



June 30, 1993

131.0100.003

Alameda County Environmental Health Services
Hazardous Materials Division
80 Swan Way Room 200
Oakland, California 94621

Attention: Ms. Susan Hugo

**QUARTERLY GROUNDWATER MONITORING REPORT
MAY 1993 SAMPLING EVENT
EMERY BAY PLAZA
1650 65TH STREET
EMERYVILLE, CALIFORNIA**

Dear Ms. Hugo:

This letter presents data collected by PES Environmental, Inc. (PES) during the May 20, 1993 quarterly groundwater monitoring conducted at Emery Bay Plaza, located at 1650 65th Street in Emeryville, California (Plate 1). PES has been retained by Emery Bay Plaza to conduct groundwater monitoring at the site. PES also provides operation, maintenance and monitoring of a groundwater extraction and treatment system at the site.

The purpose of the groundwater monitoring program at this site is to: (1) evaluate the presence of hydrocarbons in groundwater; (2) provide data to assess the performance and effectiveness of the groundwater remedial program; and (3) monitor seasonal water level variations at the site. The monitoring is performed in accordance with California Regional Water Quality Control Board (RWQCB) guidelines and the approved remedial action plan for this site.

BACKGROUND

Six monitoring wells and one extraction well were installed at the site (Plate 2) following removal of an on site underground storage tank (UST) in July 1987 and several offsite USTs in September and October 1989. Groundwater has been monitored since November, 1989. An activated carbon groundwater treatment system was installed and its operation was begun in December 1990. Discharges of treated groundwater are to the sanitary sewer under the authority of an East Bay Municipal Utility District wastewater discharge permit (Permit No.

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502-45131). The present sampling is the fifteenth consecutive sampling event since groundwater monitoring was initiated, and the seventh to be conducted by PES.

GROUNDWATER ELEVATIONS

Water-level Measurement Procedures

Prior to sampling, the groundwater level in each of the six monitoring wells was measured to a precision of 0.01 feet using an electronic water-level indicator. Prior to each measurement, the portion of the water-level indicator that was submerged in the well was cleaned with a mild detergent solution and rinsed with de-ionized water.

Results

Water-level data were converted to water-level elevations referenced to mean sea level (MSL). A groundwater elevation map constructed from the data is presented on Plate 3. An historical summary of groundwater elevations for wells at the site is presented in Table 1.

Water levels have fluctuated since the February 18, 1993 sampling event. Water levels in upgradient Wells MW-5 and MW-7 have increased slightly while all others, except MW-2, have decreased slightly. The water level in Well MW-2, which is near Extraction Well EW-1, did not change between the February and May monitoring events. Based on measured water levels on May 20, 1993, groundwater flow direction at the site was calculated to be toward the southwest, with an approximate gradient of 0.01 foot per foot. This is generally consistent with historical groundwater flow direction and gradient.

GROUNDWATER SAMPLING AND ANALYTICAL TESTING

Sampling Protocol

Groundwater samples were collected on May 20, 1993 by Blaine Tech Services, Inc. (Blaine Tech) from Monitoring Wells MW-2, MW-3, MW-4, MW-5, MW-6, and MW-7. Prior to sampling, the groundwater was visually inspected to assess the presence of floating product. A minimum of three well volumes were evacuated prior to sampling using a teflon bladder pump. During pumping the discharge water was measured for pH, temperature, electrical conductivity and turbidity. Groundwater samples were collected with a clean teflon bailer and decanted into clean 40-milliliter glass vials with teflon lined caps.

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Samples were immediately labeled to designate sample number, time and date collected, and analysis requested, and stored in a chilled, thermally insulated cooler for transport to the analytical laboratory for chemical analysis. The information collected during the groundwater sampling and the chain of custody records are presented in a groundwater sampling report prepared by Blaine Tech, provided in Appendix A.

A sample (Sample 93135A) was collected on May 20, 1993 by PES from the extraction well (Well EW-1), to monitor chemical conditions of extracted groundwater. The sample was collected from a sample tap located on piping upstream of the treatment system. Water was purged from the sample tap for approximately one minute prior to collection of the sample. Three 40-milliliter glass vials with teflon-lined caps were filled directly from the sample tap.

Analytical Program

Groundwater samples from all wells including the extraction well were analyzed by Coast-to-Coast Analytical Services, Inc. (Coast to Coast) in Benicia, California, a State-certified chemical analysis laboratory. Samples were analyzed for total petroleum hydrocarbons quantified as gasoline (TPH gas) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Test Method 8020/8015. The groundwater sample from the extraction well was analyzed by EPA Test Method 5030/8240 and Cal DHS Draft TPH (Modified).

Analytical Results

Detectable levels of TPH gas and BTEX were found in all wells except Well MW-6. Consistent with historical monitoring data, Well MW-2, located within the backfill of the soil excavation at the former onsite UST, exhibited the highest levels of dissolved hydrocarbons (TPH and BTEX).

Analytical results for all wells, including historical monitoring results for the previous sampling events and relevant federal and state standards, are presented in Table 2. Laboratory reports and chain of custody records are provided in Appendix B. The distribution of hydrocarbons in groundwater at the site on April 20, 1993 is presented on Plate 4.

SUMMARY

Groundwater elevations have fluctuated slightly since the February 18, 1993 sampling. The groundwater flow direction continues to be southwest. Concentrations of petroleum hydrocarbons in groundwater samples did not change significantly from the last monitoring event.

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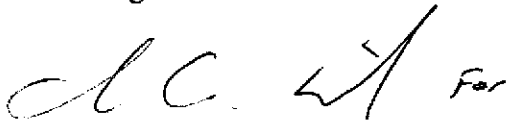
If you have any questions or comments, please do not hesitate to call either of the undersigned.

Yours very truly,

PES ENVIRONMENTAL, INC.



Paul R. Lohman
Staff Engineer



Robert S. Creps, P. E.
Associate Engineer



Attachments:

- | | |
|------------|---|
| Table 1 | Summary of Groundwater Elevations |
| Table 2 | Summary of Analytical Results for Groundwater Samples |
| Plate 1 | Site Location Map |
| Plate 2 | Well Location Map |
| Plate 3 | Groundwater Elevation Contours on May 20, 1993 |
| Plate 4 | Dissolved Hydrocarbons in Groundwater on May 20, 1993 |
| Appendix A | Groundwater Sampling Report |
| Appendix B | Analytical Laboratory Reports |

pc: Mr. Thomas Gram - P. O. Partners
Ms. Lynn Tolin - Emery Bay Plaza
Mr. Matt Dulka - Hanson, Bridgett, Marcus, Vlahos & Rudy

Table 1. Summary of Groundwater Elevations Through May 1993
Emery Bay Plaza
1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-2	21-Feb-90	ES	15.75	11.72	4.03
	25-May-90	ES	15.75	11.83	3.92
	29-Aug-90	ES	15.75	11.72	4.03
	29-Nov-90	ES	15.75	11.99	3.76
	1-Mar-91	ES	15.79	12.87	2.92
	28-May-91	ES	15.79	12.21	3.58
	1-Aug-91	ES	15.79	NA	NA
	27-Jan-92	PES	15.79	11.78	4.01
	28-Feb-92	PES	15.79	11.70	4.09
	28-May-92	PES	15.79	11.83	3.96
	27-Aug-92	PES	15.79	12.28	3.51
	10-Nov-92	PES	15.79	12.40	3.39
	18-Feb-93	PES	15.79	12.00	3.79
	20-May-93	PES	15.79	12.00	3.79
MW-3	21-Feb-90	ES	12.45	9.18	3.27
	25-May-90	ES	12.45	9.25	3.20
	29-Aug-90	ES	12.45	9.50	2.95
	29-Nov-90	ES	12.45	9.80	2.65
	1-Mar-91	ES	12.43	9.51	2.92
	28-May-91	ES	12.43	9.03	3.40
	1-Aug-91	ES	12.43	NA	NA
	27-Jan-92	PES	12.43	9.44	2.99
	28-Feb-92	PES	12.43	8.80	3.63
	28-May-92	PES	12.43	8.80	3.63
	27-Aug-92	PES	12.43	9.18	3.25
	10-Nov-92	PES	12.43	9.44	2.99
	18-Feb-93	PES	12.43	7.59	4.84
	20-May-93	PES	12.43	8.21	4.22
MW-4	21-Feb-90	ES	12.24	8.63	3.61
	25-May-90	ES	12.24	8.58	3.66
	29-Aug-90	ES	12.24	8.50	3.74
	29-Nov-90	ES	12.24	8.74	3.50
	1-Mar-91	ES	12.24	8.65	3.59
	28-May-91	ES	12.24	8.57	3.67
	1-Aug-91	ES	12.24	NA	NA
	27-Jan-92	PES	12.24	8.62	3.62
	28-Feb-92	PES	12.24	8.52	3.72
	28-May-92	PES	12.94	8.35	3.89

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1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-4 (continued)	27-Aug-92	PES	12.24	9.00	3.24
	10-Nov-92	PES	12.24	8.85	3.39
	18-Feb-93	PES	12.24	8.17	4.07
	20-May-93	PES	12.24	8.21	4.03
MW-5	21-Feb-90	ES	12.81	6.91	5.90
	25-May-90	ES	12.81	7.58	5.23
	29-Aug-90	ES	12.81	7.75	5.06
	29-Nov-90	ES	12.81	8.17	4.64
	1-Mar-91	ES	12.82	8.11	4.71
	28-May-91	ES	12.82	7.39	5.43
	1-Aug-91	ES	12.82	NA	NA
	27-Jan-92	PES	12.82	7.90	4.92
	28-Feb-92	PES	12.82	7.73	5.09
	28-May-92	PES	12.82	7.18	5.64
	27-Aug-92	PES	12.82	7.54	5.28
	10-Nov-92	PES	12.82	7.90	4.92
	18-Feb-93	PES	12.82	6.58	6.24
	20-May-93	PES	12.82	6.29	6.53
MW-6	1-Mar-91	ES	12.03	8.59	3.44
	28-May-91	ES	12.03	8.35	3.68
	1-Aug-91	ES	12.03	NA	NA
	27-Jan-92	PES	12.03	8.32	3.71
	28-Feb-92	PES	12.03	8.08	3.95
	28-May-92	PES	12.03	8.04	3.99
	27-Aug-92	PES	12.03	8.48	3.55
	10-Nov-92	PES	12.03	8.52	3.51
	18-Feb-93	PES	12.03	8.14	3.89
	20-May-93	PES	12.03	8.46	3.57

Table 1. Summary of Groundwater Elevations Through May 1993
 Emery Bay Plaza
 1650 65th Street, Emeryville, California

Well Number	Date	Measured by	Top of Casing (feet MSL)	Depth to Water (feet)	Groundwater Elevations (feet MSL)
MW-7	1-Mar-91	ES	12.9	7.51	5.39
	28-May-91	ES	12.9	7.07	5.83
	1-Aug-91	ES	12.9	NA	NA
	27-Jan-92	PES	12.9	7.28	5.62
	28-Feb-92	PES	12.9	7.04	5.86
	28-May-92	PES	12.9	6.81	6.09
	27-Aug-92	PES	12.9	7.12	5.78
	10-Nov-92	PES	12.9	7.80	5.10
	18-Feb-93	PES	12.9	6.54	6.36
	20-May-93	PES	12.9	6.17	6.73

NOTES: Ft MSL = feet above Mean Sea Level
 ES = Engineering-Science, Inc.
 PES = PES Environmental, Inc.
 NA = Information not available at this date.

Table 2. Summary of Analytical Results for Groundwater Samples Through May, 1993
 Emery Bay Plaza
 1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-2	Nov-89	ES	100	NA	8.4	7.4	2.4	13	0.015 *	0.05
	Feb-90	ES	54	NA	7.8	5.6	1.6	8.4	0.032 *	0.021
	May-90	ES	40	NA	7.8	7.5	1.6	7.6	0.076 *	0.025
	Aug-90	ES	49	4.6	9	8	ND	8.9	0.040 *	0.0059
	Nov-90	ES	73	3.5	6.9	5.9	1.4	7.4	NA	NA
	Mar-91	ES	72	1.8	5.5	6.6	1	7.7	NA	NA
	May-91	ES	31	ND	8.4	4.7	1.7	6.3	NA	NA
	Aug-91	ES	47	ND	7.6	1.6	7.3	7.8	NA	NA
	Jan-92	PES	77	NA	10	8.7	2	7.6	NA	NA
	28-Feb-92	PES	70	NA	9.1	6.4	0.53	7.4	NA	NA
	28-May-92	PES	54	NA	8.0	4.8	2.4	6.2	NA	NA
	27-Aug-92	PES	47	NA	2.7	2.9	3.4	9.2	NA	NA
	10-Nov-92	PES	45	<20	6.6	4.0	2.0	5.8	<0.05	NA
	18-Feb-93	PES	14	NA	2.3	0.81	0.67	1.4	NA	NA
20-May-93	PES	43	NA	7.3	5.2	1.5	5.5	NA	NA	
MW-3	Nov-89	ES	0.13	NA	0.0022	ND	ND	0.003	ND	ND
	Feb-90	ES	ND	NA	0.0025	ND	ND	ND	NA	0.011
	May-90	ES	ND	ND	0.002	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.8	0.0044	0.0029	ND	0.0054	NA	NA
	Nov-90	ES	0.9	0.8	0.0034	ND	ND	ND	NA	NA
	Mar-91	ES	ND	ND	0.025	0.025	0.0053	0.32	NA	NA
	May-91	ES	ND	ND	0.0026	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	0.0019	ND	ND	ND	NA	NA
	Jan-92	PES	0.092	NA	0.0024	<0.0003	0.0006	<0.0003	NA	NA
	28-Feb-92	PES	0.160***	NA	0.0028	<0.0003	0.0007	0.0005	NA	NA

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Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-3	28-May-92	PES	<0.05	NA	0.0025	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.37	NA	0.004	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.24	<0.1	0.0042	<0.0003	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.14	NA	0.0018	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	0.072	NA	0.0031	<0.0005	<0.0005	<0.0005	NA	NA
MW-4	Nov-89	ES	0.2	NA	0.0023	ND	ND	ND	ND	ND
	Feb-90	ES	ND	NA	ND	ND	ND	ND	NA	0.006
	May-90	ES	ND	ND	0.001	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.8	0.0089	0.0071	ND	0.0094	NA	NA
	Nov-90	ES	ND	0.7	0.0027	ND	ND	ND	NA	NA
	Mar-91	ES	NA	ND	0.003	ND	ND	ND	NA	NA
	May-91	ES	NA	ND	0.0024	ND	ND	ND	NA	NA
	Aug-91	ES	NA	ND	0.0015	ND	ND	ND	NA	NA
	Jan-92	PES	<0.05	NA	0.0022	0.0004	<0.0003	0.0007	NA	NA
	28-Feb-92	PES	<0.05	NA	0.0016	<0.0003	<0.0003	0.0003	NA	NA
	28-May-92	PES	<0.05	NA	0.0015	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.08	NA	0.003	<0.001	<0.0005	0.0005	NA	NA
	10-Nov-92	PES	0.18	<0.1	0.06	0.0009	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.06	NA	0.0017	<0.0005	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.05	NA	0.0022	<0.0005	<0.0005	<0.0005	NA	NA
MW-5	Nov-89	ES	ND	NA	0.074	ND	ND	0.0042	ND	ND
	Feb-90	ES	ND	NA	0.2	ND	ND	ND	NA	0.012
	May-90	ES	ND	ND	0.11	ND	ND	ND	ND	NA
	Aug-90	ES	ND	0.7	0.066	0.0022	ND	0.0038	NA	NA
	Nov-90	ES	0.6	0.9	0.069	ND	ND	ND	NA	NA
	Mar-91	ES	ND	1.1	0.066	0.0023	ND	ND	NA	NA

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 Emery Bay Plaza
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Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-5 (cont.)	May-91	ES	ND	ND	0.11	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	0.078	0.0021	ND	ND	NA	NA
	Jan-92	PES	0.19	NA	0.09	0.0005	<0.0003	0.0006	NA	NA
	28-Feb-92	PES	0.23***	NA	0.11	0.0009	<0.0003	0.0005	NA	NA
	28-May-92	PES	0.13	NA	0.10	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.52	NA	0.083	0.002	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.24	<0.1	0.074	0.001	<0.0003	<0.0006	<0.0003	NA
	18-Feb-93	PES	0.19	NA	0.056	0.0006	<0.0005	<0.0005	NA	NA
	20-May-93	PES	<0.2	NA	0.056	<0.002	<0.002	<0.002	NA	NA
MW-6	May-90	ES	NA	ND	ND	ND	ND	ND	ND	ND**
	Aug-90	ES	NA	ND	NA	NA	NA	NA	NA	ND**
	Nov-90	ES	1.2	1.4	0.0012	ND	ND	ND	0.0012	NA
	Mar-91	ES	ND	ND	ND	ND	ND	ND	NA	NA
	May-91	ES	ND	ND	ND	ND	ND	ND	NA	NA
	Aug-91	ES	ND	ND	ND	ND	ND	ND	NA	NA
	Jan-92	PES	<0.05	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-Feb-92	PES	<0.05	NA	<0.0003	<0.0003	<0.0003	<0.0003	NA	NA
	28-May-92	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	<0.05***	NA	<0.0005	<0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	<0.050	<0.1	<0.0003	<0.0003	<0.0003	<0.0006	<0.0003	NA
18-Feb-93	PES	<0.050	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA	
20-May-93	PES	<0.05	NA	<0.0005	<0.0005	<0.0005	<0.0005	NA	NA	
MW-7	May-90	ES	NA	0.6	0.24	ND	ND	ND	0.24	ND**
	Aug-90	ES	ND	ND	0.081	0.0018	ND	ND	0.0844	ND**
	Nov-90	ES	ND	0.8	0.054	ND	ND	ND	0.054	NA
	Mar-91	ES	ND	ND	0.1	0.0036	ND	ND	NA	NA

Table 2. Summary of Analytical Results for Groundwater Samples Through May, 1993

Emery Bay Plaza
1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

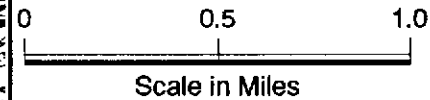
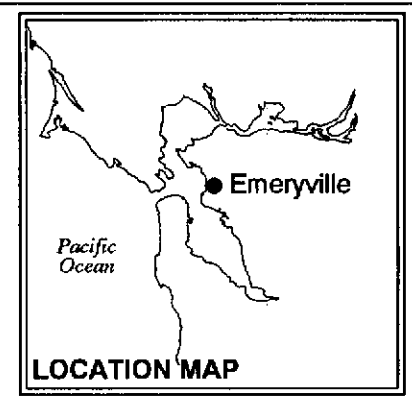
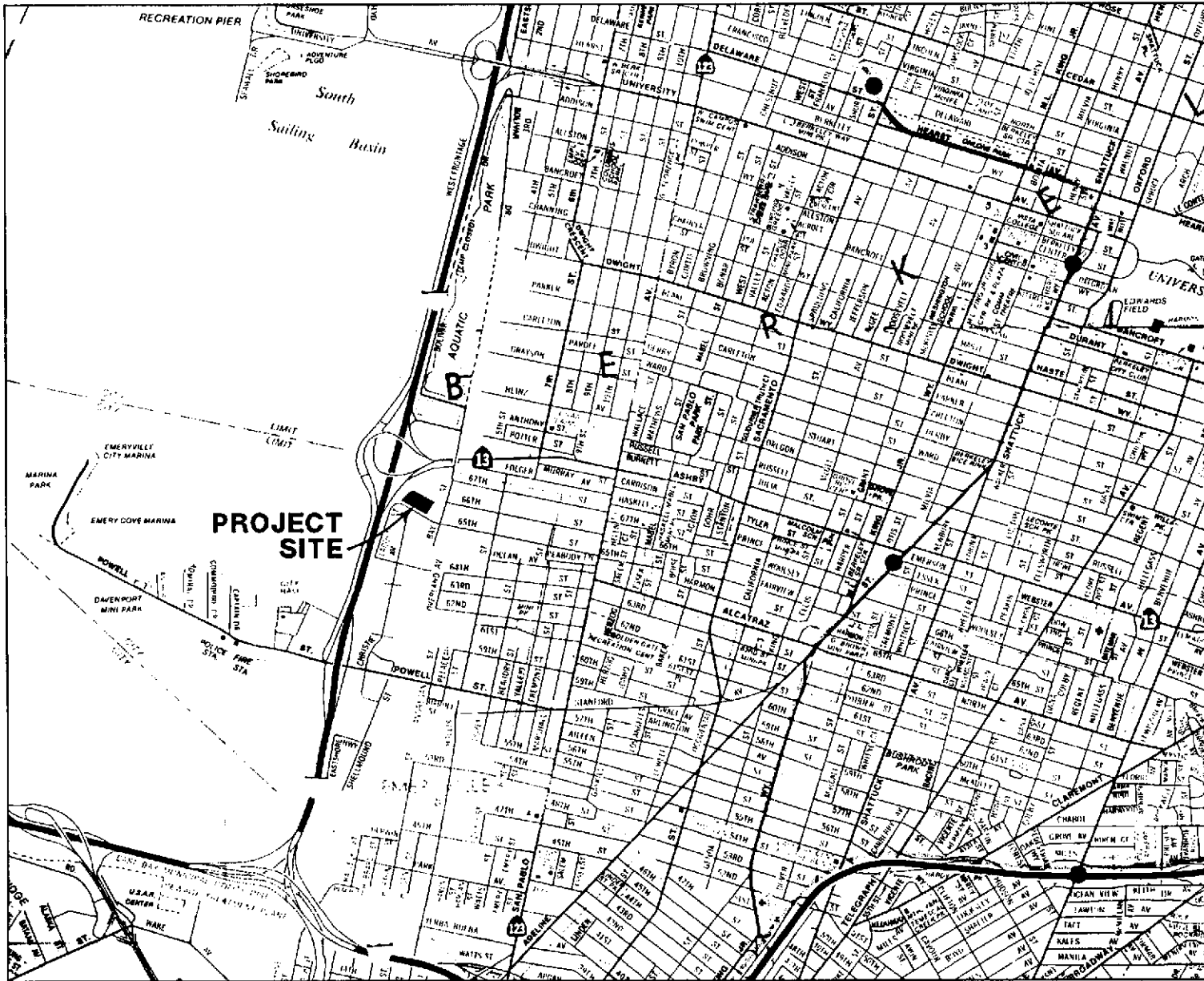
Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
MW-7 (cont.)	May-91	ES	ND	ND	0.12	0.0027	ND	ND	NA	NA
	Aug-91	ES	ND	ND	0.074	0.0033	ND	ND	NA	NA
	Jan-92	PES	0.27	NA	0.025	0.0005	<0.0003	0.0008	NA	NA
	1-Feb-92	PES	0.1***	NA	0.033	0.0007	<0.0003	0.0007	NA	NA
	28-May-92	PES	0.15	NA	0.021	<0.0005	<0.0005	<0.0005	NA	NA
	27-Aug-92	PES	0.44	NA	0.011	0.001	<0.0005	<0.0005	NA	NA
	10-Nov-92	PES	0.37	<0.1	0.031	0.0012	<0.0003	0.0012	<0.0003	NA
	18-Feb-93	PES	0.27	NA	0.077	0.0013	<0.0005	0.0014	NA	NA
	20-May-93	PES	0.3	NA	0.15	0.003	<0.002	0.003	NA	NA
	EW-1	May-90	ES	20	ND	7.5	4.5	1	6.3	0.068
Aug-90		ES	NA	3.5	6	4.2	ND	4.6	0.016 *	ND**
Nov-90		ES	47	3.1	6	3.4	1	4.7	NA	NA
17-Dec-90		ES	NA	NA	11	7.9	2.2	10	NA	NA
19-Dec-90		ES	NA	NA	3.7	2.5	ND	2.3	NA	NA
21-Dec-90		ES	NA	NA	3.2	2.2	ND	1.7	NA	NA
27-Dec-90		ES	NA	NA	2.9	2.1	0.16	1.5	NA	NA
4-Jan-91		ES	NA	NA	3.2	2.8	ND	ND	NA	NA
11-Jan-91		ES	NA	NA	3	2.4	0.2	1.8	NA	NA
6-Feb-91		ES	NA	NA	0.47	0.23	0.011	0.39	NA	NA
13-Feb-91		ES	NA	NA	1.2	0.28	ND	0.36	NA	NA
15-Mar-91		ES	NA	NA	0.13	0.085	0.006	0.17	NA	NA
3-Jul-91		ES	NA	NA	1.3	0.95	0.22	1.4	NA	NA
1-Aug-91		ES	NA	NA	0.22	0.19	0.013	0.27	NA	NA
16-Aug-91		ES	NA	NA	0.17	0.16	0.013	0.19	NA	NA
13-Nov-91		ES	NA	NA	3.1	0.27	0.04	0.22	NA	NA
29-Jan-92	PES	2.7	NA	0.57	0.15	0.007	0.26	NA	NA	
3-Mar-92	PES	25	NA	3.6	2.6	0.53	2.6	NA	NA	

Table 2. Summary of Analytical Results for Groundwater Samples Through May, 1993
 Emery Bay Plaza
 1650 65th Street, Emeryville, California

Concentrations expressed in milligrams per liter (mg/l) - equivalent to parts per million (ppm)

Well Number	Sample Date	Sampled by	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Purgeable Halocarbons	Lead
					MCL = 0.001	DAL = 0.1	MCL = 0.68	MCL = 1.75		MCL = 0.005
EW-1 (cont.)	28-May-92	PES	16	NA	3.3	3.2	0.75	2.6	NA	NA
	29-Jun-92	PES	7	NA	2.2	3.1	0.27	1.4	NA	NA
	21-Jul-92	PES	1.6	NA	0.22	0.017	<0.0005	0.1	NA	NA
	27-Aug-92	PES	NS	NS	NS	NS	NS	NS	NS	NS
	23-Sep-92	PES	5.2	NA	1.1	0.59	0.1	1.0	NA	NA
	27-Oct-92	PES	1.3	NA	0.22	0.06	0.005	0.11	NA	NA
	24-Nov-92	PES	7.1	NA	1.4	1.1	0.12	0.89	NA	NA
	18-Feb-93	PES	7.2	NA	1.4	0.93	0.21	1	NA	NA
	09-Mar-93	PES	4.6	NA	0.99	0.75	0.062	0.84	NA	NA
	21-Apr-93	PES	4.9	NA	0.27	0.18	0.02	0.19	NA	NA
	13-May-93	PES	2.6	NA	0.52	0.11	0.023	0.33	NA	NA

NOTES: * = 1,2-Dichlorethane concentration (only 1,2-Dichloroethane detected).
 ** = Organic Lead
 *** = TPH quantified as gasoline but chromatogram pattern was not typical of gasoline.
 **** = Small amount of Diesel 2 was detected in sample.
 ES = Engineering-Science, Inc.
 PES = PES Environmental, Inc.
 NA = Not analyzed
 ND = Not detected above method detection limit.
 NS = Not sampled.
 <0.0005 = Not detected above indicated method detection limit.
 MCL = California Maximum Contaminant Level, current as of January 1991.
 DAL = Department of Health Services Action Levels, current as of January 1991.
 TPH = Total Petroleum Hydrocarbons



PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
1650 65th Street
Emeryville, California

PLATE

1

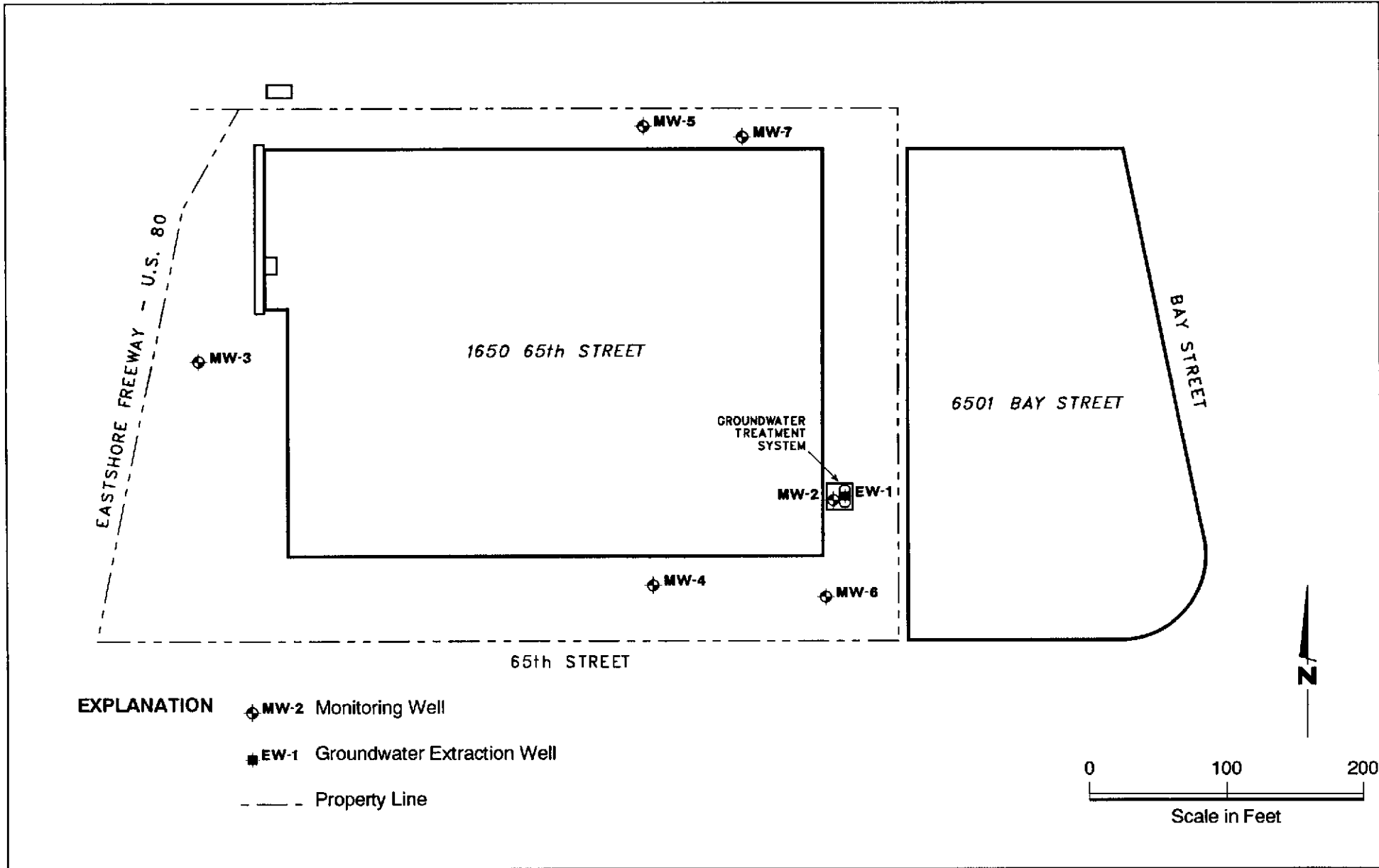
JOB NUMBER
131.01.003

REVIEWED BY
JAS

DATE
6/92

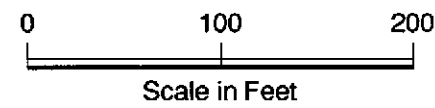
REVISED DATE

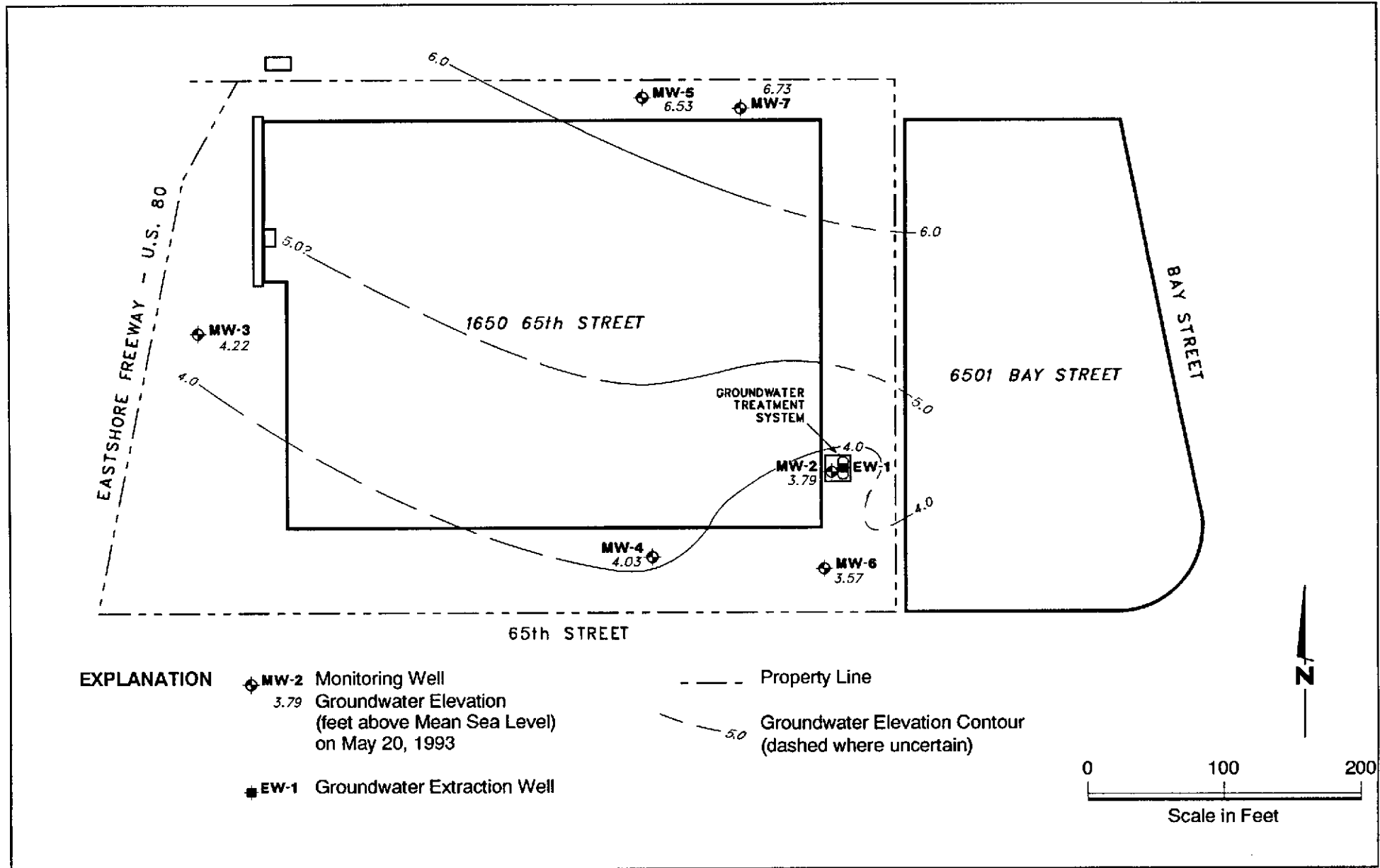
REVISED DATE

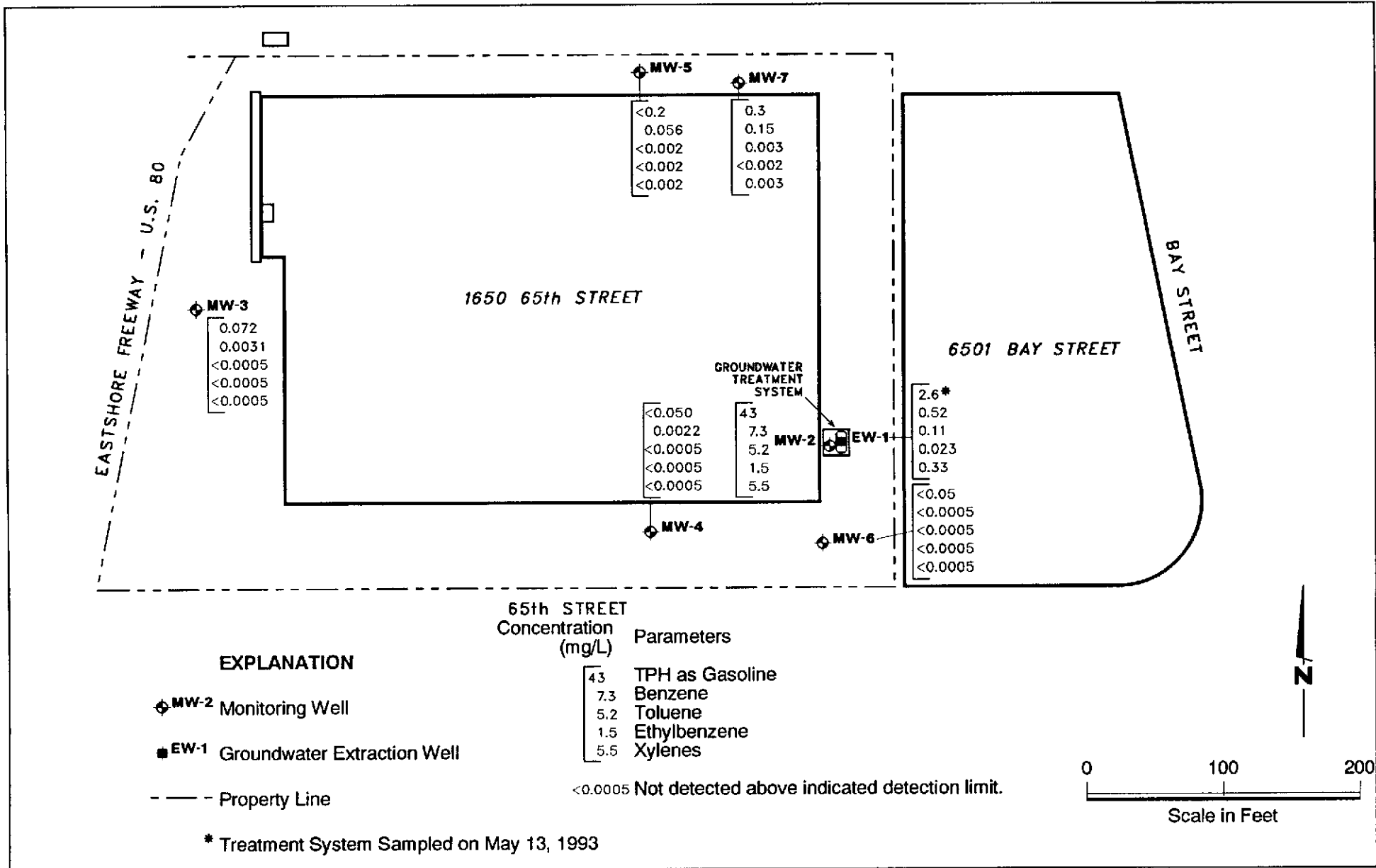


EXPLANATION

- ◆ MW-2 Monitoring Well
- EW-1 Groundwater Extraction Well
- - - Property Line









BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

June 4, 1993

RECEIVED

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

Attn: Paul Lohman

SITE:
P.O. Partners
1650 65th Street
Emeryville, California

DATE:
May 20, 1993

GROUNDWATER SAMPLING REPORT 930520-A-1

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 is presented in the TABLE OF WELL MONITORING DATA. This data was collected during our inspection, well evacuation, and sample collection. Measurements include the total depth of the well and depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, and temperature readings were obtained during well evacuation and at the time of sample collection. Recharge performance can be evaluated by comparing the anticipated three, four, or five case volume evacuation gallonage with the volume which could actually be purged.

TABLE OF WELL MONITORING DATA

Well I.D.	MW-2	MW-3	MW-4	MW-5								
Date Sampled	05/20/93	05/20/93	05/20/93	05/20/93								
Well Diameter (in.)	2	4	4	4								
Total Well Depth (ft.)	26.66	18.29	15.92	18.04								
Depth To Water (ft.)	12.00	8.21	8.21	6.29								
Free Product (in.)	NONE	NONE	NONE	NONE								
Reason If Not Sampled	--	--	--	--								
1 Case Volume (gal.)	2.39	6.55	5.01	7.63								
Did Well Dewater?	NO	NO	NO	NO								
Gallons Actually Evacuated	7.5	20.0	16.0	23.0								
Purging Device	BAILER	MIDDLEBURG	MIDDLEBURG	MIDDLEBURG								
Sampling Device	BAILER	BAILER	BAILER	BAILER								
Time	15:18	15:22	15:26	12:41	12:48	12:55	13:38	13:44	13:50	11:00	11:08	11:16
Temperature (Fahrenheit)	66.1	65.2	65.7	65.1	64.4	65.5	70.0	69.7	69.7	64.6	64.6	64.6
pH	6.3	8.0	8.1	7.8	7.9	7.9	7.9	8.0	8.0	7.4	7.2	7.2
Conductivity (micromhos/cm)	8000	6400	5800	4000	4100	4000	8400	8700	8800	2900	3000	3000
Nephelometric Turbidity Units	>200	>200	>200	14.46	14.38	14.71	20.3	18.12	18.84	22.7	11.96	7.80
BTS Chain of Custody	930520-A-1	930520-A-1	930520-A-1	930520-A-1								
BTS Sample I.D.	MW-2	MW-3	MW-4	MW-5								
DHS HMTL Laboratory	COAST TO COAST	COAST TO COAST	COAST TO COAST	COAST TO COAST								
Analysis	TPH (GAS), BTEX	TPH (GAS), BTEX	TPH (GAS), BTEX	TPH (GAS), BTEX								

TABLE OF WELL MONITORING DATA

Well I.D.	MW-6				MW-7		
Date Sampled	05/20/93				05/20/93		
Well Diameter (in.)	4				4		
Total Well Depth (ft.)	18.77				18.80		
Depth To Water (ft.)	8.46				6.17		
Free Product (in.)	NONE				NONE		
Reason If Not Sampled	--				--		
1 Case Volume (gal.)	6.70				8.20		
Did Well Dewater?	NO				NO		
Gallons Actually Evacuated	21.0				25.0		
Purging Device	MIDDLEBURG				MIDDLEBURG		
Sampling Device	BAILER				BAILER		
Time	14:13	14:20	14:27	11:37	11:46	11:55	
Temperature (Fahrenheit)	66.5	66.5	66.4	63.6	63.7	63.2	
pH	8.2	8.2	8.2	7.6	7.7	7.8	
Conductivity (micromhos/cm)	>10,000	>10,000	>10,000	1900	1700	1900	
Nephelometric Turbidity Units	13.29	8.74	14.82	42.1	19.9	19.4	
BTS Chain of Custody	930520-A-1				930520-A-1		
BTS Sample I.D.	MW-6				MW-7		
DHS HMTL Laboratory	COAST TO COAST				COAST TO COAST		
Analysis	TPH (GAS), BTEX				TPH (GAS), BTEX		

EQUIPMENT

Selection of Sampling Equipment

The determination of what apparatus is to be used on particular wells may be made by the property owner, but is usually made by the professional consultant directing the performance of the monitoring on the property owner's behalf. When no specific requirement is made, our personnel will select equipment that will accomplish the work in the most efficient manner. Our personnel are equipped with a variety of sampling devices that include USGS/Middleburg pumps, down hole electric submersible pumps, air lift pumps, suction pumps, and bailers made of both Teflon and stainless steel.

USGS/Middleburg pumps and bailers were selected for the collection of samples at this site.

USGS/Middleburg Positive Displacement Sampling Pumps: USGS/Middleburg positive displacement sampling pumps are EPA approved pumps appropriate for use in wells down to two inches in diameter and depths up to several hundred feet. The pump contains a flexible Teflon bladder which is alternately allowed to fill with well water and then collapsed. Actuation of the pump is accomplished with compressed air supplied by a single hose to one side of the Teflon membrane. Water on the other side of the membrane is squeezed out of the pump and up a Teflon conductor pipe to the surface. Evacuation and sampling are accomplished as a continuum. The rate of water removal is relatively slow and loss of volatiles almost non-existent. There is only positive pressure on the water being sampled and there is no impeller cavitation or suction. The pumps can be placed at any location within the well, can draw water from the very bottom of the well case, and are virtually immune to the erosive effects of silt or lack of water which destroy other types of pumps.

Disadvantages associated with Middleburg pumps include their high cost, low flow rate, temperamental operation, and cleaning requirements which are both elaborate and time consuming.

Bailers: A bailer, in its simplest form, is a hollow tube which 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 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.

STANDARD PRACTICES

Evacuation

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The protocol used on these wells called for a volumetric removal of three case volumes with stabilization of standard water parameters. There are situations where up to ten case volumes of evacuation may be removed, especially when attempting to stabilize turbidity in undeveloped wells. Different professional consultants may specify different levels of evacuation prior to sampling or may request that specific parameters be used to determine when to collect the sample. Our personnel use several standard instruments to record the changes in parameters as the well is evacuated. These instruments are used regardless of whether or not a specific volumetric standard has been called for. As a result, the consultant will always be provided with a record of the pH, EC, and temperature changes that occurred during the evacuation process. Additional information obtained with different types of instruments (such as dissolved oxygen and turbidity meters) can also be collected if requested in advance.

Effluent Materials

The evacuation of purge water creates a volume of effluent water which, in most cases, must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new 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.

Observations and Measurements

Included in the scope of work are routine measurements and investigative procedures which are intended to determine if the wells are suitable for evacuation and sampling. These include measurement (from the top of the well case) of the total depth of the well; the depth to water, and the thickness of any free product zone (FPZ) encountered. The presence of a significant free product zone may interfere with efforts to collect a water sample that accurately reflects the condition of groundwater lying below the FPZ. This interference is caused by adhesion of petroleum to any device being lowered through the FPZ and the likelihood that minute globules of petroleum may break free of the sampling device and be included in the sample. Accordingly, evaluation of analytical results from

wells containing any amount of free petroleum should take into account the possibility that positive results have been skewed higher by such an inclusion. The decision to sample or not sample such wells is left to the discretion of our field personnel at the site and the consultant who establishes sampling guidelines based on the need for current information on groundwater conditions at the site.

Sampling Methodology

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms with 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 the T.E.G.D. which is published separately.

Sample Containers

Sample material is collected in specially prepared containers appropriate to the type of analyses intended. Our firm uses new sample containers of the type specified by either EPA or the RWQCB. Often times analytical laboratories wish to supply the sample containers because checks performed on these bottles are often part of a comprehensive laboratory QC program. In cases where the laboratory does not supply sample containers our personnel collect water samples in new containers that are appropriate to the type of analytical procedure that the sample is to receive. For example, 40 ml volatile organic analysis vials (VOAs) are used when analysis for gasoline and similar light volatile compounds is intended. These containers are prepared according to EPA SW 846 and will usually contain a small amount of preservative when the analysis is for TPH as gasoline or EPA 602. Vials intended for EPA 601 analysis and EPA 624 GCMS procedures are not preserved. The closure of volatile organic analysis water sample containers is accomplished with an open headed (syringe accessible) plastic screw cap brought down on top of a Teflon faced septum which is used to seal the sample without headspace.

Water samples intended for semivolatile and nonvolatile analysis such as total oil and grease (TOG) and diesel (TPH HBF) are collected and transported in properly prepared new glass liter bottles. Dark amber glass is used in the manufacture of these bottles to reduce any adverse effect on the sample by sunlight. Antimicrobial preservative may be added to the sample liquid if a prolonged holding time is expected prior to analysis. Closure is accomplished with a heavy plastic screw cap.

Groundwater well samples intended for metals analysis are transported in new plastic bottles and preserved with nitric acid. Our personnel can field filter the sample liquid prior to placing it in the sample container if instructed to perform this procedure.

Sample Handling Procedures

Water samples are collected in any of several appropriate devices such as bailers, Coliwasas, Middleburg sampling pumps etc. which are described in detail only as warranted by their employment at a given site. Sample liquid is decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA procedures for handling volatile organic and semi-volatile compounds.

Groundwater samples that are to receive metals analyses can be filtered prior to being placed in the plastic sample bottles that contain the nitric acid preservative. The filtration process employs new glass containers which are discarded and laboratory quality disposable filtering containers which are also discarded. A frequently used filtering procedure employs a vacuum pump to draw sample material through a 0.45 micron filter. The 0.45 micron pore size is standard, but the amount of filter available varies with the type of package selected. Filters are selected on the basis of the relative turbidity of the water sample. Samples which are relatively clean can be efficiently filtered with relatively inexpensive filters while very turbid water will require a very large filter with a high tolerance for sediments. One of several such filters our firm uses are the Nalgene Type A filters in which an upper and lower receptacle chamber are affixed to the filter. Sample material is poured into the upper chamber and a vacuum pump attached to the lower chamber. Simple actuation of the vacuum pump induces the flow of water through the filter and into the lower chamber. The sample is then decanted into the laboratory container and the filter assembly discarded. Cartridge type flow-through filters are more expensive but can be fitted directly to the discharge line of most sampling pumps (USGS/Middleburg pumps) and electric submersible pumps.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of 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 the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were transported in cooled ice chest to the office of Blaine Tech Services, Inc. to be stored in a refrigerator overnight. The following day, the samples were released into the custody of a courier for delivery to Coast to Coast Analytical Services.

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.

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. Decontamination procedures include complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

Please call if we can be of any further assistance.


Richard C. Blaine

RCB/skt

attachments: chain of custody

BLAINE TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

CONDUCT ANALYSIS TO DETECT

LAB Coast to Coast DHS # _____
ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS
SET BY CALIFORNIA DHS AND
 EPA RWQCB REGION _____
 LIA
 OTHER

CHAIN OF CUSTODY
930520A1
CLIENT PES ENVIRONMENTAL
SITE PO PARTNER'S
1650 65TH ST.
EMERYVILLE

C = COMPOSITE ALL CONTAINERS
gas test

SPECIAL INSTRUCTIONS
*Bill to PES Environmental
ATTN: Paul Lehmann*

Routine

SAMPLE I.D.	MATRIX		TOTAL	CONDUCT ANALYSIS TO DETECT						ADDL INFORMATION	STATUS	CONDITION	LAB SAMPLE #
	S = SOIL	W = H ₂ O											
<i>MW 5</i>	<i>W</i>		<i>3</i>							<i>Routine</i>			
<i>MW 7</i>			<i>3</i>										
<i>MW 3</i>			<i>3</i>										
<i>MW 4</i>			<i>3</i>										
<i>MW 6</i>			<i>3</i>										
<i>MW 2</i>		<i>W</i>	<i>3</i>										

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN	
	<i>5/20/93</i>	<i>1700</i>	<i>J. L. Lutes</i>		
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
<i>J. L. Lutes</i>	<i>5-21-93</i>	<i>14:10</i>	<i>[Signature]</i>	<i>5-21-93</i>	<i>14:11</i>
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA • Goleta, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Paul Lohman
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : JJ-0653-6
Project : 930520A1 PO Partners,
Emeryville
Analyzed : 06/01/93
Analyzed by: CB
Method : E8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
MW 2	Monitoring Water	Jeff Cartes	05/20/93	05/21/93

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		200.	7300.	
Toluene		200.	5200.	
Ethylbenzene		200.	1500.	
Xylenes		200.	5500.	
Total Petroleum Hydrocarbons (Gasoline)		20000.	43000.	
Percent Surrogate Recovery			103.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)

06/01/93
GC2/601B308
MC/mcc
GC2-060193

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Paul Lohman
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : JJ-0653-3
Project : 930520A1 PO Partners,
Emeryville
Analyzed : 05/28/93
Analyzed by: CB
Method : E8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
MW 3	Monitoring Water	Jeff Cartes	05/20/93	05/21/93

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.5	3.1	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	72.	
Percent Surrogate Recovery			105.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

06/01/93
GC2/527B335
MC/mcc
GC2-052793

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Marissa Coronel
Laboratory Director

**COAST - TO -
COAST
ANALYTICAL
SERVICES**

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
 Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory)
 2059 Junction Ave.

San Jose, CA 95131
 (408) 955-9077

CLIENT: Paul Lohman
 PES Environmental Inc
 1682 Novato Boulevard, Suite 100
 Novato, CA 94947

Lab Number : JJ-0653-4
 Project : 930520A1 PO Partners,
 Emeryville
 Analyzed : 05/28/93
 Analyzed by: CB
 Method : E8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
MW 4	Monitoring Water	Jeff Cartes	05/20/93	05/21/93
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.5	2.2	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Percent Surrogate Recovery			106.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

06/01/93
 GC2/527B334
 MC/mcc
 GC2-052793

Respectfully submitted,
 COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
 Marissa Coronel
 Laboratory Director

**COAST - TO -
COAST
ANALYTICAL
SERVICES**

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Paul Lohman
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : JJ-0653-1
Project : 930520A1 PO Partners,
Emeryville
Analyzed : 05/28/93
Analyzed by: CB
Method : E8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
MW 5	Monitoring Water	Jeff Cartes	05/20/93	05/21/93
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		2.	56.	
Toluene		2.	ND	
Ethylbenzene		2.	ND	
Xylenes		2.	ND	
Total Petroleum Hydrocarbons (Gasoline)		200.	ND	
Percent Surrogate Recovery			105.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

06/01/93
GC2/527B337
MC/mcc
GC2-052793

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Marissa Coronel
Laboratory Director



Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Paul Lohman
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : JJ-0653-5
Project : 930520A1 PO Partners,
Emeryville
Analyzed : 05/28/93
Analyzed by: CB
Method : E8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
MW 6	Monitoring Water	Jeff Cartes	05/20/93	05/21/93

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		0.5	ND	
Toluene		0.5	ND	
Ethylbenzene		0.5	ND	
Xylenes		0.5	ND	
Total Petroleum Hydrocarbons (Gasoline)		50.	ND	
Percent Surrogate Recovery			102.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

06/01/93
GC2/527B329
MC/mcc
GC2-052793

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Marissa Coronel
Laboratory Director

**COAST - TO -
COAST
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Air, Water & Hazardous Waste Sampling, Analysis & Consultation
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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

CLIENT: Paul Lohman
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : JJ-0653-2
Project : 930520A1 PO Partners,
Emeryville
Analyzed : 05/28/93
Analyzed by: CB
Method : E8020/8015M

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED	
MW 7	Monitoring Water	Jeff Cartes	05/20/93	05/21/93

CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE
BTEX + TPH (Gasoline)				1
Benzene		2.	150.	
Toluene		2.	3.	
Ethylbenzene		2.	ND	
Xylenes		2.	3.	
Total Petroleum Hydrocarbons (Gasoline)		200.	300.	
Percent Surrogate Recovery			107.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

06/01/93
GC2/527B337
MC/mcc
GC2-052793

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Marissa Coronel
Laboratory Director



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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: GC2-052793

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/27/93
Analyzed by: CB
Method : E8020/8015M

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
METHOD BLANK	Aqueous				
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE	
PURGEABLE AROMATICS (BTEX)					
Benzene		0.5	ND		
Toluene		0.5	ND		
Ethylbenzene		0.5	ND		
Xylenes		0.5	ND		
Total Petroleum Hydrocarbons (Gasoline)		50.	ND		

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

06/01/93
GC2/527B304
MC/mcc
JJ0631-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.

San Jose, CA 95131
(408) 955-9077

QC Batch ID: GC2-052793

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/27/93
Analyzed by: CB
Method : E8020/8015M

QC MATRIX SPIKE
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
MATRIX SPIKE	Aqueous				
CONSTITUENT	ORIGINAL RESULT	SPIKE AMOUNT	RESULT µg/L	%REC	NOTE
PURGEABLE AROMATICS (BTEX)					
Benzene	ND	5.0	4.8	96.	
Toluene	ND	5.0	4.8	96.	
Ethylbenzene	ND	5.0	4.5	90.	
Xylenes	ND	15.	14.	93.	
Total Petroleum Hydrocarbons (Gasoline)	ND	120.	130.	108.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

06/01/93
GC2/527B323
MC/mcc
JJ0631-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Marissa Coronel
Laboratory Director

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NorCal Division (San Jose Laboratory)
 2059 Junction Ave.

San Jose, CA 95131
 (408) 955-9077

QC Batch ID: GC2-052793

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/27/93
 Analyzed by: CB
 Method : E8020/8015M

QC MATRIX SPIKE
 REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED			
MATRIX SPIKE DUPLICATE	Aqueous						
CONSTITUENT		ORIGINAL RESULT	SPIKE AMOUNT	RESULT µg/L	%REC	%DIFF	NOTE
PURGEABLE AROMATICS (BTEX)							
Benzene		ND	5.0	5.1	102.	6.1	
Toluene		ND	5.0	5.0	100.	4.1	
Ethylbenzene		ND	5.0	4.8	96.	6.5	
Xylenes		ND	15.	15.	100.	6.9	
Total Petroleum Hydrocarbons (Gasoline)		ND	120.	120.	100.	8.	

San Jose Lab Certifications: CAELAP #1204

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

06/01/93
 GC2/527B324
 MC/mcc
 JJ0631-1

Respectfully submitted,
 COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
 Marissa Coronel
 Laboratory Director

BLAINE

TECH SERVICES INC

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

CONDUCT ANALYSIS TO DETECT

LAB

Coast to Coast

DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

- EPA
- LIA
- OTHER

RWQCB REGION

SPECIAL INSTRUCTIONS

*Bill to PES Environmental
ATTN: PAUL LOHMAN*

Routine

CHAIN OF CUSTODY
930520A1

CLIENT *PES ENVIRONMENTAL*

SITE *PO PARTNERS
1650 65th St.
EMERYVILLE*

C = COMPOSITE ALL CONTAINERS

gr. stop

SAMPLE I.D.	MATRIX		CONTAINERS	
	S = SOIL W = H2O		TOTAL	
<i>MW 5</i>	<i>W</i>		<i>3</i>	
<i>MW 7</i>	<i>W</i>		<i>3</i>	
<i>MW 3</i>	<i>W</i>		<i>3</i>	
<i>MW 4</i>	<i>W</i>		<i>3</i>	
<i>MW 6</i>	<i>W</i>		<i>3</i>	
<i>MW 2</i>	<i>W</i>		<i>3</i>	

ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
	<i>Routine</i>		<i>350653-1</i>
			<i>2</i>
			<i>3</i>
			<i>4</i>
			<i>5</i>
			<i>6</i>

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY	RESULTS NEEDED NO LATER THAN	
	<i>5/20/93</i>	<i>1700</i>	<i>Jeff Carter</i>		
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
<i>Jeff Carter</i>	<i>5-21-93</i>	<i>14:10</i>	<i>Shelley Hoyt</i>	<i>5-21-93</i>	<i>14:11</i>
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
<i>Whinnie Davenport</i>	<i>05/21/93</i>	<i>1430</i>	<i>Shelley Hoyt</i>	<i>05/21/93</i>	<i>1430</i>
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

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NorCal Division (Benicia Laboratory)
6006 Egret Court, Benicia, California 94510

(707) 747-2757
FAX (707)747-2765

CLIENT: Andy Briefer
PES Environmental Inc
1682 Novato Boulevard, Suite 100
Novato, CA 94947

Lab Number : BJ-0365-1
Project : 131.01.00.001 P.O.
Partners
Analyzed : 05/20/93
Analyzed by: HC
Method : EPA 8260

REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
93135A	Aqueous	Paul Lohman	05/13/93	05/14/93	
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE	
BTEX + TPH (Gasoline)					1,2,3
Benzene	(71432)	1.	520.		
Toluene	(108883)	2.	110.		
Ethylbenzene	(100411)	1.	23.		
Xylenes, Total		1.	330.		
Total Petroleum Hydrocarbons (Gasoline)		100.	2600.		
Percent Surrogate Recovery			94.		

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) EXTRACTED by EPA 5030 (purge-and-trap)
- (2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8240 (GC/MS)
- (3) High concentration of some analytes caused the sample to be run diluted resulting in raised Practical Quantitation Limits for analytes. Refer to instrument blank for undiluted Practical Quantitation Limits.

05/21/93
INCOS 50-387
EPP/dpc/epp
BJE2011

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Emma P. Popsek
Emma P. Popsek, CHMM
Laboratory Manager

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NorCal Division (Benicia Laboratory)
6006 Egret Court, Benicia, California 94510

(707) 747-2757
FAX (707) 747-2765

QC Batch ID: BJE2011

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/20/93
Analyzed by: HC
Method : EPA 8260

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE RECEIVED		
METHOD BLANK	Aqueous				
CONSTITUENT	(CAS RN)	*PQL µg/L	RESULT µg/L	NOTE	
BTEX + TPH (Gasoline)				1,2	
Benzene	(71432)	0.5	ND		
Toluene	(108883)	1.	ND		
Ethylbenzene	(100411)	0.5	ND		
Xylenes, Total		0.5	ND		
Total Petroleum Hydrocarbons (Gasoline)		50.	ND		
Percent Surrogate Recovery			89.		

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) EXTRACTED by EPA 5030 (purge-and-trap)
- (2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8240 (GC/MS)

05/21/93
INCOS 50-387
EPP/dpo/epp
BJ0365-1

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Emma P. Popek
Emma P. Popek, CHMM
Laboratory Manager

**COAST - TO -
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 6006 Egret Court, Benicia, California 94510

(707) 747-2757
 FAX (707) 747-2765

QC Batch ID: BJE2011

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/20/93
 Analyzed by: HC
 Method : EPA 8260

QC SPIKE
 REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED	
QC SPIKE	Aqueous				
CONSTITUENT	*PQL µg/L	SPIKE AMOUNT	RESULT µg/L	%REC	NOTE
BTEX + TPH (Gasoline)					1,2
Benzene	0.5	20.	18.	90.	
Toluene	1.	69.	63.	91.	
Ethylbenzene	0.5	19.	17.	89.	
Xylenes, Total	0.5	91.	83.	91.	
Total Petroleum Hydrocarbons (Gasoline)	100.	710.	600.	85.	
Percent Surrogate Recovery		100.	93.		

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

- (1) EXTRACTED by EPA 5030 (purge-and-trap)
- (2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8240 (GC/MS)

05/21/93
 INCOS 50-387
 EPP/dpo/epp
 BJ0365-1

Respectfully submitted,
 COAST-TO-COAST ANALYTICAL SERVICES, INC.

Emma P. Popek
 Emma P. Popek, CHMM
 Laboratory Manager

**COAST - TO -
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(707) 747-2757
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QC Batch ID: BJE2011

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 05/20/93
 Analyzed by: HC
 Method : EPA 8260

QC SPIKE
 REPORT OF ANALYTICAL RESULTS

Page 1 of 1

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY		SAMPLED DATE RECEIVED		
QC SPIKE DUPLICATE	Aqueous					
CONSTITUENT	*PQL μg/L	SPIKE AMOUNT	RESULT μg/L	%REC	%DIFF	NOTE
BTEX + TPH (Gasoline)						1,2
Benzene	0.5	20.	16.	80.	12.	
Toluene	1.	69.	60.	87.	4.9	
Ethylbenzene	0.5	19.	17.	89.	0.	
Xylenes, Total	0.5	91.	84.	92.	1.2	
Total Petroleum Hydrocarbons (Gasoline)	50.	710.	730.	103.	20.	
Percent Surrogate Recovery		100.	94.			

Benicia Lab Certifications: CAELAP #1719; L.A.Co.CSD #10185

*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)

(1) EXTRACTED by EPA 5030 (purge-and-trap)

(2) ANALYZED by CAL DHS DRAFT TPH (modified) and EPA 8240 (GC/MS)

05/21/93
 INCOS 50-387
 EPP/dpo/epp
 BJ0365-1

Respectfully submitted,
 COAST-TO-COAST ANALYTICAL SERVICES, INC.

Emma P. Popsek
 Emma P. Popsek, CHMM
 Laboratory Manager

CHAIN OF CUSTODY RECORD

SAMPLERS: PAUL LOHMAN

JOB NUMBER: 131.01.00.001
NAME/LOCATION: P.O. PARTNERS
PROJECT MANAGER: ANDY BRIEFER

RECORDER: Paul Roff
(Signature Required)

ANALYSIS REQUESTED										
EPA 601/9010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pollutant Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb.	TPH GAS			
							X	X	X	B10365 -1
								X	X	-2
								X		-3

DATE				SAMPLE NUMBER OR LAB NUMBER		
YR	MO	DY	TIME	YR	WK	SEQ
93	05	13	1220	93	13	5A
			1225	93	13	5B
			1230	93	13	51

SOURCE CODE	MATRIX					# CONTAINERS & PRESERV.				DEPTH IN FEET	COL MTD CD	QA CODE
	Water	Sedim't	Soil	Oil	Unpres.	H ₂ SO ₄	HNO ₃	Filtered	HCl			
	X								3			
	X								3			
	X								3			

NOTES

NORMAL TURNAROUND

COAST TO COAST

CHAIN OF CUSTODY RECORD					
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)		DATE	TIME	
<u>Paul Roff</u>	<u>Randa</u>		5/14/93	2:20	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)		DATE	TIME	
<u>Randa</u>					
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)		DATE	TIME	
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)		DATE	TIME	
DISPATCHED BY: (Signature)	DATE	TIME	RECEIVED FOR LAB BY: (Signature)		DATE
METHOD OF SHIPMENT:					