



**Pacific Gas and  
Electric Company**

577 064  
LS

Technical and Ecological Services 3400 Crow Canyon Road  
San Ramon, CA 94583  
925.820.2000

June 14, 1999

Ms. Jennifer Eberle  
Hazardous Materials Specialist  
Alameda County Department of Environmental Health  
UST Local Oversight Program  
1131 Harbor Way Parkway, 2<sup>nd</sup> Floor  
Alameda, CA 94502-6577

Re: Groundwater Monitoring and Sampling Annual Report, Oakland Power Plant,  
Oakland, California

Dear Ms. Eberle:

Enclosed is a copy of the Groundwater Monitoring and Sampling Annual Report for Oakland Power Plant at 50 Martin Luther King Jr. Way, Oakland, California. The purpose of this report is to present the results of annual groundwater monitoring and sampling activities conducted at the site on February 17, 1999. This report is submitted to your office as requested in your letter dated April 23, 1993.

The analytical results show that unknown hydrocarbons in the early diesel range were detected in the groundwater sample collected from well MW-1-2 at a concentration of 130 micrograms per liter ( $\mu\text{g/L}$ ). Diesel-range hydrocarbons were not detected at or above the method detection limit in the groundwater samples collected from wells MW-1-3 and MW-2-3.

Based on water level measurements made at the site, shallow groundwater is present about 3.5 feet below the surface and groundwater flowed to the northwest at a gradient of approximately 0.009 foot per foot.

Should you have any questions regarding this report, please contact me at (925) 866-5882.

Sincerely,

Korbin D. Creek  
Acting Supervisor Land and Water Quality Unit

KDC:dlw  
402\_331-99\_110.doc/109.xls

pc: CRFletcher  
DAGilbert  
PLNelson  
KSPiini

Enclosure

99 JUN 21 PM 3:48  
ENVIRONMENTAL  
PROTECTION

# TES

**Groundwater Monitoring and  
Sampling Annual  
Report**

**Oakland Power Plant  
50 Martin Luther King Jr. Way  
Oakland, California**

**February 1999**

Prepared by  
**Technical and Ecological Services**

June 1999

Report No.: 402.331-99.109  
TES 24-Hr. Service Line: 8-251-3197 or (925) 866-3197

**Pacific Gas and Electric Company  
Technical and Ecological Services  
3400 Crow Canyon Road, San Ramon, California 94583**

Prepared by:

*Karen S. Piini*

Karen S. Piini  
Engineer

Approved by:



*Korbin D. Creek*

Korbin D. Creek  
Acting Supervisor Land and Water Quality Unit

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## 1 INTRODUCTION

This report presents the results of groundwater monitoring performed during the 1999 annual monitoring event to comply with the monitoring requirements for underground diesel dump tanks Nos. 2 and 3 at Oakland Power Plant located at 50 Martin Luther King Jr. Way, Oakland, California (see Figure 1).

## 2 GROUNDWATER LEVELS AND DIRECTION

The 1999 annual groundwater levels were measured at Oakland Power Plant on February 17, 1999, using an electronic sounding device, and recorded on the monitoring well water level / floating product survey form included in Appendix A. The groundwater elevations are summarized in Table 1. The February data were used to construct a groundwater contour map (Figure 2). February water levels ranged from a low of 9.91 feet above mean sea level (MSL) in well MW-1-3 to a high of 10.62 feet above MSL in well MW-1-2. The estimated groundwater gradient is approximately 0.009 foot per foot (ft/ft) to the northwest.

## 3 SAMPLING, ANALYSIS, AND MONITORING PROGRAM RESULTS

Groundwater samples were collected from wells MW-1-2, MW-1-3, and MW-2-3 on February 17, 1999, consistent with the protocol presented in Figure 3. Samples collected from these wells were analyzed for total petroleum hydrocarbons as diesel (TPHD) using U.S. Environmental Protection Agency (USEPA) Method 3510/8015. For the February 1999 sampling event, sample preparation for TPHD analysis also included silica gel clean-up to remove non-petroleum hydrocarbons. Field readings from the 1999 annual monitoring event, including sample temperature, conductivity, and pH, are recorded on the purging and sampling log sheets (see Appendix A) and are presented in Table 1.

Based on a letter dated January 11, 1996 from Jennifer Eberle, the Hazardous Materials Specialist with the Alameda County Environmental Health Services Department, the analysis for BTEX was eliminated for well MW-2-3 and the field blank. The analysis for BTEX was eliminated for wells MW-1-2 and MW-1-3 in the second quarter of 1994.

The February 1999 and historical analytical data are summarized in Table 1. Certified analytical reports and chain-of-custody records are included in Appendix B. The analytical results are discussed below.

An unknown hydrocarbon in the early diesel range was detected in the groundwater sample collected from well MW-1-2 at a concentration of 130 micrograms per liter ( $\mu\text{g/L}$ ). Diesel-range hydrocarbons were not detected at or above the method detection limit ( $50 \mu\text{g/L}$ ) in the samples collected from wells MW-1-3 and MW-2-3.

#### 4 FIELD AND LABORATORY QUALITY CONTROL RESULTS

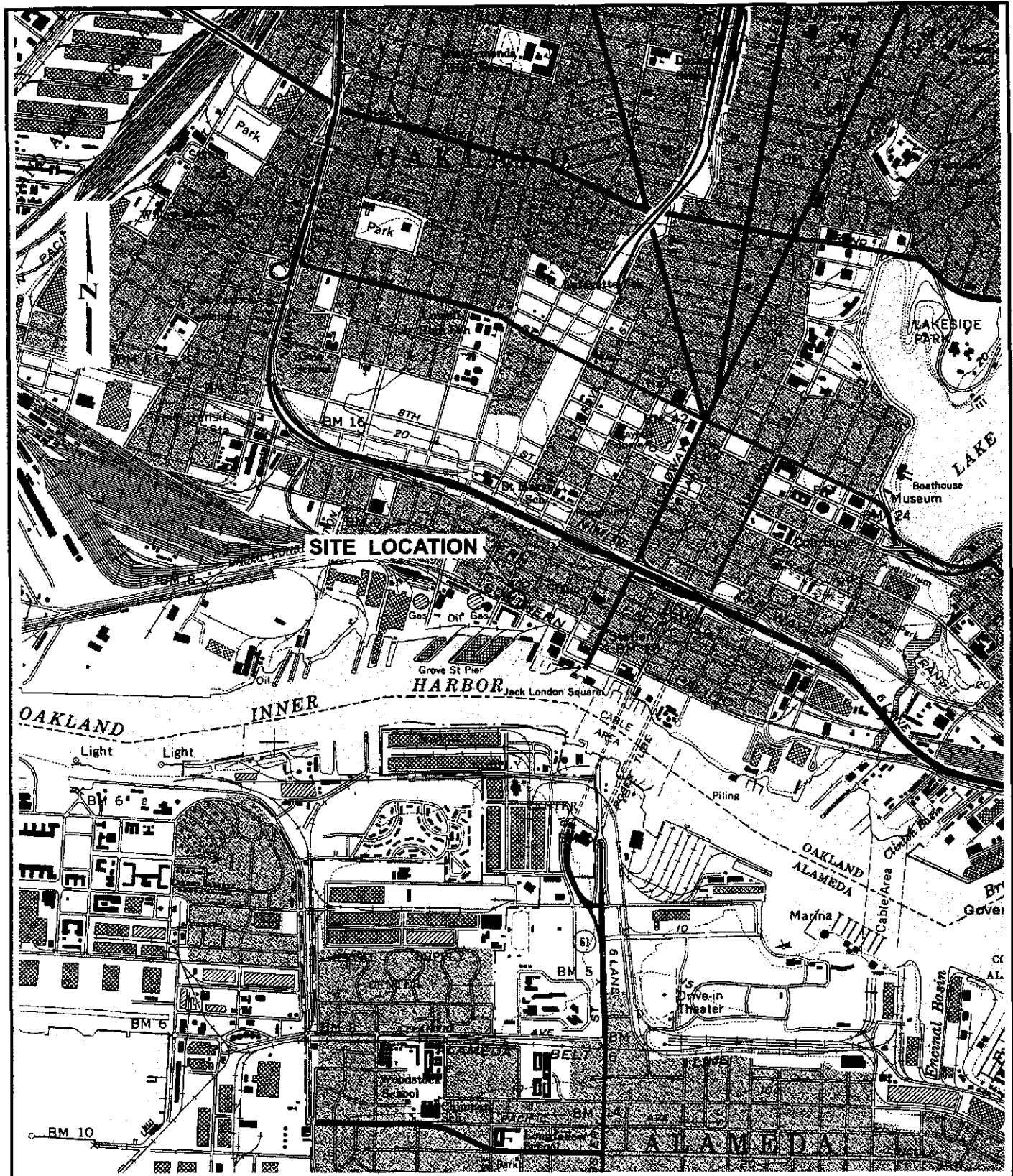
Analytical data were evaluated for accuracy and precision based on field and laboratory quality control (QC) sample performance. The field QC consisted of collecting one field blank and analyzing it for TPHD.

The field blank was collected to assess the effect of field environments on the analytical results and to identify false positives. No parameters were detected above their respective method reporting limits in the field blank, indicating no adverse effects from sampling or analytical procedures.

The laboratory QC consisted of checking adherence to holding times and evaluating method blanks and matrix spike (MS) results. Holding times are established by the USEPA and refer to the maximum time allowed between sample collection and analysis by the laboratory. These limits assist in determining data validity. The method blank results are used to assess the effect of the laboratory environment on the analytical results. The MS recoveries are used to assess accuracy.

All analyses were done within the holding times specified by the USEPA. No compounds were detected in the daily method blanks. Recoveries of MS were within the laboratory acceptance limits.

The field and laboratory QC results indicate that the analytical data are of acceptable quality.



Base map from U.S. Geological Survey 7.5 minute series.  
 Quadrangle: Oakland West, Calif.

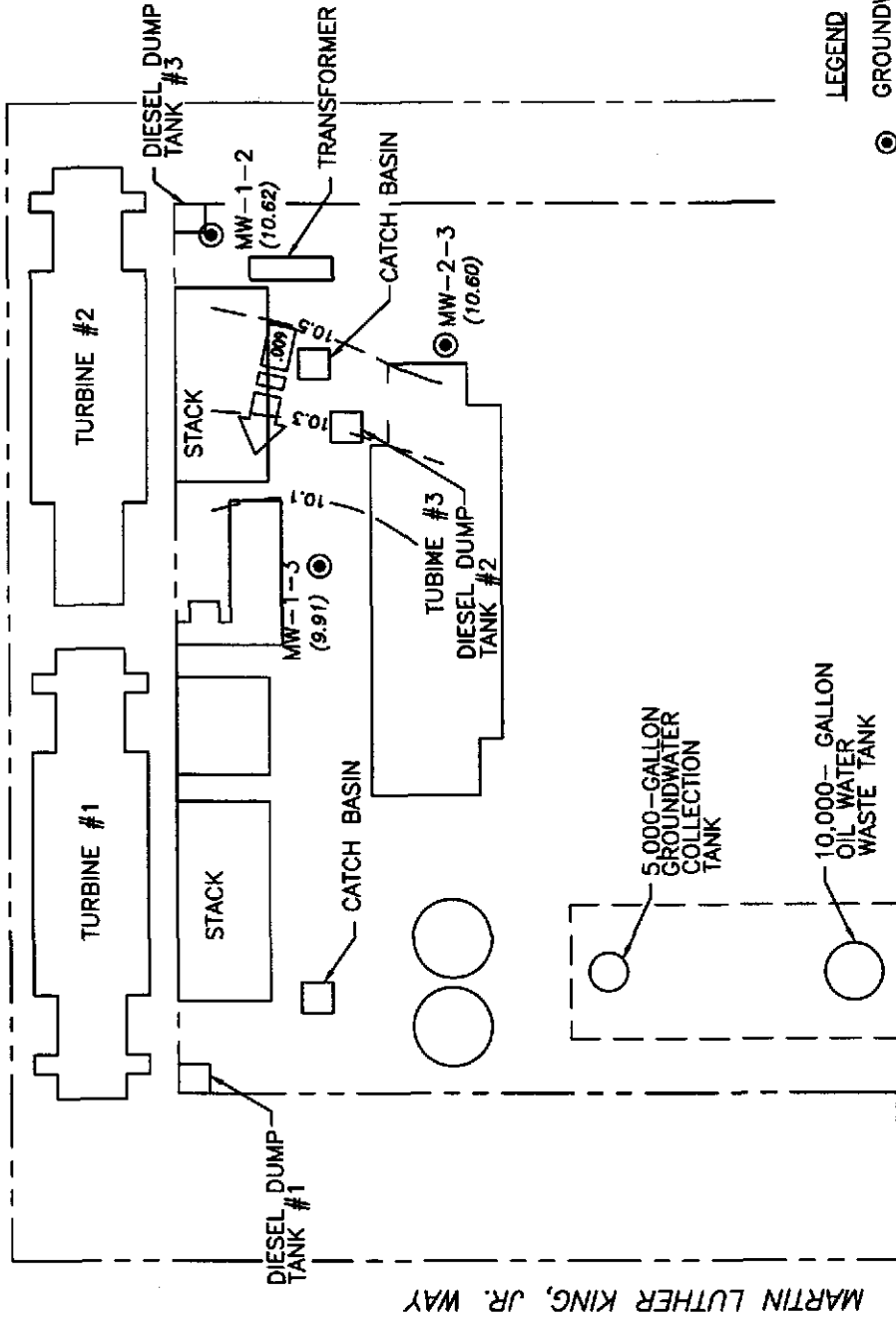
0 2000 Feet



Figure 1. Site Location Map of Oakland Power Plant.



EMBARCADERO WAY

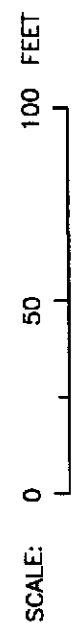


MARTIN LUTHER KING, JR. WAY

JEFFERSON STREET

**LEGEND**

- ⊙ GROUNDWATER MONITORING WELL
- (10.19) GROUNDWATER ELEVATION (Ft--MSL)
- - - GROUNDWATER ELEVATION CONTOUR (Ft--MSL)
- ↑ 0.009 APPROXIMATE DIRECTION OF GROUNDWATER FLOW SHOWING GRADIENT, Ft/Ft



|          |                   |
|----------|-------------------|
| DRN: LKE | DATE: 6/2/99      |
| CHK: KP  | SCALE: As Shown   |
| APR: EPJ | SHEET: Oakland PP |
| REV.     | 0                 |

**Oakland Power Plant**  
**Groundwater Contour Map - February 17, 1999**

TECHNICAL AND ECOLOGICAL SERVICES -- LWQU



FIGURE 2

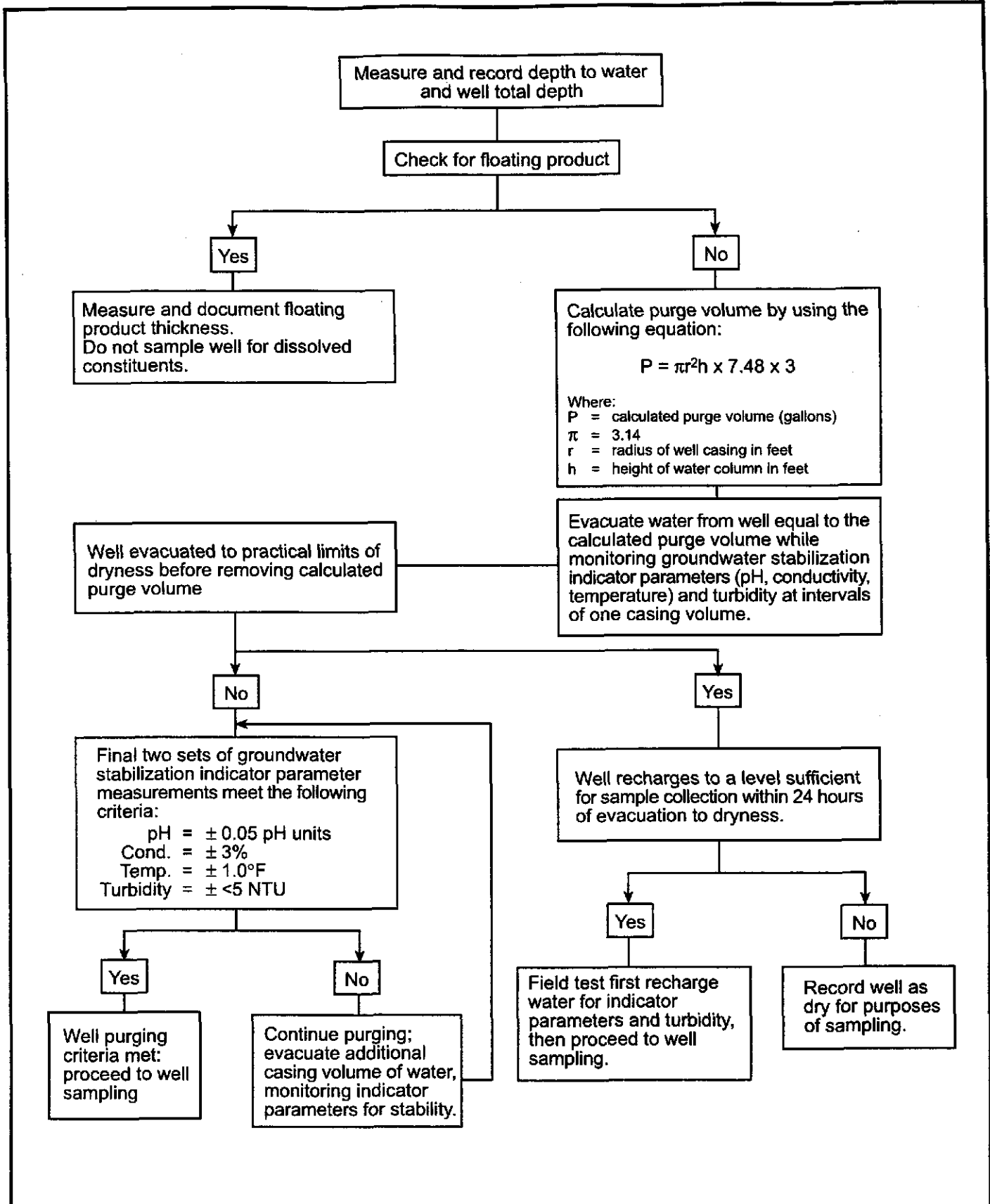


Figure 3. Monitoring Well Purging Protocol



**Table 1  
Oakland Power Plant  
February 1999 and Historical Monitoring Data**

| Sample Designation | Sampling Date | Top of Casing (ft/MSL) | Depth to Groundwater (ft) | Groundwater Elevation (ft/MSL) | TPHD $\mu\text{g/L}$ | Benzene $\mu\text{g/L}$ | Toluene $\mu\text{g/L}$ | Ethylbenzene $\mu\text{g/L}$ | Total Xylenes $\mu\text{g/L}$ |
|--------------------|---------------|------------------------|---------------------------|--------------------------------|----------------------|-------------------------|-------------------------|------------------------------|-------------------------------|
| MW-1-2             | 06/22/93      | 13.95                  | 5.05                      | 8.90                           | 1,500 <sup>1</sup>   | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-2             | 09/22/93      |                        | 5.91                      | 8.04                           | 240                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| Dup                | 09/22/93      |                        | ---                       | ---                            | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-2             | 12/28/93      |                        | 4.77                      | 9.18                           | 200                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| Dup                | 12/28/93      |                        | ---                       | ---                            | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-2             | 04/11/94      |                        | 4.66                      | 9.29                           | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| Dup                | 04/11/94      |                        | ---                       | ---                            | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-2             | 04/20/94      |                        | 4.86                      | 9.09                           | 600                  | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 06/29/94      |                        | 5.18                      | 8.77                           | 520                  | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 10/07/94      |                        | 4.55                      | 9.40                           | 590                  | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 01/03/95      |                        | 4.11                      | 9.84                           | 650 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 03/24/95      |                        | 3.57                      | 10.38                          | 740 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 06/30/95      |                        | 4.69                      | 9.26                           | 540                  | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 10/12/95      |                        | 5.35                      | 8.60                           | 230 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 01/18/96      |                        | 4.19                      | 9.76                           | 600 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 02/19/96      |                        | 4.03                      | 9.92                           | 670 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 02/28/97      |                        | 4.73                      | 9.22                           | 1,800 <sup>1</sup>   | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 02/24/98      |                        | 3.50                      | 10.45                          | 430 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-2             | 02/17/99      |                        | 3.33                      | 10.62                          | 130 <sup>1,5</sup>   | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 06/22/93      | 14.01                  | 5.15                      | 8.86                           | 160 <sup>1</sup>     | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-3             | 09/22/93      |                        | 5.57                      | 8.44                           | 430                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-3             | 12/28/93      |                        | 5.13                      | 8.88                           | <50                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-3             | 04/11/94      |                        | 5.01                      | 9.00                           | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-1-3             | 04/20/94      |                        | 5.09                      | 8.92                           | <50                  | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 06/29/94      |                        | 5.30                      | 8.71                           | 280 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 10/07/94      |                        | 5.69                      | 8.32                           | 160 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 01/03/95      |                        | 4.62                      | 9.39                           | 210 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 06/30/95      |                        | 4.89                      | 9.12                           | 231 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |

**Table 1  
Oakland Power Plant  
February 1999 and Historical Monitoring Data**

| Sample Designation | Sampling Date | Top of Casing (ft/MSL) | Groundwater               |                    | TPHD $\mu\text{g/L}$ | Benzene $\mu\text{g/L}$ | Toluene $\mu\text{g/L}$ | Ethylbenzene $\mu\text{g/L}$ | Total Xylenes $\mu\text{g/L}$ |
|--------------------|---------------|------------------------|---------------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------------|-------------------------------|
|                    |               |                        | Depth to Groundwater (ft) | Elevation (ft/MSL) |                      |                         |                         |                              |                               |
| MW-1-3             | 10/12/95      |                        | 5.43                      | 8.58               | 190 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 01/18/96      |                        | 4.72                      | 9.29               | 240 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 02/19/96      |                        | 4.41                      | 9.60               | 290 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 02/28/97      |                        | 4.90                      | 9.11               | 1,500 <sup>1</sup>   | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 02/24/98      |                        | 3.82                      | 10.19              | 160 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-1-3             | 02/17/99      |                        | 4.10                      | 9.91               | <50 <sup>5</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-2-3             | 06/22/93      | 13.91                  | 5.00                      | 8.91               | 560 <sup>2</sup>     | 3                       | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 09/22/93      |                        | 5.50                      | 8.41               | 460                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 12/28/93      |                        | 4.74                      | 9.17               | <50 <sup>3</sup>     | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 04/11/94      |                        | 5.62                      | 8.29               | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 04/20/94      |                        | 5.83                      | 8.08               | <50                  | ---                     | ---                     | ---                          | ---                           |
| MW-2-3             | 06/29/94      |                        | 5.14                      | 8.77               | 920 <sup>1,4</sup>   | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 10/07/94      |                        | 5.50                      | 8.41               | <50                  | 16                      | 13                      | 6                            | 24                            |
| MW-2-3             | 01/03/95      |                        | 4.11                      | 9.80               | 190 <sup>1</sup>     | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 03/24/95      |                        | 3.47                      | 10.44              | 110 <sup>1</sup>     | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| Dup                | 03/24/95      |                        | ---                       | ---                | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 06/30/95      |                        | 4.66                      | 9.25               | 187 <sup>1</sup>     | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| Dup                | 06/30/95      |                        | ---                       | ---                | ---                  | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 10/12/95      |                        | 5.30                      | 8.61               | 290 <sup>1</sup>     | <0.5                    | <0.5                    | <0.5                         | <0.5                          |
| MW-2-3             | 01/18/96      |                        | 4.15                      | 9.76               | 370 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-2-3             | 02/19/96      |                        | 3.97                      | 9.94               | 320 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-2-3             | 02/28/97      |                        | 4.70                      | 9.21               | 610 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-2-3             | 02/24/98      |                        | 3.40                      | 10.51              | 140 <sup>1</sup>     | ---                     | ---                     | ---                          | ---                           |
| MW-2-3             | 02/17/99      |                        | 3.31                      | 10.60              | <50 <sup>5</sup>     | ---                     | ---                     | ---                          | ---                           |

**Table 1  
Oakland Power Plant  
February 1999 and Historical Monitoring Data**

| Sample Designation | Sampling Date | Groundwater            |                           |                    | TPHD $\mu\text{g/L}$ | Benzene $\mu\text{g/L}$ | Toluene $\mu\text{g/L}$ | Ethylbenzene $\mu\text{g/L}$ | Total Xylenes $\mu\text{g/L}$ |
|--------------------|---------------|------------------------|---------------------------|--------------------|----------------------|-------------------------|-------------------------|------------------------------|-------------------------------|
|                    |               | Top of Casing (ft/MSL) | Depth to Groundwater (ft) | Elevation (ft/MSL) |                      |                         |                         |                              |                               |
| Travel Blank       | 09/22/93      |                        |                           |                    |                      |                         |                         |                              |                               |
| Travel Blank       | 12/28/93      |                        |                           |                    |                      |                         |                         |                              |                               |
| Travel Blank       | 04/11/94      |                        |                           |                    |                      |                         |                         |                              |                               |
| Travel Blank       | 01/03/95      |                        |                           |                    |                      |                         |                         |                              |                               |
| Travel Blank       | 03/24/95      |                        |                           |                    |                      |                         |                         |                              |                               |
| Travel Blank       | 06/30/95      |                        |                           |                    |                      |                         |                         |                              |                               |
| Travel Blank       | 10/12/95      |                        |                           |                    |                      |                         |                         |                              |                               |
| Trip Blank         | 01/18/96      |                        |                           |                    | <50                  |                         |                         |                              |                               |
| Field Blank        | 02/19/96      |                        |                           |                    | <50                  |                         |                         |                              |                               |
| Field Blank        | 02/28/97      |                        |                           |                    | <50                  |                         |                         |                              |                               |
| Field Blank        | 02/24/98      |                        |                           |                    | <50                  |                         |                         |                              |                               |
| Field Blank        | 02/17/99      |                        |                           |                    | <50                  |                         |                         |                              |                               |

TPHD = Total petroleum hydrocarbons as diesel.

ft/MSL = Feet with respect to mean sea level.

$\mu\text{g/L}$  = Micrograms per liter.

Dup = Blind duplicate.

<sup>1</sup> Unknown hydrocarbon in diesel range quantified as diesel.

<sup>2</sup> Motor oil at a concentration of 3.1 milligrams per liter detected in sample.

<sup>3</sup> Motor oil at a concentration of 2.9 milligrams per liter detected in sample.

<sup>4</sup> Unknown hydrocarbon in motor oil range was also observed in sample.

<sup>5</sup> Sample preparation included silica gel clean-up.

-- = Not analyzed.

Appendix A

**MONITORING WELL WATER LEVEL/FLOATING PRODUCT SURVEY  
FORM AND PURGING AND SAMPLING LOG SHEETS**



# PG & E PURGING AND SAMPLING LOG

SITE Oakland PP JOB ID \_\_\_\_\_  
 PURGE DATE 2-17-95 BY CMH  
 SAMPLE DATE 2-17-95 BY CMH

WELL # MW-2-3  
 WEATHER Clear

### WATER ELEVATION / VOLUME CALCULATIONS

MEASURING POINT (MP) TOC @ Black Mark HYDROCARBON ODOR YES NO  
 DEPTH OF WELL (DTB) 13.38 FT THICKNESS \_\_\_\_\_  
 DEPTH TO WATER (DTW) 3.31 FT  
 TOTAL WATER DEPTH 10.07 FT  
 MEASUREMENT METHOD SOLINST SLOPE INDICATOR \_\_\_\_\_

TOC ELEV. = \_\_\_\_\_ FT - DTW \_\_\_\_\_ FT = GW ELEV. \_\_\_\_\_ FT

### PURGE VOLUME CALCULATIONS

10.07 FT WATER \* CASING FACTOR = 6.64 GAL/CASING VOL. \* 3 VOLUMES = 19.9 TOTAL PURGED (GALS)  
 CASING FACTOR FOR 2" DIA = 0.17 GAL / FT  
 (CIRCLE ONE) FOR 3" DIA = 0.38 GAL / FT  
 FOR 4" DIA = 0.66 GAL / FT

### PURGING

| TIME        | CUMULATIVE DISCHARGE (GAL) | PH                 | CONDUCTIVITY umho/cm | TURBIDITY | °C TEMP | COMMENTS |                         |
|-------------|----------------------------|--------------------|----------------------|-----------|---------|----------|-------------------------|
| START 11:21 | END 11:24                  | 10                 | 6.1                  | 1527      | 61      | 16.6     | 12" by Dent Gray        |
|             | 11:27                      | 14                 | 6.7                  | 1612      | 40      | 17.2     | Lite grey Iron Dore Kay |
|             | 11:30                      | <del>18</del>      | 7.5                  | 1648      | 13      | 18.5     | Well failure            |
|             | 1300                       | DTW at Sample Time |                      | 3.51      |         |          | Wt to Balance           |

METHOD OF DISCHARGE DISPOSAL GROUND BARREL POND (CIRCLE ONE)  
 METHOD OF PURGING HOMELITE BAILER HAND PUMP SUBMERSIBLE WATERRA (CIRCLE ONE)  
 METHOD OF SAMPLING WELL WIZARD TEFLON BAILER HAND PUMP DISPOSABLE BAILER (CIRCLE ONE)  
 METHOD OF CLEANING ALCONOX / DI WATER STEAM CLEANER / DI WATER (CIRCLE ONE)  
 PUMP LINES / BAILER ROPES NEW CLEANED, OR DEDICATED (CIRCLE ONE)  
 pH METER YSI 3502 CALIBRATED YES NO COND. METER YSI 3502 CALIBRATED YES NO  
 TEMP. CORRECTED YES NO CALIBRATION DATA \_\_\_\_\_ pH 4 = 7.00 COND. 1,000 = 981  
 pH 7 = 7.00 COND. 10,000 = \_\_\_\_\_  
 pH 10 = \_\_\_\_\_

### SAMPLES

LAB ANALYSIS PH-D  
 LABORATORY Chryma  
 SAMPLE TIME 1300  
 REMARKS \_\_\_\_\_

- Needs new 4" well seal - Broken Lock ring  
 12" Emco heater 15/16



# PG & E PURGING AND SAMPLING LOG

SITE Oakland?? JOB ID \_\_\_\_\_  
 PURGE DATE 2-17-99 BY CMK  
 SAMPLE DATE 2-17-99 BY CMK

WELL # MW-1-2  
 WEATHER Clear

### WATER ELEVATION / VOLUME CALCULATIONS

MEASURING POINT (MP) TOC@ Black Mark HYDROCARBON ODOR  YES  NO  
 DEPTH OF WELL (DTB) 13.58 FT THICKNESS \_\_\_\_\_  
 DEPTH TO WATER (DTW) 3.33 FT  
 TOTAL WATER DEPTH 10.25 FT  
 MEASUREMENT METHOD  SOLINST  SLOPE INDICATOR

TOC ELEV = \_\_\_\_\_ FT - DTW \_\_\_\_\_ FT = GW ELEV. \_\_\_\_\_ FT

### PURGE VOLUME CALCULATIONS

10.25 FT WATER \* CASING FACTOR = 0.17 GAL/CASING VOL \* 3 VOLUMES = 20.3 TOTAL PURGED (GALS)  
 CASING FACTOR FOR 2" DIA = 0.17 GAL / FT  
 (CIRCLE ONE) FOR 3" DIA = 0.38 GAL / FT  
 FOR 4" DIA = 0.66 GAL / FT

### PURGING

| TIME  |      | CUMULATIVE DISCHARGE (GAL) | pH  | CONDUCTIVITY umho/cm | TURBIDITY | °C TEMP | COMMENTS    |
|-------|------|----------------------------|-----|----------------------|-----------|---------|-------------|
| START | END  |                            |     |                      |           |         |             |
| 1221  | 1224 | 16                         | 7.6 | 1225                 | 25        | 16.1    |             |
| 1226  | 1229 | 15                         | 7.4 | 1048                 | 5         | 16.5    | light grey  |
|       | 1232 | 21                         | 7.3 | 962                  | 3         | 16.1    | Clear water |
|       |      |                            |     |                      |           |         |             |
|       |      |                            |     |                      |           |         |             |

METHOD OF DISCHARGE DISPOSAL  GROUND  BARREL  POND (CIRCLE ONE)  
 METHOD OF PURGING  HOMELITE  BAILER  HAND PUMP  SUBMERSIBLE  WATERA (CIRCLE ONE)  
 METHOD OF SAMPLING  WELL WIZARD  TEFLON BAILER  HAND PUMP  DISPOSABLE BAILER (CIRCLE ONE)  
 METHOD OF CLEANING  ALCONOX / DI WATER  STEAM CLEANER / DI WATER (CIRCLE ONE)  
 PUMP LINES / BAILER ROPES  NEW,  CLEANED, OR DEDICATED (CIRCLE ONE)  
 pH METER \_\_\_\_\_ CALIBRATED  YES  NO COND. METER \_\_\_\_\_ CALIBRATED  YES  NO  
 TEMP. CORRECTED  YES  NO CALIBRATION DATA \_\_\_\_\_ pH 4 = \_\_\_\_\_ COND. 1,000 = \_\_\_\_\_  
 See 2-3 for Cal Data pH 7 = \_\_\_\_\_ COND. 10,000 = \_\_\_\_\_  
 pH 10 = \_\_\_\_\_

### SAMPLES

LAB ANALYSIS TPH-D  
 LABORATORY Univis  
 SAMPLE TIME 1245  
 REMARKS 12 CMK w/rotop 15"/c

# PG & E PURGING AND SAMPLING LOG

SITE OAKLAND P3 JOB ID \_\_\_\_\_  
 PURGE DATE 2-17-99 BY CMK  
 SAMPLE DATE 2-17-99 BY CMK

WELL # MW-1-3  
 WEATHER clear

### WATER ELEVATION / VOLUME CALCULATIONS

MEASURING POINT (MP) TOC@ Black Mark HYDROCARBON ODOR  YES  NO  
 DEPTH OF WELL (DTB) 7.25 FT THICKNESS \_\_\_\_\_  
 DEPTH TO WATER (DTW) 4.10 FT  
 TOTAL WATER DEPTH 3.15 FT  
 MEASUREMENT METHOD SOLINST SLOPE INDICATOR \_\_\_\_\_

TOC ELEV. \_\_\_\_\_ FT - DTW \_\_\_\_\_ FT = GW ELEV. \_\_\_\_\_ FT

### PURGE VOLUME CALCULATIONS

3.15 FT WATER \* CASING FACTOR = 2.09 GAL/CASING VOL. \* 3 VOLUMES = 6.27 TOTAL PURGED (GALS)  
 CASING FACTOR FOR 2" DIA = 0.17 GAL / FT  
 (CIRCLE ONE) FOR 3" DIA = 0.38 GAL / FT  
 FOR 4" DIA = 0.66 GAL / FT

### PURGING

| TIME  |      | CUMULATIVE DISCHARGE (GAL) | pH  | CONDUCTIVITY umho/cm | TURBIDITY | °C TEMP | COMMENTS |
|-------|------|----------------------------|-----|----------------------|-----------|---------|----------|
| START | END  |                            |     |                      |           |         |          |
| 1150  | 1152 | 2.5                        | 7.5 | 1833                 | 14        | 16.2    |          |
|       | 1153 | 5.0                        | 7.6 | 1670                 | 9         | 15.3    |          |
|       | 1155 | 6.5                        | 7.7 | 1595                 | 27        | 15.5    | Cloudy   |
|       |      |                            |     |                      |           |         |          |
|       |      |                            |     |                      |           |         |          |

METHOD OF DISCHARGE DISPOSAL  GROUND  BARREL  POND (CIRCLE ONE)  
 METHOD OF PURGING  HOMELITE  BAILER  HAND PUMP  SUBMERSIBLE  WATERRA (CIRCLE ONE)  
 METHOD OF SAMPLING  WELL WIZARD  TEFLON BAILER  HAND PUMP  DISPOSABLE BAILER (CIRCLE ONE)  
 METHOD OF CLEANING  ALCONOX / DI WATER  STEAM CLEANER / DI WATER (CIRCLE ONE)  
 PUMP LINES / BAILER ROPES NEW,  CLEANED,  OR DEDICATED (CIRCLE ONE)  
 pH METER \_\_\_\_\_ CALIBRATED YES NO COND. METER \_\_\_\_\_ CALIBRATED YES NO  
 TEMP. CORRECTED YES NO CALIBRATION DATA \_\_\_\_\_ pH 4 = \_\_\_\_\_ COND. 1,000 = \_\_\_\_\_  
 See 2-3 for CAL DATA pH 7 = \_\_\_\_\_ COND. 10,000 = \_\_\_\_\_  
 pH 10 = \_\_\_\_\_

### SAMPLES

LAB ANALYSIS TOT-D  
 LABORATORY Gamma  
 SAMPLE TIME 1215  
 REMARKS 12" small water in 15

Appendix B

**CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY  
DOCUMENTATION**

# CHROMALAB, INC.

Environmental Services (SDB)

March 3, 1999

Submission #: 9902224

P.G. & E. WATER QUAL GP S RAMON

Atten: ERIC KENZLER

Project: OAKLAND P.P.

Received: February 17, 1999

re: 4 samples for TPH - Diesel analysis.


Method: EPA 8015M

Sampled: February 17, 1999 Matrix: WATER Run#: 17447 Extracted: February 18, 1999 Analyzed: February 18, 1999

| Spl#   | CLIENT SPL ID | DIESEL (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|--------|---------------|---------------|------------------------|---------------------|-----------------|-----------------|
| 229320 | FIELD BLANK   | N.D.          | 50                     | N.D.                | 118             | 1               |

Sampled: February 17, 1999 Matrix: WATER Run#: 17495 Extracted: February 22, 1999 Analyzed: February 24, 1999

| Spl#  | CLIENT SPL ID | DIESEL (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|---|---------------|---------------|------------------------|---------------------|-----------------|-----------------|
| 229317  | MW 2-3        | N.D.          | 50                     | N.D.                | 96.4            | 1               |
| Note: Silica gel cleanup.   |               |               |                        |                     |                 |                 |
| 229318  | MW 1-2        | 130           | 50                     | N.D.                | 96.4            | 1               |
| Note: Hydrocarbon reported is in the early Diesel Range and does not match our Diesel Standard. Silica gel cleanup. |               |               |                        |                     |                 |                 |
| 229319  | MW 1-3        | N.D.          | 50                     | N.D.                | 96.4            | 1               |
| Note: Silica gel cleanup.   |               |               |                        |                     |                 |                 |

  
Carolyn House  
Analyst

  
Bruce Havlik  
Analyst



# CHAIN OF CUSTODY RECORD

44635

Page 1 of 1

**FROM:** Eric Kenzler  
 Pacific Gas & Electric Company  
 Address: 3400 Crown Canyon Rd.  
 City, State, Zip: San Ramon  
 Contact Name/Phone No.: 925 866 5806

**SHIP TO:**  
 Laboratory Name: Chromalac  
 Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_

Normal Turnaround Time  RUSH!

Telephone  FAX  Results ASAP to

(Name) \_\_\_\_\_ (Telephone/FAX) \_\_\_\_\_

| Sampled                      |              | Sample Type/Description | Containers |      | Remarks   |
|------------------------------|--------------|-------------------------|------------|------|---|
| Sample No./Equip. Serial No. | Date         |                         | No.        | Size |   |
| MW 2-3                       | 2-17-99 1300 | GW                      | 2          | 12   | TRR-0<br>Analysis Requested<br>- 10 DAY TAT<br>- Silicon Jell Coating on well Sampled, NOT on Blank.<br>J. Amber Lister<br>5-9-00 |
| MW 1-2                       | 2-17 1245    | GW                      | 2          | 12   |   |
| MW 1-3                       | 2-17 1215    | GW                      | 2          | 12   |   |
| FIELD Blank                  | 2-17 1200    | AG                      | 2          | 12   |   |

Project Name: OAKLAND P.P. Field Team Leader: Eric Kenzler  
 Sampled by: (Signature) Eric Kenzler (Print Name)

SUBJ #: 330224 REF: GC  
 CLIENT: FDE-WRT  
 DUE: 02/24/03  
 REF #: 44635

| Relinquished by (Name/Dept.): | Date/Time:     | Received by (Name/Dept.): | Date/Time:     | Ship Via:        | SAP Accounting Data |
|-------------------------------|----------------|---------------------------|----------------|------------------|---------------------|
| <u>Eric M. Kenzler</u>        | <u>2-17-99</u> | <u>Eric Kenzler</u>       | <u>2-17-99</u> | <u>Chromalac</u> |                     |
| <u>Eric M. Kenzler</u>        | <u>2-17-99</u> | <u>Eric Kenzler</u>       | <u>2-17-99</u> | <u>Chromalac</u> |                     |
| <u>Eric M. Kenzler</u>        | <u>2-17-99</u> | <u>Eric Kenzler</u>       | <u>2-17-99</u> | <u>Chromalac</u> |                     |

Notes: 1. Samples are discarded by the laboratory 30 days after results are reported unless other arrangements are made.  
 2. File a copy of this Chain of Custody Record, complete with appropriate laboratory signatures, with the test analysis results.  
 3. The first "Relinquished by/Date" represents the sample shipping date.