



A Report Prepared For:

Pacific Electric Motor Company  
1009 66th Avenue  
Oakland, California 94601

Attention: Mr. Rand Perry

JAN 31 2002

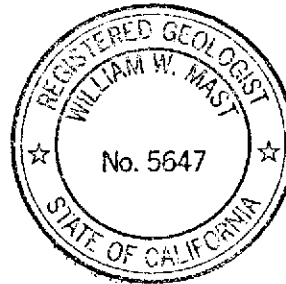
**FOURTH QUARTER 2001  
GROUNDWATER MONITORING REPORT  
PACIFIC ELECTRIC MOTOR COMPANY  
1009 66TH AVENUE  
OAKLAND, CALIFORNIA**

**JANUARY 29, 2002**

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618.001.02.002

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## 1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring performed by PES Environmental, Inc. (PES) during the Fourth Quarter of 2001 at Pacific Electric Motor Company (PEM) in Oakland, California (Plate 1). The current groundwater monitoring program consists of measuring the depth to groundwater in four onsite monitoring wells, and purging and sampling the monitoring wells (Wells MW-1, MW-2, MW-3, and MW-4) on a quarterly basis.

The purpose of the groundwater monitoring program is to: (1) assess the presence and concentration trends of petroleum hydrocarbons in groundwater; and (2) monitor water-level variations at the site.

## 2.0 BACKGROUND INFORMATION

The site is located in a residential and light industrial area in Oakland, California and is presently used to repair large electric motors. PEM formerly operated a 2,000-gallon steel gasoline underground storage tank (UST) on the east side of the warehouse building (Plate 2). The tank was reportedly installed in approximately 1975 (ENVIRON, 1997). In February 1995, the UST was removed by W. A. Craig, Inc. (WAC). Observations at the time of removal indicated that the tank was in good condition and no holes were evident. However, free-phase gasoline product was observed on the water surface in the tank excavation. Soil samples collected from the UST excavation and associated piping trenches detected total petroleum hydrocarbons as gasoline (TPH-g) at concentrations up to 10,000 milligrams per kilogram.

In April 1995, WAC performed a soil investigation consisting of the drilling and sampling of nine soil borings to delineate the lateral and vertical extent of the petroleum hydrocarbons in soil. On the basis of the results of the soil investigation, WAC prepared and implemented a remediation program to remove soil affected by petroleum hydrocarbons. Approximately 1,500 cubic yards of soil were excavated and stockpiled onsite, and 116,000 gallons of petroleum hydrocarbon-affected water were pumped from the excavation and disposed. A dewatering sump installed by WAC during soil excavation was later converted to groundwater monitoring well WAC-1 (Plate 2). Because of its uncertain construction, ACEHS stated that no monitoring of Well WAC-1 is required (ACEHS, 1997). WAC summarized the results of their remediation program in a report entitled *Excavation and Sampling Report, Pacific Electric Motor Co., 1009 66<sup>th</sup> Avenue, Oakland, California*, dated May 12, 1997 (WAC, 1997).

ENVIRON, Inc. (ENVIRON) installed and sampled three shallow monitoring wells (MW-1, MW-2, MW-3) in June 1997 to evaluate groundwater conditions in the vicinity of the former UST. Well completion details are summarized in Table 1. The well installation program and associated soil and groundwater sampling program was summarized in the ENVIRON report

*Soil and Ground Water Investigation, Summary Report, Pacific Electric Motor Co., 1009-66th Avenue, Oakland, California, dated July 17, 1997 (ENVIRON, 1997).* ENVIRON concluded that the remediation performed had successfully removed the source of the petroleum hydrocarbons (i.e., the former UST), and that residual concentrations of petroleum hydrocarbons in soil and groundwater were present only in the immediate vicinity of the former UST.

In September 1998 PES conducted additional soil and groundwater sampling in the vicinity of the former UST, as requested by the ACEHS in a May 13, 1998 letter to PEM (ACEHS, 1998a). Two soil borings were drilled within the backfill of the former UST excavation, and one monitoring well was installed downgradient of the former UST. Petroleum hydrocarbons were generally not detected in the excavation backfill, although groundwater samples collected from both soil borings indicated the presence of methyl tert-butyl ether (MTBE), a gasoline additive. Elevated petroleum hydrocarbons were found in soil and groundwater downgradient of the UST excavation during installation and groundwater sampling of monitoring well MW-4. On the basis of the elevated concentrations of petroleum hydrocarbons, PES recommended performing periodic groundwater monitoring. The additional investigation was summarized in the PES report *Results of Additional Soil and Groundwater Investigation, 1009 66<sup>th</sup> Avenue, Oakland, California, dated November 11, 1998 (PES, 1998a).*

### 3.0 WATER-LEVEL MEASUREMENTS

Water levels in four onsite groundwater monitoring wells (Wells MW-1, MW-2, MW-3, and MW-4) were measured by Blaine Tech Services, Inc. (Blaine Tech) of San Jose, California, prior to sampling on November 28, 2001. Depth-to-water in the monitoring wells was measured from the top-of-casing (TOC) reference benchmark to a precision of 0.01-feet using an electronic water-level indicator/interface probe. Depth-to-water measurements were converted to water-level elevations by subtracting the depth to water from the TOC elevation referenced to a site datum established by ENVIRON (ENVIRON, 1997). The monitoring well construction details and TOC elevations are compiled in Table 1. Free product was not observed in any of the monitoring wells.

To prevent cross-contamination between wells, the portion of the water-level indicator that was submerged in the well was cleaned between well measurements using a phosphate-free detergent/deionized water solution and double rinsed with deionized water.

### 4.0 GROUNDWATER SAMPLING

On November 28, 2001, Blaine Tech, collected groundwater samples from Wells MW-1, MW-2, MW-3, and MW-4. Groundwater samples were collected from each well after removing approximately three well volumes of water with disposable bailers. During well

purging, the discharged water was monitored for pH, temperature, electrical conductivity, and turbidity.

Following purging, samples were collected from the wells using a stainless steel or Teflon disposable bailer and transferred to the appropriate laboratory sample containers. The sample containers were filled slowly to minimize sample volatilization and to ensure that the sample was free of air bubbles. The samples were labeled to designate sample number, time and date collected, and analysis required. The samples were immediately placed in a chilled, thermally-insulated cooler. To prevent cross-contamination between wells, the pump and stainless steel bailer were decontaminated using a high-pressure steam cleaner prior to initial use and after sampling at each well. Sampling procedures are documented in the groundwater sampling report prepared by Blaine Tech, included in Appendix A.

Groundwater samples were transported under chain-of-custody protocol to a state-certified laboratory. Chromalab, Inc. of Pleasanton, California analyzed samples for: (1) total petroleum hydrocarbons quantified as gasoline (TPH-g) using EPA Test Method 8015 Modified; (2) benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Test Method 8021B; and (3) methyl tert-butyl ether (MTBE) using EPA Test Method 8021B. If detected, the presence of MTBE was confirmed using EPA Test Method 8260. The laboratory reports and chain-of-custody records are included in Appendix B.

## **5.0 DISCUSSION OF MONITORING RESULTS**

This section presents a summary of water-level measurements and groundwater analyses results from the November 2001 sampling event.

### **5.1 Water-Level Measurements**

Depth-to-water measurements taken on November 28, 2001 ranged from 4.92 feet (MW-3) to 5.67 feet (MW-4) below TOC. Groundwater-level elevations calculated from the November 2001 water levels ranged from 94.70 feet (MW-2) to 95.36 feet (MW-1) referenced to site datum established by ENVIRON (ENVIRON, 1997). Current and historical depth-to-water measurements and calculated water-level elevations are presented in Table 2.

Plate 3 presents water-level elevation contours developed from water levels measured on November 28, 2001. Groundwater elevations generally indicate a southwesterly flow direction, consistent with historical observations of southerly to southwesterly groundwater flow direction. The water-level elevation for Well MW-3 was not used in contouring; it may be anomalous or indicate a minor tidal effect. The groundwater gradient is approximately 0.0125 foot per foot (ft/ft) between MW-1 and MW-4.

## 5.2 Groundwater Chemistry

A summary of current and historical laboratory chemical results for petroleum hydrocarbons is presented in Table 3. The analytical laboratory reports and chain-of-custody forms are presented in Appendix B.

During the current monitoring period petroleum hydrocarbon compounds were detected in groundwater samples from wells MW-1 and MW-4; no petroleum hydrocarbon compounds were detected in the samples collected from wells MW-2 and MW-3.

At well MW-1, petroleum hydrocarbons were detected at the following concentrations: TPH-g at 1,800 micrograms per liter ( $\mu\text{g/L}$ ), benzene at 27  $\mu\text{g/L}$ , ethyl benzene at 72  $\mu\text{g/L}$ , xylenes at 160  $\mu\text{g/L}$ , and MTBE was not detected above laboratory reporting limits. Although petroleum hydrocarbon concentrations in well MW-1 have fluctuated over the past year, concentrations have generally decreased since June 1997.

At well MW-4, TPH-g was detected at 67,000  $\mu\text{g/L}$ , benzene at 8,100  $\mu\text{g/L}$ , toluene at 3,300  $\mu\text{g/L}$ , ethyl benzene at 1,400  $\mu\text{g/L}$ , xylenes at 5,600  $\mu\text{g/L}$ , and MTBE at 57,000  $\mu\text{g/L}$ . These data are generally consistent with historical conditions.

Current data from the downgradient monitoring wells (MW-2 and MW-3) indicate no detected petroleum hydrocarbons and are consistent with previous sampling events. These data appear to indicate that the petroleum hydrocarbon plume associated with the former UST remains stable and localized.

## 6.0 REFERENCES

- Alameda County Environmental Health Services (ACEHS), 1997. *Soil and Groundwater Investigation for Pacific Electric Motor Co., 1009-66th Ave., Oakland, CA 94601*. August 19.
- \_\_\_\_\_, 1998a. *Evaluation of Residual Health Risks at Pacific Electric Motor Company, 1009 66<sup>th</sup> Avenue, Oakland, CA 94601*. May 13.
- \_\_\_\_\_, 1998b. *Additional Soil and Groundwater Investigation Report, 1009 66th Ave., Oakland, 94601*. December 1.
- ENVIRON Corporation, 1997. *Soil and Groundwater Investigation, Summary Report, Pacific Electric Motor Co., 1009-66th Avenue, Oakland, California*. July 17.
- PES Environmental, Inc. (PES), 1998a. *Results of Additional Soil and Groundwater Investigation, 1009 66<sup>th</sup> Avenue, Oakland, California*. November 11.

\_\_\_\_\_, 1998b. *Proposal, Quarterly Groundwater Sampling, Pacific Electric Motor Company, Oakland, California.* December 11.

W. A. Craig, Inc. (WAC), 1997. *Excavation and Sampling Report, Pacific Electric Motor Co., 1009 66th Avenue, Oakland, California.* May 12. (Partial)



**Table 1. Monitoring Well Completion Details  
 Quarterly Monitoring Report  
 Fourth Quarter 2001  
 Pacific Electric Motor Company  
 1009 66th Avenue, Oakland, California**

Well Number	Date Installed	Installed By	TOC Elevation (feet*)	Boring Diameter (inches)	Casing Diameter (inches)	Total Depth Boring (feet bgs)	Total Depth of Casing (feet bgs)	Screened Interval Depth (feet bgs)	
								Top	Bottom
MW-1	6/10/97	ENVIRON	100.67	8	2	26.5	25.5	5	25
MW-2	6/10/97	ENVIRON	99.85	8	2	25.5	25.5	5	25
MW-3	6/10/97	ENVIRON	99.93	8	2	25.5	25.5	5	25
MW-4	9/14/98	PES	100.32	8	2	25.0	25.0	15	25

**Notes:**

\* = Referenced to site datum established by ENVIRON (1997)

bgs = Below ground surface

Table 2. Water-Level Elevation Data  
 Quarterly Monitoring Report  
 Fourth Quarter 2001  
 Pacific Electric Motor Company  
 1009 66th Avenue, Oakland, California

Well Number	Date	Measured By	Top of Casing Elevation (feet*)	Depth to Water (feet BTOC)	Water-level Elevation (feet*)
MW-1	6/19/97	ENVIRON	100.67	5.87	94.80
	7/1/97	ENVIRON	100.67	5.88	94.79
	9/29/97	PES	100.67	6.45	94.22
	12/16/97	PES	100.67	3.42	97.25
	3/10/98	PES	100.67	3.06	97.61
	10/1/98	PES	100.67	6.36	94.31
	1/19/99	PES	100.67	5.33	95.34
	4/15/99	PES	100.67	3.23	97.44
	5/6/99	PES	100.67	4.36	96.31
	7/30/99	PES	100.67	5.49	95.18
	11/15/99	PES	100.67	6.30	94.37
	3/24/00	PES	100.67	3.47	97.20
	5/18/00	PES	100.67	4.34	96.33
	7/26/00	PES	100.67	5.28	95.39
	10/30/00	PES	100.67	5.68	94.99
	11/14/00	PES	100.67	5.53	95.14
7/24/01	PES	100.67	5.52	95.15	
11/28/01	PES	100.67	100.67	5.31	95.36
MW-2	6/19/97	ENVIRON	99.85	5.30	94.55
	7/1/97	ENVIRON	99.85	5.37	94.48
	9/29/97	PES	99.85	6.05	93.80
	12/16/97	PES	99.85	3.81	96.04
	3/10/98	PES	99.85	2.89	96.96
	10/1/98	PES	99.85	5.83	94.02
	1/19/99	PES	99.85	5.26	94.59
	4/15/99	PES	99.85	3.19	96.66
	5/6/99	PES	99.85	3.91	95.94
	7/30/99	PES	99.85	4.79	95.06
	11/15/99	PES	99.85	5.92	93.93
	3/24/00	PES	99.85	3.55	96.30
	5/18/00	PES	99.85	4.04	95.81
	7/26/00	PES	99.85	4.85	95.00
	10/30/00	PES	99.85	5.31	94.54
	11/14/00	PES	99.85	5.14	94.71
7/24/01	PES	99.85	99.85	5.12	94.73
11/28/01	PES	99.85	99.85	5.15	94.70
MW-3	6/19/97	ENVIRON	99.93	5.50	94.43
	7/1/97	ENVIRON	99.93	5.52	94.41
	9/29/97	PES	99.93	6.16	93.77
	12/16/97	PES	99.93	5.52	94.41
	3/10/98	PES	99.93	3.11	96.82
	10/1/98	PES	99.93	5.96	93.97
	1/19/99	PES	99.93	5.45	94.48
	4/15/99	PES	99.93	3.85	96.08
	5/6/99	PES	99.93	4.12	95.81
	7/30/99	PES	99.93	5.14	94.79
	11/15/99	PES	99.93	6.35	93.58
	3/24/00	PES	99.93	3.29	96.64
	5/18/00	PES	99.93	4.16	95.77

**Table 2. Water-Level Elevation Data  
 Quarterly Monitoring Report  
 Fourth Quarter 2001  
 Pacific Electric Motor Company  
 1009 66th Avenue, Oakland, California**

Well Number	Date	Measured By	Top of Casing Elevation (feet*)	Depth to Water (feet BTOC)	Water-level Elevation (feet*)
MW-3 Cont.	7/26/00	PES	99.93	5.14	94.79
	10/30/00	PES	99.93	5.43	94.50
	11/14/00	PES	99.93	5.25	94.68
	7/24/01	PES	99.93	5.29	94.64
	11/28/01	PES	99.93	4.92	95.01
MW-4	10/1/98	PES	100.32	6.32	94.00
	1/19/99	PES	100.32	5.59	94.73
	4/15/99	PES	100.32	7.71 #	92.61 #
	5/6/99	PES	100.32	4.50	95.82
	7/30/99	PES	100.32	5.18	95.14
	11/15/99	PES	100.32	6.27	94.05
	3/24/00	PES	100.32	3.59	96.73
	5/18/00	PES	100.32	4.40	95.92
	7/26/00	PES	100.32	5.65	94.67
	10/30/00	PES	100.32	5.89	94.43
	11/14/00	PES	100.32	5.61	94.71
	7/24/01	PES	100.32	5.34	94.98
	11/28/01	PES	100.32	5.67	94.65

Notes:

\* = Referenced to site datum established by ENVIRON (1997)

BTOC = Below top of casing

# = Anomalous data, not used for water-level elevation contouring

**Table 3. Analytical Results for Groundwater Samples  
Quarterly Monitoring Report  
Fourth Quarter 2001  
Pacific Electric Motor Company  
1009 66th Avenue, Oakland, California**

Sample Location	Date Sampled	Sampled By	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	MTBE EPA 8020 (µg/L)	MTBE EPA 8260 (µg/L)
MW-1	6/19/97	ENVIRON	18,000	3,300	200	1,100	4,900	<250	--
	9/29/97	PES	29,000	4,800	<25	2,000	3,500	<250	--
	12/16/97	PES	<50	1.3	<0.5	0.6	0.7	<5	--
	3/10/98	PES	190	2.0	<0.5	5.7	1.7	<5	--
	1/19/99	PES	1,000	40	<0.5	18	68	8.3	6.9
	4/15/99	PES	<50	0.92	0.9	0.7	0.87	<5.0	--
	7/30/99	PES	1,400	60	<0.5	63	120	13	<5.0
	11/15/99	PES	3,600	120	<0.5	150	620	<5.0	--
	3/24/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	5/18/00	PES	1,300	10	1.2	38	130	8.6	<5.0
	7/26/00	PES	6,400	100	7.4	260	680	<5.0	NA
	10/30/00	PES	6,000	130	14	330	950	<100	NA
	7/24/01	PES	1,200	13	<0.5	70	39	13	NA
11/28/01	PES	1,800	27	0.93	72	160	<5.0	NA	
MW-2	6/19/97	ENVIRON	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	9/29/97	PES	<50	<0.5	<0.5	<0.5	<0.5	<5	--
	12/16/97	PES	<50	<0.5	<0.5	<0.5	<0.5	<5	--
	3/10/98	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	1/19/99	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
	4/15/99	PES	<50	0.75	0.64	<0.5	0.74	<5.0	--
	7/30/99	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	11/15/99	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	3/24/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	5/18/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	7/26/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	10/30/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	7/24/01	PES	<50	<0.5	<0.5	<0.5	<0.5	7.6	--
11/28/01	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	
MW-3	6/19/97	ENVIRON	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	9/29/97	PES	<50	<0.5	<0.5	<0.5	<0.5	<5	--
	12/16/97	PES	<50	<0.5	<0.5	<0.5	<0.5	<5	--
	3/10/98	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	1/19/99	PES	<50	0.78	<0.5	<0.5	<0.5	8.7	<5.0
	4/15/99	PES	<50	5.4	3.9	1.7	5.6	23	25
	7/30/99	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	11/15/99	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	3/24/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--

**Table 3. Analytical Results for Groundwater Samples  
 Quarterly Monitoring Report  
 Fourth Quarter 2001  
 Pacific Electric Motor Company  
 1009 66th Avenue, Oakland, California**

Sample Location	Date Sampled	Sampled By	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	MTBE EPA 8020 (µg/L)	MTBE EPA 8260 (µg/L)
MW-3 (cont.)	5/18/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	7/26/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	10/30/00	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	7/24/01	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
	11/28/01	PES	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--
MW-4	9/15/98	PES	170,000	26,000	32,000	2,900	18,000	26,000	--
	1/19/99	PES	2,600	1,700	3.8	25	29	13,000	16,000
	4/15/99	PES	210,000	28,000	15,000	3,700	19,000	52,000	67,000
	7/30/99	PES	91,000	16,000	7,500	2,300	8,500	68,000	67,000
	11/15/99	PES	63,000	8,500	2,400	1,400	4,000	57,000	58,000
	3/24/00	PES	95,000	16,000	13,000	2,500	12,000	44,000	NA
	5/18/00	PES	91,000	15,000	10,000	2,200	9,600	64,000	77,000
	7/26/00	PES	130,000	11,000	6,400	1,700	6,500	80,000	NA
	10/30/00	PES	59,000	6,700	2,200	750	3,100	68,000	68,000*
	7/24/01	PES	180,000	25,000	23,000	3,500	20,000	44,000	44,000*
	11/28/01	PES	67,000	8,100	3,300	1,400	5,600	57,000	57,000*

**Notes:**

TPH-g = Total petroleum hydrocarbons quantified as gasoline (EPA 8015M)

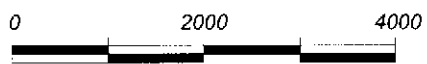
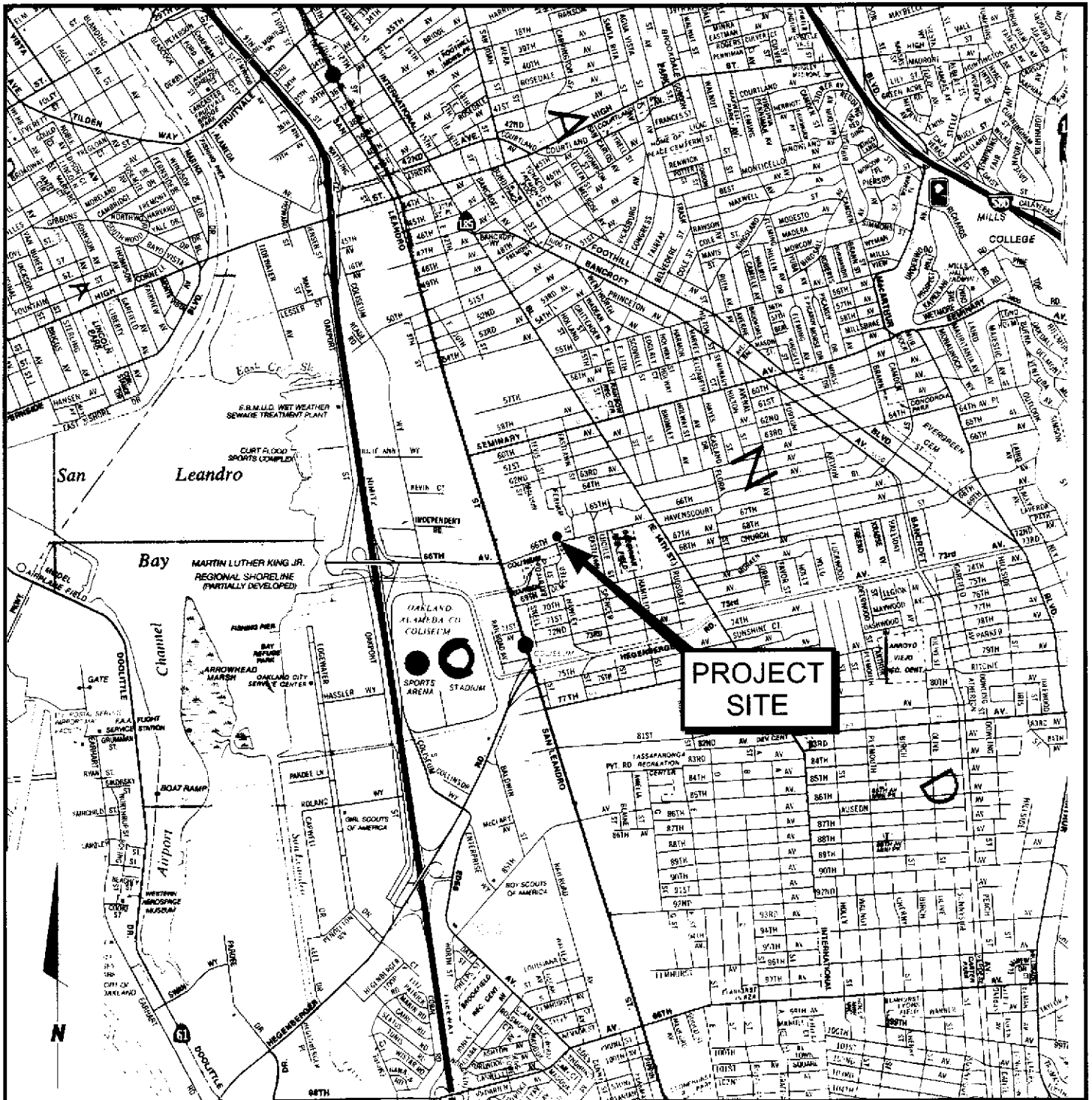
MTBE = Methyl tert-butyl ether (EPA 8020; detected concentrations were confirmed by EPA 8260)

µg/L = Micrograms per liter

&lt;50 = Not detected at or above the indicated laboratory reporting limit

NA = Not analyzed

\* = MTBE result confirmed but not requantified by EPA Method 8260



Scale in Feet

Oakland Map, California State Automobile Association, 1997.



**PES Environmental, Inc.**  
Engineering & Environmental Services

**Site Location Map**  
Fourth Quarter Groundwater  
Monitoring Report  
Pacific Electric Motor Company  
1009 66th Avenue, Oakland, California

PLATE  
**1**

618.001.02.002  
JOB NUMBER

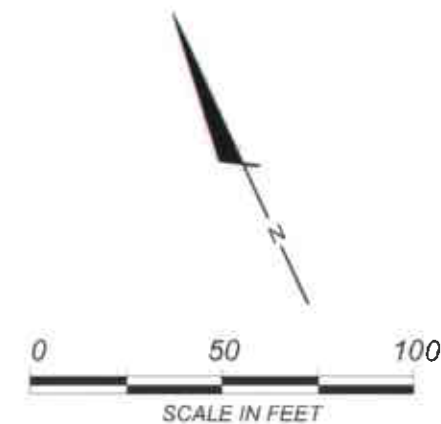
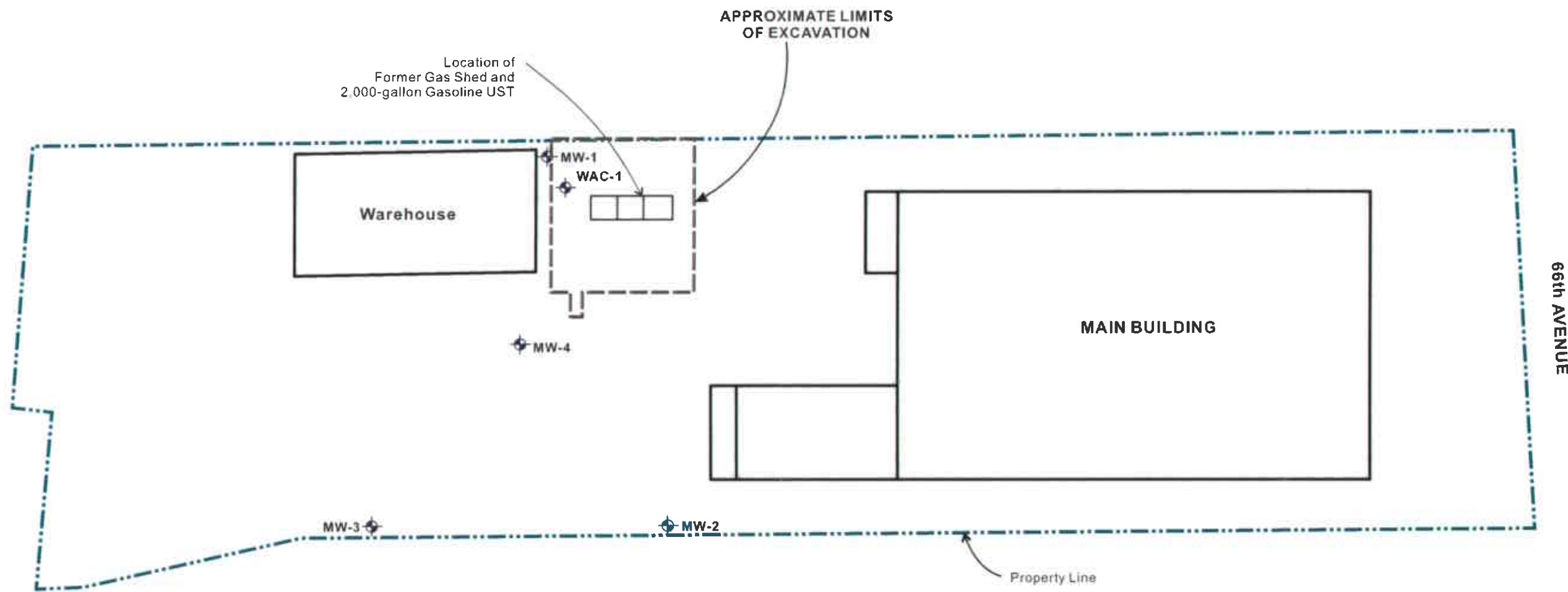
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REVIEWED BY

1/02  
DATE




Explanation

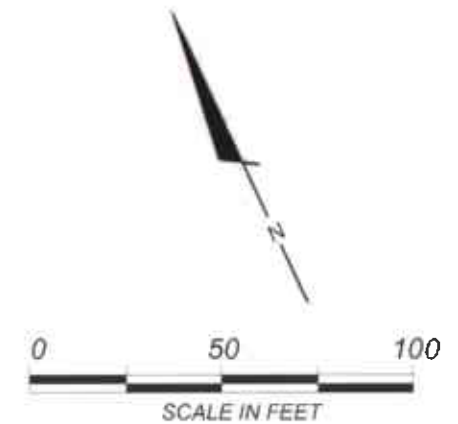
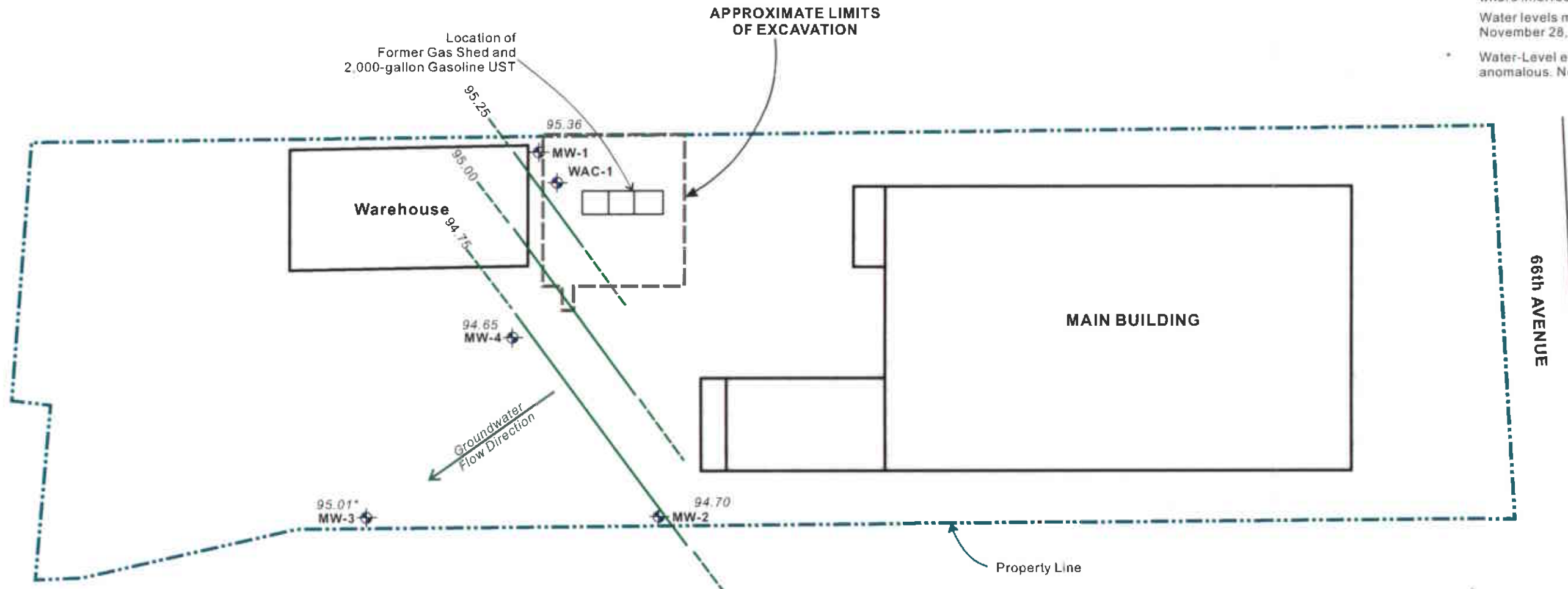
Monitoring Well Location



Drawing modified from ENVIRON, 1997

**Explanation**

-  Monitoring Well Location
- 95.15 Water-Level Elevation (in feet, referenced to site datum.)
-  Groundwater contour (in feet referenced to site datum; dashed where inferred)
- Water levels measured on November 28, 2001.
-  Water-Level elevation appears anomalous. Not used in contouring



Drawing modified from ENVIRON, 1997



**APPENDIX A**

**GROUNDWATER SAMPLING REPORT**

**BLAINE**  
TECH SERVICES, INC.



1680 ROGERS AVENUE  
SAN JOSE, CA 95112-1105  
(408) 573-7771 FAX  
(408) 573-0555 PHONE  
CONTRACTOR'S LICENSE #746684  
www.blainetech.com

RECEIVED DEC 12 2001

December 10, 2001

PES Environmental, Inc.  
1682 Novato Blvd., Suite 100  
Novato, CA 94947

ATTN: Saul Germanis

Site:  
Pacific Electric Motor Company  
1099 66th Ave.  
Oakland, California

Date:  
November 28, 2001

## GROUNDWATER SAMPLING REPORT 011128-CW-2

---

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results, or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site are presented in the TABLE OF WELL MONITORING DATA. This information was collected during our inspection, well evacuation and sample collection. Measurements include the total depth of the well and the depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, turbidity, and temperature readings were obtained during well evacuation and at the time of sample collection.

# STANDARD PRACTICES

---

## Evacuation and Sampling Equipment

As shown in the TABLE OF WELL MONITORING DATA, the wells at this site were evacuated according to a protocol requirement for the removal of three case volumes of water, before sampling. The wells were evacuated using bailers.

Samples were collected using bailers.

**Bailers:** A bailer, in its simplest form, is a hollow tube that has been fitted with a check valve at the lower end. The device can be lowered into a well by means of a cord. When the bailer enters the water, the check valve opens and liquid flows into the interior of the bailer. The bottom check valve prevents water from escaping when the bailer is drawn up and out of the well. Two types of bailers are used in groundwater wells at sites where fuel hydrocarbons are of concern. The first type of bailer is made of a clear material such as acrylic plastic and is used to obtain a sample of the surface and the near surface liquids, in order to detect the presence of visible or measurable fuel hydrocarbon floating on the surface. The second type of bailer is made of Teflon or stainless steel, and is used as an evacuation and/or sampling device.

Bailers are inexpensive and relatively easy to clean. Because they are manually operated, variations in operator technique may have a greater influence than would be found with more automated sampling equipment. Also, where fuel hydrocarbons are involved, the bailer may include near surface contaminants that are not representative of water deeper in the well.

## Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site.

## Effluent Materials

The evacuation process creates a volume of effluent water that must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new 55-gallon DOT 17 E drums to the site, which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well. If that sample does not establish whether or not the effluent water is contaminated, or if effluent from more than one source has been combined in the same container, it may be necessary to conduct additional analyses on the effluent material.

## **Sampling Methodology**

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms to both State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846 and T.E.G.D. which is published separately.

## **Sample Containers**

Sample containers are supplied by the laboratory performing the analyses.

## **Sample Handling Procedures**

Following collection, samples are promptly placed in an ice chest containing ice or an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

## **Sample Designations**

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days, as jobs and projects often do.

## **Chain of Custody**

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date and signature of person accepting custody of the samples).

## **Hazardous Materials Testing Laboratory**

The samples obtained at this site were analyzed at STL Chromalab in Pleasanton, California. STL Chromalab is certified by the California Department of Health Services under the Environmental Laboratory Accreditation Program (ELAP), and is listed as ELAP #1094.

## Personnel

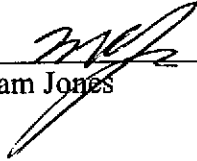
All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

## Reportage

Submission to the Regional Water Quality Control Board and the local implementing agency should include copies of the sampling report, the chain of custody and the certified analytical report issued by the Hazardous Materials Testing Laboratory.

Please call if we can be of any further assistance.

  
\_\_\_\_\_  
William Jones

WRJ/mb

attachments: table of well monitoring data  
chain of custody

## TABLE OF WELL MONITORING DATA

Well I.D.	MW-1			MW-2			MW-3			MW-4		
Date Sampled	11/28/2001			11/28/2001			11/28/2001			11/28/2001		
Well Diameter (in.)	2			2			2			2		
Total Well Depth (ft.)	24.90			24.88			24.71			24.74		
Depth To Water (ft.)	5.31			5.15			4.92			5.67		
Free Product (in.)	NONE			NONE			NONE			NONE		
Reason If Not Sampled	-			-			-			-		
1 Case Volume (gal.)	3.1			3.1			3.1			3.0		
Did Well Dewater?	NO			NO			NO			NO		
Gallons Actually Evacuated	9.3			9.3			9.3			9.0		
Purging Device	BAILER			BAILER			BAILER			BAILER		
Sampling Device	BAILER			BAILER			BAILER			BAILER		
Time	14:02	14:07	14:12	14:47	14:52	14:57	15:20	15:25	15:32	16:11	16:17	16:23
Temperature (Fahrenheit)	64.8	64.6	64.6	62.5	63.4	63.2	60.8	62.0	62.0	62.4	67.4	68.1
pH	7.2	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.0	6.8	6.7	6.7
Conductivity (micromhos/cm)	475	516	545	1193	1152	1109	2340	3311	5710	5446	5780	5852
Nephelometric Turbidity Units	32	107	68	43	68	74	32	32	10	21	24	22
BTS Chain of Custody	011128-CW-2			011128-CW-2			011128-CW-2			011128-CW-2		
BTS Sample I.D.	MW-1			MW-2			MW-3			MW-4		
DOHS HMTL Laboratory	CHROMOLAB			CHROMOLAB			CHROMOLAB			CHROMOLAB		
Analysis	TPH-G, BTEX, MTBE			TPH-G, BTEX, MTBE			TPH-G, BTEX, MTBE			TPH-G, BTEX, MTBE		

**APPENDIX B**

**LABORATORY REPORTS  
AND  
CHAIN-OF-CUSTODY RECORDS**

Submission #: 2001-11-0587

Date: January 28, 2002

**SEVERN  
TRENT  
SERVICES**

PES

1682 Novato Blvd., Suite 10  
Novato, CA 94947-7021

Attn: Mr. Saul Germanas

Project: 011128-CW-2  
Pacific Electric Motor

STL San Francisco  
1220 Quarry Lane  
Pleasanton, CA 94566

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com  
CA DHS ELAP#1094

Dear Sal,

Attached is our report for your samples received on Thursday November 29, 2001  
This report has been reviewed and approved for release. Reproduction of this report  
is permitted only in its entirety.

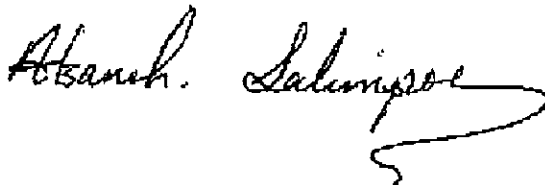
The report contains a Case Narrative detailing sample receipt and analysis.

Please note that any unused portion of the samples will be discarded after  
January 13, 2002 unless you have requested otherwise.

We appreciate the opportunity to be of service to you. If you have any questions,  
please call me at (925) 484-1919.

You can also contact me via email. My email address is: [asalimpour@chromalab.com](mailto:asalimpour@chromalab.com)

Sincerely,



Afsaneh Salimpour  
Project Manager



CASE NARRATIVE

STL San Francisco  
1220 Quarry Lane  
Pleasanton, CA 94566

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com  
CA DHS ELAP#1094

General and Sample Comments

We (STL San Francisco) received 4 Water samples, on Nov 29 2001 6:50PM.

MTBE for sample MW-4 was confirmed by 8260 GC/MS. This conformation is a qualitative analysis n quantitative.

Gas/BTEX Compounds by 8015M/8021

<b>PES</b>	☒ 1682 Novato Blvd., Suite 10 Novato, CA 94947-7021
Attn: Saul Germanas	Phone: (415) 899-1600 Fax: (415) 899-1601
011128-CW-2	Project: Pacific Electric Motor

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

**Samples Reported**

Sample ID	Matrix	Date Sampled	Lab #
MW-1	Water	11/28/2001 14:28	1
MW-2	Water	11/28/2001 15:06	2
MW-3	Water	11/28/2001 15:50	3
MW-4	Water	11/28/2001 16:41	4

Gas/BTEX Compounds by 8015M/8021

PES

Test Method: 8021B  
8015M

Attn: Saul Germanas

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

Sample ID: MW-1	Lab Sample ID: 2001-11-0587-001
Project: 011128-CW-2 Pacific Electric Motor	Received: 11/29/2001 18:50
	Extracted: 12/05/2001 17:38
Sampled: 11/28/2001 14:28	QC-Batch: 2001/12/05-01.02
Matrix: Water	

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	1800	50	ug/L	1.00	12/05/2001 17:38	
Benzene	27	0.50	ug/L	1.00	12/05/2001 17:38	
Toluene	0.93	0.50	ug/L	1.00	12/05/2001 17:38	
Ethyl benzene	72	0.50	ug/L	1.00	12/05/2001 17:38	
Xylene(s)	160	0.50	ug/L	1.00	12/05/2001 17:38	
MTBE	ND	5.0	ug/L	1.00	12/05/2001 17:38	
<i>Surrogate(s)</i>						
Trifluorotoluene	87.9	58-124	%	1.00	12/05/2001 17:38	
4-Bromofluorobenzene-FID	100.8	50-150	%	1.00	12/05/2001 17:38	

Gas/BTEX Compounds by 8015M/8021

PES

Test Method: 8021B  
8015M

Attn: Saul Germanas

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

Sample ID: MW-2	Lab Sample ID: 2001-11-0587-002
Project: 011128-CW-2 Pacific Electric Motor	Received: 11/29/2001 18:50
Sampled: 11/28/2001 15:06	Extracted: 12/05/2001 18:10
Matrix: Water	QC-Batch: 2001/12/05-01.02

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	12/05/2001 18:10	
Benzene	ND	0.50	ug/L	1.00	12/05/2001 18:10	
Toluene	ND	0.50	ug/L	1.00	12/05/2001 18:10	
Ethyl benzene	ND	0.50	ug/L	1.00	12/05/2001 18:10	
Xylene(s)	ND	0.50	ug/L	1.00	12/05/2001 18:10	
MTBE	ND	5.0	ug/L	1.00	12/05/2001 18:10	
<i>Surrogate(s)</i>						
Trifluorotoluene	85.8	58-124	%	1.00	12/05/2001 18:10	
4-Bromofluorobenzene-FID	98.8	50-150	%	1.00	12/05/2001 18:10	

Gas/BTEX Compounds by 8015M/8021

PES

Test Method: 8021B  
8015M

Attn: Saul Germanas

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

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www.chromalab.com

CA DHS ELAP#1094

Sample ID: MW-3	Lab Sample ID: 2001-11-0587-003
Project: 011128-CW-2 Pacific Electric Motor	Received: 11/29/2001 18:50
Sampled: 11/28/2001 15:50	Extracted: 12/05/2001 18:41
Matrix: Water	QC-Batch: 2001/12/05-01.02

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	12/05/2001 18:41	
Benzene	ND	0.50	ug/L	1.00	12/05/2001 18:41	
Toluene	ND	0.50	ug/L	1.00	12/05/2001 18:41	
Ethyl benzene	ND	0.50	ug/L	1.00	12/05/2001 18:41	
Xylene(s)	ND	0.50	ug/L	1.00	12/05/2001 18:41	
MTBE	ND	5.0	ug/L	1.00	12/05/2001 18:41	
<i>Surrogate(s)</i>						
Trifluorotoluene	84.5	58-124	%	1.00	12/05/2001 18:41	
4-Bromofluorobenzene-FID	99.5	50-150	%	1.00	12/05/2001 18:41	

Gas/BTEX Compounds by 8015M/8021

PES

Test Method: 8021B  
8015M

Attn: Saul Germanas

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

Sample ID: MW-4	Lab Sample ID: 2001-11-0587-004
Project: 011128-CW-2 Pacific Electric Motor	Received: 11/29/2001 18:50
Sampled: 11/28/2001 16:41	Extracted: 12/06/2001 12:48
Matrix: Water	QC-Batch: 2001/12/06-01.02

Compound	Result	Rep.Limit	Units	Dilution	Analyzed	Flag
Gasoline	67000	25000	ug/L	500.00	12/06/2001 12:48	
Benzene	8100	250	ug/L	500.00	12/06/2001 12:48	
Toluene	3300	250	ug/L	500.00	12/06/2001 12:48	
Ethyl benzene	1400	250	ug/L	500.00	12/06/2001 12:48	
Xylene(s)	5600	250	ug/L	500.00	12/06/2001 12:48	
MTBE	57000	2500	ug/L	500.00	12/06/2001 12:48	
<i>Surrogate(s)</i>						
Trifluorotoluene	92.4	58-124	%	500.00	12/06/2001 12:48	
4-Bromofluorobenzene-FID	103.6	50-150	%	500.00	12/06/2001 12:48	







Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8021B

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

<b>Laboratory Control Spike (LCS/LCSD)</b>	<b>Water</b>	<b>QC Batch # 2001/12/05-01.02</b>
LCS: 2001/12/05-01.02-004	Extracted: 12/05/2001 09:07	Analyzed: 12/05/2001 09:07
LCSD: 2001/12/05-01.02-005	Extracted: 12/05/2001 09:39	Analyzed: 12/05/2001 09:39

Tel 925 484 1919  
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www.chromalab.com

CA DHS ELAP#1094

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Benzene	94.0	91.0	100.0	100.0	94.0	91.0	3.2	77-123	20		
Toluene	89.7	86.6	100.0	100.0	89.7	86.6	3.5	78-122	20		
Ethyl benzene	94.3	91.1	100.0	100.0	94.3	91.1	3.5	70-130	20		
Xylene(s)	280	271	300	300	93.3	90.3	3.3	75-125	20		
<b>Surrogate(s)</b>											
Trifluorotoluene	477	456	500	500	95.4	91.2		58-124			

Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8015M

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

Laboratory Control Spike (LCS/LCSD)		Water		QC Batch # 2001/12/05-01.02	
LCS: 2001/12/05-01.02-006	Extracted: 12/05/2001 10:10	LCSD: 2001/12/05-01.02-007	Extracted: 12/05/2001 10:42	Analyzed: 12/05/2001 10:10	Analyzed: 12/05/2001 10:42

Tel 925 484 1919  
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CA DHS ELAP#1094

Compound	Conc. [ug/L]		Exp. Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD		[%]	Recovery	RPD	LCS
Gasoline <i>Surrogate(s)</i>	433	451	500	500	86.6	90.2	4.1	75-125	20		
4-Bromofluorobenzene-	524	537	500	500	104.8	107.4		50-150			

Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8021B

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

<b>Laboratory Control Spike (LCS/LCSD)</b>	<b>Water</b>	<b>QC Batch # 2001/12/06-01.02</b>
LCS: 2001/12/06-01.02-004	Extracted: 12/06/2001 08:43	Analyzed: 12/06/2001 08:43
LCSD: 2001/12/06-01.02-005	Extracted: 12/06/2001 09:15	Analyzed: 12/06/2001 09:15

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www.chromalab.com

CA DHS ELAP#1094

Compound	Conc. [ug/L]		Exp. Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Benzene	95.2	90.5	100.0	100.0	95.2	90.5	5.1	77-123	20		
Toluene	90.7	86.4	100.0	100.0	90.7	86.4	4.9	78-122	20		
Ethyl benzene	95.0	90.4	100.0	100.0	95.0	90.4	5.0	70-130	20		
Xylene(s)	281	268	300	300	93.7	89.3	4.8	75-125	20		
<b>Surrogate(s)</b>											
Trifluorotoluene	487	451	500	500	97.4	90.2		58-124			

Gas/BTEX Compounds by 8015M/8021

Batch QC report

Test Method: 8015M

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

<b>Laboratory Control Spike (LCS/LCSD)</b>	<b>Water</b>	<b>QC Batch # 2001/12/06-01.02</b>
LCS: 2001/12/06-01.02-006	Extracted: 12/06/2001 09:47	Analyzed: 12/06/2001 09:47
LCSD: 2001/12/06-01.02-007	Extracted: 12/06/2001 10:18	Analyzed: 12/06/2001 10:18

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www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

Compound	Conc. [ug/L]		Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	LCS	LCSD	LCS	LCSD	LCS	LCSD	[%]	Recovery	RPD	LCS	LCSD
Gasoline	441	481	500	500	88.2	96.2	8.7	75-125	20		
<i>Surrogate(s)</i>											
4-Bromofluorobenzene-	527	540	500	500	105.4	108.0		50-150			

Gas/BTEX Compounds by 8015M/8021

Batch QC Report

Test Method: 8021B

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

<b>Matrix Spike ( MS / MSD )</b>	<b>Water</b>	<b>QC Batch # 2001/12/05-01.02</b>
Sample ID: <b>MW-2 &gt;&gt; MS</b>		Lab ID: 2001-11-0587-002
MS: 2001/12/05-01.02-023	Extracted: 12/05/2001 19:45	Analyzed: 12/05/2001 19:45
		Dilution: 1
MSD: 2001/12/05-01.02-024	Extracted: 12/05/2001 20:17	Analyzed: 12/05/2001 20:17
		Dilution: 1

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

Compound	Conc. [ug/L]			Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	MS	MSD	Sample	MS	MSD	MS	MSD	[%]	Recovery	RPD	MS	MSD
Benzene	81.9	88.1	ND	100.0	100.0	81.9	88.1	7.3	65-135	20		
Toluene	77.7	82.7	ND	100.0	100.0	77.7	82.7	6.2	65-135	20		
Ethyl benzene	81.3	85.6	ND	100.0	100.0	81.3	85.6	5.2	65-135	20		
Xylene(s)	241	251	ND	300	300	80.3	83.7	4.1	65-135	20		
<b>Surrogate(s)</b>												
Trifluorotoluene	391	428		500	500	78.2	85.6		58-124			

Gas/BTEX Compounds by 8015M/8021

Batch QC Report

Test Method: 8015M

Prep Method: 5030

STL Chromalab  
1220 Quarry Lane  
Pleasanton, CA 94566

Matrix Spike ( MS / MSD )	Water	QC Batch # 2001/12/05-01.02	
Sample ID: MW-2 >> MS		Lab ID: 2001-11-0587-002	
MS: 2001/12/05-01.02-025	Extracted: 12/05/2001 20:48	Analyzed: 12/05/2001 20:48	
		Dilution: 1	
MSD: 2001/12/05-01.02-026	Extracted: 12/05/2001 21:20	Analyzed: 12/05/2001 21:20	
		Dilution: 1	

Tel 925 484 1919  
Fax 925 484 1096  
www.stl-inc.com  
www.chromalab.com

CA DHS ELAP#1094

Compound	Conc. [ug/L]			Exp.Conc. [ug/L]		Recovery [%]		RPD	Ctrl.Limits [%]		Flags	
	MS	MSD	Sample	MS	MSD	MS	MSD		Recovery	RPD	MS	MSD
Gasoline	410	406	ND	500	500	82.0	81.2	1.0	65-135	20		
<i>Surrogate(s)</i>												
4-Bromofluorobenz	511	512		500	500	102.	102.4		50-150			



DISTRIBUTION

FOURTH QUARTER 2001  
GROUNDWATER MONITORING REPORT  
PACIFIC ELECTRIC MOTOR COMPANY  
1009 66TH AVENUE  
OAKLAND, CALIFORNIA

JANUARY 29, 2002

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