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January 15, 2008

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

**Subject: Board Order R7-2006-0060; WDID No. 7B 36 2033 001  
PG&E Topock Compressor Station, Needles, California  
Interim Measure No. 3 Groundwater Treatment System  
Discharge to Injection Wells  
*December 2007 and Fourth Quarter 2007 Monitoring Report / Semi-Annual  
July 1 – December 31, 2007 Operation and Maintenance Report***

Dear Mr. Perdue:

Enclosed is the combined *December 2007 and Fourth Quarter 2007 Monitoring Report / Semi-Annual July 1 – December 31, 2007 Operation and Maintenance Report* for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Interim Measure (IM) No. 3 Groundwater Treatment System.

This report is being submitted in compliance with the Waste Discharge Requirements (WDRs) issued September 20, 2006 by the California Regional Water Quality Control Board, Colorado River Basin Region (Water Board) under Order R7-2006-0060. The WDRs apply to IM No. 3 Treatment System discharge by subsurface injection.

The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.

If you have any questions regarding this report, please call me at (760) 326-5582.

Sincerely,

Curt Russell  
Topock Onsite Project Manager

Enclosures:

Combined report: *December 2007 and Fourth Quarter 2007 Monitoring Report/ Semi-Annual July 1 – December 31, 2007 Operation and Maintenance Report* for IM No. 3 Groundwater Treatment System.

Robert Perdue  
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January 15, 2008

cc: Abdi Haile, Water Board  
Cliff Raley, Water Board  
Tom Vandenberg, State Water Resources Control Board  
Aaron Yue, DTSC

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*Combined Report*

**December 2007 and Fourth Quarter 2007  
Monitoring Report / Semi-Annual July 1–  
December 31, 2007 Operation and Maintenance  
Report**

**Interim Measure No. 3 Groundwater Treatment System  
PG&E Topock Compressor Station  
Needles, California  
Waste Discharge Requirements Board Order No. R7-2006-0060  
WDID No. 7B 36 2033 001**

Prepared for  
**California Regional Water Quality Control Board  
Colorado River Basin Region**

On behalf of  
**Pacific Gas and Electric Company**

January 15, 2008

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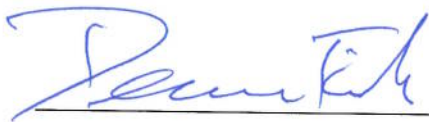
**Combined Report:  
December 2007 and Fourth Quarter 2007 Monitoring Report,  
and  
July 1, 2007 - December 31, 2007 Semi-Annual Operation and  
Maintenance Report**

**Interim Measure No. 3 Groundwater Treatment System  
Waste Discharge Requirements Order No. R7-2006-0060  
WDID No. 7B 36 2033 001  
PG&E Topock Compressor Station  
Needles, California**

Prepared for  
Pacific Gas and Electric Company

January 15, 2008

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



Dennis Fink, P.E.  
Project Engineer



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# Acronyms and Abbreviations

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EPA	U.S. Environmental Protection Agency
gpm	gallons per minute
IM	Interim Measure
MRP	Monitoring and Reporting Program
LES	Liquid Environmental Solutions
PG&E	Pacific Gas and Electric Company
PLC	programmable logic controller
Truesdail	Truesdail Laboratories, Inc.
Water Board	California Regional Water Quality Control Board, Colorado River Basin Region
WDR	Waste Discharge Requirements

# 1.0 Introduction

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Pacific Gas and Electric Company (PG&E) is implementing an Interim Measure (IM) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The IM consists of groundwater extraction for hydraulic control of the plume boundaries in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems collectively are referred to as IM No. 3. Figure 1 provides a map of the project area. (All figures are located at the end of this report.)

California Regional Water Quality Control Board, Colorado River Basin Region (Water Board) Board Order No. R7-2006-0060 authorizes PG&E to inject treated groundwater into injection wells located on San Bernardino County Assessor's Parcel No. 650-151-06. Order No. R7-2006-0060 was issued September 20, 2006, and is the successor to Order No. R7-2004-0103. The Monitoring and Reporting Program (MRP) under the order requires monthly monitoring reports to be submitted by the fifteenth day of the following month.

**This combined report covers December 2007 and Fourth Quarter 2007 monitoring activities, and July 1, 2007 through December 31, 2007 Semi-Annual operation and maintenance activities related to operation of the IM No. 3 groundwater treatment system.** The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.



## 2.0 Sampling Station Locations

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Table 1 lists the locations of sampling stations (all tables are located at the end of this report). The locations of the sampling stations are shown on process and instrumentation diagrams TP-PR-10-10-04, TP-PR-10-10-08, and TP-PR-10-10-06, which were previously provided in PG&E's Sampling Locations letter to the Water Board Executive Officer, dated June 29, 2005. These diagrams are attached following Figure 1.

## 3.0 December 2007 and Fourth Quarter 2007 Monitoring Activities

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This combined report covers December 2007 monitoring activities, the Fourth Quarter 2007 monitoring activities, and the July 1, 2007 through December 31, 2007 operation and maintenance activities related to the IM No. 3 groundwater treatment system. IM No. 3 monitoring activities between July 1, 2007 and November 30, 2007 were reported in the following monitoring reports:

- *July 2007 Monitoring Report*, submitted to the Water Board August 15, 2007.
- *August 2007 Monitoring Report*, submitted to the Water Board September 14, 2007.
- *September 2007 / 3<sup>rd</sup> Quarter 2007 Monitoring Report*, submitted to the Water Board October 15, 2007.
- *October 2007 Monitoring Report*, submitted to the Water Board November 15, 2007.
- *November 2007 Monitoring Report*, submitted to the Water Board December 14, 2007.

### 3.1 Groundwater Treatment System

Influent to the treatment facility, permitted by Order R7-2006-0060, includes the following sources:

- Groundwater from extraction wells.
- Purged groundwater and water generated from rinsing field equipment during monitoring events.
- Groundwater generated during well installation, well development, and aquifer testing.

Operation of the groundwater treatment system results in the following three effluent streams:

- **Treated Effluent:** Treated water that is discharged to the injection well(s).
- **Reverse Osmosis Concentrate (brine):** Treatment byproduct that is transported and disposed of offsite at a permitted facility.
- **Sludge:** Treatment byproduct that is transported offsite for disposal at a permitted facility, which occurs either when a sludge waste storage bin reaches capacity, or within 90 days of the start date for accumulation in the storage container, whichever occurs first.

## 3.2 Groundwater Treatment System Flow Rates for December 2007

Periods of planned and unplanned extraction system downtime are summarized in the Operations and Maintenance Log provided in Appendix A. Data regarding daily volumes of groundwater treated and discharged are provided in Appendix B. The IM No. 3 groundwater treatment system flowmeter calibration records are included in Appendix C.

### 3.2.1 Treatment System Influent

#### Groundwater Extraction Wells Flow Rate

During December 2007, extraction wells TW-3D and PE-1 operated at a target pump rate of at 135 gallons per minute (gpm) excluding periods of planned and unplanned downtime. Extraction well TW-2S was operated on December 17<sup>th</sup> and TW-2D was operated on December 5<sup>th</sup> and 17<sup>th</sup> while collecting groundwater samples and/or in support of site activities. The IM No. 3 facility treated 5,919,990 gallons of extracted groundwater during December 2007. The December 2007 monthly average influent flow rate from extraction wells is shown in Table 2.

The operational run time for the IM No. 3 groundwater extraction system (combined or individual pumping from TW-3D and PE-1) was over 99 percent during the December 2007 reporting period.

#### Groundwater Monitoring Program Generated Water

During December 2007, approximately 4,295 gallons of water were generated from the groundwater monitoring program, and pumped into the IM No. 3 treatment system.

#### Injection Wells Maintenance Program Treated Water

No water was generated from injection well re-development during December 2007.

### 3.2.2 Effluent Streams

#### Treatment System Effluent (Injection Wells)

The treatment system effluent flow rate was measured by flow meters mounted in the piping leading to injection wells IW-2 and IW-3 (Figure TP-PR-10-10-11), and in the piping running from the treated water tank T-700 to the injection wells (Figure TP-PR-10-10-04). The IM No. 3 facility injected 5,560,689 gallons of treatment system effluent during December 2007. The December 2007 monthly average effluent flow rate to injection wells is shown in Table 2.

#### Reverse Osmosis Concentrate

The reverse osmosis concentrate flow rate was measured by a flow meter at the piping carrying water from reverse osmosis concentrate tank T-701 to the truck load-out station (Figure TP-PR-10-10-08). The IM No. 3 facility generated 346,127 gallons of reverse osmosis concentrate during December 2007. The December 2007 monthly average reverse osmosis concentrate flow rate is shown in Table 2.

## Sludge

The sludge flow rate is measured by the size and weight of containers shipped off-site. Two sludge containers were shipped off-site from the IM No. 3 facility during December 2007. The shipment dates and approximate weights are provided in Section 5.3.

## 3.3 Sampling and Analytical Procedures

Samples were collected at the designated sampling locations and placed directly into containers provided by Truesdail Laboratories, Inc. (Truesdail). Sample containers were labeled and packaged according to standard sampling procedures.

The samples were stored in a sealed container chilled with ice and transported to Truesdail via courier service under chain-of-custody documentation. The laboratories confirmed the samples were received in chilled condition upon arrival. Truesdail is certified by the California Department of Health Services (Certification No. 1237) under the State of California's Environmental Laboratory Accreditation Program.

Analyses were performed in accordance with the latest edition of the "Guidelines Establishing Test Procedures for Analysis of Pollutants" (40 Code of Federal Regulations Part 136), promulgated by the United States Environmental Protection Agency (EPA).

During the July 1, 2007 through December 31, 2007 period, analysis of pH was conducted at Truesdail laboratories for each sample. Starting November 20, 2007, analysis of pH was also conducted by field method pursuant to the Water Board letter dated October 16, 2007 (Clarification of Monitoring and Reporting Program Requirements) authorizing pH measurements to be conducted in the field. The field method pH samples were collected at the designated sampling locations and field tested within 15 minutes of sampling.

As required by the MRP, the analytical method selected for total chromium has a method detection limit of 1 part per billion, and the analytical method selected for hexavalent chromium has a method detection limit of 0.2 part per billion.

Influent, effluent, reverse osmosis concentrate, and sludge sampling was conducted in accordance with the sampling frequency required by the MRP (see Section 4.0). The December 2007 sampling analytical results are shown in Tables 3, 4, 5, and 6.

Groundwater quality is being monitored in observation and compliance wells according to Order R7-2006-0060, and the procedures and schedules approved in the *Groundwater Compliance Monitoring Plan for Interim Measures No. 3 Injection Area* submitted to the Water Board June 17, 2005. Groundwater monitoring analytical results and groundwater levels for the injection area (wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D) are reported in a separate document.

## 4.0 Monitoring Analytical Results

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The analytical results and laboratory reports for the IM No. 3 groundwater treatment system monitoring program between July 1, 2007 and November 30, 2007 were included in previous monthly reports submitted to the Water Board (see Section 3.0 for a complete listing of reports).

The December 2007 analytical results from groundwater treatment system influent, effluent, reverse osmosis concentrate, and sludge samples are shown on Tables 3, 4, 5, and 6, respectively. The December 2007 laboratory reports prepared by the certified analytical laboratories are included in Appendix D.

In accordance with the WDR reporting requirements, the following sampling frequency schedule was followed during December 2007:

- The influent was sampled monthly; sample date was December 5, 2007. Results are presented in Table 3.
- The effluent was sampled weekly; sample dates were December 5, 12, 19 and 27, 2007. Results are presented in Table 4.
- The reverse osmosis concentrate was sampled monthly; sample date was December 5, 2007. Results are presented in Table 5.
- The sludge was sampled monthly; sample date was December 5, 2007. In accordance with WDRs, sludge is to be sampled each time it is transported offsite (unless sludge is transported offsite more frequently than monthly, in which case, the sampling frequency is monthly). Results are presented in Table 6.
- The sludge is required to have an aquatic bioassay test quarterly; the 4<sup>th</sup> Quarter 2007 aquatic bioassay test was performed on a sludge sample collected October 3, 2007. The results were presented in the *October 2007 WDR Monitoring Report* submitted to the Water Board on November 15, 2007.

Table 7 identifies the laboratory that performed each analysis and lists the following required information:

- Sample location
- Sample identification number
- Sampler name
- Sample date
- Sample time
- Laboratory performing analysis
- Analysis method
- Analysis date
- Laboratory technician

## 5.0 Semi-Annual Operation and Maintenance

Pursuant to the WDRs Operations and Maintenance Section 1:

*The discharger shall inspect and document any operation/maintenance problems by inspecting each unit process. In addition, calibration of flow meters and equipment shall be performed in a timely manner and documented. Operation and Maintenance reports shall be submitted to the Regional Water Board Office twice annually.*

This section includes the Semi-Annual Operation and Maintenance Report for the IM No. 3 groundwater treatment system for the period July 1, 2007 through December 31, 2007.

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

The following sections summarize the operations and maintenance activities during this semi-annual reporting period.

### 5.1 Flowmeter Calibration Records

The IM No. 3 groundwater treatment system flowmeter calibration records are included in Appendix C. Flowmeter calibrations are performed in a timely manner consistent with the use, flow and material. The following flowmeters are used at the plant to measure groundwater flow:

Location	Flowmeter ID No.	Current Serial No.	Date of Most Recent Re-Calibrated Meter Installation	Previous Serial No.
Extraction well PE-1	FIT-103	6C036F16000	January 4, 2007	6A022216000
Extraction well TW-3D	FIT-102	6C037216000	January 4, 2007	6A022116000
Extraction well TW-2D <sup>1</sup>	FIT-101	6A021F16000	July 28, 2005	---
Extraction well TW-2S <sup>2</sup>	FIT-100	6A022016000	July 28, 2005	---
Injection well IW-02	FIT-1202	6A022116000	February 2, 2007	6C037016000
Injection well IW-03	FIT-1203	7700F216000	December 19, 2006	---
Combined flow to IW-02 and IW-03	FIT-702	7700F316000	December 19, 2006	---
Reverse osmosis concentrate	FIT-701	6C037316000	February 2, 2007	6C037316000

Notes:

<sup>1</sup> TW-2D is a backup extraction well last operated in December 2007 for testing.

<sup>2</sup> TW-2S is a backup extraction well last operated in December 2007 for testing.

## 5.2 Volumes of Groundwater Treated

Data regarding daily volumes of groundwater treated are provided in Appendix B. 35,278,284 gallons of groundwater were extracted and treated between July 1, 2007 and December 31, 2007. A total of 33,234,748 gallons of treated groundwater were injected back into the Alluvial Aquifer, and 1,977,774 gallons of water were shipped offsite as reverse osmosis concentrate (i.e., brine).

Approximately 25,435 gallons of well purge water (generated during well development, monitoring well sampling, and/or aquifer testing) and 67,035 gallons of injection well re-development water was treated at the IM No. 3 facility during the July 1, 2007 through December 31, 2007 semi-annual period. Treatment of this water at the IM No. 3 facility is being performed in accordance with the conditions of Order No. R7-2006-0060.

## 5.3 Residual Solids Generated (Sludge)

During the July 1, 2007 through December 31, 2007 reporting period six containers of sludge were shipped off-site for disposal. The sludge was shipped to Chemical Waste Management at Kettleman Hills for disposal. A listing of each shipment during this period is provided below.

<b>Date Sludge Bin Removed from Site</b>	<b>Approximate Quantity from Waste Manifests (cubic yards)</b>	<b>Approximate Wet Weight (lbs)</b>	<b>Type of Shipment</b>
7/25/2007	11	23,680	non-RCRA hazardous waste
8/28/2007	12	19,960	non-RCRA hazardous waste
10/8/2007	12	23,600	non-RCRA hazardous waste
11/27/2007	7	10,840	RCRA hazardous waste
12/21/2007	8	11,900	non-RCRA hazardous waste
12/31/2007	8	14,120	non-RCRA hazardous waste

Note: The approximate wet weight is provided by the disposal facility based on full container weight less the empty container weight.

## 5.4 Reverse Osmosis Concentrate Generated

Data regarding daily volumes of reverse osmosis concentrate generated are provided in Appendix B, as measured by flowmeter FIT-701 (Figure TP-PR-10-10-08). From July 1, 2007 through December 31, 2007 approximately 1,977,774 gallons of reverse osmosis concentrate were transported to Liquid Environmental Solutions (LES) in Phoenix, Arizona for disposal.

## 5.5 Summary of WDR Violations

No WDR violations were identified during the July 1, 2007 through December 31, 2007 semi-annual reporting period. No corrective actions were required.

## 5.6 Operation and Maintenance – Required Shutdowns

Appendix A contains a summary of the operation or maintenance issues that required shutting down the treatment system during this semi-annual reporting period. Records of routine maintenance are kept on site.

## 5.7 Treatment Plant Modifications

There were no treatment plant modifications that affected the capacity or performance of the extraction and treatment system during the July 1, 2007 through December 31, 2007 reporting period. The following modifications that did not affect the capacity or performance of the extraction and treatment system were made:

- Replaced turbidity meter for clarifier effluent.
- Replaced existing piping and pumps for sodium hydroxide system.
- Switched to hydrochloric acid for process pH control on September 25, 2007 following Water Board approval.
- Switched to smaller phase separators to hold and transport sludge from the facility.
- Installed drain for clarifier sample ports.
- Changed sludge recirculation pump and actuator valve diaphragms.
- Removed inline valve for 402 tank sludge taps (taps have individual valves).
- Added purge water off-loading line.
- Hard-mounted a peristaltic chemical pump for spent microfilter cleaning solution.
- Removed Pump 602A in July 2007 and operated using Pump 602B. Pump 602A was put back into service in January 2008.
- Remounted microfilter clean-in-place bag filter.



## 6.0 Conclusions

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

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

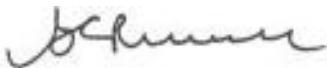
## 7.0 Certification

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PG&E submitted a signature delegation letter to the Water Board on August 12, 2005. The letter delegated PG&E signature authority to Mr. Curt Russell and Ms. Yvonne Meeks for correspondence regarding Board Order R7-2004-0103. Order R7-2006-0600 is the successor to Order R7-2004-0103; an additional signature authority delegation is not required, as confirmed in an email from Jose Cortez dated October 12, 2006.

### **Certification Statement:**

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

Signature:  \_\_\_\_\_

Name: Curt Russell

Company: Pacific Gas and Electric Company

Title: Topock Onsite Project Manager

Date: January 15, 2008



**TABLE 1**  
**Sampling Station Descriptions**  
*December 2007 Monthly Report for Interim Measure No. 3 Groundwater Treatment System*

<b>Sample Station</b>	<b>Sample ID<sup>a</sup></b>	<b>Location</b>
Sampling Station A: Groundwater Treatment System Influent	SC-100B-WDR-###	Sample collected from tap on pipe into T-100 (see Figure TP-PR-10-10-04).
Sampling Station B: Groundwater Treatment System Effluent	SC-700B-WDR-###	Sample collected from tap on pipe downstream from T-700 (see Figure TP-PR-10-10-04).
Sampling Station D: Groundwater Treatment System Reverse Osmosis Concentrate	SC-701-WDR-###	Sample collected from tap on pipe into T-701 (see Figure TP-PR-10-10-08).
Sampling Station E: Groundwater Treatment System Sludge	SC-SLUDGE-WDR-###	Sample collected from sludge accumulated in the phase separator used this quarter (see Figure TP-PR-10-10-06).

**Note:**

### = Sequential sample identification number at each sample station.

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

TABLE 2  
Flow Monitoring Results  
*December 2007 Monthly Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	System Influent <sup>a,b</sup>	System Effluent <sup>b,c</sup>	Reverse Osmosis Concentrate <sup>b,d</sup>
Average Monthly Flowrate (gpm)	132.6	124.6	7.8

**Notes:**

gpm: gallons per minute.

<sup>a</sup> Extraction wells TW-3D and PE-1 were operated during December 2007. Extraction wells TW-2S and TW-2D were operated on December 17, 2007 to collect groundwater samples.

<sup>b</sup> The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates was approximately 0.2 percent, which is within the range of acceptable accuracy considering the margin of error for onsite instrumentation, the water contained within the sludge, purge water treated at the IM No. 3 facility in addition to the extraction wells, and differences in the inventory of water in the treatment system between the beginning and end of the reporting period.

<sup>c</sup> Effluent was discharged into injection well IW-03 during December 2007.

<sup>d</sup> Reverse Osmosis Concentrate flow meter reading from FIT-701.

TABLE 3  
Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)  
Influent Monitoring Results <sup>a</sup>  
*December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System*

Required Sampling Frequency		Monthly																								
<div><div></div><div>Analytes Units <sup>b</sup></div><div>MDL</div></div>	Date	TDS	Turbidity	Specific Conductance	Lab <sup>c</sup> pH	Field <sup>d</sup> pH	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	Nitrite (as N)	Sulfate	Iron	Zinc	
		mg/L	NTU	µmhos/cm	pHunits	pHunits	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L
		50.4	0.0070	0.153	0.0700	---	0.27	2.9	0.26	0.0710	0.022	0.015	0.016	0.0048	0.13	0.0250	0.018	0.016	0.017	0.13	0.0350	0.0010	0.600	2.4	0.12	
Sample ID	Date																									
SC-100B-WDR-128	12/5/2007	4810	0.295	7890	7.35 J	7.28	1710	1500	ND (50.0)	ND (0.500)	ND (3.0)	ND (5.0)	ND (300)	1.05	ND (10.0)	2.66	ND (2.0)	ND (20.0)	20.8	ND (20.0)	3.20	ND (0.0050)	601	ND (20.0)	ND (20.0)	
RL		250	0.100	2.00	2.00	2.00	1.0	20.0	50.0	0.500	3.0	5.0	300	0.200	10.0	0.500	2.0	20.0	5.0	20.0	1.00	0.0050	12.5	20.0	20.0	

NOTES:

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

<sup>a</sup> Sampling Location for all Influent Samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04)  
<sup>b</sup> Units reported in this table are those units required in the WDRs  
<sup>c</sup> pH results are J flagged because recent EPA requirements for pH analysis have 15-minute holding time.  
<sup>d</sup> Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.

TABLE 4  
Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)  
Effluent Monitoring Results<sup>a</sup>  
December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System

WDRs Effluent Limits <sup>b</sup>	Ave. Monthly	NA	NA	NA	6.5-8.4	6.5-8.4	25	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Max Daily	NA	NA	NA	6.5-8.4	6.5-8.4	50	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Required Sampling Frequency		Weekly							Monthly																	
<div><div></div></div>	Analytes Units <sup>c</sup>	TDS	Turbidity	Specific Conductance	Lab <sup>e</sup> pH	Field <sup>f</sup> pH	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	Nitrite (as N)	Sulfate	Iron	Zinc	
		mg/L	NTU	µmhos/cm	pHunits	pHunits	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L	
	MDL <sup>d</sup>	50.4	0.0070	0.153	0.0700	---	0.053	0.030	0.26	0.0710	0.022	0.015	0.016	0.0048	0.13	0.0250	0.018	0.016	0.017	0.13	0.0350	0.0010	0.600	2.4	0.12	
Sample ID	Date																									
SC-700B-WDR-128 12/5/2007		3830	ND (0.100)	6690	8.08 J	8.20	ND (1.0)	ND (0.20)	ND (50.0)	ND (0.500)	ND (3.0)	ND (5.0)	ND (300)	1.01	ND (10.0)	2.01	ND (2.0)	81.2	15.3	ND (20.0)	2.84	ND (0.0050)	484	97.1	ND (20.0)	
RL		250	0.100	2.00	2.00	2.00	1.0	0.20	50.0	0.500	3.0	5.0	300	0.200	10.0	0.500	2.0	20.0	5.0	20.0	1.00	0.0050	12.5	20.0	20.0	
SC-700B-WDR-129 12/12/2007		4340	ND (0.100)	7100	8.28 J	8.10	3.3	ND (0.20)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
RL		250	0.100	2.00	2.00	2.00	1.0	0.20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SC-700B-WDR-130 12/19/2007		4260	ND (0.100)	6790	8.06 J	8.00	ND (1.0)	ND (0.20)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
RL		250	0.100	2.00	2.00	2.00	1.0	0.20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SC-700B-WDR-131 12/27/2007		4280	ND (0.100)	6180	8.23 J	7.90	ND (1.0)	ND (0.20)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
RL		125	0.100	2.00	2.00	2.00	1.0	0.20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

NOTES:

(---) = not required by the WDR Monitoring and Reporting Program

NA = not applicable

µg/L = micrograms per liter

mg/L = milligrams per liter

NTU = nephelometric turbidity units

µmhos/cm = micromhos per centimeter

ND = parameter not detected at the listed value

J = concentration or reporting limits estimated by laboratory or validation

RL = project reporting limit

MDL = method detection limit

N = nitrogen

<sup>a</sup> Sampling location for all Effluent Samples is tap on pipe downstream from tank T-700 to injection wells (see attached P&ID TP-PR-10-10-04)

<sup>b</sup> In addition to the listed effluent limits, the WDRs state that the effluent shall not contain heavy metals, chemicals, pesticides or other constituents in concentrations toxic to human health

<sup>c</sup> Units reported in this table are those units required in the WDRs

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

<sup>e</sup> pH results are J flagged because recent EPA requirements for pH analysis have 15-minute holding time.

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

TABLE 5  
Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)  
Reverse Osmosis Concentrate Results <sup>a</sup>  
*December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System*

Required Sampling Frequency		Monthly																						
<div>Sample ID</div> <div>Date</div>	<div>Analytes Units <sup>b</sup></div> <div>MDL</div>	TDS	Specific Conductance	Lab <sup>c</sup> pH	Field <sup>d</sup> pH	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		mg/L	µmhos/cm	pHunits	pHunits	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		50.4	0.153	0.0700	---	0.00027	0.00014	0.00011	0.000075	0.000081	0.00019	0.000058	0.00013	0.00065	0.0250	0.000091	0.000084	0.000030	0.00064	0.000080	0.00011	0.000090	0.000062	0.00058
SC-701-WDR-128	12/5/2007	19100	26100	7.86 J	7.82	0.0017	ND (0.0010)	ND (0.0030)	ND (0.0050)	ND (0.300)	ND (0.0010)	ND (0.0020)	ND (0.0050)	ND (0.0100)	6.81	ND (0.0020)	0.0712	ND (0.00020)	ND (0.0200)	0.0089	0.0062	ND (0.0010)	ND (0.0050)	ND (0.0200)
RL		250	2.00	2.00	2.00	0.0010	0.0010	0.0030	0.0050	0.300	0.0010	0.0020	0.0050	0.0100	0.500	0.0020	0.0050	0.00020	0.0200	0.0050	0.0050	0.0010	0.0050	0.0200

**NOTES:**  
(---) = not required by the WDR Monitoring and Reporting Program  
µg/L = micrograms per liter  
mg/L = milligrams per liter  
µmhos/cm = micromhos per centimeter  
ND = parameter not detected at the listed value  
J = concentration or reporting limits estimated by laboratory or validation  
MDL = method detection limit  
RL = project reporting limit

<sup>a</sup> Sampling Location for all Reverse Osmosis Samples is tap on pipe T-701 (see attached P&ID TP-PR-10-10-08)  
<sup>b</sup> Units reported in this table are those units required in the WDRs  
<sup>c</sup> pH results are J flagged because recent EPA requirements for pH analysis have 15-minute holding time.  
<sup>d</sup> Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.



TABLE 6  
Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)  
Sludge Monitoring Results<sup>a</sup>  
*December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System*

Required Sampling Frequency		Monthly <sup>c</sup>																		
<div><div></div><div>Analytes</div><div>Units <sup>b</sup></div><div>MDL</div></div>	<div><div></div><div>Sample ID</div><div>Date</div></div>	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		1.55	0.00029	0.288	0.211	0.0361	0.0301	0.0232	0.0366	0.120	0.100	0.150	0.100	0.0029	0.0632	0.464	0.0206	0.103	0.0327	0.0830
SC-Sludge-WDR-128	12/5/2007	21600	293	370	68.2	108	127	57.9	17.7	906	102	111	ND (2.50)	ND (0.100)	77.4	233	ND (4.41)	ND (4.41)	124	1390
RL		110	10.3	4.41	4.41	2.50	2.50	4.41	2.50	2.50	10.3	4.41	2.50	0.100	2.50	11.0	4.41	4.41	2.50	11.0

NOTES:

(---) = not required by the WDR Monitoring and Reporting Program  
ND = parameter not detected at the listed value  
J = concentration or reporting limits estimated by laboratory or validation  
mg/kg = milligrams per killogram  
mg/L = milligrams per liter  
MDL = method detection limit  
RL = project reporting limit

<sup>a</sup> Sampling Location for all Sludge Samples is the Sludge Collection Bin (see attached P&ID TP-PR-10-10-06)  
<sup>b</sup> Units reported in this table are those units required in the WDR  
<sup>c</sup> Sludge shall be tested for the listed constituents each time sludge is transported offsite, unless transport is more frequent than monthly, in which case the sampling frequency shall be monthly

TABLE 7

Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)

Monitoring Information

December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-128	Dave Chaney	12/5/2007	12:50:00 PM	TLI	EPA 120.1	SC	12/10/2007	Tina Acquiat
					TLI	EPA 200.7	FE	12/12/2007	Mark Kotani
					TLI	EPA 200.7	B	12/12/2007	Mark Kotani
					TLI	EPA 200.8	ZN	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	SB	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	PB	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	NI	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	MO	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	MN	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CU	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CR	1/4/2008	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	BA	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	AS	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	AL	1/3/2008	Michel Mendoza/Linda Saetern
					TLI	EPA 218.6	CR6	12/5/2007	Jean Paul Gleeson
					TLI	EPA 300.0	FL	12/7/2007	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/7/2007	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/7/2007	Giawad Ghenniwa
					FIELD	HACH	PH	12/6/2007	Dave Chaney
					TLI	SM2130B	TRB	12/6/2007	Gautam Savani
					TLI	SM2540C	TDS	12/11/2007	Tina Acquiat
					TLI	SM4500-HB	PH	12/6/2007	Tina Acquiat
SC-700B	SC-700B-WDR-128	Dave Chaney	12/5/2007	1:15:00 PM	TLI	SM4500NH3D	NH3N	12/11/2007	Jordan Stavrev
					TLI	SM4500NO2B	NO2N	12/7/2007	Tina Acquiat
					TLI	EPA 120.1	SC	12/10/2007	Tina Acquiat
					TLI	EPA 200.7	B	12/12/2007	Mark Kotani
					TLI	EPA 200.7	FE	12/12/2007	Mark Kotani
					TLI	EPA 200.8	AS	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	ZN	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	SB	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	PB	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	NI	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	MO	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	MN	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CU	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CR	12/19/2007	Michel Mendoza/Linda Saetern

TABLE 7

Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)

Monitoring Information

December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-128	Dave Chaney	12/5/2007	1:15:00 PM	TLI	EPA 200.8	AL	1/3/2008	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	BA	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 218.6	CR6	12/6/2007	Jean Paul Gleeson
					TLI	EPA 300.0	SO4	12/7/2007	Giawad Ghenniwa
					TLI	EPA 300.0	FL	12/7/2007	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/7/2007	Giawad Ghenniwa
					FIELD	HACH	PH	12/6/2007	Dave Chaney
					TLI	SM2130B	TRB	12/6/2007	Gautam Savani
					TLI	SM2540C	TDS	12/11/2007	Tina Acquiat
					TLI	SM4500-HB	PH	12/6/2007	Tina Acquiat
					TLI	SM4500NH3D	NH3N	12/11/2007	Jordan Stavrev
					TLI	SM4500NO2B	NO2N	12/7/2007	Tina Acquiat
SC-700B	SC-700B-WDR-129	Dave Chaney	12/12/2007	1:30:00 PM	TLI	EPA 120.1	SC	12/14/2007	Tina Acquiat
					TLI	EPA 200.8	CR	12/18/2007	Linda Saetern
					TLI	EPA 218.6	CR6	12/12/2007	Jean Paul Gleeson
					FIELD	HACH	PH	12/13/2007	Dave Chaney
					TLI	SM2130B	TRB	12/13/2007	Gautam Savani
					TLI	SM2540C	TDS	12/14/2007	Tina Acquiat
					TLI	SM4500-HB	PH	12/13/2007	Tina Acquiat
SC-700B	SC-700B-WDR-130	Gary Sibble	12/19/2007	10:15:00 AM	TLI	EPA 120.1	SC	12/20/2007	Tina Acquiat
					TLI	EPA 200.8	CR	12/20/2007	Linda Saetern
					TLI	EPA 218.6	CR6	12/20/2007	Jean Paul Gleeson
					FIELD	HACH	PH	12/20/2007	Gary Sibble
					TLI	SM2130B	TRB	12/20/2007	Guatam Savani
					TLI	SM2540C	TDS	12/20/2007	Tina Acquiat
					TLI	SM4500-HB	PH	12/20/2007	Tina Acquiat
SC-700B	SC-700B-WDR-131	Joe Aide	12/27/2007	11:30:00 AM	TLI	EPA 120.1	SC	12/28/2007	Tina Acquiat
					TLI	EPA 200.8	CR	12/28/2007	Linda Saetern
					TLI	EPA 218.6	CR6	12/28/2007	Jean Paul Gleeson
					FIELD	HACH	PH	12/28/2007	Joe Aide
					TLI	SM2130B	TRB	12/28/2007	Guatam Savani
					TLI	SM2540C	TDS	12/28/2007	Tina Acquiat
					TLI	SM4500-HB	PH	12/28/2007	Tina Acquiat
SC-701	SC-701-WDR-128	Dave Chaney	12/5/2007	1:10:00 PM	TLI	EPA 120.1	SC	12/10/2007	Tina Acquiat
					TLI	EPA 200.8	CR	12/19/2007	Michel Mendoza/Linda Saetern

TABLE 7

Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)

Monitoring Information

December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-701	SC-701-WDR-128	Dave Chaney	12/5/2007	1:10:00 PM	TLI	EPA 200.8	PB	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	ZN	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	V	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	TL	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CD	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	SB	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	NI	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	MO	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CU	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	CO	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	BE	1/4/2008	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	BA	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	AS	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	AG	12/19/2007	Michel Mendoza/Linda Saetern
					TLI	EPA 200.8	SE	1/4/2008	Michel Mendoza/Linda Saetern
					TLI	EPA 218.6	CR6	12/6/2007	Jean Paul Gleeson
					TLI	EPA 245.1	HG	12/15/2007	Michel Mendoza
					TLI	EPA 300.0	FL	12/7/2007	Giawad Ghenniwa
					FIELD	HACH	PH	12/6/2007	Dave Chaney
					TLI	SM2540C	TDS	12/11/2007	Tina Acquiat
					TLI	SM4500-HB	PH	12/6/2007	Tina Acquiat
Phase Seperator	SC-Sludge-WDR-128	Dave Chaney	12/5/2007	1:00:00 PM	TLI	EPA 300.0	FL	12/7/2007	Giawad Ghenniwa
					TLI	EPA 6010B	NI	12/12/2007	Mark Kotani
					TLI	EPA 6010B	ZN	12/26/2007	Mark Kotani
					TLI	EPA 6010B	V	12/12/2007	Mark Kotani
					TLI	EPA 6010B	TL	12/12/2007	Mark Kotani
					TLI	EPA 6010B	SE	12/12/2007	Mark Kotani
					TLI	EPA 6010B	AG	12/12/2007	Mark Kotani
					TLI	EPA 6010B	PB	12/12/2007	Mark Kotani
					TLI	EPA 6010B	MO	12/12/2007	Mark Kotani
					TLI	EPA 6010B	CU	12/12/2007	Mark Kotani
					TLI	EPA 6010B	CR	12/12/2007	Mark Kotani
					TLI	EPA 6010B	CO	12/12/2007	Mark Kotani
					TLI	EPA 6010B	CD	12/12/2007	Mark Kotani
					TLI	EPA 6010B	BE	12/12/2007	Mark Kotani
					TLI	EPA 6010B	BA	12/12/2007	Mark Kotani

TABLE 7

Board Order No. R7-2006-0060 Waste Discharge Requirements (WDRs)

Monitoring Information

December 2007 Monthly Report for Interim Measures No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
Phase Separator	SC-Sludge-WDR-128	Dave Chaney	12/5/2007	1:00:00 PM	TLI	EPA 6010B	AS	12/12/2007	Mark Kotani
					TLI	EPA 6010B	SB	12/12/2007	Mark Kotani
					TLI	EPA 7471A	HG	12/17/2007	Michel Mendoza
					TLI	SM2540B	MOIST	12/10/2007	Gautam Savani
					TLI	SW 7199	CR6	12/12/2007	David Blackburn

**NOTES:**

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

SC-100B = Sampling Location for all Influent Samples is tap on pipe from extraction wells into tank T-100 (see attached P&amp;ID TP-PR-10-10-04)

SC-701 = Sampling Location for all Reverse Osmosis Samples is tap on pipe T-701 (see attached P&amp;ID TP-PR-10-10-08)

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

TLI = Truesdail Laboratories, Inc.

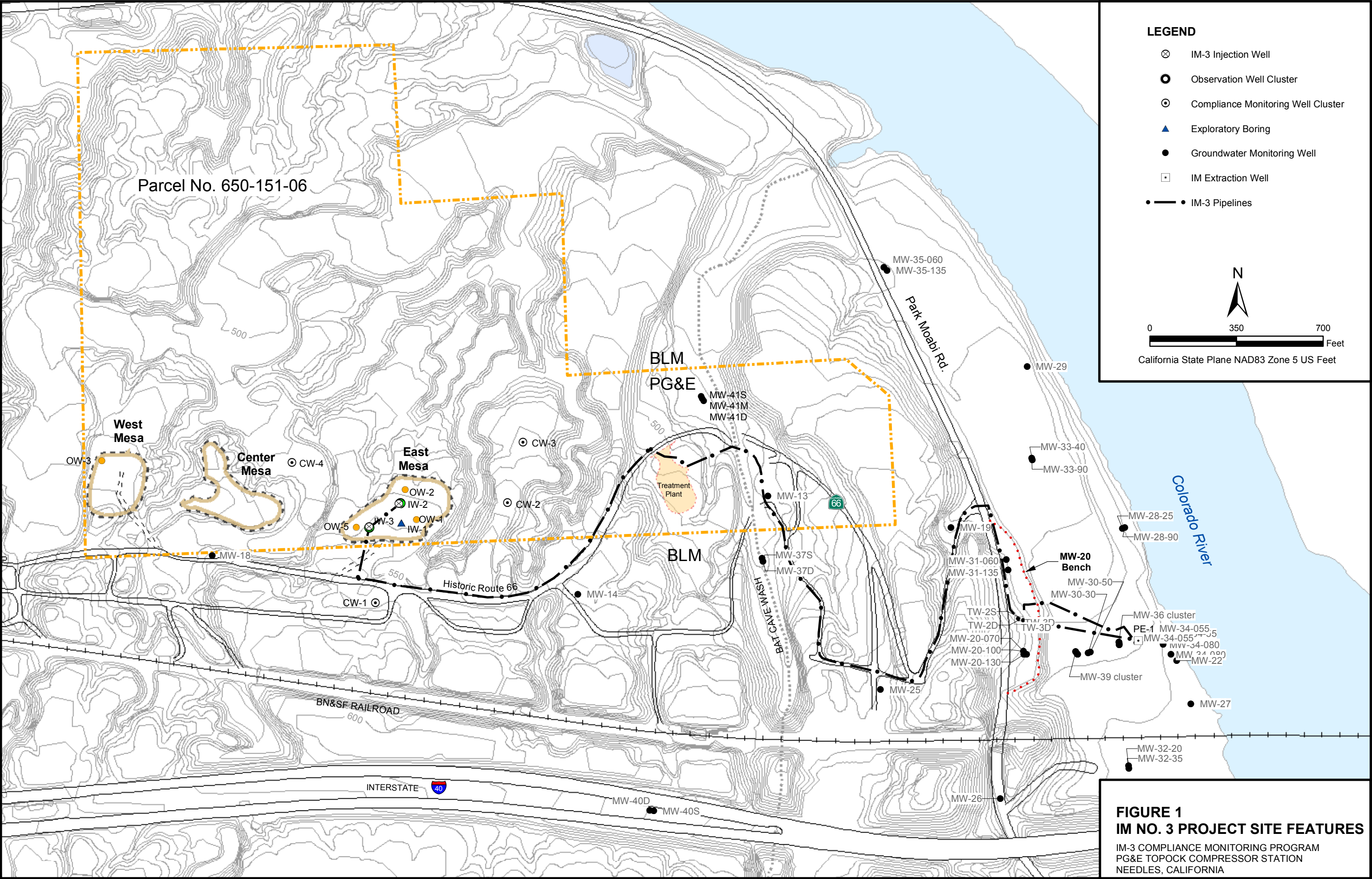
STL = Severn Trent Laboratories, Inc.

MBC = MBC Applied Environmental Sciences

SC = specific conductance	MO = molybdenum
PH = pH	NI = nickel
TDS = total dissolved solids	PB = lead
TRB = turbidity	HG = mercury
CR = chromium	SE = selenium
CR6 = hexavalent chromium	TL = thallium
FL = fluoride	CO = cobalt
AL = aluminum	CD = cadmium
B = boron	BE = beryllium
FE = iron	AG = silver
MN = manganese	V = vanadium
ZN = zinc	NO3N = nitrate (as N)
SB = antimony	NH3N = ammonia (as N)
AS = arsenic	NO2N = nitrite (as N)
BA = barium	SO4 = sulfate
CU = copper	

## Figures

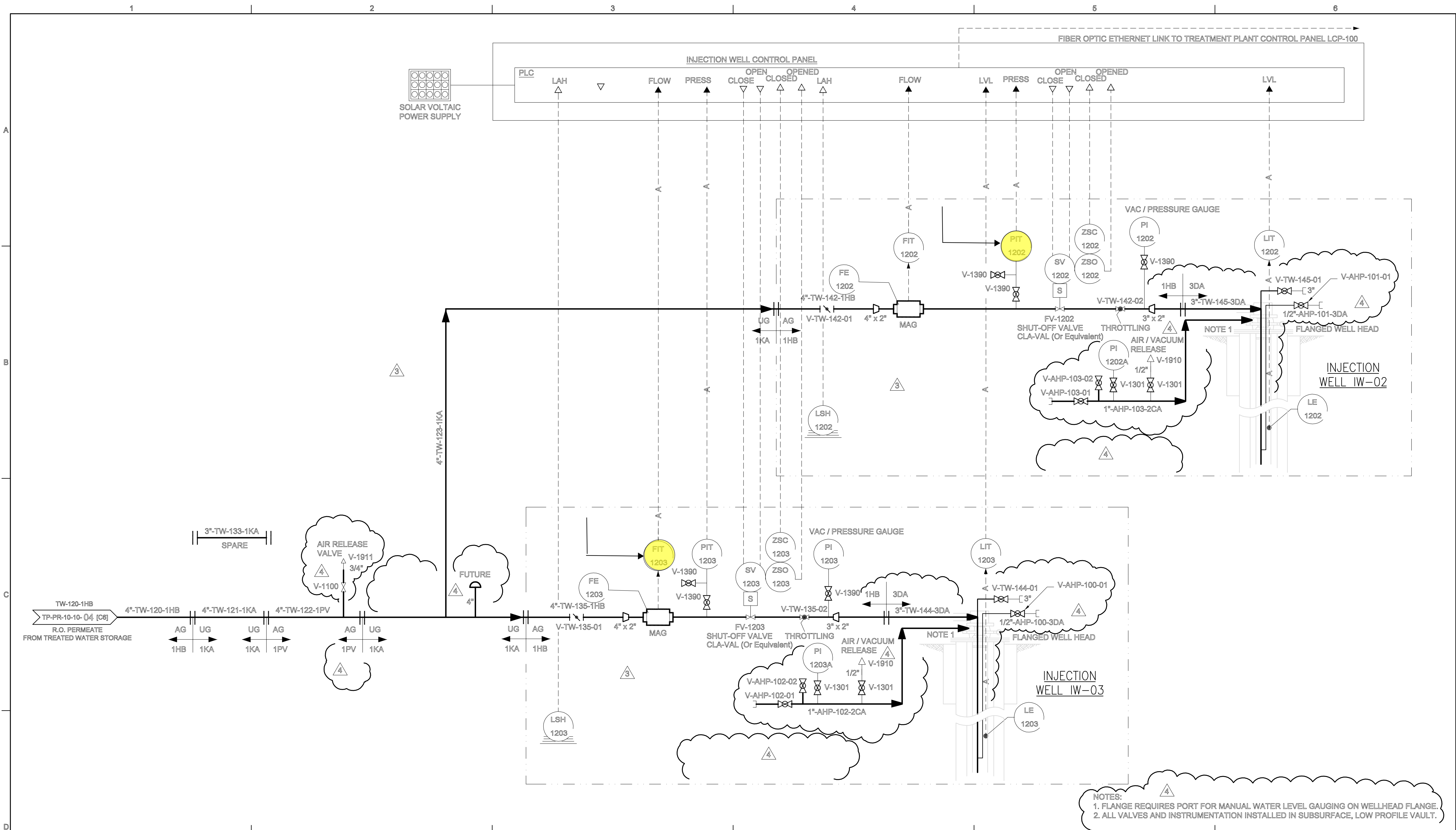
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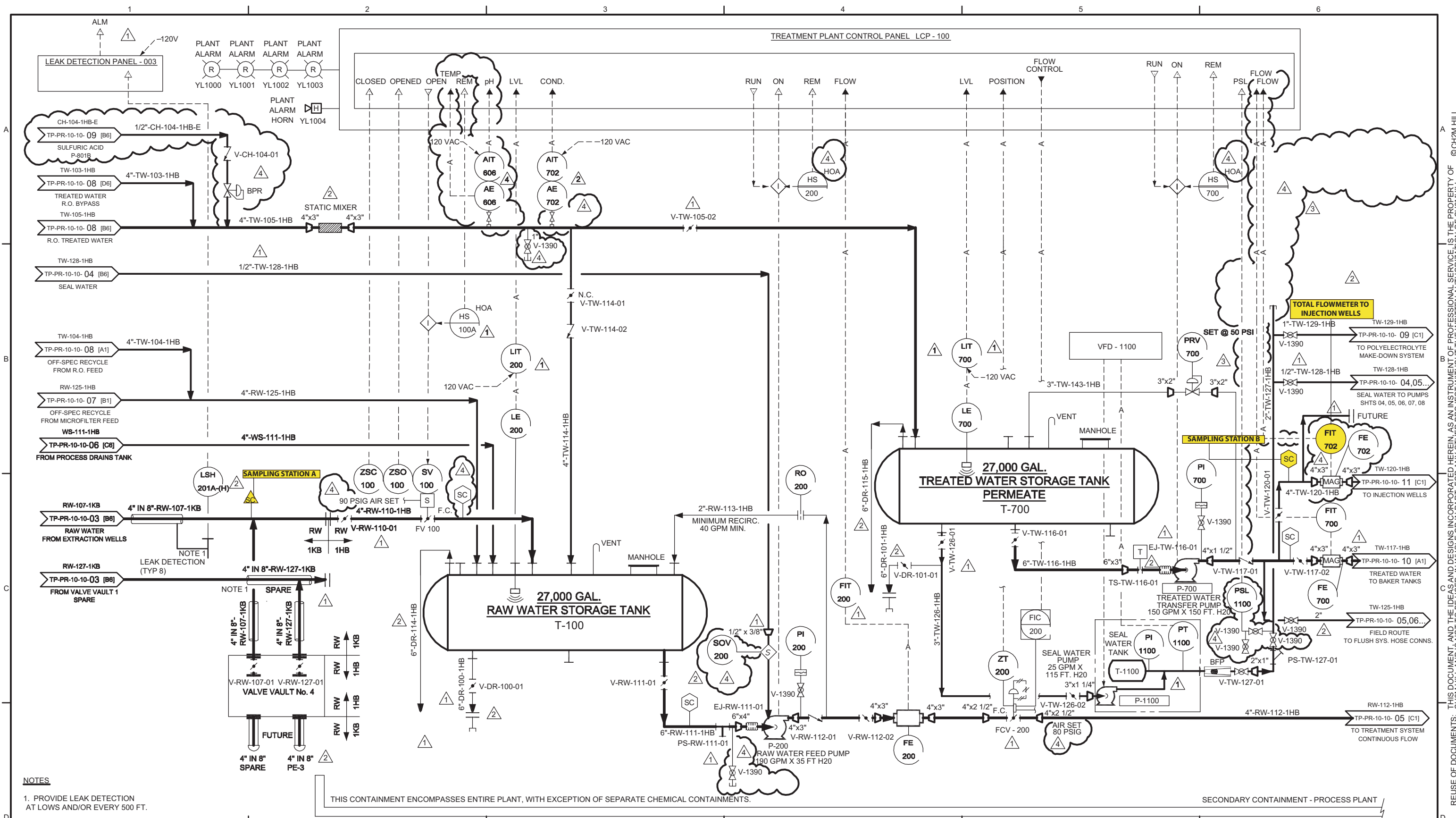






NOTES:  
1. FLANGE REQUIRES PORT FOR MANUAL WATER LEVEL GAUGING ON WELLHEAD FLANGE.  
2. ALL VALVES AND INSTRUMENTATION INSTALLED IN SUBSURFACE, LOW PROFILE VAULT.

RESPONSIBLE ENGINEER: Kenneth L. Martins PE# CH44976 Exp 6-30-06	NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL		REV 4	DATE 03/10/05	PRINT DISTRIBUTION		STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM  PROJ NO. 315994			PROCESS AND INSTRUMENTATION DIAGRAM  SHEET 11 INJECTION WELLS		
	A	07/28/04	FOR INTERNAL REVIEW	EFC	AJ	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE		ISSUED	REV	DATE	SDE	PEM						
	0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL		ELECTRICAL		STATUS		PRELIMINARY										
	1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL		INST & CONTROL		REV.		FOR REVIEW AND APPROVAL	A	07/28/04								
	2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL		ARCHITECTURAL		CLIENT		APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP						
	3	02/14/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS		ENVIRONMENTAL		FIELD		REVISED & APPROVED FOR CONSTRUCTION	4	/ /								
	4	03/10/05	REMOVED HOLD AND APPROVED FOR CONSTRUCTION	EFC	AJ	PIPING		GEN. ARRANG.		INTRA CO.												
												</										



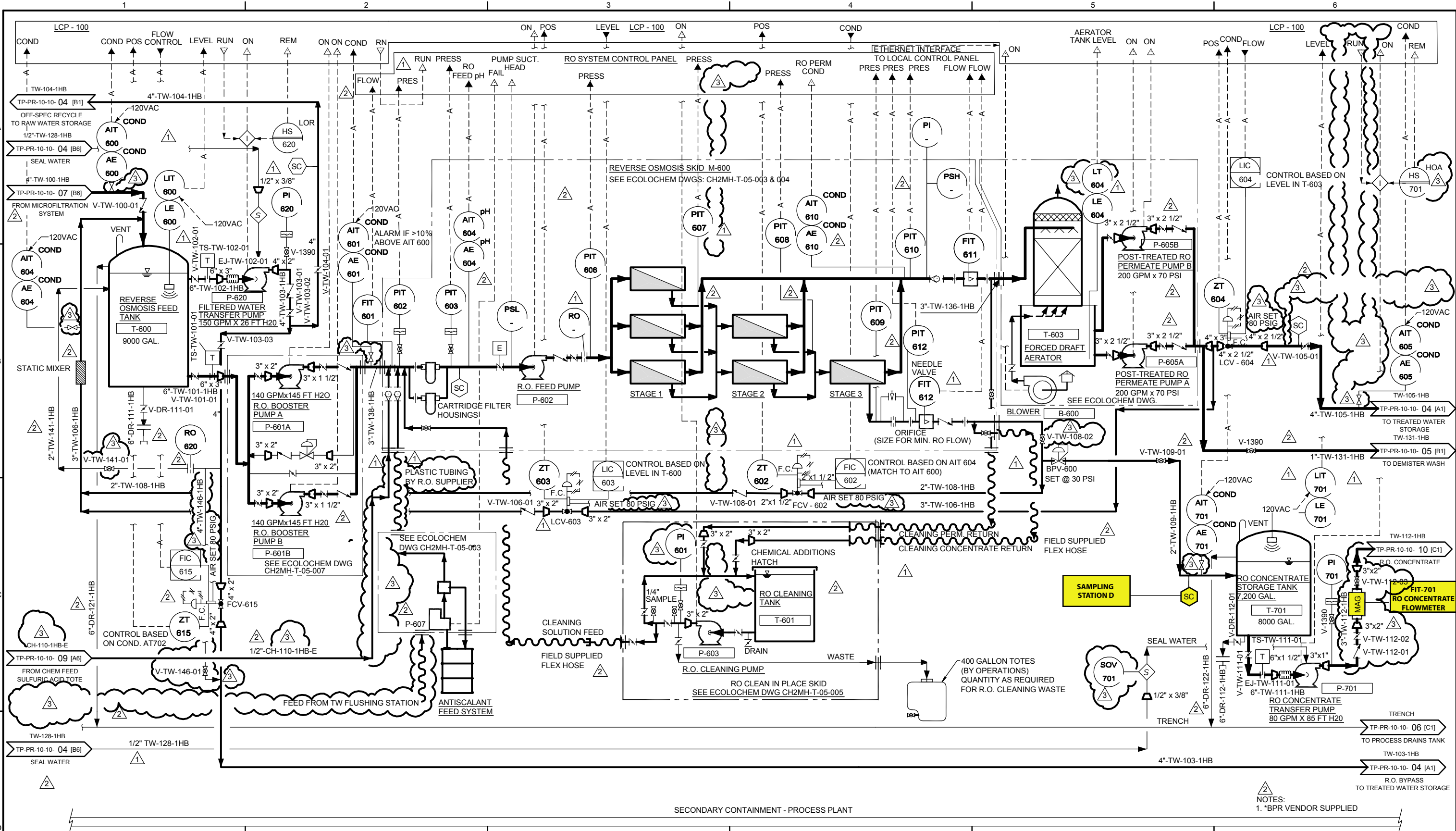
NOTES  
1. PROVIDE LEAK DETECTION AT LOWS AND/OR EVERY 500 FT.

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

SECONDARY CONTAINMENT - PROCESS PLANT

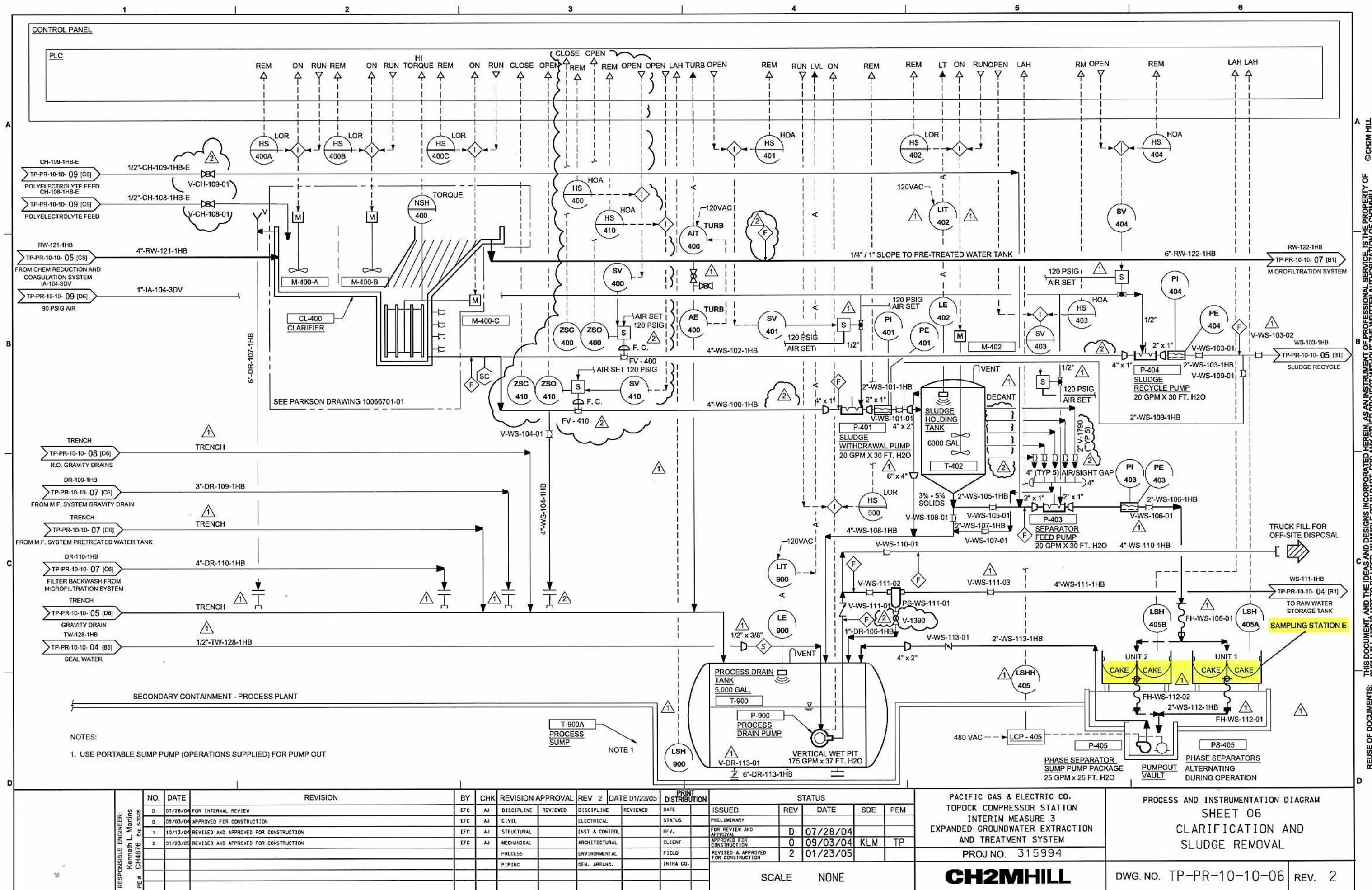
RESPONSIBLE ENGINEER: Kenneth L. Martins CH4876 PE #	NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 4	DATE 09/21/05	PRINT DISTRIBUTION	STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM PROJ NO. 315994	PROCESS AND INSTRUMENTATION DIAGRAM  SHEET 04 STORAGE AREA			
	0	07/28/04	FOR INTERNAL REVIEW	EFC	AJ	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE		ISSUED	REV	DATE				SDE	PEM
	0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL		ELECTRICAL		STATUS		PRELIMINARY							
	1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL		INST & CONTROL		REV.		FOR REVIEW AND APPROVAL	D	07/28/04					
	2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL		ARCHITECTURAL		CLIENT		APPROVED FOR CONSTRUCTION	0	09/03/04				KLM	TP
	3	02/14/05	ADDED RECIRC. LINE AND PRV VALVE TO T-700 - APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS		ENVIRONMENTAL		FIELD		REVISED & APPROVED FOR CONSTRUCTION	4	/ /					
	4	09/21/05	REVISED PER AS-BUILT CONDITIONS	EFC	AJ	PIPING		GEN. ARRANG.		INTRA CO.									
										SCALE NONE					CH2MHILL		DWG. NO. TP-PR-10-10-04	REV. 4	





RESPONSIBLE ENGINEER: Kenneth L. Martins PE # CH43876 Exp. 6-30-06	NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 3	DATE 09/21/05	PRINT DISTRIBUTION	STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM  PROJ NO. 315994	PROCESS AND INSTRUMENTATION DIAGRAM SHEET 08 REVERSE OSMOSIS SYSTEM		
	0	07/28/04	FOR INTERNAL REVIEW	EFC	AJ	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE	ISSUED	REV	DATE	SDE				PEM
	0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL		ELECTRICAL	REVIEWED	STATUS								
	1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL		INST & CONTROL		REV.	D	07/28/04						
	2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL		ARCHITECTURAL		CLIENT	0	09/03/04	KLM	TP				
	3	09/21/05	REVISED PER AS-BUILT CONDITIONS	EFC	AJ	PROCESS		ENVIRONMENTAL		FIELD	REVISED & APPROVED FOR CONSTRUCTION	3	/ /					
						PIPING		GEN. ARRANG.		INTRA CO.								
										SCALE NONE					CH2MHILL	DWG. NO. TP-PR-10-10-08	REV. 3	





## **Appendix A**

### **Operations and Maintenance Log**

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# Semi-Annual Operations and Maintenance Log

## July 1, 2007 through December 31, 2007

### Interim Measures No. 3 Groundwater Treatment System

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Records of IM No. 3 Operations and Maintenance activities are maintained onsite using operations software. Periods of planned and unplanned treatment system and resulting extraction system downtime from July 1, 2007 through December 31, 2007 attributed to system operations and maintenance are listed below. The times shown are in Pacific Standard Time (PST) to be consistent with other data collected (e.g. water level data) at the site.

#### July 2007

- **July 3, 2007 (unplanned):** The extraction well system was temporarily offline from 11:14 am until 11:19 am to switch to generator power after a City of Needles power outage. Extraction system downtime was 5 minutes.
- **July 9, 2007 (unplanned):** The extraction well system was temporarily offline from 12:00 pm until 12:05 pm to return operations to City of Needles power supply from generator power supply. Extraction system downtime was 5 minutes.
- **July 11, 2007 (planned):** The extraction well system was temporarily offline from 8:30 am until 9:00 am to replace an air relief valve on the air compressor storage tank. The repairs were completed with onsite parts. The extraction system downtime was 30 minutes.
- **July 15, 2007 (unplanned):** The extraction well system was temporarily offline from 7:21 pm until 9:02 pm to replace the drive belts on the iron oxidation system air blower and replace a fitting on the seal water distribution system. The repairs were completed with onsite spare parts. The extraction system downtime was 1 hour 41 minutes.
- **July 23, 2007 (unplanned):** The extraction well system was temporarily offline from 9:52 pm until 9:57 pm to switch to generator power after a City of Needles power outage. Extraction system downtime was 5 minutes.
- **July 24, 2007 (planned):** The extraction well system was temporarily offline from 10:37 am until 10:46 am to switch microfilter module banks and begin clean-in-place procedure for the offline microfilter modules. The extraction system downtime was 9 minutes.
- **July 28, 2007 (unplanned):** The extraction well system was temporarily offline from 8:12 pm until 8:17 pm to return operations to City of Needles power supply from generator power supply. Extraction system downtime was 5 minutes.

- **July 29, 2007 (unplanned):** The extraction well system was temporarily offline from 5:40 am until 5:45 am to switch to generator power after a City of Needles power outage. Extraction system downtime was 5 minutes.
- **July 30, 2007 (unplanned):** The extraction well system was temporarily offline from 4:50 pm until 4:55 pm to return operations to City of Needles power supply from generator power supply. Extraction system downtime was 5 minutes.

## August 2007

- **August 12, 2007 (unplanned):** The extraction well system was temporarily offline from 1:45 pm until 1:50 pm after a City of Needles power imbalance. Extraction system downtime was 5 minutes.
- **August 14, 2007 (unplanned):** The extraction well system was temporarily offline from 4:50 am until 4:55 am after a City of Needles power imbalance. Extraction system downtime was 5 minutes.
- **August 15, 2007 (planned):** The extraction well system was temporarily offline from 9:00 am until 11:00 am to remove accumulated solids in a section of process pipe between the chrome reduction tank (T-300) and the first iron oxidation tank (T-301A). The extraction system downtime was 2 hours.
- **August 16, 2007 (unplanned):** The extraction well system was temporarily offline from 12:45 pm until 1:50 pm to repair two small leaks in the treated water pipeline between the IM No. 3 treatment plant and the injection wellfield. Both leaks occurred at the flanged ends between the pipe sections and were identified as part of daily pipeline inspections. Approximately 2 gallons of treated water leaked from one location and less than a gallon of treated water leaked from the second location. Both locations are on PG&E property. The wetted soil at each location was hand excavated and returned to the IM No. 3 facility where it was containerized for offsite disposal. The extraction system downtime was 1 hour and 5 minutes.
- **August 17, 2007 (unplanned):** The extraction well system was temporarily offline from 10:45 am until 10:50 am after a City of Needles power imbalance. Extraction system downtime was 5 minutes.
- **August 20, 2007 (unplanned):** The extraction well system was temporarily offline from 10:00 am until 10:15 am to switch to generator power after a City of Needles power outage. The extraction well system was again offline from 11:00 am until 11:15 am to return operations to the City of Needles power supply from generator power supply. Extraction system downtime was 30 minutes.
- **August 24, 2007 (unplanned):** The extraction well system was temporarily offline from 1:09 pm until 1:14 pm to switch to generator power after a City of Needles power outage. The extraction well system was again offline at 7:04 pm until 7:10 pm to return operations to the City of Needles power supply from generator power supply. Extraction system downtime was 11 minutes.

## September 2007

- **September 19, 2007 (unplanned):** The extraction well system was temporarily offline from 12:30 pm until 12:45 pm after a City of Needles power imbalance. Extraction system downtime was 15 minutes.
- **September 24, 2007 (planned):** The extraction well system was temporarily offline from 9:25 am until 11:36 am to complete plant maintenance activities including cleaning the pipe between the chemical reduction loop and Chrome Reduction Tank (T-300) and polymer system maintenance. Extraction system downtime was 2 hours 11 minutes.
- **September 27, 2007 (planned):** The extraction well system was temporarily offline from 9:15 am until 10:45 am to switch to a cleaned set of microfilter modules. Extraction system downtime was 1 hour 30 minutes.

## October 2007

- **October 10, 2007 (planned):** The extraction well system was temporarily offline from 9:22 am until 10:00 am to complete general plant maintenance. Extraction system downtime was 38 minutes.
- **October 11, 2007 (unplanned):** The extraction well system was temporarily offline from 4:06 pm until 4:12 pm due to a City of Needles power imbalance. Extraction system downtime was 6 minutes.

## November 2007

- **November 6, 2007 (planned):** The extraction well system was temporarily offline from 11:41 am until 11:44 am to complete operator training. Extraction system downtime was 3 minutes.
- **November 10, 2007 (unplanned):** The extraction well system was offline from 2:15 pm until 2:17 pm to re-start the facility after a City of Needles power failure. Extraction system downtime was 2 minutes.
- **November 14 and 15, 2007 (planned):** The extraction well system was offline during November 14<sup>th</sup> and 15<sup>th</sup> two days to complete plant maintenance and re-start, as described below. The total extraction system downtime was 13 hours 31 minutes.
  - November 14<sup>th</sup> from 7:40 am until 4:03 pm to complete planned facility maintenance associated with the RO unit, iron oxidation tanks, and clarifier.
  - November 14<sup>th</sup> from 5:32 pm until 7:10 pm, and for one minute at 7:21 pm, while replacing a fouled microfilter strainer encountered while re-starting the facility.
  - November 14<sup>th</sup> from 7:23 pm until 8:38 pm to replace a failed gasket on the RO Unit discovered while re-starting the facility.
  - November 15<sup>th</sup> from 12:44 am until 12:57 am and 1:23 am until 3:24 am to operate the facility in a re-circulation mode to attain normal operating parameters while bringing the plant back on-line after maintenance activities.



- **November 19, 2007 (unplanned):** The extraction well system was offline from 2:28 am until 2:43 am and 3:14 am until 3:18 am to re-start the facility after failure of the variable frequency drive on pump P-400. Extraction system downtime was 19 minutes.
- **November 21, 2007 (unplanned):** The extraction well system was offline from 11:31 am until 11:33 am, 11:56 until 11:57 am, and 1:17 pm until 1:18 pm while testing the pipeline leak detection system. Extraction system downtime was 4 minutes.
- **November 26, 2007 (unplanned):** The extraction well system was offline from 1:30 pm until 1:34 pm, 1:39 pm until 1:42 pm, and 2:03 pm until 2:13 pm to complete testing of the City of Needles power supply and to transfer operations to generator power. Extraction system downtime was 17 minutes.
- **November 27, 2007 (unplanned):** The extraction well system was offline from 11:21 am until 11:41 am to return operation from generator power to City of Needles power. Extraction system downtime was 20 minutes.
- **November 28, 2007 (unplanned):** The extraction well system was offline from 3:15 pm until 3:21 pm to test City of Needles power. Extraction system downtime was 6 minutes.
- **November 30, 2007 (unplanned):** The extraction well system was offline from 11:02 am until 11:04 am to transfer operations from generator power to City of Needles power. Extraction system downtime was 2 minutes.
- **November 30, 2007 (unplanned):** The extraction well system was offline from 9:06 pm until 9:20 pm to transfer operations to generator power after a City of Needles power imbalance. Extraction system downtime was 14 minutes.

## December 2007

- **December 1, 2007 (planned):** The extraction well system was temporarily offline from 3:13 am until 3:31 am while cleaning the screen on flow control valve FCV-200. Extraction system downtime was 18 minutes.
- **December 1, 2007 (unplanned):** The extraction well system was temporarily offline from 7:03 am until 7:05 am to return operations from generator power to City of Needles power. Extraction system downtime was 2 minutes.
- **December 1, 2007 (unplanned):** The extraction well system was temporarily offline from 9:00 pm until 9:04 pm to transfer operations to generator power after a City of Needles power failure. Extraction system downtime was 4 minutes.
- **December 2, 2007 (unplanned):** The extraction well system was temporarily offline from 7:07 am until 7:11 am to return operations from generator power to City of Needles power. Extraction system downtime was 4 minutes.
- **December 3, 2007 (unplanned):** The extraction well system was temporarily offline from 6:20 pm until 6:23 pm to transfer operations to generator power after a City of Needles power failure. Extraction system downtime was 3 minutes.
- **December 4, 2007 (unplanned):** The extraction well system was temporarily offline from 7:31 am until 7:32 am to return operations from generator power to City of Needles power. Extraction system downtime was 1 minute.

- **December 4, 2007 (unplanned):** The extraction well system was temporarily offline from 4:55 pm until 5:13 pm to transfer operations to generator power after a City of Needles power failure. Extraction system downtime was 18 minutes.
- **December 5, 2007 (unplanned):** The extraction well system was temporarily offline from 9:04 am until 9:10 am to return operations from generator power to City of Needles power. Extraction system downtime was 6 minutes.
- **December 5, 2007 (unplanned):** The extraction well system was temporarily offline from 8:44 pm until 8:47 pm to transfer operations to generator power after a City of Needles power failure. Extraction system downtime was 3 minutes.
- **December 6, 2007 (unplanned):** The extraction well system was temporarily offline from 7:26 am until 7:31 am to return operations from generator power to City of Needles power. Extraction system downtime was 5 minutes.
- **December 6, 2007 (unplanned):** The extraction well system was temporarily offline from 8:41 pm until 10:12 pm while transferring operations to generator power after a City of Needles power failure, during which time the unit power control source failed for the PLC and was replaced with a temporary backup. Extraction system downtime was 1 hour 31 minutes.
- **December 11, 2007 (unplanned):** The extraction well system was temporarily offline from 1:39 pm until 1:42 pm, to troubleshoot power supply at the facility. Extraction system downtime was 3 minutes.
- **December 12, 2007 (unplanned):** The extraction well system was temporarily offline from 1:38 pm until 1:42 pm, 4:02 pm until 5:02 pm, 5:39 pm until 5:42 pm, and 6:06 pm until 6:07 pm to troubleshoot power supply at the facility. Extraction system downtime was 1 hour 8 minutes.
- **December 20, 2007 (planned):** The extraction well system was temporarily offline from 7:55 am until 8:03 am while installing a new unit power control source for the PLC. Extraction system downtime was 8 minutes.
- **December 27, 2007 (unplanned):** The extraction well system was temporarily offline from 5:36 pm until 5:46 pm and from 7:43 pm until 8:40 pm, which was initially due to a City of Needles power outage. After switching to generator power, additional troubleshooting was required to bring the Reverse Osmosis Unit back into service and transfer operation back to City of Needles power. Extraction system downtime was 1 hour 7 minutes.

**Appendix B**  
**Daily Volumes of Groundwater Treated**

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# **July 2007 Operational Data**

IM-3 Groundwater Extraction and Treatment System  
PG&E Topock Compressor Station, Needles California

Month	Day	Year	Extraction Well System					Injection Well System <sup>a,b,c</sup>			RO Brine
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
July	1	2007	---	---	149,656	45,734	195,390	180,144	---	180,144	13,298
July	2	2007	---	---	149,864	45,430	195,294	181,712	---	181,712	14,389
July	3	2007	---	---	148,368	47,144	195,512	178,776	---	178,776	10,526
July	4	2007	---	---	149,864	47,528	197,392	182,840	---	182,840	13,276
July	5	2007	---	---	149,656	47,378	197,034	177,472	---	177,472	13,402
July	6	2007	---	---	147,160	47,836	194,996	181,144	---	181,144	14,339
July	7	2007	---	---	145,432	47,546	192,978	176,408	---	176,408	13,246
July	8	2007	---	---	144,760	46,750	191,510	181,408	---	181,408	10,279
July	9	2007	---	---	144,152	45,948	190,100	171,520	---	171,520	14,705
July	10	2007	---	---	145,920	46,768	192,688	174,776	---	174,776	11,290
July	11	2007	---	---	145,456	45,110	190,566	175,512	---	175,512	12,287
July	12	2007	---	---	149,760	45,824	195,584	180,480	---	180,480	10,283
July	13	2007	---	---	149,656	45,530	195,186	179,856	---	179,856	17,377
July	14	2007	---	---	149,864	44,780	194,644	182,624	---	182,624	13,352
July	15	2007	---	---	137,920	42,392	180,312	146,912	---	146,912	10,289
July	16	2007	---	---	147,904	46,044	193,948	185,800	---	185,800	14,376
July	17	2007	---	---	147,200	45,722	192,922	166,992	---	166,992	13,428
July	18	2007	---	---	147,096	45,762	192,858	180,240	---	180,240	13,405
July	19	2007	---	---	146,688	45,588	192,276	178,008	---	178,008	10,264
July	20	2007	---	---	147,576	44,988	192,564	66,000	110,000	176,000	13,343
July	21	2007	---	---	147,688	44,636	192,324	---	174,712	174,712	13,270
July	22	2007	---	---	145,032	45,500	190,532	---	181,256	181,256	10,171
July	23	2007	---	---	138,920	46,334	185,254	---	176,760	176,760	14,387
July	24	2007	---	---	143,016	46,936	189,952	---	157,336	157,336	11,288
July	25	2007	---	---	135,384	47,032	182,416	---	188,360	188,360	11,241
July	26	2007	---	---	134,528	47,290	181,818	---	156,864	156,864	14,244
July	27	2007	---	---	137,896	46,204	184,100	---	179,256	179,256	13,285
July	28	2007	---	---	136,856	45,768	182,624	---	180,456	180,456	13,323
July	29	2007	---	---	137,384	46,276	183,660	---	174,320	174,320	10,256
July	30	2007	---	---	136,896	46,848	183,744	---	174,504	174,504	10,253
July	31	2007	---	---	134,952	46,882	181,834	---	166,316	166,316	10,232
<b>Total Monthly Volumes (gal)</b>			---	---	<b>4,472,504</b>	<b>1,429,508</b>	<b>5,902,012</b>	<b>3,428,624</b>	<b>2,020,140</b>	<b>5,448,764</b>	<b>389,104</b>
<b>Average Pump/Injection Rates (gpm)</b>			---	---	<b>100.2</b>	<b>32.0</b>	<b>132.2</b>	<b>76.8</b>	<b>45.3</b>	<b>122.1</b>	<b>8.7</b>

## NOTES:

gal: gallons

gpm: gallons per minute

RO: Reverse Osmosis

<sup>a</sup>Flow meter FIT-702 located on the injection well pipeline was used to record injection well flow measurements as there were communication problems with flowmeters FIT-1202 and FIT-1203 located at the injection wellheads.

<sup>b</sup>Injection well IW-02 was shut-down at 9:15 am on July 20 and IW-03 was placed into service. The individual injection well volume shown is proportional to the total daily volume volume measured at flow meter FIT-702 (see note a above).

<sup>c</sup>The injection well flow measurement on July 31st was based on manual readouts from FIT-702 as the electronic data logging system was being reprogrammed.

**August 2007 Operational Data**

IM-3 Groundwater Extraction and Treatment System  
PG&E Topock Compressor Station, Needles California

Month	Day	Year	Extraction Well System <sup>a</sup>					Injection Well System <sup>a,b</sup>			RO Brine
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
August	1	2007	---	0	138,144	46,764	184,908	4	182,552	182,556	10,529
August	2	2007	---	0	138,336	46,560	184,896	0	177,246	177,246	10,313
August	3	2007	---	0	138,144	45,312	183,456	0	176,680	176,680	10,463
August	4	2007	---	0	138,336	45,674	184,010	4	172,628	172,632	10,217
August	5	2007	---	0	138,144	45,816	183,960	0	180,196	180,196	9,278
August	6	2007	---	0	138,336	46,100	184,436	4	181,258	181,262	10,217
August	7	2007	---	946	136,488	46,414	183,848	8	178,154	178,162	10,259
August	8	2007	---	0	138,336	47,012	185,348	4	182,442	182,446	9,238
August	9	2007	---	0	138,144	46,272	184,416	0	179,418	179,418	10,233
August	10	2007	---	0	138,336	46,182	184,518	4	182,598	182,602	10,254
August	11	2007	---	0	138,144	45,048	183,192	4	173,317	173,321	8,188
August	12	2007	---	0	141,096	45,586	186,682	0	179,533	179,533	11,412
August	13	2007	---	0	149,656	45,488	195,144	0	181,664	181,664	11,299
August	14	2007	---	540	147,480	46,072	194,092	4	192,642	192,646	10,184
August	15	2007	---	0	133,808	41,790	175,598	4	149,602	149,606	8,192
August	16	2007	---	0	140,088	44,096	184,184	4	173,356	173,360	8,138
August	17	2007	---	0	149,456	45,862	195,318	0	183,642	183,642	12,326
August	18	2007	---	0	149,760	46,250	196,010	4	190,690	190,694	11,246
August	19	2007	---	0	149,760	45,916	195,676	4	191,544	191,548	10,252
August	20	2007	---	0	147,800	46,066	193,866	4	183,944	183,948	10,230
August	21	2007	---	0	149,760	46,544	196,304	0	183,974	183,974	9,248
August	22	2007	---	0	149,760	46,586	196,346	8	177,570	177,578	10,173
August	23	2007	---	0	149,656	45,886	195,542	4	191,546	191,550	10,267
August	24	2007	---	0	146,712	46,392	193,104	0	180,764	180,764	9,209
August	25	2007	---	0	149,658	45,688	195,346	4	187,152	187,156	10,311
August	26	2007	---	0	149,862	46,018	195,880	8	187,220	187,228	10,139
August	27	2007	---	0	149,656	45,874	195,530	0	180,236	180,236	10,276
August	28	2007	---	678	147,504	45,990	194,172	0	179,286	179,286	9,222
August	29	2007	---	0	149,656	46,062	195,718	0	182,538	182,538	10,231
August	30	2007	---	0	149,864	45,648	195,512	99,232	88,882	188,114	9,217
August	31	2007	---	0	149,656	44,802	194,458	55,380	127,452	182,832	10,285
<b>Total Monthly Volumes (gal)</b>			---	<b>2,164</b>	<b>4,469,536</b>	<b>1,419,770</b>	<b>5,891,470</b>	<b>154,692</b>	<b>5,459,726</b>	<b>5,614,418</b>	<b>311,046</b>
<b>Average Pump/Injection Rates (gpm)</b>			---	<b>0.05</b>	<b>100.1</b>	<b>31.8</b>	<b>132.0</b>	<b>3.5</b>	<b>122.3</b>	<b>125.8</b>	<b>7.0</b>

**NOTES:**

--- : Not in operation during reporting period.

gal: gallons

gpm: gallons per minute

RO: Reverse Osmosis

<sup>a</sup>Flow Readings tabulated from Human-Machine Interface (HMI) computer at the IM-3 Facility.

<sup>b</sup>Small readings from IW-02 are associated with small amounts of treated water entering the injection well via the 'closed' valve, or associated with acceptable instrument inaccuracy.

**September 2007 Operational Data**

IM-3 Groundwater Extraction and Treatment System  
PG&E Topock Compressor Station, Needles California

Month	Day	Year	Extraction Well System <sup>a</sup>					Injection Well System <sup>a,b</sup>			RO Brine <sup>a</sup>
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
September	1	2007	---	0.0	149,760	45,014	194,774	8	181,130	181,138	9,233
September	2	2007	---	0.0	149,760	44,378	194,138	0	185,642	185,642	10,344
September	3	2007	---	0.0	149,656	45,046	194,702	0	176,002	176,002	10,328
September	4	2007	---	0.0	149,752	45,820	195,572	0	186,432	186,432	10,245
September	5	2007	---	1740.0	146,592	45,988	194,320	0	185,304	185,304	9,172
September	6	2007	---	0.0	149,760	46,160	195,920	0	182,688	182,688	10,220
September	7	2007	---	0.0	149,760	46,144	195,904	0	182,624	182,624	10,213
September	8	2007	---	0.0	149,760	45,714	195,474	0	182,746	182,746	9,228
September	9	2007	---	70.0	149,760	45,590	195,420	0	185,844	185,844	10,061
September	10	2007	---	0.0	149,760	45,930	195,690	1,996	180,384	182,380	10,270
September	11	2007	---	0.0	149,760	45,964	195,724	628	179,278	179,906	9,196
September	12	2007	---	0.0	151,320	43,596	194,916	0	186,170	186,170	10,280
September	13	2007	---	0.0	156,520	37,116	193,636	0	174,448	174,448	7,148
September	14	2007	---	0.0	149,760	46,100	195,860	4	188,586	188,590	9,175
September	15	2007	---	0.0	149,760	45,576	195,336	0	185,082	185,082	6,190
September	16	2007	---	0.0	142,440	45,956	188,396	4	189,356	189,360	10,253
September	17	2007	---	0.0	138,240	46,650	184,890	0	177,774	177,774	6,161
September	18	2007	---	0.0	138,240	46,784	185,024	0	186,560	186,560	10,267
September	19	2007	---	0.0	138,920	46,324	185,244	0	179,756	179,756	6,139
September	20	2007	---	0.0	149,608	47,104	196,712	0	190,614	190,614	9,216
September	21	2007	---	0.0	149,632	46,928	196,560	0	187,802	187,802	7,191
September	22	2007	---	0.0	149,128	46,644	195,772	4	187,622	187,626	9,275
September	23	2007	---	0.0	148,760	47,244	196,004	0	185,714	185,714	6,215
September	24	2007	---	0.0	133,824	41,222	175,046	0	154,984	154,984	9,315
September	25	2007	---	0.0	149,648	46,974	196,622	129,728	65,688	195,416	7,143
September	26	2007	---	0.0	152,120	41,898	194,018	193,000	0	193,000	10,218
September	27	2007	---	0.0	141,544	45,052	186,596	175,208	2	175,210	6,151
September	28	2007	---	0.0	149,760	47,044	196,804	196,124	0	196,124	11,406
September	29	2007	---	0.0	149,760	46,696	196,456	193,460	0	193,460	7,134
September	30	2007	---	0.0	149,760	46,770	196,530	193,384	4	193,388	10,302
<b>Total Monthly Volumes (gal)</b>			---	<b>1,810</b>	<b>4,432,824</b>	<b>1,363,426</b>	<b>5,798,060</b>	<b>1,083,548</b>	<b>4,448,236</b>	<b>5,531,784</b>	<b>267,689</b>
<b>Average Pump/Injection Rates (gpm)</b>			---	<b>0.0</b>	<b>102.6</b>	<b>31.6</b>	<b>134.2</b>	<b>25.1</b>	<b>103.0</b>	<b>128.1</b>	<b>6.2</b>

**NOTES:**

--- : Not in operation during reporting period.

gal: gallons

gpm: gallons per minute

RO: Reverse Osmosis

<sup>a</sup>Flow Readings tabulated from Human-Machine Interface (HMI) computer at the IM-3 Facility.

<sup>b</sup>Small readings from IW-02 and IW-03 are associated with small amounts of treated water entering the injection well via the 'closed' valve, or associated with acceptable instrument inaccuracy.

# **October 2007 Operational Data**

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles California

Month	Day	Year	Extraction Well System <sup>a</sup>					Injection Well System <sup>a,b</sup>			RO Brine <sup>a</sup>
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
October	1	2007	0	0.0	149,760	46,864	196,624	189,696	2	189,698	10,239
October	2	2007	4	0.0	150,416	40,738	191,158	188,660	0	188,660	6,100
October	3	2007	4	1,494.0	147,376	46,054	194,928	181,864	0	181,864	10,359
October	4	2007	523	1,448.0	149,080	45,472	196,523	185,988	0	185,988	9,220
October	5	2007	0	0.0	149,760	46,702	196,462	187,220	0	187,220	7,241
October	6	2007	0	0.0	149,656	46,318	195,974	193,296	2	193,298	9,251
October	7	2007	0	0.0	149,760	46,686	196,446	188,068	0	188,068	10,339
October	8	2007	0	0.0	149,760	46,134	195,894	188,664	0	188,664	9,253
October	9	2007	0	0.0	149,760	46,874	196,634	78,640	109,046	187,686	10,214
October	10	2007	0	0.0	150,376	43,792	194,168	0	172,536	172,536	10,328
October	11	2007	0	0.0	145,912	46,766	192,678	0	189,430	189,430	10,270
October	12	2007	0	0.0	149,760	46,680	196,440	0	184,858	184,858	9,212
October	13	2007	0	0.0	149,880	46,046	195,926	0	185,630	185,630	10,308
October	14	2007	0	0.0	149,760	46,782	196,542	0	184,928	184,928	10,309
October	15	2007	0	0.0	149,760	46,330	196,090	4	186,150	186,154	9,235
October	16	2007	0	0.0	149,760	46,202	195,962	8	183,498	183,506	9,282
October	17	2007	0	0.0	149,760	46,534	196,294	0	179,340	179,340	7,176
October	18	2007	0	0.0	149,760	46,200	195,960	0	190,060	190,060	10,449
October	19	2007	0	0.0	149,760	46,164	195,924	0	187,248	187,248	9,245
October	20	2007	0	0.0	149,752	46,066	195,818	0	184,858	184,858	10,281
October	21	2007	0	0.0	149,608	46,124	195,732	0	183,276	183,276	10,253
October	22	2007	0	0.0	149,760	45,954	195,714	0	180,872	180,872	13,288
October	23	2007	0	0.0	149,760	45,680	195,440	0	185,796	185,796	9,490
October	24	2007	0	0.0	149,760	45,972	195,732	4	179,886	179,890	10,650
October	25	2007	0	0.0	149,760	45,592	195,352	0	184,306	184,306	13,443
October	26	2007	0	0.0	149,760	45,664	195,424	0	180,820	180,820	10,321
October	27	2007	0	0.0	149,760	45,346	195,106	0	184,718	184,718	13,295
October	28	2007	0	0.0	149,760	45,494	195,254	0	182,508	182,508	10,296
October	29	2007	0	0.0	149,760	45,554	195,314	0	181,096	181,096	13,434
October	30	2007	0	0.0	149,760	45,124	194,884	0	178,968	178,968	10,332
October	31	2007	0	0.0	149,760	45,748	195,508	0	175,832	175,832	13,192
<b>Total Monthly Volumes (gal)</b>			<b>531</b>	<b>2,942</b>	<b>4,636,776</b>	<b>1,421,656</b>	<b>6,061,905</b>	<b>1,582,112</b>	<b>4,135,664</b>	<b>5,717,776</b>	<b>316,305</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.1</b>	<b>103.9</b>	<b>31.8</b>	<b>135.8</b>	<b>35.4</b>	<b>92.6</b>	<b>128.1</b>	<b>7.1</b>

## NOTES:

--- : Not in operation during reporting period.

gal: gallons

gpm: gallons per minute

RO: Reverse Osmosis

<sup>a</sup>Flow Readings tabulated from Human-Machine Interface (HMI) computer at the IM-3 Facility.

<sup>b</sup>Small readings from IW-02 and IW-03 are associated with small amounts of treated water entering the extraction well via the 'closed' valve, or associated with acceptable instrument inaccuracy.

# November 2007 Operational Data

IM-3 Groundwater Extraction and Treatment System  
PG&E Topock Compressor Station, Needles California

Month	Day	Year	Extraction Well System <sup>a,b,c</sup>					Injection Well System <sup>a,c</sup>			RO Brine <sup>a</sup>
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
November	1	2007	--	19	147,917	45,074	193,010	--	189,583	189,583	10,117
November	2	2007	--	17	147,821	45,174	193,012	--	180,705	180,705	10,178
November	3	2007	--	17	147,868	44,967	192,852	--	183,168	183,168	13,436
November	4	2007	--	23	147,858	44,756	192,638	--	183,504	183,504	10,409
November	5	2007	--	19,883	141,522	35,818	197,223	--	182,606	182,606	10,960
November	6	2007	--	1,045	146,809	46,398	194,251	--	186,149	186,149	14,008
November	7	2007	--	16	149,340	46,922	196,277	--	179,026	179,026	10,527
November	8	2007	--	20	149,223	46,779	196,022	--	184,616	184,616	10,496
November	9	2007	--	19	149,167	46,700	195,885	--	185,753	185,753	10,797
November	10	2007	--	19	148,653	46,379	195,052	--	181,360	181,360	13,555
November	11	2007	--	16	149,270	46,292	195,578	--	187,478	187,478	10,910
November	12	2007	--	19	154,709	35,180	189,908	--	179,453	179,453	10,545
November	13	2007	--	21	148,995	46,511	195,526	--	179,501	179,501	10,669
November	14	2007	--	19	76,113	24,878	101,011	--	68,914	68,914	11,217
November	15	2007	--	23	133,783	42,717	176,523	--	181,927	181,927	15,364
November	16	2007	--	19	148,621	46,619	195,259	--	186,271	186,271	12,704
November	17	2007	--	24	148,621	46,397	195,042	--	184,178	184,178	12,445
November	18	2007	--	16	148,364	46,528	194,908	--	181,875	181,875	10,701
November	19	2007	--	18	144,398	46,010	190,426	--	183,053	183,053	10,329
November	20	2007	--	15	148,556	46,300	194,872	--	177,211	177,211	14,000
November	21	2007	--	18	147,231	46,131	193,381	--	177,210	177,210	10,576
November	22	2007	--	18	148,516	45,970	194,503	--	183,981	183,981	11,079
November	23	2007	--	18	148,665	45,752	194,435	--	185,772	185,772	12,929
November	24	2007	--	20	148,938	45,685	194,644	--	186,013	186,013	10,609
November	25	2007	--	16	148,893	45,629	194,538	--	179,256	179,256	11,026
November	26	2007	--	15	144,572	45,739	190,326	--	181,933	181,933	14,085
November	27	2007	--	14	144,859	46,489	191,362	--	172,210	172,210	10,570
November	28	2007	--	17	146,482	46,905	193,404	--	185,815	185,815	10,584
November	29	2007	--	18	147,081	47,113	194,212	--	183,559	183,559	14,082
November	30	2007	--	14	142,526	46,227	188,766	--	179,237	179,237	8,596
<b>Total Monthly Volumes (gal)</b>			<b>0</b>	<b>21,438</b>	<b>4,345,369</b>	<b>1,338,040</b>	<b>5,704,847</b>	<b>0</b>	<b>5,361,317</b>	<b>5,361,317</b>	<b>347,503</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.5</b>	<b>100.6</b>	<b>31.0</b>	<b>132.1</b>	<b>0.0</b>	<b>124.1</b>	<b>124.1</b>	<b>8.0</b>

## NOTES:

--- : Not in operation during reporting period.

gal: gallons

gpm: gallons per minute

RO: Reverse Osmosis

<sup>a</sup>Flow Readings tabulated from data historian computer at the IM-3 Facility.

<sup>b</sup>Small readings from TW-2D are associated with small computational errors. However, the data is included in the monthly record to be consistent with the data historian.

<sup>c</sup>Extraction well TW-2S and injection well IW-02 were not operated.



**December 2007 Operational Data**

IM-3 Groundwater Extraction and Treatment System  
 PG&E Topock Compressor Station, Needles California

Month	Day	Year	Extraction Well System <sup>a</sup>					Injection Well System <sup>a,b</sup>			RO Brine <sup>a</sup>
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
December	1	2007	34	8	141,142	46,211	187,395	---	174,104	174,104	10,487
December	2	2007	39	13	146,001	46,858	192,912	---	175,231	175,231	13,796
December	3	2007	40	17	145,860	46,126	192,043	---	171,864	171,864	10,066
December	4	2007	40	17	144,486	46,088	190,632	---	187,916	187,916	10,120
December	5	2007	43	3,944	142,983	45,057	192,027	---	183,443	183,443	10,163
December	6	2007	40	21	134,552	43,580	178,192	---	167,445	167,445	10,268
December	7	2007	38	14	137,588	43,678	181,319	---	173,047	173,047	12,381
December	8	2007	43	19	146,763	46,131	192,957	---	182,444	182,444	10,109
December	9	2007	41	17	147,030	45,806	192,894	---	177,944	177,944	10,190
December	10	2007	39	19	147,096	45,800	192,954	---	178,357	178,357	10,841
December	11	2007	40	23	135,268	44,232	179,562	---	171,613	171,613	12,768
December	12	2007	36	21	141,206	35,265	176,529	---	172,390	172,390	10,114
December	13	2007	34	19	145,067	46,493	191,613	---	173,794	173,794	10,242
December	14	2007	33	24	146,632	45,658	192,346	---	182,230	182,230	11,615
December	15	2007	37	21	146,839	45,367	192,263	---	183,076	183,076	10,349
December	16	2007	32	20	146,721	45,484	192,257	---	172,611	172,611	12,450
December	17	2007	4,702	7,622	134,536	42,939	189,799	---	179,793	179,793	11,549
December	18	2007	36	14	145,982	46,201	192,233	---	183,853	183,853	10,177
December	19	2007	43	20	147,784	46,142	193,989	---	181,836	181,836	10,155
December	20	2007	40	20	147,350	45,554	192,965	---	180,109	180,109	13,495
December	21	2007	34	21	149,705	45,733	195,494	---	183,816	183,816	10,201
December	22	2007	34	19	149,992	45,517	195,563	---	182,992	182,992	10,207
December	23	2007	35	16	150,511	44,789	195,350	---	181,618	181,618	13,672
December	24	2007	42	21	150,559	44,779	195,400	---	179,520	179,520	10,268
December	25	2007	34	22	150,604	44,674	195,333	---	182,615	182,615	12,411
December	26	2007	34	17	150,547	44,854	195,452	---	188,514	188,514	9,705
December	27	2007	31	20	140,717	39,359	180,127	---	156,630	156,630	12,312
December	28	2007	31	17	148,729	46,142	194,919	---	190,063	190,063	13,741
December	29	2007	37	17	148,996	46,041	195,091	---	188,396	188,396	10,389
December	30	2007	34	19	149,309	45,801	195,163	---	188,095	188,095	13,594
December	31	2007	34	17	149,536	45,630	195,218	---	185,330	185,330	8,294
<b>Total Monthly Volumes (gal)</b>			<b>5,810</b>	<b>12,102</b>	<b>4,510,090</b>	<b>1,391,988</b>	<b>5,919,990</b>	<b>0</b>	<b>5,560,689</b>	<b>5,560,689</b>	<b>346,127</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.1</b>	<b>0.3</b>	<b>101.0</b>	<b>31.2</b>	<b>132.6</b>	<b>0.0</b>	<b>124.6</b>	<b>124.6</b>	<b>7.8</b>

## NOTES:

--- : Not in operation during reporting period.

gal: gallons

gpm: gallons per minute

RO: Reverse Osmosis

<sup>a</sup>Flow Readings tabulated from the date historian at the IM-3 Facility.

<sup>b</sup>Small readings from TW-2S and TW-2D are associated with small computational errors. However, the data is included in the monthly record to be consistent with the data historian.

## **Appendix C**

### **Flowmeter Calibration Records**

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## Flow Calibration without Adjustment

30092302-1304705

WWRA-000923-F

Purchase order number

US-19050353-30 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C036F16000

Serial N°

~~FIT-1201~~ FIT-103/PE-1 / installed 1/4/07

Tag N°

FCP-6.F

Calibration rig

155.6102 GPM (  $\triangleq 100\%$  )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9148

Calibration factor

0

Zero point

72.3 °F

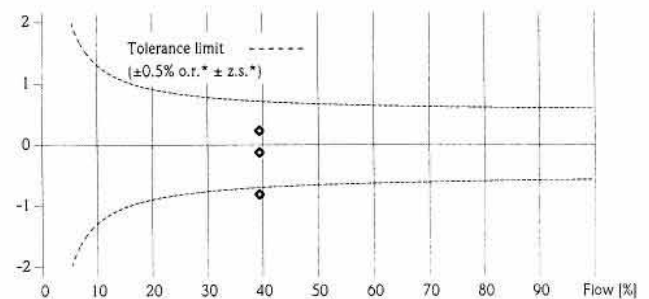
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
39.5	61.5	30.1	30.816	30.002	-2.64	10.15
39.5	61.5	30.1	30.807	30.875	0.22	10.34
39.5	61.5	30.1	30.813	30.772	-0.13	10.31
39.5	61.5	30.1	30.812	30.561	-0.81	10.27
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value: [4 - 20 mA]

Measured error % o.r.



\*z.s.: Zero stability

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



12-04-2006

Date of calibration

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

Tim Swick

Operator

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

# Flow Calibration without Adjustment

30092173-1304708

WWRA-000923-F

Purchase order number

US-19050353-10 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037216000

Serial N°

~~FIT-1204~~ FIT-102 / TW-3D / installed 1/4/07

Tag N°

FCP-6.F

Calibration rig

155.6102 GPM ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9244

Calibration factor

20

Zero point

75.0 °F

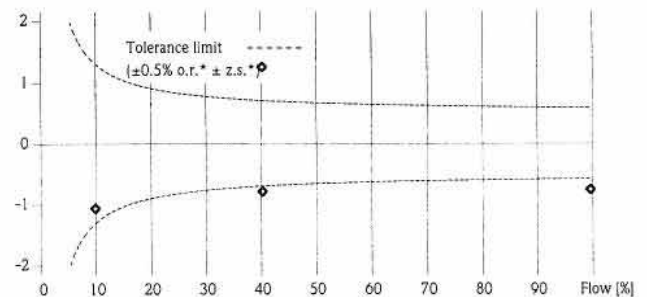
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
10.0	15.5	30.1	7.7678	7.6854	-1.06	5.58
40.4	62.8	30.1	31.473	31.226	-0.79	10.41
40.4	62.8	30.1	31.475	31.867	1.25	10.54
99.8	155.3	30.1	77.806	77.217	-0.76	19.85
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



\*z.s.: Zero stability

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

*M. E. Trueblood Jr.*

11-30-2006

Date of calibration

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

Morris E. Trueblood Jr.

Operator

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

# Flow Calibration with Adjustment

30057870-1275191

41724888

Purchase Order Number

USA-49310090-40 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order Code

PROMAG 23 P 2"

Transmitter/Sensor

6A022016000

Serial N°

FIT-101 / TW-2D

Tag N°

FCP-6.C

Calibration rig

155.6102 GPM (  $\pm 100\%$  )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9207

Calibration factor

0

Zero point

74.1 °F

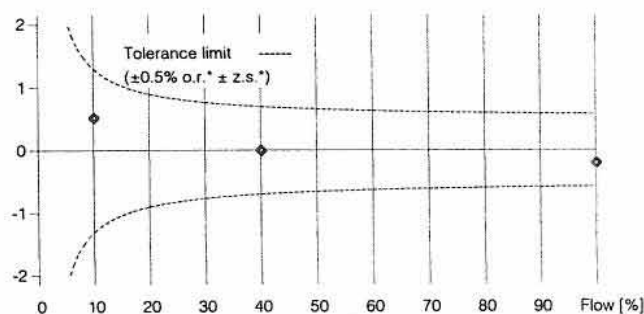
Water temperature

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

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



\*z.s.: Zero stability

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

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

11-29-2004

Date of calibration

Endress+Hauser  
2350 Endress Place  
Greenwood, IN 46143



Tim Swick

Operator

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

# Flow Calibration with Adjustment

**Endress+Hauser**



People for Process Automation

30057866-1275190

41724888

Purchase Order Number

USA-49310090-40 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order Code

PROMAG 23 P 2"

Transmitter/Sensor

6A021F16000

Serial N°

FIT-100 / TW-25

Tag N°

FCP-6.C

Calibration rig

155.6102 GPM ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9178

Calibration factor

0

Zero point

72.9 °F

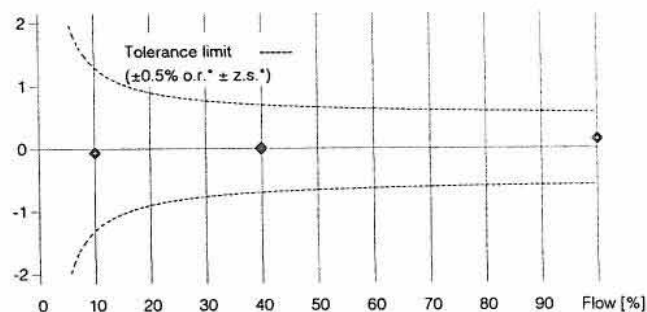
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
10.0	15.5	30.0	7.7502	7.7457	-0.06	5.59
39.9	62.1	30.0	31.071	31.070	0.00	10.38
39.9	62.1	30.0	31.073	31.078	0.02	10.38
100.2	156.0	30.0	78.041	78.156	0.15	20.06
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



\*z.s.: Zero stability

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

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

11-29-2004

Date of calibration

Endress+Hauser  
2350 Endress Place  
Greenwood, IN 46143

*Tim Swick*

Tim Swick

Operator

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



## Flow Calibration without Adjustment

30094933-1275192

WWRA-001176-F

Purchase order number

US-19051105-10 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022116000

Serial N°

*FIT-1202*  
*FIT-102 / IW-02 / installed 02/02/07*

Tag N°

FCP-6.F

Calibration rig

155.6102 GPM ( $\triangleq 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9214

Calibration factor

0

Zero point

72.3 °F

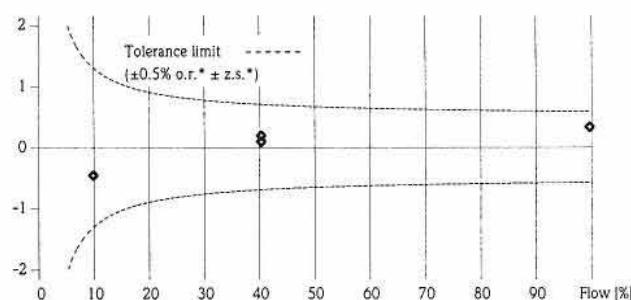
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
9.9	15.5	30.1	7.7413	7.7054	-0.46	5.58
40.5	63.0	30.1	31.575	31.604	0.09	10.48
40.5	63.0	30.1	31.562	31.621	0.19	10.49
99.8	155.3	30.1	77.847	78.099	0.32	20.02
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value [4 - 20 mA]

Measured error % o.r.



\*z.s.: Zero stability

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

*Jim Baase*

01-23-2007

Date of calibration

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

Jim Baase

Operator

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

## Flow Calibration without Adjustment

30092169-1385272

WWRA-000923-F

Purchase order number

US-19050353-20 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

7700F216000

Serial N°

- FIT-1203 / IW-03 / installed 12/19/06

Tag N°

FCP-6.F

Calibration rig

155.6102 GPM ( $\triangleq 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9248

Calibration factor

0

Zero point

74.9 °F

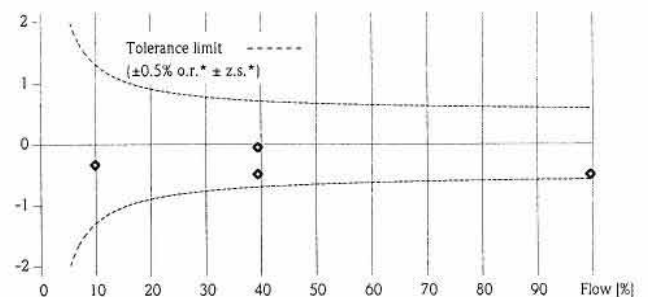
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
10.0	15.5	30.1	7.7755	7.7489	-0.34	5.59
39.6	61.5	30.1	30.846	30.693	-0.49	10.30
39.6	61.6	30.1	30.852	30.834	-0.06	10.33
99.8	155.3	30.1	77.842	77.452	-0.50	19.89
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



\*z.s.: Zero stability

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

*M. E. Trueblood Jr.*

11-30-2006

Date of calibration

Endress+Hauser Flowtec, Division USA

2330 Endress Place

Greenwood, IN 46143

Morris E. Trueblood Jr.

Operator

Certified acc. to

MIL-STD-45662A

ISO 9001, Reg.-N° 030502.2



## Flow Calibration with Adjustment

30092564-1385273

WWRA-000923-F

Purchase order number

US-19050353-40 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P80-AL1A1AA022AW

Order code

PROMAG 23 P 3"

Transmitter/Sensor

7700F316000

Serial N°

- FIT-702 / Combined Inj. Wells  
flow to IW-2 & IW-3 / installed 12/19/06

Tag N°

FCP-20 MEDIUM

Calibration rig

398.3621 GPM ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

1.1873

Calibration factor

0

Zero point

76.7 °F

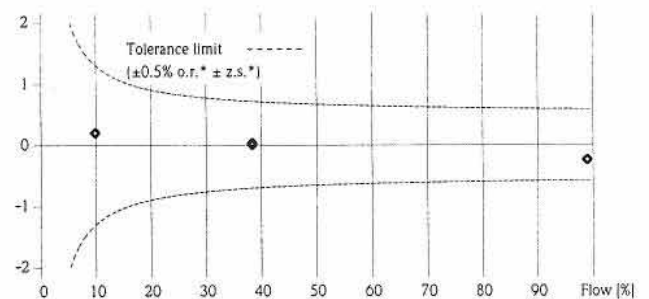
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
9.9	39.6	60.8	40.120	40.199	0.20	5.59
38.5	153.2	60.8	155.374	155.417	0.03	10.16
38.5	153.3	60.9	155.578	155.582	0.00	10.16
99.1	394.9	60.9	400.783	399.816	-0.24	19.82
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value: (4 - 20 mA)

Measured error % o.r.



\*z.s.: Zero stability

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

*Tim Swick*

12-07-2006

Date of calibration

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

Tim Swick

Operator

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

## Flow Calibration with Adjustment

30094931-1275193

WWRA-001178-F

Purchase order number

US-19051105-30 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022216000

Serial N°

~~FIT-701~~  
~~FIT-103~~ / RO Concentrate / installed 02/02/07

Tag N°

FCP-6.F

Calibration rig

155.6102 GPM (  $\pm 100\%$  )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9235

Calibration factor

0

Zero point

72.2 °F

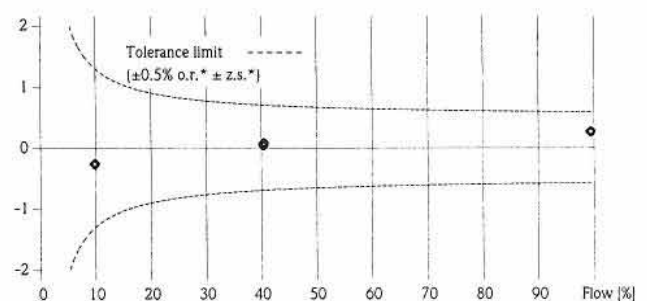
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	$\Delta$ o.r.* [%]	Outp.** [mA]
10.0	15.5	30.1	7.7833	7.7628	-0.26	5.59
40.5	63.1	30.1	31.600	31.613	0.04	10.49
40.6	63.1	30.1	31.650	31.674	0.07	10.50
99.7	155.1	30.1	77.720	77.919	0.26	19.98
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



\*z.s.: Zero stability

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



Jim Baase

Operator

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

01-23-2007

Date of calibration

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

**Appendix D**  
**December 2007 Laboratory Analytical Reports**

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# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

January 4, 2008

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

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-128 PROJECT, GROUNDWATER  
MONITORING,  
TLI No.: 971670

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-128 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 5, 2007, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Total Chromium by EPA 200.8, for sample SC-100B-WDR-128, was re-analyzed due to the discrepancy between the Total Chromium and Hexavalent Chromium results. The result from the re-analysis is reported.

The matrix spike for Total Barium by EPA 200.8 failed due to the amount of Barium detected in the sample, which was below the contract, required detection limit.

Total Dissolved Manganese was analyzed for sample SC-100B-WDR-128 as requested on the chain of custody. The internal standard recovery was outside the acceptance limits for this sample. As the Total Manganese was below the reporting limit, the Total Dissolved Manganese was not re-analyzed, and was therefor not reported, with Mr. Shawn Duffy's approval.

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

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

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

*Sam Condon*

for Mona Nassimi  
Manager, Analytical Services

*Ali Kharrag*

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

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

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

**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

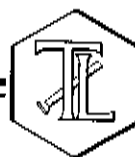
**Received:** December 5, 2007

## ANALYST LIST

EPA 120.1	Specific Conductivity	Tina Acquiat
SM 4500-H B	pH	Tina Acquiat
SM 2540C	Total Dissolved Solids	Tina Acquiat
SM 2130B	Turbidity	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 B	Ammonia	Iordan Stavrev
SM 4500-NO2 B	Nitrite as N	Tina Acquiat
EPA 200.7	Metals by ICP	Mark Kotani
EPA 200.8	Metals by ICP/MS	Michel Mendoza / Linda Saetern
EPA 245.1	Mercury	Michel Mendoza
EPA 218.6	Hexavalent Chromium	Jean Paul Gleeson

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EXCELLENCE IN INDEPENDENT TESTING



Established 1931

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

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971670

**Sample:** Three (3) Groundwaters

**Date:** January 4, 2008

**Project Name:** PG&E Topock Project

**Collected:** December 5, 2007

**Project No.:** 358342.TM.02.00

**Received:** December 5, 2007

**P.O. No.:** 358342.TM.02.00

**Prep/ Analyzed:** December 6, 2007

**Analytical Batch:** 12PH07H

**Investigation:**

pH by SM 4500-H B

### Analytical Results pH

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Run Time</u>	<u>Units</u>	<u>MDL</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	10:03	pH	0.0700	2.00	7.35
971670-2	SC-700B-WDR-128	10:06	pH	0.0700	2.00	8.08
971670-3	SC-701-WDR-128	10:10	pH	0.0700	2.00	7.86

### QA/QC Summary

<u>QC STD I.D.</u>	<u>Laboratory Number</u>	<u>Concentration</u>	<u>Duplicate Concentration</u>	<u>Difference (Units)</u>	<u>Acceptance limits</u>	<u>QC Within Control</u>
Duplicate	971670-3	7.86	7.86	0.00	+ 0.100 Units	Yes

<u>QC Std I.D.</u>	<u>Measured Concentration</u>	<u>Theoretical Concentration</u>	<u>Difference (Units)</u>	<u>Acceptance Limits</u>	<u>QC Within Control</u>
LCS	7.04	7.00	0.04	+ 0.100 Units	Yes
LCS #1	7.03	7.00	0.03	+ 0.100 Units	Yes
LCS #2	7.02	7.00	0.02	+ 0.100 Units	Yes

ND: Below the reporting limit (Not Detected).

RL: Reporting Limit.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Condon*  
for **Mona Nassimi, Manager**  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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Oakland, CA 94612

## REPORT

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

Attention: Shawn Duffy

Laboratory No.: 971670

Sample: Three (3) Groundwaters  
Project Name: PG&E Topock Project  
Project No.: 358342.TM.02.00  
P.O. No.: 358342.TM.02.00

Date: January 4, 2008  
Collected: December 5, 2007  
Received: December 5, 2007  
Prep/ Analyzed: December 10, 2007  
Analytical Batch: 12EC071

Investigation:

Specific Conductivity by EPA 120.1

### Analytical Results Specific Conductivity

TLI I.D.	Field I.D.	Units	Method	DF	RL	Results
971670-1	SC-100B-WDR-128	µmhos/cm	EPA 120.1	1.00	2.00	7890
971670-2	SC-700B-WDR-128	µmhos/cm	EPA 120.1	1.00	2.00	6690
971670-3	SC-701-WDR-128	µmhos/cm	EPA 120.1	1.00	2.00	26100

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance Limits	QC Within Control
Duplicate	971669-16	1860	1860	0.00%	≤ 10%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
CCS	696	706	98.6%	90% - 110%	Yes
CVS#1	988	996	99.2%	90% - 110%	Yes
CVS#2	987	996	99.1%	90% - 110%	Yes
LCS	697	706	98.7%	90% - 110%	Yes

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

  
Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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Oakland, CA 94612

## REPORT

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 11, 2007

**Analytical Batch:** 12TDS07E

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

**Investigation:**

**Total Dissolved Solids by SM 2540C**

### Analytical Results Total Dissolved Solids

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	mg/L	SM 2540C	250	4810
971670-2	SC-700B-WDR-128	mg/L	SM 2540C	250	3830
971670-3	SC-701-WDR-128	mg/L	SM 2540C	250	19100

### QA/QC Summary

<u>QC STD I.D.</u>	<u>Laboratory Number</u>	<u>Concentration</u>	<u>Duplicate Concentration</u>	<u>Percent Difference</u>	<u>Acceptance Limits</u>	<u>QC Within Control</u>
Duplicate	971670-2	3830	3830	0.00%	≤ 5%	Yes

<u>QC Std I.D.</u>	<u>Measured Concentration</u>	<u>Theoretical Concentration</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>	<u>QC Within Control</u>
LCS 1	500	500	100%	90% - 110%	Yes
LCS 2	498	500	99.6%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

RL: Reporting Limit.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

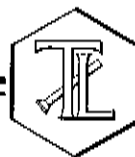
  
Mona Nassimi, Manager  
Analytical Services

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



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

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

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

## REPORT

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

**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 6, 2007

**Analytical Batch:** 12TUC07F

**Investigation:**

**Turbidity by Method SM 2130B**

### Analytical Results Turbidity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	12:50	NTU	1.00	0.100	0.295
971670-2	SC-700B-WDR-128	13:15	NTU	1.00	0.100	ND

### QA/QC Summary


QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance Limits	QC Within Control
Duplicate	971661-1	ND	ND	0.00%	< 20%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS	7.96	8.00	99.5%	90% - 110%	Yes
LCS	8.05	8.00	101%	90% - 110%	Yes
LCS	8.10	8.00	101%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

  
↓  
Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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## REPORT

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

Attention: Shawn Duffy

Sample: Three (3) Groundwaters

Project Name: PG&E Topock Project

Project No.: 358342.TM.02.00

P.O. No.: 358342.TM.02.00

Prep. Batch: 12CrH07G

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

Laboratory No.: 971670

Date: January 4, 2008

Collected: December 5, 2007

Received: December 5, 2007

Prep/ Analyzed: December 5 - 6, 2007

Analytical Batch: 12CrH07G

Investigation:

Hexavalent Chromium by IC Using Method EPA 218.6

### Analytical Results Hexavalent Chromium

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
971670-1	SC-100B-WDR-128	12:50	12/5/07; 23:52	mg/L	100	0.0200	1.50
971670-2	SC-700B-WDR-128	13:15	12/6/07; 00:02	mg/L	1.05	0.00020	ND
971670-3	SC-701-WDR-128	13:10	12/6/07; 01:47	mg/L	5.00	0.0010	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Sample Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971670-1	1.50	1.52	1.32%	< 20%	Yes

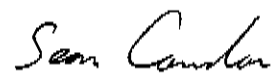
QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971670-1	1.53	100	0.0200	2.00	3.54	3.53	101%	90-110%	Yes
MS	971670-2	0.00	1.06	0.00100	0.00106	0.00112	0.00106	106%	90-110%	Yes
MS	971670-3	0.00	5.00	0.00100	0.00500	0.00532	0.00500	106%	90-110%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.00501	0.00500	100%	90% - 110%	Yes
MRCVS#1	0.0102	0.0100	102%	95% - 105%	Yes
MRCVS#2	0.0102	0.0100	102%	95% - 105%	Yes
MRCVS#3	0.0103	0.0100	103%	95% - 105%	Yes
MRCVS#4	0.0104	0.0100	104%	95% - 105%	Yes
LCS	0.00496	0.00500	99.2%	90% - 110%	Yes
LCSD	0.00498	0.00500	99.6%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

  
Mona Nassimi, Manager  
Analytical Services

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 11, 2007

**Analytical Batch:** 12NH3-E07B

**Investigation:**

**Ammonia as N by Method SM 4500-NH3 D**

### Analytical Results Ammonia as N

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Method</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	12:50	SM 4500-NH3 D	mg/L	1.00	0.500	ND
971670-2	SC-700B-WDR-128	13:15	SM 4500-NH3 D	mg/L	1.00	0.500	ND

### QA/QC Summary

<u>QC STD I.D.</u>		<u>Laboratory Number</u>		<u>Concentration</u>	<u>Duplicate Concentration</u>	<u>Relative Percent Difference</u>	<u>Acceptance limits</u>	<u>QC Within Control</u>
Duplicate		971742-1		5.55	5.60	0.90%	≤ 20%	Yes

<u>QC Std I.D.</u>	<u>Lab Number</u>	<u>Conc. of unspiked sample</u>	<u>Dilution Factor</u>	<u>Added Spike Conc.</u>	<u>MS Amount</u>	<u>Measured Conc. of spiked sample</u>	<u>Theoretical Conc. of spiked sample</u>	<u>MS% Recovery</u>	<u>Acceptance limits</u>	<u>QC Within Control</u>
MS	971742-1	5.55	1.00	6.00	6.00	11.1	11.6	92.5%	75-125%	Yes

<u>QC Std I.D.</u>	<u>Measured Concentration</u>	<u>Theoretical Concentration</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>	<u>QC Within Control</u>
LCS	10.0	10.0	100%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sam Condon*  
for, Mona Nassimi, Manager  
Analytical Services

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## REPORT

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TUSTIN, CALIFORNIA 92780-7008  
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www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612  
**Attention:** Shawn Duffy  
**Sample:** Three (3) Groundwaters  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Laboratory No.:** 971670  
**Date:** January 4, 2008  
**Collected:** December 5, 2007  
**Received:** December 5, 2007  
**Prep/ Analyzed:** December 7, 2007  
**Analytical Batch:** 12AN07F

**Investigation:** Fluoride by Ion Chromatography using EPA 300.0

### Analytical Results Fluoride

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
971670-1	SC-100B-WDR-128	12:50	08:13	mg/L	5.00	0.500	2.66
971670-2	SC-700B-WDR-128	13:15	08:25	mg/L	5.00	0.500	2.01
971670-3	SC-701-WDR-128	13:10	08:36	mg/L	5.00	0.500	6.81

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971671	0.999	0.873	13.5%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971671	0.999	1.00	2.00	2.00	3.21	3.00	111%	75-125%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCSS	4.16	4.00	104%	90% - 110%	Yes
MRCVS#1	3.03	3.00	101%	90% - 110%	Yes
MRCVS#2	3.17	3.00	106%	90% - 110%	Yes
MRCVS#3	3.10	3.00	103%	90% - 110%	Yes
MRCVS#4	3.12	3.00	104%	90% - 110%	Yes
LCS	4.15	4.00	104%	90% - 110%	Yes
LCSD	4.07	4.00	102%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*Sean Condon*  
6- Mona Nassimi, Manager  
Analytical Services

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 7, 2007

**Analytical Batch:** 12AN07F

**Investigation:**

**Sulfate by Method EPA 300.0**

### Analytical Results Sulfate

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	12:50	14:53	mg/L	25.0	12.5	601
971670-2	SC-700B-WDR-128	13:15	15:04	mg/L	25.0	12.5	484

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971669-15	256	256	0.00%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971669-15	256	50.0	10.0	500	753	756	99.4%	85-115%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	19.9	20.0	99.5%	90% - 110%	Yes
MRCVS#1	15.0	15.0	100%	90% - 110%	Yes
MRCVS#2	15.0	15.0	100%	90% - 110%	Yes
MRCVS#3	14.9	15.0	99.3%	90% - 110%	Yes
MRCVS#4	15.0	15.0	100%	90% - 110%	Yes
LCS	19.9	20.0	99.5%	90% - 110%	Yes
LCSD	20.0	20.0	100%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

  
Mona Nassimi, Manager  
Analytical Services

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 7, 2007

**Analytical Batch:** 12AN07F

**Investigation:**

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

### Analytical Results Nitrate as N

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	12:50	08:13	mg/L	5.00	1.00	3.20
971670-2	SC-700B-WDR-128	13:15	08:25	mg/L	5.00	1.00	2.84

### QA/QC Summary

<u>QC STD I.D.</u>		<u>Laboratory Number</u>	<u>Concentration</u>	<u>Duplicate Concentration</u>	<u>Relative Percent Difference</u>	<u>Acceptance limits</u>	<u>QC Within Control</u>
Duplicate		971689-4	16.2	16.1	0.62%	≤ 20%	Yes

<u>QC Std I.D.</u>	<u>Lab Number</u>	<u>Conc. of unspiked sample</u>	<u>Dilution Factor</u>	<u>Added Spike Conc.</u>	<u>MS Amount</u>	<u>Measured Conc. of spiked sample</u>	<u>Theoretical Conc. of spiked sample</u>	<u>MS% Recovery</u>	<u>Acceptance limits</u>	<u>QC Within Control</u>
MS	971689-4	16.2	5.00	4.00	20.0	36.2	36.2	100%	75-125%	Yes

<u>QC Std I.D.</u>	<u>Measured Concentration</u>	<u>Theoretical Concentration</u>	<u>Percent Recovery</u>	<u>Acceptance Limits</u>	<u>QC Within Control</u>
MRCCS	4.01	4.00	100%	90% - 110%	Yes
MRCVS#1	2.97	3.00	99.0%	90% - 110%	Yes
MRCVS#2	2.99	3.00	99.7%	90% - 110%	Yes
MRCVS#3	2.97	3.00	99.0%	90% - 110%	Yes
MRCVS#4	2.97	3.00	99.0%	90% - 110%	Yes
MRCVS#5	2.97	3.00	99.0%	90% - 110%	Yes
LCS	4.01	4.00	100%	90% - 110%	Yes
LCSD	3.98	4.00	99.5%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

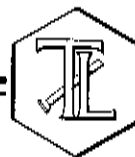
Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Condon*  
Mona Nassimi, Manager  
Analytical Services

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 971670

**Date:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 7, 2007

**Analytical Batch:** 12NO207C

**Investigation:**

**Nitrite as N by Method SM 4500-NO2-B**

### Analytical Results for Nitrite as N

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971670-1	SC-100B-WDR-128	12:50	09:47	mg/L	1.00	0.0050	ND
971670-2	SC-700B-WDR-128	13:15	09:48	mg/L	1.00	0.0050	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971670-2	ND	ND	0.00%	< 20%	Yes

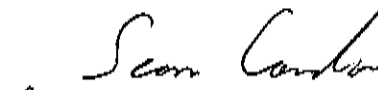
QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971670-2	0.00	1.00	0.0200	0.0200	0.0205	0.0200	103%	75-125%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.0229	0.0230	99.6%	90% - 110%	Yes
MRCVS#1	0.0192	0.0200	96.0%	90% - 110%	Yes
LCS	0.0293	0.0290	101%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

  
Mona Nassimi, Manager  
Analytical Services

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

**Attention:** Shawn Duffy

## REPORT

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**Laboratory No.:** 971670

**Reported:** January 4, 2008

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Analyzed:** See Below

**Samples:** Three (3) Groundwaters  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Investigation:** Total Metal Analyses as Requested

## Analytical Results

SAMPLE ID: SC-100B-WDR-128		Time Collected: 12:50		LAB ID: 971670-1				
Parameter	Method	Reported Value	DF	Units	RL	Batch	Date Analyzed	Time Analyzed
Aluminum	EPA 200.8	ND	1.00	mg/L	0.0500	010308B	01/03/08	16:00
Antimony	EPA 200.8	ND	1.00	mg/L	0.0030	121907A	12/19/07	08:01
Arsenic	EPA 200.8	ND	1.00	mg/L	0.0050	121907A	12/19/07	08:01
Barium	EPA 200.8	ND	1.00	mg/L	0.300	121907A	12/19/07	08:01
Chromium	EPA 200.8	1.71	5.00	mg/L	0.0010	010408A	01/04/08	09:25
Copper	EPA 200.8	ND	1.00	mg/L	0.0100	121907A	12/19/07	08:01
Lead	EPA 200.8	ND	1.00	mg/L	0.0020	121907A	12/19/07	08:01
Manganese	EPA 200.8	ND	1.00	mg/L	0.0200	121907A	12/19/07	08:01
Molybdenum	EPA 200.8	0.0208	1.00	mg/L	0.0050	121907A	12/19/07	08:01
Nickel	EPA 200.8	ND	1.00	mg/L	0.0200	121907A	12/19/07	08:01
Zinc	EPA 200.8	ND	1.00	mg/L	0.0200	121907A	12/19/07	08:01
Boron	EPA 200.7	1.05	1.00	mg/L	0.200	121207A	12/12/07	12:07
Iron	EPA 200.7	ND	1.00	mg/L	0.0200	121207A	12/12/07	12:07

SAMPLE ID: SC-700B-WDR-128		Time Collected: 13:15		LAB ID: 971670-2				
Parameter	Method	Reported Value	DF	Units	RL	Batch	Date Analyzed	Time Analyzed
Aluminum	EPA 200.8	ND	1.00	mg/L	0.0500	010308B	01/03/08	16:06
Antimony	EPA 200.8	ND	1.00	mg/L	0.0030	121907A	12/19/07	08:25
Arsenic	EPA 200.8	ND	1.00	mg/L	0.0050	121907A	12/19/07	08:25
Barium	EPA 200.8	ND	1.00	mg/L	0.300	121907A	12/19/07	08:25
Chromium	EPA 200.8	ND	1.00	mg/L	0.0010	121907A	12/19/07	11:43
Copper	EPA 200.8	ND	1.00	mg/L	0.0100	121907A	12/19/07	08:25
Lead	EPA 200.8	ND	1.00	mg/L	0.0020	121907A	12/19/07	08:25
Manganese	EPA 200.8	0.0812	1.00	mg/L	0.0200	121907A	12/19/07	08:25
Molybdenum	EPA 200.8	0.0153	1.00	mg/L	0.0050	121907A	12/19/07	08:25
Nickel	EPA 200.8	ND	1.00	mg/L	0.0200	121907A	12/19/07	08:25
Zinc	EPA 200.8	ND	1.00	mg/L	0.0200	121907A	12/19/07	08:25
Boron	EPA 200.7	1.01	1.00	mg/L	0.200	121207A	12/12/07	13:11
Iron	EPA 200.7	0.0971	1.00	mg/L	0.0200	121207A	12/12/07	13:11

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Report Continued

SAMPLE ID: SC-701-WDR-128		Time Collected: 13:10		LAB ID: 971670-3				
Parameter	Method	Reported Value	DF	Units	RL	Batch	Date Analyzed	Time Analyzed
Antimony	EPA 200.8	ND	5.00	mg/L	0.0030	121907A	12/19/07	08:55
Arsenic	EPA 200.8	ND	5.00	mg/L	0.0050	121907A	12/19/07	08:55
Barium	EPA 200.8	ND	5.00	mg/L	0.300	121907A	12/19/07	08:55
Beryllium	EPA 200.8	ND	5.00	mg/L	0.0010	010408A	01/04/08	10:25
Cadmium	EPA 200.8	ND	5.00	mg/L	0.0020	121907A	12/19/07	08:55
Chromium	EPA 200.8	0.0017	5.00	mg/L	0.0010	121907A	12/19/07	08:55
Cobalt	EPA 200.8	ND	5.00	mg/L	0.0050	121907A	12/19/07	08:55
Copper	EPA 200.8	ND	5.00	mg/L	0.0100	121907A	12/19/07	08:55
Lead	EPA 200.8	ND	5.00	mg/L	0.0020	121907A	12/19/07	08:55
Mercury	EPA 245.1	ND	1.00	mg/L	0.00020	12HG07Aa	12/15/07	N/A
Molybdenum	EPA 200.8	0.0712	5.00	mg/L	0.0050	121907A	12/19/07	08:55
Nickel	EPA 200.8	ND	5.00	mg/L	0.0200	121907A	12/19/07	08:55
Selenium	EPA 200.8	0.0089	5.00	mg/L	0.0050	010408A	01/04/08	10:25
Silver	EPA 200.8	0.0062	5.00	mg/L	0.0050	121907A	12/19/07	08:55
Thallium	EPA 200.8	ND	5.00	mg/L	0.0010	121907A	12/19/07	08:55
Vanadium	EPA 200.8	ND	5.00	mg/L	0.0050	121907A	12/19/07	08:55
Zinc	EPA 200.8	ND	5.00	mg/L	0.0200	121907A	12/19/07	08:55

ND: Not detected, or below limit of detection.

DF: Dilution factor.

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*for Sean Condon*  
Mona Nassimi, Manager  
Analytical Services

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



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www.truesdail.com

# CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-128]

COC Number

TURNAROUND TIME 10 Days

DATE 12-5-07 PAGE 1 OF 1

971670

COMPANY E2	PROJECT NAME PG&E Topock	PHONE (530) 229-3303	FAX (530) 339-3303	ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612	P.O. NUMBER 358342 TM.02.00	TEAM 1	SAMPLERS (SIGNATURE) 	SAMPLE ID.	DATE	TIME	DESCRIPTION	Al (218.6) Lab Filtered	Al, Ba, B, Cd, Cr, Pb, Mn, Mo, Ni, Sb, Fe, Zn	Manganese (200.7) Field Filtered Min	Total Metals (200.7) Field Filtered Min	Specific Conductance (120.1)	TDS (SM2540C)	PH (SM4500HB)	Anions (300.0) FI	Anions (300.0) FI, SO4, NO2, NO3	Cr6 (7199)	Metals (6010B) Title 22, Mercury	Turbidity (SM2130)	Ammonia (SM4500NH3)	NUMBER OF CONTAINERS	COMMENTS
SC-100B-WDR-128	12-5-07	1250	Water	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	6	PH: 7.28 pH=2	
SC-700B-WDR-128	12-5-07	1315	Water	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	5	8.02 PH. pH=2	
SC-701-WDR-128	12-5-07	1310	Water	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	4	PH 7.82 pH=2	
													15	TOTAL NUMBER OF CONTAINERS												

ALERT !!  
Level III QC

For Sample Conditions  
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	RECEIVED	COOL	WARM	°F
	David S. Topock	CHAM Hillmont	12-5-07 15:50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Signature (Received)	Printed Name	Company/Agency	Date/Time	CUSTODY SEALED	YES	NO	
Refuel David S. Topock	David S. Topock	T.L.I.	12-5-07 15:10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	SPECIAL REQUIREMENTS:			
	David S. Topock	CHAM Hillmont	12-5-07 21:45				
Signature (Received)	Printed Name	Company/Agency	Date/Time				
	David S. Topock	T.L.I.	12-5-07 21:45				
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time				
	David S. Topock	T.L.I.	12-5-07 21:45				
Signature (Received)	Printed Name	Company/Agency	Date/Time				
	David S. Topock	T.L.I.	12-5-07 21:45				

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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14201 FRANKLIN AVENUE  
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December 26, 2007

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-129 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 971878

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-129 project groundwater monitoring for Hexavalent and Total Chromium, Turbidity, Specific Conductivity, pH, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 12, 2007, 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.

Due to the large number of samples in-house, the sample for Total Chromium analysis was analyzed by method EPA 200.8, rather than EPA 200.7 as requested on the chain of custody.

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

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

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

*Sean Condon*  
for Mona Nassimi  
Manager, Analytical Services

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

# TRUESDAIL LABORATORIES, INC.

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

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TUSTIN, CALIFORNIA 92780-7008  
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**Laboratory No.:** 971878

**Date:** December 26, 2007

**Collected:** December 12, 2007

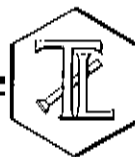
**Received:** December 12, 2007

## ANALYST LIST

Method	Parameter	Analyst
EPA 120.1	Specific Conductivity	Tina Acquiat
SM 4500-H B	pH	Tina Acquiat
SM 2540C	Total Dissolved Solids	Tina Acquiat
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Chromium	Linda Saetern
EPA 218.6	Hexavalent Chromium	Jean-Paul Gleeson

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## REPORT

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971878

**Sample:** One (1) Groundwater Samples

**Date:** December 26, 2007

**Project Name:** PG&E Topock Project

**Collected:** December 12, 2007

**Project No.:** 358342.TM.02.00

**Received:** December 12, 2007

**P.O. No.:** 358342.TM.02.00

**Prep/ Analyzed:** December 18, 2007

**Prep. Batch:** 121807A

**Analytical Batch:** 121807A

**Investigation:** Total Chromium by Inductively Coupled Argon Plasma Mass Spectrometer  
using EPA 200.8

### Analytical Results Total Chromium

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>Run Time</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971878	SC-700B-WDR-129	mg/L	EPA 200.8	15:25	1.00	0.0010	0.0033

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971746-1	0.00275	0.00276	0.36%	≤20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971746-1	0.00275	1.00	0.0500	0.0500	0.0500	0.0528	94.5%	70-130%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.0518	0.0500	104%	90% - 110%	Yes
MRCVS#1	0.0525	0.0500	105%	90% - 110%	Yes
ICS	0.0560	0.0500	112%	80% - 120%	Yes
LCS	0.0525	0.0500	105%	90% - 110%	Yes

**ND:** Not detected at reporting limit

**DF:** Dilution Factor

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Condon*  
for **Mona Nassimi, Manager**  
Analytical Services

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

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971878

**Sample:** One (1) Groundwater Samples  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Date:** December 26, 2007  
**Collected:** December 12, 2007  
**Received:** December 12, 2007  
**Prep/ Analyzed:** December 12, 2007  
**Analytical Batch:** 12CrH07Q

**Investigation:**

**Hexavalent Chromium by EPA 218.6**

### Analytical Results Hexavalent Chromium

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971878	SC-700B-WDR-129	13:30	22:17	mg/L	1.05	0.00020	ND

### QA/QC Summary

QC STD I.D.		Laboratory Number		Concentration		Duplicate Concentration		Relative Percent Difference	Acceptance Limits	QC Within Control	
Duplicate		971878		ND		ND		0.00%	< 20%	Yes	

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance Limits	QC Within Control
MS	971878	0.00	1.06	0.00100	0.00106	0.00117	0.00106	110%	90-110%	No

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.00503	0.00500	101%	90% - 110%	Yes
MRCVS#1	0.0104	0.0100	104%	95% - 105%	Yes
MRCVS#2	0.0104	0.0100	104%	95% - 105%	Yes
LCS	0.00503	0.00500	101%	90% - 110%	Yes
LCSD	0.00503	0.00500	101%	90% - 110%	Yes

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

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Seem Condor*  
for Mona Nassimi, Manager  
Analytical Services

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971878

**Sample:** One (1) Groundwater Samples

**Date:** December 26, 2007

**Project Name:** PG&E Topock Project

**Collected:** December 12, 2007

**Project No.:** 358342.TM.02.00

**Received:** December 12, 2007

**P.O. No.:** 358342.TM.02.00

**Prep/ Analyzed:** December 13, 2007

**Analytical Batch:** 12TUC071

**Investigation:**

**Turbidity by Method SM 2130B**

### Analytical Results Turbidity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971878	SC-700B-WDR-129	13:30	NTU	1.00	0.100	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971842-4	ND	ND	0.00%	≤ 20%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS	7.53	8.00	94.1%	90% - 110%	Yes
LCS	7.55	8.00	94.4%	90% - 110%	Yes
LCS	7.58	8.00	94.8%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Shawn Condon*  
for Mona Nassimi, Manager  
Analytical Services

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971878

**Sample:** One (1) Groundwater Samples

**Date:** December 26, 2007

**Project Name:** PG&E Topock Project

**Collected:** December 12, 2007

**Project No.:** 358342.TM.02.00

**Received:** December 12, 2007

**P.O. No.:** 358342.TM.02.00

**Prep/ Analyzed:** December 13, 2007

**Analytical Batch:** 12PH07Q

**Investigation:**

**pH by SM 4500-H B**

### Analytical Results pH

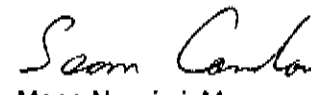
<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>MDL</u>	<u>RL</u>	<u>Results</u>
971878	SC-700B-WDR-129	13:30	08:53	pH	0.0700	2.00	8.28

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Difference (Units)	Acceptance limits	QC Within Control
Duplicate	971879-2	7.44	7.44	0.00	+ 0.100 Units	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Difference (Units)	Acceptance Limits	QC Within Control
LCS	7.07	7.00	0.07	+ 0.100 Units	Yes
LCS #1	7.05	7.00	0.05	+ 0.100 Units	Yes
LCS #2	7.04	7.00	0.04	+ 0.100 Units	Yes

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*for*   
Mona Nassimi, Manager  
Analytical Services



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

**Attention:** Shawn Duffy

**Laboratory No.:** 971878

**Sample:** One (1) Groundwater Samples  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Date:** December 26, 2007  
**Collected:** December 12, 2007  
**Received:** December 12, 2007  
**Prep/ Analyzed:** December 14, 2007  
**Analytical Batch:** 12EC07L

**Investigation:**

**Specific Conductivity by EPA 120.1**

### Analytical Results Specific Conductivity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971878	SC-700B-WDR-129	µmhos/cm	EPA 120.1	1.00	2.00	7100

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971878	7100	7100	0.00%	≤ 10%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
CCS	697	706	98.7%	90% - 110%	Yes
CVS#1	988	996	99.2%	90% - 110%	Yes
CVS#2	937	996	94.1%	90% - 110%	Yes
LCS	698	706	98.9%	90% - 110%	Yes

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Condon*  
L. Mona Nassimi, Manager  
Analytical Services

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

**Attention:** Shawn Duffy

**Laboratory No.:** 971878

**Sample:** One (1) Groundwater Samples  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Date:** December 26, 2007  
**Collected:** December 12, 2007  
**Received:** December 12, 2007  
**Prep/ Analyzed:** December 14, 2007  
**Analytical Batch:** 12TDS07H

**Investigation:**

**Total Dissolved Solids by SM 2540C**

### Analytical Results Total Dissolved Solids

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>RL</u>	<u>Results</u>
971878	SC-700B-WDR-129	mg/L	SM 2540C	250	4340

### QA/QC Summary


QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Percent Difference	Acceptance limits	QC Within Control
Duplicate	971879-1	4530	4620	0.98%	≤ 5%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS 1	498	500	99.6%	90% - 110%	Yes
LCS 2	497	500	99.4%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

RL: Reporting Limit.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*for*   
Mona Nassimi, Manager  
Analytical Services



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# CHAIN OF CUSTODY RECORD

[IM3] Plant-WDR-129

COC Number

TURNAROUND TIME 10 Days

DATE 12-12-07 PAGE 1 OF 1

9741878

COMPANY E2	PROJECT NAME PG&E Topock	PHONE (530) 229-3303	FAX (530) 339-3303	ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612	P.O. NUMBER 358342.TM.02.00	TEAM 1	SAMPLERS SIGNATURE 	DATE 12-12-07	TIME 13:30	DESCRIPTION Water	C6 (218.6) Lab Filtered	Total Metals (200.7) Total Chromium	Specific Conductance (120.1)	TDS (SM2540C)	PH (SM4500HB)	Turbidity (SM2130)	NUMBER OF CONTAINERS 3	COMMENTS
TOTAL NUMBER OF CONTAINERS 3																		

ALERT!!  
Level III QC

## CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)		Printed Name	David Chappell	Company/Agency	CHAM HILL	Date/Time	12-12-07 15:35
Signature (Received)	Bonifacio Dayag	Printed Name	Bonifacio Dayag	Company/Agency	TL-1	Date/Time	12-12-07 15:35
Signature (Relinquished)	Bonifacio Dayag	Printed Name	Bonifacio Dayag	Company/Agency	TL-1	Date/Time	12-12-07
Signature (Received)	Bonifacio Dayag	Printed Name	B. DAYAG	Company/Agency	TL-1	Date/Time	12-12-07
Signature (Relinquished)		Printed Name	Shabanneh	Company/Agency	TL-1	Date/Time	12/12/07
Signature (Received)	Shabanneh	Printed Name	Shabanneh	Company/Agency	TL-1	Date/Time	12/12/07

## SAMPLE CONDITIONS

RECEIVED	COOL <input type="checkbox"/>	WARM <input type="checkbox"/>	°F
CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>	

## SPECIAL REQUIREMENTS:

Sample Conditions  
See Form Attached

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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www.truesdail.com

January 8, 2008

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

Dear Mr. Duffy:

SUBJECT: REVISED CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-130 PROJECT,  
GROUNDWATER MONITORING, TLI NO.: 972114

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-130 project groundwater monitoring for Hexavalent and Total Chromium, Turbidity, Specific Conductivity, pH, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 19, 2007, 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.

Due to the large number of samples in-house, the sample for Total Chromium analysis was analyzed by method EPA 200.8, rather than EPA 200.7 as requested on the chain of custody.

Results for Hexavalent Chromium by EPA 218.6 are reported in the matrix spike calculations although they are below the reporting limit due to the small amount of Hexavalent Chromium present in the sample.

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

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

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

*Sean Condon*  
for Mona Nassimi  
Manager, Analytical Services

*K.R.P. Iyer*

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

# TRUESDAIL LABORATORIES, Inc.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

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

**Laboratory No.:** 972114

**Date:** December 26, 2007

**Collected:** December 19, 2007

**Received:** December 19, 2007

## ANALYST LIST

ANALYST		
EPA 120.1	Specific Conductivity	Tina Acquiat
SM 4500-H B	pH	Tina Acquiat
SM 2540C	Total Dissolved Solids	Tina Acquiat
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Chromium	Linda Saetern
EPA 218.6	Hexavalent Chromium	Jean-Paul Gleeson

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## REPORT

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www.truesdail.com

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

Attention: Shawn Duffy

Sample: One (1) Groundwater Samples  
Project Name: PG&E Topock Project  
Project No.: 358342.TM.02.00  
P.O. No.: 358342.TM.02.00

Laboratory No.: 972114

Date: January 8, 2008  
Collected: December 19, 2007  
Received: December 19, 2007  
Prep/ Analyzed: December 20, 2007  
Analytical Batch: 12CrH07V  
Revision 1

Investigation:

Hexavalent Chromium by EPA 218.6

### Analytical Results Hexavalent Chromium

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
972114	SC-700B-WDR-130	10:15	07:34	mg/L	1.05	0.00020	ND

### QA/QC Summary

QC STD I.D.		Laboratory Number		Concentration		Duplicate Concentration		Relative Percent Difference		Acceptance limits		QC Within Control	
Duplicate		972114 5x		ND		ND		0.00%		≤ 20%		Yes	

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	972114	0.00011	1.06	0.00100	0.00106	0.00119	0.00117	102%	90-110%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.00517	0.00500	103%	90% - 110%	Yes
MRCVS#1	0.00990	0.0100	99.0%	95% - 105%	Yes
MRCVS#2	0.00987	0.0100	98.7%	95% - 105%	Yes
LCS	0.00518	0.00500	104%	90% - 110%	Yes
LCSD	0.00516	0.00500	103%	90% - 110%	Yes

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

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*Sean Condon*  
for Mona Nassimi, Manager  
Analytical Services

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

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## REPORT

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

Attention: Shawn Duffy

Sample: One (1) Groundwater Samples  
Project Name: PG&E Topock Project  
Project No.: 358342.TM.02.00  
P.O. No.: 358342.TM.02.00  
Prep. Batch: 122007A

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Laboratory No.: 972114

Date: December 26, 2007  
Collected: December 19, 2007  
Received: December 19, 2007  
Prep/ Analyzed: December 20, 2007  
Analytical Batch: 122007A

Investigation: Total Chromium by Inductively Coupled Argon Plasma Mass Spectrometer  
using EPA 200.8

### Analytical Results Total Chromium

TLI I.D.	Field I.D.	Units	Method	Run Time	DF	RL	Results
972114	SC-700B-WDR-130	mg/L	EPA 200.8	12:28	1.00	0.0010	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971669-7	ND	ND	0.00%	≤20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971669-7	0.00	1.00	0.0500	0.0500	0.0470	0.0500	94.0%	70-130%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.0506	0.0500	101%	90% - 110%	Yes
MRCVS#1	0.0522	0.0500	104%	90% - 110%	Yes
MRCVS#2	0.0518	0.0500	104%	90% - 110%	Yes
ICS	0.0547	0.0500	109%	80% - 120%	Yes
LCS	0.0527	0.0500	105%	90% - 110%	Yes

ND: Not detected at reporting limit

DF: Dilution Factor

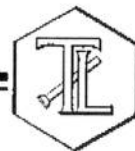
Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Condon*  
for Mona Nassimi, Manager  
Analytical Services

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# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 972114

**Date:** December 26, 2007

**Collected:** December 19, 2007

**Received:** December 19, 2007

**Prep/ Analyzed:** December 20, 2007

**Analytical Batch:** 12TUC070

**Investigation:**

**Turbidity by Method SM 2130B**

### Analytical Results Turbidity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
972114	SC-700B-WDR-130	10:15	NTU	1.00	0.100	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	972103-32	0.108	0.109	0.92%	≤ 20%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS	7.30	8.00	91.3%	90% - 110%	Yes
LCS	7.35	8.00	91.9%	90% - 110%	Yes
LCS	7.40	8.00	92.5%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Condon*  
for Mona Nassimi, Manager  
Analytical Services

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## REPORT

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155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 972114

**Date:** December 26, 2007

**Collected:** December 19, 2007

**Received:** December 19, 2007

**Prep/ Analyzed:** December 20, 2007

**Analytical Batch:** 12PH07W

**Investigation:**

pH by SM 4500-H B

### Analytical Results pH

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>MDL</u>	<u>RL</u>	<u>Results</u>
972114	SC-700B-WDR-130	10:15	09:08	pH	0.0700	2.00	8.06

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Difference (Units)	Acceptance Limits	QC Within Control
Duplicate	972114	8.06	8.08	0.02	+ 0.100 Units	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Difference (Units)	Acceptance Limits	QC Within Control
LCS	7.06	7.00	0.06	+ 0.100 Units	Yes
LCS #1	7.05	7.00	0.05	+ 0.100 Units	Yes
LCS #2	7.09	7.00	0.09	+ 0.100 Units	Yes

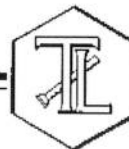
Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sam Corle*  
for Mona Nassimi, Manager  
Analytical Services

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# TRUESDAIL LABORATORIES, INC.

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 972114

**Date:** December 26, 2007

**Collected:** December 19, 2007

**Received:** December 19, 2007

**Prep/ Analyzed:** December 20, 2007

**Analytical Batch:** 12EC07Q

**Investigation:**

**Specific Conductivity by EPA 120.1**

### Analytical Results Specific Conductivity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
972114	SC-700B-WDR-130	µmhos/cm	EPA 120.1	1.00	2.00	6790

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	972114	6790	6800	0.15%	≤ 10%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
CCS	688	706	97.5%	90% - 110%	Yes
CVS#1	945	996	94.9%	90% - 110%	Yes
LCS	688	706	97.5%	90% - 110%	Yes

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*for*   
Mona Nassimi, Manager  
Analytical Services

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# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 972114

**Date:** December 26, 2007

**Collected:** December 19, 2007

**Received:** December 19, 2007

**Prep/ Analyzed:** December 20, 2007

**Analytical Batch:** 12TDS07J

**Investigation:**

**Total Dissolved Solids by SM 2540C**

### Analytical Results Total Dissolved Solids

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>RL</u>	<u>Results</u>
972114	SC-700B-WDR-130	mg/L	SM 2540C	250	4260

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Percent Difference	Acceptance Limits	QC Within Control
Duplicate	972114	4260	4240	0.24%	≤ 5%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS 1	494	500	98.8%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).  
RL: Reporting Limit.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Sean Conlan*  
for Mona Nassimi, Manager  
Analytical Services

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972114

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

COC Number

# CHAIN OF CUSTODY RECORD

[IM3] Plant-WDR-130]

TURNAROUND TIME 10 Days

DATE 12/19/07 PAGE 1 OF 1

COMPANY E2		DATE 12/19/07		TIME 1015		DESCRIPTION Water	
PROJECT NAME PG&E Topock	PHONE (530) 229-3303	FAX (530) 339-3303	TEAM 1				
ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612		P.O. NUMBER 358342 TM.02.00					
SAMPLERS (SIGNATURE) <i>[Signature]</i>		SAMPLER I.D. SC-700B-WDR-130					
COMMENTS REWORK 10:28 HRS PH 8.0 CES		NUMBER OF CONTAINERS 3					
		TOTAL NUMBER OF CONTAINERS 3					

## CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	Printed Name <i>[Signature]</i>	Company/Agency CINEMA HILL	Date/Time 12/19/07	SAMPLE CONDITIONS RECEIVED <input type="checkbox"/> COOL <input type="checkbox"/> WARM <input type="checkbox"/> °F CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>
Signature (Received)	Printed Name Bonifacio Doyag	Company/Agency BONIFACIO Doyag	Date/Time 12-19-07	
Signature (Relinquished)	Printed Name Bonifacio Doyag	Company/Agency BONIFACIO Doyag	Date/Time 12-19-07	SPECIAL REQUIREMENTS: For Sample Collection See Form A-12
Signature (Received)	Printed Name <i>[Signature]</i>	Company/Agency TCL	Date/Time 12-19-07	
Signature (Relinquished)	Printed Name Level QC	Company/Agency Level QC	Date/Time 12-19-07	RUSH
Signature (Received)	Printed Name <i>[Signature]</i>	Company/Agency Level QC	Date/Time 12-19-07	

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INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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

January 2, 2007

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-131 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 972292

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-131 project groundwater monitoring for Hexavalent and Total Chromium, Turbidity, Specific Conductivity, pH, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 27, 2007, 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.

Due to the large number of samples in-house, the sample for Total Chromium analysis was analyzed by method EPA 200.8, rather than EPA 200.7 as requested on the chain of custody.

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

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

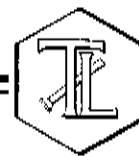
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

For Mona Nassimi  
Manager, Analytical Services

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

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



Established 1931

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

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

**Laboratory No.:** 972292

**Date:** January 2, 2008

**Collected:** December 27, 2007

**Received:** December 27, 2007

## ANALYST LIST

EPA 120.1	Specific Conductivity	Tina Acquiat
SM 4500-H B	pH	Tina Acquiat
SM 2540C	Total Dissolved Solids	Tina Acquiat
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Chromium	Linda Saetern
EPA 218.6	Hexavalent Chromium	Jean-Paul Gleeson

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

## REPORT

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

Attention: Shawn Duffy

Sample: One (1) Groundwater Samples  
Project Name: PG&E Topock Project  
Project No.: 358342.TM.02.00  
P.O. No.: 358342.TM.02.00

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TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
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Laboratory No.: 972292

Date: January 2, 2008  
Collected: December 27, 2007  
Received: December 27, 2007  
Prep/ Analyzed: December 28, 2007  
Analytical Batch: 12CrH07X

Investigation:

Hexavalent Chromium by EPA 218.6

### Analytical Results Hexavalent Chromium

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
972292	SC-700B-WDR-131	11:30	08:19	mg/L	1.05	0.00020	ND

### QA/QC Summary

QC STD I.D.		Laboratory Number		Concentration		Duplicate Concentration		Relative Percent Difference		Acceptance Limits		QC Within Control	
Duplicate		972292 5x		ND		ND		0.00%		< 20%		Yes	

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance Limits	QC Within Control
MS	972292	0.000186	1.06	0.00100	0.00106	0.00125	0.00125	100%	90-110%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.00520	0.00500	104%	90% - 110%	Yes
MRCVS#1	0.00981	0.0100	98.1%	95% - 105%	Yes
LCS	0.00520	0.00500	104%	90% - 110%	Yes
LCSD	0.00518	0.00500	104%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*A. Nassimi*  
For Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

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## REPORT

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**Client:** E2 Consulting Engineers, Inc.  
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Oakland, CA 94612

**Attention:** Shawn Duffy

**Laboratory No.:** 972292

**Sample:** One (1) Groundwater Samples  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00  
**Prep. Batch:** 122807A

**Date:** January 2, 2008  
**Collected:** December 27, 2007  
**Received:** December 27, 2007  
**Prep/ Analyzed:** December 28, 2007  
**Analytical Batch:** 122807A

**Investigation:** Total Chromium by Inductively Coupled Argon Plasma Mass Spectrometer  
using EPA 200.8

### Analytical Results Total Chromium

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>Run Time</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
972292	SC-700B-WDR-131	mg/L	EPA 200.8	10:02	1.00	0.0010	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	972292	ND	ND	0.00%	≤20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	972292	0.00	1.00	0.0500	0.0500	0.0525	0.0500	105%	70-130%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.0482	0.0500	96.4%	90% - 110%	Yes
MRCVS#1	0.0528	0.0500	106%	90% - 110%	Yes
ICS	0.0497	0.0500	99.4%	80% - 120%	Yes
LCS	0.0484	0.0500	96.8%	90% - 110%	Yes

ND: Not detected at reporting limit

DF: Dilution Factor

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*Mona Nassimi*  
For Mona Nassimi, Manager  
Analytical Services



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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

**Laboratory No.:** 972292

**Date:** January 2, 2008

**Collected:** December 27, 2007

**Received:** December 27, 2007

**Prep/ Analyzed:** December 28, 2007

**Analytical Batch:** 12TUC07S

**Investigation:**

**Turbidity by Method SM 2130B**

### Analytical Results Turbidity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
972292	SC-700B-WDR-131	11:30	NTU	1.00	0.100	ND

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	972285-1	3.95	3.98	0.76%	≤ 20%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS	7.52	8.00	94.0%	90% - 110%	Yes
LCS	7.60	8.00	95.0%	90% - 110%	Yes
LCS	7.65	8.00	95.6%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

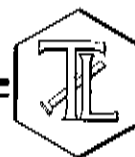
DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Ah. Khana*  
For **Mona Nassimi, Manager**  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 972292

**Date:** January 2, 2008

**Collected:** December 27, 2007

**Received:** December 27, 2007

**Prep/ Analyzed:** December 28, 2007

**Analytical Batch:** 12TDS07N

**Investigation:**

**Total Dissolved Solids by SM 2540C**

### Analytical Results Total Dissolved Solids

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>RL</u>	<u>Results</u>
972292	SC-700B-WDR-131	mg/L	SM 2540C	125	4280

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Percent Difference	Acceptance limits	QC Within Control
Duplicate	972292	4280	4340	0.70%	≤ 5%	Yes

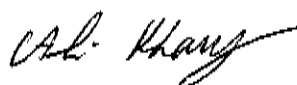
  

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
LCS 1	499	500	99.8%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

RL: Reporting Limit.

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*For*   
Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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## REPORT

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

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www.truesdail.com

**Attention:** Shawn Duffy

**Laboratory No.:** 972292

**Sample:** One (1) Groundwater Samples  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Date:** January 2, 2008  
**Collected:** December 27, 2007  
**Received:** December 27, 2007  
**Prep/ Analyzed:** December 28, 2007  
**Analytical Batch:** 12EC07T

**Investigation:**

**Specific Conductivity by EPA 120.1**

### Analytical Results Specific Conductivity

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Units</u>	<u>Method</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
972292	SC-700B-WDR-131	µmhos/cm	EPA 120.1	1.00	2.00	6180


### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	972292	6180	6200	0.32%	≤ 10%	Yes

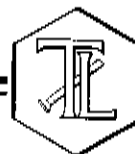
QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
CCS	687	706	97.3%	90% - 110%	Yes
CVS#1	944	996	94.8%	90% - 110%	Yes
LCS	687	706	97.3%	90% - 110%	Yes

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*For*   
Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Samples  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

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**Laboratory No.:** 972292

**Date:** January 2, 2008

**Collected:** December 27, 2007

**Received:** December 27, 2007

**Prep/ Analyzed:** December 28, 2007

**Analytical Batch:** 12PH07BB

**Investigation:**

pH by SM 4500-H B

### Analytical Results pH

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>MDL</u>	<u>RL</u>	<u>Results</u>
972292	SC-700B-WDR-131	11:30	08:37	pH	0.0700	2.00	8.23

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Difference (Units)	Acceptance limits	QC Within Control
Duplicate	972292	8.23	8.24	0.01	+ 0.100 Units	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Difference (Units)	Acceptance Limits	QC Within Control
LCS	7.08	7.00	0.08	+ 0.100 Units	Yes
LCS #1	7.06	7.00	0.06	+ 0.100 Units	Yes

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Mona Nassimi*  
For **Mona Nassimi, Manager**  
Analytical Services

RUSH

Rec'd 12/27/07

72292

COC Number

TURNAROUND TIME

5 Days

DATE

PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-131]

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972292

COMPANY	E2	DATE	TIME	DESCRIPTION	Water
PROJECT NAME	PG&E Topock	12-27-07	1130		
PHONE	(530) 229-3303				
FAX	(530) 339-3303				
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612				
P.O. NUMBER	358342.TM.02.00				
TEAM	1				
SAMPLERS (SIGNATURE)					
SAMPLE ID.	SC-700B-WDR-131				
NUMBER OF CONTAINERS	3				
COMMENTS	Temp - 77.5 pH - 7.9				
TOTAL NUMBER OF CONTAINERS	3				

RUSH

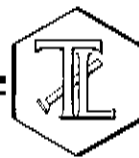
ALERT!!  
Level III QC

Lab Sample Conditions  
Sample ID: 972292

CHAIN OF CUSTODY SIGNATURE RECORD					
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SAMPLE CONDITIONS	
	Rafael Davila	Company/ Agency	12-27-07 1130	RECEIVED	COOL <input type="checkbox"/> WARM <input type="checkbox"/> °F
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED	YES <input type="checkbox"/> NO <input type="checkbox"/>
	Rafael Davila	Company/ Agency	12-27-07 3:30	SPECIAL REQUIREMENTS:	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
	Rafael Davila	Company/ Agency	12-27-07 8:30		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
	Rafael Davila	Company/ Agency	12-27-07 8:30		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
	Rafael Davila	Company/ Agency	12-27-07 8:30		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
	Rafael Davila	Company/ Agency	12-27-07 8:30		

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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December 26, 2007

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

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-128 PROJECT, SLUDGE  
MONITORING,  
TLI No.: 971671

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-128 project sludge monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.


The samples were received and delivered with the chain of custody on December 5, 2007, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

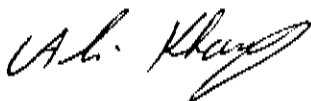
All final results and associated dilution factors are reported on a dry weight basis.

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

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

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
for Mona Nassimi  
Manager, Analytical Services

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

# TRUESDAIL LABORATORIES, INC.

INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES



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

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**Laboratory No.:** 971671

**Date:** December 26, 2007

**Collected:** December 5, 2007

**Received:** December 5, 2007

## ANALYST LIST

Sample ID	Analysis	Analyst
EPA 300.0	Fluoride	Giawad Ghenniwa
SM 2540 B	% Moisture	Gautam Savani
SW 6010B	Metals by ICP	Mark Kotani
SW 7471A	Mercury	Michel Mendoza
SW 7199	Hexavalent Chromium	David Blackburn

# TRUESDAIL LABORATORIES, INC.

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## REPORT

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

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

**Prep. Batch:** 12CrH07P

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
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**Laboratory No.:** 971671

**Date:** December 26, 2007

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 12, 2007

**Analytical Batch:** 12CrH07P

**Investigation:**

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

### Analytical Results Hexavalent Chromium

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971671	SC-Sludge-WDR-128	13:00	8:43	mg/kg	10.0	10.3	293

### QA/QC Summary

QC STD I.D.	Laboratory Number	Sample Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971671	293	342	15.4%	< 20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971671	293	10.0	41.0	410	745	703	110%	75-125%	Yes
IMS	971671	293	40.0	102	4080	4140	4373	94.3%	75-125%	Yes
PDMS	971671	293	25.0	32.8	820	1140	1113	103%	75-125%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	0.0528	0.0500	106%	90% - 110%	Yes
MRCVS#1	0.0532	0.0500	106%	90% - 110%	Yes
LCS	0.0449	0.0500	89.8%	80% - 120%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

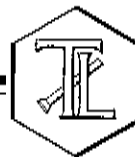
*Sean Condon*  
for **Mona Nassimi, Manager**  
Analytical Services

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



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

## REPORT

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

**Laboratory No.:** 971671

**Date:** December 26, 2007

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 10, 2007

**Analytical Batch:** 12SOLID07A

**Investigation:**

**Total Solids by SM 2540 B**

### Analytical Results % Moisture

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Units</u>	<u>Results</u>
971671	SC-Sludge-WDR-128	13:00	%	80.5

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971671	80.5	80.5	0.00%	≤ 20%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Seam Condon*  
for Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

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## REPORT

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
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**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 358342.TM.02.00

**P.O. No.:** 358342.TM.02.00

**Laboratory No.:** 971671

**Date:** December 26, 2007

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Prep/ Analyzed:** December 7, 2007

**Analytical Batch:** 12AN07F

**Investigation:**

**Fluoride by Ion Chromatography using EPA 300.0**

### Analytical Results Fluoride

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
971671	SC-Sludge-WDR-128	13:00	13:33	mg/kg	20.0	10.3	102

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	971671	102	89.5	13.1%	≤ 20%	Yes

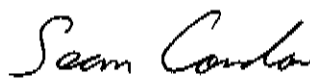
QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	971671	102	20.0	10.2	204	329	306	111%	85-115%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
MRCCS	4.16	4.00	104%	90% - 110%	Yes
MRCVS#1	3.03	3.00	101%	90% - 110%	Yes
MRCVS#2	3.17	3.00	106%	90% - 110%	Yes
MRCVS#3	3.10	3.00	103%	90% - 110%	Yes
MRCVS#4	3.12	3.00	104%	90% - 110%	Yes
LCS	4.15	4.00	104%	90% - 110%	Yes
LCSD	4.07	4.00	102%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

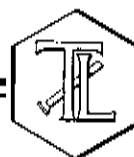
Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*for*   
Mona Nassimi, Manager  
Analytical Services

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# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



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## REPORT

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

**Attention:** Shawn Duffy

**Samples:** One (1) Soil Sample  
**Project Name:** PG&E Topock Project  
**Project No.:** 358342.TM.02.00  
**P.O. No.:** 358342.TM.02.00

**Investigation:** Total Metal Analyses as Requested

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**Laboratory No.:** 971671

**Reported:** December 26, 2007

**Collected:** December 5, 2007

**Received:** December 5, 2007

**Analyzed:** November 9 - 21, 2007

## Analytical Results

SAMPLE ID: SC-Sludge-WDR-128		Time Collected: 13:00		LAB ID: 971671				
Parameter	Method	Reported				Batch	Date	Time
		Value	DF	Units	RL		Analyzed	Analyzed
Antimony	SW 6010B	370	43.0	mg/kg	4.41	121207A	12/12/07	12:47
Arsenic	SW 6010B	68.2	43.0	mg/kg	4.41	121207A	12/12/07	12:47
Barium	SW 6010B	108	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Beryllium	SW 6010B	127	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Cadmium	SW 6010B	57.9	43.0	mg/kg	4.41	121207A	12/12/07	12:47
Chromium	SW 6010B	21600	2150	mg/kg	110	121207A	12/12/07	12:43
Cobalt	SW 6010B	17.7	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Copper	SW 6010B	906	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Lead	SW 6010B	111	43.0	mg/kg	4.41	121207A	12/12/07	12:47
Mercury	SW 7471A	ND	97.7	mg/kg	0.100	12HG07Ac	12/17/07	N/A
Molybdenum	SW 6010B	ND	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Nickel	SW 6010B	77.4	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Selenium	SW 6010B	233	43.0	mg/kg	11.0	121207A	12/12/07	12:47
Silver	SW 6010B	ND	43.0	mg/kg	4.41	121207A	12/12/07	12:47
Thallium	SW 6010B	ND	43.0	mg/kg	4.41	121207A	12/12/07	12:47
Vanadium	SW 6010B	124	43.0	mg/kg	2.50	121207A	12/12/07	12:47
Zinc	SW 6010B	1390	43.0	mg/kg	11.0	122607A	12/26/07	15:23

### NOTES:

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

ND: Not detected, or below limit of detection.

DF: Dilution factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Shawn Condon*  
for Mona Nassimi, Manager  
Analytical Services

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

971671

TRUESDAIL LABORATORIES, INC.  
14201 Franklin Avenue, Tustin, CA 92780-7008  
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CHAIN OF CUSTODY RECORD  
[IM3Plant-WDR-128]

COC Number  
TURNAROUND TIME 10 Days  
DATE 12-5-07 PAGE 1 OF 1

COMPANY	E2	PROJECT NAME	PG&E Topock	PHONE	(530) 229-3303	FAX	(530) 339-3303	ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612	P.O. NUMBER	358342.TM.02.00	TEAM	1	SAMPLERS (SIGNATURE)	<i>David S. Topock</i>	SAMPLE ID.	SC-Sludge-WDR-128	DATE	12-5-07	TIME	1300	DESCRIPTION	Sludge	COMMENTS	Rec'd 12/05/07 Lab.# 971671
																		NUMBER OF CONTAINERS				TOTAL NUMBER OF CONTAINERS			
																		C6 (218.6) Lab Filtered							
																		Total Metals (200.7) Field Filtered Mn							
																		Alas Ba B.Cu Pb.Mn Mo Ni Sb Fe Zn							
																		Manganese (200.7) Field Filtered Mn							
																		Total Metals (200.7) Title 22, Mercury							
																		Specific Conductance (120.1)							
																		TDS (SM2540C)							
																		PH (SM4500H)							
																		Anions (300.0) FI							
																		Anions (300.0) FI, SO4, NO2, NO3							
																		C6 (7199)							
																		Metals (60108) Title 22, Mercury							
																		Turbidity (SM2130)							
																		Ammonia (SM4500NH3)							

ALERT !!  
Level III QC

For Sample Conditions  
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD													
Signature (Relinquished)	<i>David S. Topock</i>	Printed Name	David S. Topock	Company/Agency	CH2M Hill	Date/Time	12/5/07 1300	SAMPLE CONDITIONS				°F	
Signature (Received)	<i>Rafael David</i>	Printed Name	Rafael David	Company/Agency	T-LI	Date/Time	12-5-07 15:20	RECEIVED	COOL	WARM			
Signature (Relinquished)		Printed Name		Company/Agency		Date/Time		CUSTODY SEALED	YES	NO			
Signature (Received)	<i>David S. Topock</i>	Printed Name	David S. Topock	Company/Agency	CH2M Hill	Date/Time	12/5/07 1300	SPECIAL REQUIREMENTS:					
Signature (Relinquished)		Printed Name		Company/Agency		Date/Time							
Signature (Received)	<i>Rafael David</i>	Printed Name	Rafael David	Company/Agency	T-LI	Date/Time	12-5-07 15:20						