: (yes) / no
Airbill No: N/A
Lab Name: Truesdail Laboratories, Inc.
Lab Phone: (714) 730-6239

ATTN:
Sample Custody

Special Instructions:
April 7-9, 2014

Report Copy to
Shawn Duffy
(530) 229-3303

1104

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
3/26/14	812753	7.00	2ml/100ml	9.5	7:30	NE
4/9/14	812966-1	7.00	2ml/100ml	9.5	7:20	NE
	-2					
	-3					
	812967-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	812968 (Sdup)					
	812969-1	7.00	2ml/100ml	9.5	7:20	NE
	-2					
4/16/14	813068	7.00	2ml/100ml	9.5	7:40	NE

NE 4/17/14

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

TRUESDAIL LABORATORIES, INC.
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
812829	>1	<2	4/3/14	KD	Yes			
812830	>1	<2	↓	↓	↓			
812833 (4)	>1	<2						
812848	>1	<2						
812849-4	>1	<2						
812851 (1-2)	>1	<2						
812852	>1	<2	↓	↓	↓			
812858	>1	<2	4/3/14	KD	Yes			
812820	>1	<2	↓	↓	↓			
812821	>1	<2						
812823	<1	>2	↓	↓	NO	1110	4/4/14 12:30	pH <2
812859	<1	>2	4/4/14	KD	NO			
812872	>1	<2	↓	↓	Yes			
812866	>1	>2	↓	↓	~~Yes~~			
812912	>1	<2	4/7/14	ES	Yes			
812922	<1	<2	↓	↓	↓			
812923 (1-4)	>1	<2	↓	↓	↓			
812929 (1-2)	>1	<2	4/8/14	ES	Yes			
812927-6	<1	>2	↓	↓	NO	10:10		
812942 (1,2,4)	<1	>2	4/8/14	KD	NO	1305		
812944	<1	<2	4/9/14	ES	Yes			
812945	↓	↓	↓	↓	↓			
812946	>1							
812947	↓							
812949	<1							
812950	↓							
812951								
812952								
812953								
812954		↓			↓			
812965 (1-2)	↓	>2	↓	↓	NO	11:00		
812967 (1-11, 14-15)	<1	<2	4/9/14	ES	Yes			
812966 (1,3)	<1	<2	↓	↓	↓			
966-2	↓	>2	↓	↓	↓	1:00		pH <2
812969 (1-2)	↓	↓	↓	↓	↓	1:00		Filtered then acidified
812984 (10-12)	<1	>2	4/10/14	KD	NO	1220		
812991	~~>1~~ KD 4/10/14	<2	↓	↓	Yes			
812992 (4)	>1	<2	↓	↓	Yes			
812993 (4)	>1	<2	↓	↓	Yes			
812986 (1,2)	>1	>2	↓	↓	NO	1220		
813007 (1-4) ~~4/10/14~~	<1	>2	↓	↓	NO	↓		
813002	<1	<2	↓	↓	Yes			
813001 (1,2)	>1	<2	↓	↓	Yes			
813004	<1	<2	↓	↓	Yes			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 812967

Date Delivered: 04/08/14 **Time:** 2005 **By:** ☐Mail ☑Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☑No	☐N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☑No	☐N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 5.2 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by ☑Truesdail ☐Client	☑Yes	☐No	☐N/A
12.	Were samples pH checked? pH = see C.O.C.	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes	☐No	☐N/A

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

16. Comments: _____

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

ALERT II
Level III QC

ANALYTICAL REPORT

For:
PGE Topock - 2014-CMP-031

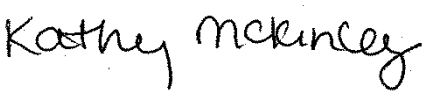
ASL Report #: N1660

Project ID: 423575.MP.02.CM

Attn: Jay Piper

cc:
Data Center/RDD

Authorized and Released By:



Laboratory Project Manager
Kathy McKinley
(541) 758-0235 ext.23144
May 05, 2014

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

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

Accredited in accordance with NELAP:
Oregon (100022)
Arizona (0771)
Louisiana (05031)

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
N166001	CW-01D-031	04/07/14 10:17	04/15/14
N166002	CW-01M-031	04/07/14 10:57	04/15/14
N166003	CW-02D-031	04/07/14 14:20	04/15/14
N166004	CW-02M-031	04/07/14 15:07	04/15/14
N166005	CW-03D-031	04/08/14 07:37	04/15/14
N166006	CW-03M-031	04/08/14 08:55	04/15/14
N166007	CW-04D-031	04/08/14 10:57	04/15/14
N166008	CW-04M-031	04/08/14 11:42	04/15/14
N166009	OW-01S-031	04/08/14 15:03	04/15/14
N166010	OW-02S-031	04/08/14 14:32	04/15/14
N166011	OW-05S-031	04/08/14 13:38	04/15/14
N166012	OW-90-031	04/08/14 06:50	04/15/14
N166013	OW-91-031	04/08/14 10:42	04/15/14

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CH2M HILL
Applied Sciences Laboratory (ASL)
1100 NE Circle Blvd
Suite 300
Corvallis, OR 97330
Tel 541.768.3120
Fax 541.752.0276

Organic CLP-Like Data Qualifiers

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

P The primary and confirmation analyte result recoveries do not match.

E The analyte was positively identified; the associated numerical value exceeded the instrument calibration range.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Inorganic CLP-Like Data Qualifiers

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

E The analyte was positively identified; the associated numerical value exceeded the instrument calibration range.

N The matrix spike/matrix spike duplicate recovery for the analyte is outside of acceptance criteria—qualifier is applied to the native sample only.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Applied Sciences Group QC Codes for Raw Data Mark Up

Code	Description
R01	Illegible entry
R02	Unnecessary entry
R03	Typo
R04	Misspelled
R05	Page mis-numbered
R06	Transcription error or incorrect entry
R07	Rounding error
R08	Unused code
R09	Unused code
R10	Wrong date entered
R11	Wrong sample number
R12	Wrong dilution factor
R13	Wrong concentration
R14	Wrong batch number
R15	Wrong standard concentration
R16	Wrong standard lot #
R17	Unused code
R18	Unused code
R19	Unused code
R20	Re-calibration of equipment
R21	Sample rerun
R22a	Miscalculation
R22b	Remake of standards
R23	Wrong detection limit given
R24	Less than reporting limit
R25	Non-target compound
R26	Unused code
R27	Unused code
R28	Includes dilution factor
R29	Sample relogged-in under a different work order
R30	Equipment malfunction
R31	Unused code
R32	Unused code
R33	Manual integration of qualifying ion only
R34	Software split peak
R35	Software included interfering peak
R37	Peak area enhanced by software
R38	Peak area excluded by software
R39	Peak misidentification by software
R40	Delete baseline noise
R41	Unused code
R42	Unused code
R43	Unused code
R44	Reanalysis due to the failure of an ISTD
R45	Analysis didn't acquire

ANALYSIS METHOD

E353.2

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

CASE NARRATIVE
GENERAL CHEMISTRY ANALYSIS

Lab Name: CH2M HILL ASL **ASL SDG#:** N1660

Project: PGE Topock **Project #:** 423575.MP.02.CM

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

Method(s):
E353.2

Matrix Spike/Matrix Spike Duplicate(s):
E353.2: MSD recovery of Total Nitrate/Nitrite (88.1%) in OW-01S-031 did not meet acceptance criteria of 90-110%.

SAMPLE DATA SUMMARY

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-01D-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166001

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.15		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-01M-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166002

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.08		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-02D-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166003

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.26		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-02M-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166004

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.11		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-03D-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166005

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.20		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-03M-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166006

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	1.73		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-04D-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166007

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.14		MG/L	4	3 ML	E353.2	04/22/14

FORM I GEN CHEM

1A-WC

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

CW-04M-031

SDG No.: N1660

Matrix: WATER

Lab Name: CH2M HILL ASL

Lab Sample ID: N166008

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	2.93		MG/L	4	3 ML	E353.2	04/22/14

FORM I GEN CHEM

EB140505-11:57-N1660-W

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-01S-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166009

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.27		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-01S-031MS

SDG No.: N1660

Matrix: WATER

Lab Name: CH2M HILL ASL

Lab Sample ID: N166009MS

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.79		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-01S-031MSD

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166009MSD

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.71		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-02S-031

SDG No.: N1660

Matrix: WATER

Lab Name: CH2M HILL ASL

Lab Sample ID: N166010

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.73		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-05S-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166011

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.35		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-90-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166012

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	1.71		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID:

OW-91-031

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: N166013

Date Received: 04/15/14

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.0112	0.0400	3.69		MG/L	4	3 ML	E353.2	04/22/14

GENERAL CHEMISTRY ANALYSIS DATA SHEET

Field Sample ID: **WB4-042214**

SDG No.: N1660

Lab Name: CH2M HILL ASL

Matrix: WATER

Lab Sample ID: WB4-042214

Date Received: / /

CAS No.	Analyte	DL	PQL	Result	Q	Units	DF	Sample Amount	Analysis Method	Date Analyzed
NO3NO2N	Nitrate/Nitrite-N	0.00280	0.0100	0.0100	U	MG/L	1	3 ML	E353.2	04/22/14

QC SUMMARY

WATER GENERAL CHEMISTRY MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SDG No.: N1660 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 Concentration Units: MG/L

Native Sample ID:	Matrix Spike ID:	Matrix Spike Duplicate ID:
OW-01S-031	OW-01S-031MS	OW-01S-031MSD

Analyte	Native Sample Result	MS Spike Added	MS Result	MS %R	MSD Spike Added	MSD Result	MSD %R	%RPD	QC Limits %R	QC Limits %RPD	Q
Nitrate/Nitrite-N	3.27	0.500	3.79	104	0.500	3.71	88	2	90-110	15	*

* Values outside of QC limits

Comments:
Result values >MDL in the native sample are used in the MS/MSD recovery calculation.

GENERAL CHEMISTRY LABORATORY CONTROL SAMPLE

SDG No.: N1660 Lab Name: CH2M HILL ASL

Analysis Method: E353.2 LCS ID: BS4W0422

Initial Calibration ID: 092313NO32SM1 Date Analyzed: 04/22/14

Matrix: (Soil/Water) WATER Time Analyzed: 1312

Instrument: SMARTCHEM Concentration Units: MG/L

Analyte	Expected	Found	%R	QC Limits %R	Q
Nitrate/Nitrite-N	0.480	0.502	105	90-110	

* Values outside of QC limits

Comments:

CHAIN OF CUSTODY/SHIPPING DOCUMENTS

N1660

CH2MHILL **CHAIN OF CUSTODY RECORD** *4/8/2014 3:20:54 PM* Page 1 OF 1

Project Name PG&E Topock
Location Topock
Project Manager Jay Piper
Sample Manager Shawn Duffy
Project Number 423575.MP.02.CM
Task Order
Project 2014-CMP-031
Turnaround Time 12 Days
Shipping Date:
COC Number: CHMC-CMP031

	Container:	Preservatives:	Filtered:	Holding Time:					
	125 ml Poly	H2SO4, pH<2, 4°C	NA	28				Number of Containers	COMMENTS
	DATE	TIME	Matrix	Nitrate/Nitrite (SM4500NO3)					
CW-01D-031	4/7/2014	10:17	Water	X				1	1
CW-01M-031	4/7/2014	10:57	Water	X				1	2
CW-02D-031	4/7/2014	14:20	Water	X				1	3
CW-02M-031	4/7/2014	15:07	Water	X				1	4
CW-03D-031	4/8/2014	7:37	Water	X				1	5
CW-03M-031	4/8/2014	8:55	Water	X				1	6
CW-04D-031	4/8/2014	10:57	Water	X				1	7
CW-04M-031	4/8/2014	11:42	Water	X				1	8
OW-01S-031	4/8/2014	15:03	Water	X				1	9
OW-02S-031	4/8/2014	14:32	Water	X				1	10
OW-05S-031	4/8/2014	13:38	Water	X				1	11
OW-90-031	4/8/2014	6:50	Water	X				1	12
OW-91-031	4/8/2014	10:42	Water	X				1	13
							TOTAL NUMBER OF CONTAINERS	13	

	Signatures	Date/Time
Approved by		
Sampled by		4-9-14 1600
Relinquished by		4-9-14 1600
Received by		
Relinquished by		09 APR 14 1655
Received by		09 APR 14 1655

Shipping Details
Method of Shipment: FedEx
On Ice: (yes) / no 2 82 12 2
Airbill No:
Lab Name: CH2M HILL Applied Sciences Lab
Lab Phone (541) 752-4271

ATTN:
Sample Custody
and
Kathy McKinley

Special Instructions:
April 7-9, 2014

Report Copy to
Shawn Duffy
(530) 229-3303

CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Record

SDG ID: N1660 Date Received: 4/15/2014

Client/Project: Topock Received By: Carmen Cole

Were custody seals intact and on the outside of the cooler?		☑ Yes	☐ No	☐ N/A
Shipping Record:	☐ Hand Delivered	☑ On File	☐ COC	
Radiological Screening for DoD		☐ Yes	☐ No	☑ N/A
Packing Material:	☐ Hand Delivered	☑ Ice	☐ Blue Ice	☐ Box
Temp OK? (<6C) Therm ID: TH173 Exp. 6/14	1.6 °C	☑ Yes	☐ No	☐ N/A
Was a Chain of Custody (CoC) Provided?		☑ Yes	☐ No	☐ N/A
Was the CoC correctly filled out (If No, document below)		☑ Yes	☐ No	☐ N/A
Did sample labels agree with COC? (If No, document below)		☑ Yes	☐ No	☐ N/A
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		☑ Yes	☐ No	☐ N/A
Were the sample containers in good condition (broken or leaking)?		☑ Yes	☐ No	☐ N/A
Was enough sample volume provided for analysis? (If No, document below)		☑ Yes	☐ No	☐ N/A
Containers supplied by ASL?		☑ Yes	☐ No	☐ N/A
Any sample with < 1/2 holding time remaining? If so contact LPM		☐ Yes	☑ No	☐ N/A
Samples have multi-phase? If yes, document on SRER		☐ Yes	☑ No	☐ N/A
All water VOCs free of air bubbles? No, document on SRER		☐ Yes	☑ No	☐ N/A
pH of all samples met criteria on receipt? If "No", preserve and document below.		☑ Yes	☐ No	☐ N/A
Dissolved/Soluble metals filtered in the field?		☐ Yes	☐ No	☑ N/A
Dissolved/Soluble metals have sediment in bottom of container? If so document below.		☐ Yes	☐ No	☑ N/A

Preservation Adjustment

Sample ID	Reagent	Reagent Lot Number	Volume Added	Initials

Sample Exception Report (The following exceptions were noted)

Client requested method SM4500 ASL will report by method E353.2.

Client was notified on: Client contact:

Resolution to Exception:

Appendix B
Field Data Sheets, First Half 2014

Topock Sampling Log

Project Name PG&E Topock CMP
Job Number 423575.MP.02.CM
Sampling Event 2014-CMP-031
Date 4-7-14
Sampler CH Field Team 1 Field Conditions Breezy, Sunny, Cool
Page 1 of 2

Well/Sample Number CW-01D-031 **QC Sample ID** NA QC Sample Time NA

Purge Start Time 0926 Purge Method: 3-Vol Ded. Pump ded tubing
Flow Cell (Y) / N Min. Purge Volume (gal) (L) 98 Purge Rate (gpm) (mLpm) 3 Pump Make and Model GX4

Water Level	Time (7 min)	Vol. Purged gallons / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
109.09	0933	21	5.7	6927	1	6.44	28.28	-30	Hz=33
	~~0940~~	42							meter malfunctioning - repaired
109.09	0947	63	7.06	6923	1	7.02	28.25	85	
109.09	0954	84	7.33	6920	1	6.97	28.09	109	
109.10	1001	105	7.26	6922	1	7.04	28.18	104	
109.08	1008	~~126~~ 147	7.46	6917	1	7.03	28.20	108	
109.08	1010	132	7.50	6914	1	7.03	28.22	108	
109.08	1015	~~147~~ 147	7.52	6913	1	7.02	28.21	108	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y	
Previous Field measurement (10/10/2013)	7.33	7427	1	7.96	29.13	155	
Are measurements consistent with previous?	Y	Y	Y	Y	Y	Y	

Sample Time 1017 Sample Location: pump tubing X well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 108.91
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (300.2)
SWH (Standing Water Height) = WD-Initial Depth 191.29
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 = 97.58

Measure Point: Well TOC Steel Casing

WQ METER MAKE and SERIAL NUMBER: In-Situ 9500 30618
WATER LEVEL METER SERIAL NUMBER: Heron PGE-2005-03

Initial DTW / Before Removal		If Transducer		
		Approx. 5 min After Reinstallation		Time of Removal NA
Time	Initial DTW	Time	Final DTW	Time of Reinstallation 1
0910	108.91	NA		

Comments:

Color: clear, grey, yellow, brown, black, cloudy, green
Odor: none, sulphur, organic, other
Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP | **Sampling Event** 2014-CMP-031
Job Number 423575.MP.02.CM | **Date** 4-7-14
Sampler CA | Field Team 1 | Field Conditions breezy, clear, warm | Page 1 of 1

BGL ✓

Well/Sample Number CW-01M-031 | **QC Sample ID** NA | QC Sample Time NA

Purge Start Time 1035 | Purge Method: 3-volume | Ded. Pump ded tubing
Flow Cell: (Y) / N | Min. Purge Volume (gal)/(L) 42 | Purge Rate (gpm)/(mLpm) 2 | Pump Make and Model G&2

Water Level	Time (4 min)	Vol. Purged (gallons)/ liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
108.90	1039	8	7.55	6781	1	8.21	29.11	101	Hz = 321
108.89	1043	16	7.54	6780	1	8.13	29.18	105	
108.89	1047	24	7.55	6772	1	8.06	29.24	105	
108.89	1051	32	7.57	6767	1	7.93	29.25	107	
108.89	1055	40	7.57	6776	1	7.76	29.29	110	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y	
Previous Field measurement (10/10/2013)	7.48	7512	1	9.51	29.14	186	
Are measurements consistent with previous?	Y	Y	Y	Y	Y	Y	

Sample Time 1057 ✓ | Sample Location: pump tubing | well port | spigot | bailer | other

Comments: _____

Initial Depth to Water (ft BTOC): 108.85
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (190)
SWH (Standing Water Height) = WD-Initial Depth 81.15
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 13.79
Three Casing Volumes = 41.39

Measure Point: Well TOC | Steel Casing

WQ METER MAKE and SERIAL NUMBER: YSI-556 MPS 09B 50618
WATER LEVEL METER SERIAL NUMBER: PBC-2005-05

Initial DTW / Before Removal		If Transducer		
		Approx. 5 min After Reinstallation		Time of Removal
Time	Initial DTW	Time	Final DTW	Time of Reinstallation
0930	108.85	NA		

Comments:

Color: clear, grey, yellow, brown, black, cloudy, green | **Odor:** none, sulphur, organic, other | **Solids:** Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Topock Sampling Log

Project Name PG&E Topock CMP | **Sampling Event** 2014-CMP-031
Job Number 423575.MP.02.CM | **Date** 4-7-14
Sampler CA | Field Team 1 | Field Conditions Hot, Breezy, Clear | Page 1 of 2 | BSL ✓

Well/Sample Number CW-02D-031 | **QC Sample ID** NA | QC Sample Time NA

Purge Start Time 1317 | Purge Method: 3-Vol | Ded. Pump ded. Tubing
Flow Cell (Y) / N | Min. Purge Volume (gal)/(L) 135 | Purge Rate (gpm)/(mLpm) 3 | Pump Make and Model GX-1

Water Level	Time (military)	Vol. Purged (gallons) liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
91.96	1321	27	7.35	6854	4	7.37	30.42	-6	Hz=311
91.96	1330	54	7.38	6843	1	7.38	30.42	5	
91.96	1339	81	7.31	6842	1	7.37	30.43	4	
91.96	1348	108	7.34	6839	1	7.38	30.41	5	
	1350	~~135~~	Pump off. Tank full. Flow must be higher than expected. ~140 gal						
	1409	Pump on @ 3gpm							
91.90	1412	~150gal	7.75	6820	1	7.32	30.34	23	
	1415	~160gal	7.70	6821	1	7.32	30.42	17	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y
Previous Field measurement (10/8/2013)	7.88	7582	1	6.94	30.98	101
Are measurements consistent with previous?	Y	Y	Y	Y	Y	historical

Sample Time 1420 ✓ | Sample Location: pump tubing | well port | spigot | bailer | other
Comments:

Initial Depth to Water (ft BTOC): 91.70
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (355)
SWH (Standing Water Height) = WD-Initial Depth 263.3
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 44.76
Three Casing Volumes = 134.28

Measure Point: Well TOC | Steel Casing

WQ METER MAKE and SERIAL NUMBER: In-Situ 9500 506/18
WATER LEVEL METER SERIAL NUMBER: DFS-1005 .03

Initial DTW / Before Removal	
Time	Initial DTW
1252	91.70

Comments:

If Transducer
Approx. 5 min After Reinstallation Time | Final DTW
Time of Removal
Time of Reinstallation

Color: clear, grey, yellow, brown, black, cloudy, green | **Odor:** none, sulphur, organic, other | **Solids:** Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Topock Sampling Log

Project Name: PG&E Topock CMP
Job Number: 423575.MP.02.CM
Field Team: 1
Field Conditions:
Sampling Event: 2014 CMP 051
Date: 4-7-14
Page: 1 of 2

Well/Sample Number: CMW-DD-031
QC Sample ID: NA
QC Sample Time: NA
Purge Start Time: 1312
Purge Method: 3-Vol
Ded. Pump: ded tubing
Flow Cell: (Y) N
Min. Purge Volume (gal)/(L): 135
Purge Rate (gpm)/(mLpm): 3

Water Level	Time	Vol. Purged gallons / liters	pH	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. oC	Salinity %	TDS g/L	Eh/ORP mv	Comments (See description below
91.90	1418	~170	7.74	6820	1	7.33	30.45	—	—	22	
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?							NA				
Previous Field measurement ()			Daryl								
Are measurements consistent with previous?							NA				

Sample Time: _____ Sample Location: pump tubing (P) well port _____ spigot _____ bailer _____ other _____

Comments: _____

Initial Depth to Water (ft BTOC): PG
Field measured confirmation of Well Depth (ft btoc): _____
WD (Well Depth - from database) ft btoc _____
SWH (Standing Water Height) = WD-Initial Depth _____
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 _____
One Casing Volume = D*SWH _____
Three Casing Volumes = _____

Measure Point: (Well TOC) Steel Casing WATER LEVEL METER SERIAL NUMBER: PG

Initial DTW / Before Removal		If Transducer		
Time	Initial DTW	Approx. 5 min After Reinstallation Time	Final DTW	Time of Removal
PG				Time of Reinstallation

Comments:

Project Name PG&E Topock CMP | **Sampling Event** 2014-CMP-031
Job Number 423575.MP.02.CM | **Date** 4-7-14
Sampler CG | Field Team 1 | Field Conditions Sunny, warm, windy | Page 1 of 1

BAL ✓

Well/Sample Number CW-02M-031 | **QC Sample ID** NA | QC Sample Time NA

Purge Start Time 1435 | Purge Method: 3-Vol | Ded. Pump ded tubing

Flow Cell: (Y) N | Min. Purge Volume (gal)/(L) 57 | Purge Rate (gpm)/(mLpm) 2 | Pump Make and Model GA 3

Water Level	Time (6 min)	Vol. Purged gallons / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
92.07	1441	12	6.84	6773	1	7.61	30.46	12	Hz = 243
92.07	1447	24	7.18	6772	1	7.64	30.48	61	
92.07	1453	36	7.44	6763	1	7.57	30.48	70	
92.07	1459	48	7.43	6752	1	7.44	30.47	71	
92.07	1505	60	7.45	6744	1	7.60	30.45	69	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y	
Previous Field measurement (10/8/2013)	7.76	7454	1	7.76	30.02	179	
Are measurements consistent with previous?	Flower	Y	Y	Y	Y	Y	

Sample Time 1507 ✓ | Sample Location: pump tubing (O) well port spigot bailer other

Comments: _____

Initial Depth to Water (ft BTOC): 91.98

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

WD (Well Depth - from database) ft btoc (202)

SWH (Standing Water Height) = WD-Initial Depth 110.02

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

One Casing Volume = D*SWH 18.70

Three Casing Volumes = 56.11

Measure Point: (Well TOC) Steel Casing

WQ METER MAKE and SERIAL NUMBER: In-Situ 95005K618

WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

Initial DTW / Before Removal		If Transducer	
Time	Initial DTW	Approx. 5 min After Reinstallation Time	Time of Removal
1425	91.98	NA	Final DTW
			Time of Reinstallation

Comments:

Color: clear, grey, yellow, brown, black, cloudy, green (C)

Odor: none (C) sulphur, organic, other

Solids: Trace (C), Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

✓ BEL

Project Name PG&E Topock CMP
Job Number 423575.MP.02.CM
Sampler CA Field Team 1 Field Conditions Sunny, Calm, Cool

Sampling Event 2014-CMP-031
Date 4-8-14
Page 1 of 1

Well/Sample Number CW-03D-031 **QC Sample ID** NA QC Sample Time NA

Purge Start Time 0651 Purge Method: 3-Vol Ded. Pump
Flow Cell (Y) / N Min. Purge Volume (gal)/(L) 135 Purge Rate (gpm)/(mLpm) 3 Pump Make and Model G#1

Water Level	Time (9 min)	Vol. Purged (gallons) / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
76.40	0700	27	7.40	7742	1	6.97	30.37	63	Hz 259
76.40	0709	54	7.53	7744	1	6.97	30.45	63	
76.40	0718	81	7.66	7746	1	6.95	30.46	63	
76.40	0727	108	7.71	7750	1	6.96	30.49	63	
76.41	0736	135	7.74	7757	1	6.96	30.49	63	
		~~162.0~~							
		~~178.8~~							
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y
Previous Field measurement (10/8/2013)	7.69	7570	0.3	6.91	30.5	189
Are measurements consistent with previous?	Y	N	Y	Y	Y	Y

Sample Time 0737 ✓ Sample Location: pump tubing ✓ well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 76.31
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (340)
SWH (Standing Water Height) = WD-Initial Depth 263.69
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 44.83
Three Casing Volumes = 134.48

WQ METER MAKE and SERIAL NUMBER: In-Situ 9500 SN 50618
Measure Point: (Well TOC) Steel Casing
WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

Initial DTW / Before Removal		If Transducer		
Time	Initial DTW	Approx. 5 min After Reinstallation: Time	Final DTW	Time of Removal / Time of Reinstallation
0640	76.31	NA		

Comments:

Color: (clear), grey, yellow, brown, black, cloudy, green
Odor: (none), sulphur, organic, other
Solids: (Trace), Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP **Sampling Event** 2014-CMP-031
Job Number 423575.MP.02.CM **Date** 4-8-14
Sampler CA Field Team 1 Field Conditions Sunny Page 1 of 1

BEC ✓

Well/Sample Number CW-03M-031 QC Sample ID OW-90-031 QC Sample Time 0650

Purge Start Time 0814 Purge Method: 3-vol Ded. Pump no
Flow Cell (Y) N Min. Purge Volume (gal)(L) 74 Purge Rate (gpm)(mLpm) 2 Pump Make and Model G#3

Water Level	Time (7 min)	Vol. Purged gallons / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below)
76.95	0824	14	7.57	9523	1	3.18	30.38	9	Hz:269
76.95	0831	28	7.53	9462	1	3.40	30.38	17	
76.95	0838	42	7.50	9350	1	3.37	30.38	32	
77.02	0845	56	7.50	9300	1	3.46	30.36	39	
77.02	0852	70	7.50	9282	1	3.47	30.37	41	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y
Previous Field measurement (10/8/2013)	7.53	8667	0.5	4.03	30.11	167
Are measurements consistent with previous?	Y	Y	Y	Y	Y	historical

Sample Time 0855 Sample Location: pump tubing ✓ well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 76.89
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (222)
SWH (Standing Water Height) = WD-Initial Depth 145.11
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 24.67
Three Casing Volumes = 74.0

WQ METER MAKE and SERIAL NUMBER: In-Situ 9500 50618
Measure Point: (Well TOC) Steel Casing
WATER LEVEL METER SERIAL NUMBER: PGE-200503

If Transducer

Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
0650	76.89	NA	

Time of Removal NA
Time of Reinstallation

Comments:

Color: (clear) grey, yellow, brown, black, cloudy, green **Odor:** (none) sulphur, organic, other **Solids:** (Trace) Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP | **Sampling Event** 2014-CMP-031
Job Number 423575.MP.02.CM | Date 4-8-14
Sampler [illegible] | Field Team 1 | Field Conditions Sunny, Calm, warm | Page 1 of 1

BGL ✓

Well/Sample Number CW-04D-031 | **QC Sample ID** NA | QC Sample Time NA

Purge Start Time 0955 | Purge Method: 3-vol | Ded. Pump NO
Flow Cell: (Y) / N | Min. Purge Volume (gal)/(L) 124 | Purge Rate (gpm)/(mLpm) 3 | Pump Make and Model GF4

Water Level	Time (5min)	Vol. Purged gallons / liters (8)	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
61.68	1003	24	7.65	7602	1	8.01	30.15	39	Hz 281
61.69	1011	48	7.69	7612	1	8.29	30.59	46	
61.50	1019	72	7.70	7610	1	8.30	30.65	46	
61.48	1027	96	7.70	7617	1	8.26	30.68	45	
61.48	1035	120	7.70	7627	1	8.26	30.66	50	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y	
Previous Field measurement (10/8/2013)	7.82	7532	1	8.36	31.04	133	
Are measurements consistent with previous?	Y	Y	Y	Y	Y	Y	

Sample Time 1037 ✓ | Sample Location: pump tubing ✓ well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 59.94
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (303)
SWH (Standing Water Height) = WD-Initial Depth 243.06
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 41.32
Three Casing Volumes = 123.96

Measure Point: (Well TOC) Steel Casing

WQ METER MAKE and SERIAL NUMBER: In-Situ 9300 50618
WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

If Transducer

Initial DTW / Before Removal | Approx. 5 min After Reinstallation | Time of Removal | Time of Reinstallation

Time	Initial DTW	Time	Final DTW
0940	59.94	NA	

Comments:

Color: clear, grey, yellow, brown, black, cloudy, green **Odor:** none, sulphur, organic, other **Solids:** Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP
Job Number 423575.MP.02.CM
Sampling Event 2014-CMP-031
Date 4-8-14
Sampler CB Field Team 1 Field Conditions Sunny, breezy, warm Page 1 of 1

BEC ✓

Well/Sample Number CW-04M-031 **QC Sample ID** NA QC Sample Time NA

Purge Start Time 1110 Purge Method: 3-vol Ded. Pump no
Flow Cell: (Y) N Min. Purge Volume (gal)(L) 56 Purge Rate (gpm)(mLpm) 2 Pump Make and Model G#2

Water Level	Time (6 min)	Vol. Purged (gallons) / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
61.30	1116	12	7.56	7288	1	7.21	29.94	46	
61.30	1122	24	7.54	7281	1	7.21	29.96	51	
61.30	1128	36	7.53	7280	1	7.21	29.97	55	
61.30	1134	48	7.53	7277	1	7.15	29.98	57	
61.30	1140	60	7.53	7272	1	7.17	29.99	58	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	y	y	y	y	y	y	
Previous Field measurement (10/9/2013)	7.09	7171	1	6.32	29.68	190	
Are measurements consistent with previous?	y	y	y	y	y	y	

Sample Time 1142 ✓ Sample Location: pump tubing ✓ well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 61.05
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc (169.8)
SWH (Standing Water Height) = WD-Initial Depth 108.75
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 18.48
Three Casing Volumes = 55.46

WQ METER MAKE and SERIAL NUMBER: In-Situ 9500 56618
Measure Point: (Well TOC) Steel Casing
WATER LEVEL METER SERIAL NUMBER: PBE-200503

Initial DTW / Before Removal		If Transducer	
		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
1100	61.05	NA	

Time of Removal
Time of Reinstallation

Comments:

Color: (clear), grey, yellow, brown, black, cloudy, green **Odor:** (none), sulphur, organic, other **Solids:** (Trace), Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP
Job Number 423575.MP.02.CM
Sampling Event 2014-CMP-031
Date 4-8-14
Sampler CG Field Team 1 Field Conditions Sunny, hot, breezy
Page 1 of 1
✓ BRC

Well/Sample Number ~~OW-06S-031~~ OW-15-031 **QC Sample ID** ~~OW-91-031~~ QC Sample Time NA

Purge Start Time 1451 Purge Method: 3-Vol Ded. Pump NO

Flow Cell: (Y) / N Min. Purge Volume (gal)/(L) 10 Purge Rate (gpm)/(mLpm) 1 Pump Make and Model (GRF)

Water Level	Time (2 min)	Vol. Purged gallons / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
92.85	1453	2	6.74	6817	16	7.40	29.64	39	
92.85	1455	4	7.25	6701	16	7.29	29.64	41	
92.85	1457	6	7.23	6683	5	7.39	29.65	38	
92.85	1454	8	7.23	6655	3	7.28	29.64	40	
92.85	1501	10	7.21	6647	2	7.39	29.56	47	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y	
Previous Field measurement (10/10/2013)	~~7.88~~	~~1965~~	~~3~~	~~8.23~~	~~28.61~~	~~418~~	NA, these are for GW-025
Are measurements consistent with previous?	NA						

Sample Time 1503 ✓ Sample Location: pump tubing ✗ well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 93.73
Field measured confirmation of Well Depth (ft btoc):
WD (Well Depth - from database) ft btoc ~~(124)~~ 113.3
SWH (Standing Water Height) = WD-Initial Depth 19.57
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH & ~~19.57~~ 3.33
Three Casing Volumes = 9.98

WQ METER MAKE and SERIAL NUMBER: In-Situ 1506 S0618
Measure Point: (Well TOC) Steel Casing
WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

If Transducer

Initial DTW / Before Removal

Time	Initial DTW
1444	93.73

Approx. 5 min After Reinstallation

Time	Final DTW
1512	93.72

Time of Removal 1445
Time of Reinstallation 1508

Comments:

Color: clear, grey, yellow, brown, black, cloudy, green **Odor:** none, sulphur, organic, other **Solids:** Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP
Job Number 423575.MP.02.CM
Sampling Event 2014-CMP-031
Date 4-8-13
Sampler CB Field Team 1 Field Conditions Sunny, breezy, warm Page 1 of 1

✓ B&C

Well/Sample Number OW-01S-031 **QC Sample ID** ~~MW~~ Ow-91-031 QC Sample Time 1042

Purge Start Time 1405 Purge Method: 3-Vol Ded. Pump No

Flow Cell: (Y) N Min. Purge Volume (gal)/(L) 15 Purge Rate (gpm)/(mLpm) 1 Pump Make and Model GRU4

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
91.70	1408	3	7.70	2329	37	8.15	29.47	10	H2 = 259
91.72	1412	6	7.72	2319	8	8.09	29.59	19	
91.72	1415	9	7.73	2303	3	8.12	29.67	23	
91.72	1418	12	7.73	2292	3	8.16	29.70	25	
91.72	1421	15	7.73	2288	2	8.11	29.70	26	
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y			
Previous Field measurement (10/9/2013)	~~7.32~~	~~6129~~	~~1~~	~~7.05~~	~~28.72~~	~~183~~	These are the for Ow-01S
Are measurements consistent with previous?	N/A						

Sample Time ~~1425~~ 1432 ✓ Sample Location: pump tubing X well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 92.35

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc ~~(113.5)~~ 121

SWH (Standing Water Height) = WD-Initial Depth ~~21.15~~ 28.65

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

One Casing Volume = D*SWH ~~3.59~~ 4.87

Three Casing Volumes = ~~10.78~~ 14.61

WQ METER MAKE and SERIAL NUMBER: In-Situ 9500 50618

Measure Point: Well TOC Steel Casing WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

Initial DTW / Before Removal		If Transducer		
		Approx. 5 min After Reinstallation		Time of Removal 1355
Time	Initial DTW	Time	Final DTW	Time of Reinstallation 1434
1354	92.35	1439	92.35	

Comments:

Color: clear, grey, yellow, brown, black, cloudy, green **Odor:** none, sulphur, organic, other **Solids:** Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP | **Sampling Event** 2014-CMP-031
Job Number 423575.MP.02.CM | **Date** 4-8-14 ✓ BGC
Sampler CM | Field Team 1 | Field Conditions Sunny, breezy, hot | Page 1 of 1

Well/Sample Number OW-05S-031 | **QC Sample ID** NA | QC Sample Time NT

Purge Start Time 1330 | Purge Method: 3.001 | Ded. Pump NO
Flow Cell (Y) / N | Min. Purge Volume (gal)/(L) 8 | Purge Rate (gpm)/(mLpm) 1 | Pump Make and Model GX#2

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity** µS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temperature °C	Eh/ORP mv	Comments (See description below
94.48	1322	2	7.77	5149	63	6.10	29.62	-15	Hz=255
94.50	1324	4	7.49	5014	17	6.30	29.73	-5	
94.50	1326	6	7.39	4898	6	6.35	29.65	4	
94.50	1328	8	7.44	4767	4	6.51	29.63	13	
94.50	1330	10	7.33	4654	4	6.51	29.62	16	
94.50	1332	12	7.36	4592	3	6.68	29.54	19	
94.50	1334	14	7.31	4478	1	6.64	29.56	20	
94.50	1336	16	7.33	4458	1	6.74	29.57	23	Conductivity out by 4 µs/cm. Sample since everything else stable.
Parameter Compliance Criteria			6.2<pH<9.2	17,000					

**If pH or conductivity 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) 510-2340). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((626) 703-4475 or (626) 297-5292).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	+/- 2°C	+/- 10 mV	
Did last three Parameters Stablize prior to sampling?	Y	Y	Y	Y	Y	Y	
Previous Field measurement (10/9/2013)	7.57	3487	1	6.62	28.72	164	
Are measurements consistent with previous?	Y	Y	Y	Y	Y	historical	

Sample Time 1338 ✓ | Sample Location: pump tubing X | well port | spigot | bailer | other

Comments: _____

Initial Depth to Water (ft BTOC): 94.44
Field measured confirmation of Well Depth (ft btoc): _____
WD (Well Depth - from database) ft btoc (110.3)
SWH (Standing Water Height) = WD-Initial Depth 15.86
D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)
One Casing Volume = D*SWH 2.69
Three Casing Volumes = 8.09

Measure Point: (Well TOC) Steel Casing

WQ METER MAKE and SERIAL NUMBER: In-Situ 9520 50618
WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

Initial DTW / Before Removal		If Transducer: Approx. 5 min After Reinstallation		Time of Removal	1311
Time	Initial DTW	Time	Final DTW	Time of Reinstallation	1342
1305	94.44	~~1311~~ 1347	95.35		

Comments: _____

Color: (clear), grey, yellow, brown, black, cloudy, green
Odor: (none), sulphur, organic, other
Solids: (Trace) Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Topock CMP Manual Water Level Snapshot

Personnel: B. Collom / CHAM :

WLI serial number: PGE 2005- 01B

Loc ID	Depth to Water (ft BTOC)	Date	Time	Comments
CW-1M	110.36	1-21-14	1136	
CW-1D	110.43		1138	
CW-2M	94.02		1141	
CW-2D	93.50		1144	
CW-3M	78.90		1146	
CW-3D	78.19		1148	
CW-4M	62.74		1153	
CW-4D	62.53		1154	
OW-1S	94.97		1158	
OW-1M	94.65		1200	
OW-1D	94.27		1202	
OW-2S	93.62		1204	
OW-2M	92.79		1206	
OW-2D	92.84		1208	
OW-5S	96.40		1210	
OW-5M	95.27		1212	
OW-5D	95.95		1214	

IM-3 Staff confirm that 1-18-14, 1-19-14, and 1-20-14 were normal operation days with no backwashing or plant down time prior to snapshot collection.

Topock CMP Manual Water Level Snapshot

Personnel: B. Collom / Cham :

WLI serial number: PGE 2014-01

Loc ID	Depth to Water (ft BTOC)	Date	Time	Comments
CW-1M	108.23	6-5-14	0921	
CW-1D	108.34		0923	
CW-2M	91.74		0927	
CW-2D	91.35		0930	
CW-3M	76.57		0933	
CW-3D	75.98		0935	
CW-4M	60.52		0941	
CW-4D	60.37		0943	
OW-1S	92.63		0948	
OW-1M	92.44		0950	
OW-1D	92.12		0952	
OW-2S	91.26		0954	
OW-2M	90.59		0957	
OW-2D	90.62		0959	
OW-5S	94.13		1001	
OW-5M	93.08		1004	
OW-5D	93.85		1006	

IM-3 Staff confirm that 6-2-14, 6-3-14, and 6-4-14 were normal operation days with no backwashing or plant down time prior to snapshot collection.