Harding Lawson Associates

Transmittal/Memorandum

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HLA

To: Alameda County Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Lowell Miller

From: John Skalbeck JS
Date: March 7, 1990
Subject: Report of System Monitoring
Job No.: 09382,040.02

Remarks: Enclosed is the *Report of System Monitoring, January 1990, Soil Treatment System, Pacific Renaissance Plaza, Oakland, California*, which describes the operations and monitoring of the in situ biotreatement system at the Pacific Renaissance site in Oakland. The report was prepared by Harding Lawson Associates on behalf of the Redevelopment Agency of the City of Oakland.

JDS/dc/jds003#1

cc:

A Report Prepared for

California Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6000
Oakland, California 94607

REPORT OF SYSTEM MONITORING
JANUARY 1990
SOIL TREATMENT SYSTEM
PACIFIC RENAISSANCE PLAZA
OAKLAND, CALIFORNIA

HLA Job No. 9382,040.02

Submitted on behalf of:

City of Oakland Redevelopment Agency
1417 Clay Street
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by

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March 6, 1990

3-12-90

Paul:
This maybe one of Gould's old cases — the big one. If you have any questions, come get me,
Cary

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1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

This report describes the operation and monitoring of the in situ soil treatment system at the Pacific Renaissance Plaza (PRP) site in Oakland, California, for the period between January 4 and February 2, 1990. The PRP site, part of the Oakland Chinatown Redevelopment Project Area, is bounded by 9th, Franklin, and Webster streets and the East Bay Municipal Utility District (EBMUD) property line approximately 100 feet north of the center line of 10th Street (Plate 1). The soil treatment system is designed to remove petroleum hydrocarbons from soil within the site boundaries before the soil is excavated during construction of the complex. The system began operation on March 4, 1989. Discussions with Pacific Renaissance Associates, the developer of the project, indicate that construction is scheduled to begin in May 1990.

This report has been prepared by Harding Lawson Associates (HLA) on behalf of the City of Oakland Redevelopment Agency (Agency). It is submitted in accordance with monitoring and reporting requirements set forth by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), in a letter to the City of Oakland dated February 22, 1989, and clarified in a letter dated March 17, 1989, from HLA to the RWQCB.

1.2 Previous Reports

Site history and characterization activities completed by HLA in 1988 are reported in *Site Characterization, Pacific Renaissance Plaza, Chinatown Redevelopment Project Area, Oakland, California (HLA, 1988)*. The site characterization report also presents a preliminary screening of soil treatment alternatives and an evaluation of the

potential for effectively removing hydrocarbons from soil at the site using biodegradation. The *Report of Waste Discharge, Pacific Renaissance Plaza, Chinatown Redevelopment Project Area, Oakland, California (HLA, 1989a)*, discusses the design of the soil treatment system and presents the results of the biodegradation treatability study and the proposed operations and monitoring plan for the system. Site background, environmental setting, and previous investigations are also described in the report.

Characterization of the extent of soil contamination at the PRP site was updated in the *Report of System Monitoring: March 1989, Soil Treatment System, Pacific Renaissance Plaza, Oakland, California (HLA, 1989b)*, using results of analyses of soil samples collected during treatment system well installation activities. System operation and monitoring from March through December 1989 are described in *HLA 1989b through k*. The objective of the system and a description of the process are presented in *HLA, 1989e*.

2.0 TREATMENT SYSTEM OPERATIONS

System operational activities and adjustments made in January are summarized below:

- Pumps in Extraction Wells EW-1, EW-13, EW-15, EW-16, EW-17, EW-18, and EW-20 were reconditioned; the pumps were removed from the wells and run in a chlorine/soap bath. Water-level probes for all of the wells were also cleaned.
- The concentration of nutrients in the injection water was maintained at 80 parts per million (ppm).
- On January 3, Infiltration Basins BA-5 and BA-6 were refilled and flow to Injection Wells IW-10, IW-13, and IW-14 was increased.
- The sand filter at the influent of the carbon treatment system was backwashed twice daily. The bag filters were changed approximately every two days. The carbon canisters were backwashed on January 5, 16, and 26.

3.0 TREATMENT SYSTEM MONITORING

3.1 Flow Rate, Water-Level, and Water Chemistry Monitoring

Flow rates, water levels, and water chemistry were monitored using procedures described in *HLA, 1989e*. Water samples were collected from selected extraction wells, injection wells, and monitoring wells and analyzed for inorganic and organic constituents and microbial populations.

3.2 Numerical Modeling of Ground-Water Flow

The numerical model of ground-water flow at the site, developed during the design phase of the project, is described in the *Report of Waste Discharge* (*HLA, 1989a*). The model is based on the ground-water flow computer code MODFLOW developed by U.S. Geological Survey (*McDonald and Harbaugh, 1984*). Individual injection well, infiltration basin, and extraction well flow rates from January 2 to January 31 were averaged for use as model input (Tables 1 and 2) for simulating ground-water elevations at the site for January 31 (Plate 2).

3.3 Confirmation Borings - Soil Sampling and Analysis

Soil samples were collected and analyzed for petroleum hydrocarbons and volatile organic constituents to assess the progress of soil treatment and to further characterize chemicals in site soils. On January 22 and 23, four confirmation borings, designated BC-21, BC-22, BC-24, and BC-25 were drilled and sampled (Plate 1). Drilling was performed by Bayland Drilling of Suisin, California, using a CME-55 hollow-stem auger rig. An HLA geologist supervised the drilling; performed health and safety monitoring; and collected samples for lithological characterization, field screening of

volatile organic compounds (VOCs), and chemical analyses. Soils were logged using the Unified Classification System (USCS). Field screening for VOCs was performed using a portable Century flame ionization organic vapor analyzer (OVA).

Soil samples were collected at 1.5-foot intervals from approximately 23 feet below ground surface (bgs) to the total depth of the borings (28 to 29 feet bgs) using a 1.5-foot long modified California split-barrel sampler lined with three 6-inch long 2.5-inch diameter stainless steel tubes. This sampling scheme provided a 5- to 6-foot long continuously sampled interval through the target zone of suspected soil contamination. The bottom tube of each sample drive was sealed on both ends with aluminum foil, plastic end caps, and electrician's tape, labeled, and placed in an ice chest for cool storage. Soil in the second tube was screened in the field for VOCs using an OVA and checked for the presence of hydrocarbon odors and evidence of staining. The remaining tube of soil was used for lithological logging.

Drilling and soil sampling equipment was decontaminated prior to and after use according to standard HLA protocol. HLA employees performing field work were safety trained and used Level D protective equipment. Soil cuttings were stockpiled on site.

Soil samples were submitted to Pace Laboratories, Inc., of Novato, California under chain of custody for chemical analysis. Two samples from each boring (one discrete sample and one composite from four sample depths) were analyzed for total petroleum hydrocarbons (TPH) calibrated as gasoline and for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Test Methods 8015 (modified) and 8020, respectively.

4.0 RESULTS

4.1 Hydraulic Analysis

Flow rates for wells and infiltration basins installed by HLA were calculated based on readings from the flowmeters on the wellheads. Average injection and extraction rates for January are presented in Tables 1 and 2. From January 2 to January 31, the total flow rate for all injection wells was about 20.00 gallons per minute (gpm). The flow rate for injection wells located south of 10th Street, (Wells IW-1 to IW-9, and IW-12 to IW-14) was about 19.95 gpm. The average flow rate into Basins BA-1 to BA-7 was about 2.43 gpm from January 2 to January 31; the average flow rate into Basins BA-8 and BA-9 was about 0.48 gpm and into BA-10 about 0.74 gpm (Table 1). All the influent to these covered basins is assumed to infiltrate. Total flow into all injection wells and infiltration basins, calculated as a monthly average, was about 23.65 gpm.

During this monitoring period, the total flow rate for all extraction wells was 24.66 gpm. The flow rate for Wells EW-1 through EW-20 was about 23.84 gpm, and for Well EW-21 and Well EW-22 was about 0.82 gpm (Table 2). The average extraction rates exceeded the average injection/infiltration rates by about 1.01 gpm in January.

Table 3 presents measurements of depth to water in monitoring wells and calculated water-level elevations from January 5, 1989 to January 31, 1990. Ground-water elevations on January 31, 1990 are shown on Plate 2 and represent conditions approximately 335 days after system startup. Contours of ground-water elevations simulated using the numerical model are also presented on Plate 2. In some cases, locations of injection and extraction points used in the model differ slightly from actual well locations because of the nature of discretization of the modeled area.

Water-level contours calculated using the site model can be used to assess the hydraulic control of injected water. Simulated contours for January 31 (Plate 2) indicate overall hydraulic control of injected water. Most injected water is recovered by the extraction wells without traveling off site. At the eastern and western ends of the site, some of the injected water may travel off site as it moves toward the extraction wells.

In general, the simulated water levels show good agreement with water-level elevations measured at monitoring wells. Plate 3 presents the results of a linear regression analysis of observed versus simulated ground-water elevations. The correlation coefficient, r, is the measure of least squares best fit straight line and was calculated to have a value of 0.96 for the January 31 results, where r = 1.00 represents a perfect match.

4.2 Distribution of Inorganic Constituents and Microbial Populations in Ground Water

Tables 4 and 5 present the inorganic chemical and microbiological analysis results for the bioremediation treatment system from startup through February 2, 1990. Nitrate and phosphate concentrations in ground water at the site for the January 31-February 2, 1990 sampling round are presented on Plates 4 and 5, respectively.

4.3 Distribution of Petroleum Hydrocarbons in Ground Water

Results of organic analyses of ground-water samples are presented in Table 6. Laboratory data sheets are presented in Appendix A. Petroleum hydrocarbon concentrations as TPH (gasoline) for the January 31-February 2, 1990, sampling round are presented on Plate 6.

Reported TPH values for samples from Monitoring Wells MW-15, MW-16 and MW-17 are higher for the February sampling round than for the January round.

Reported February TPH values for remaining monitoring wells are similar to or less than values for January. Petroleum hydrocarbons as gasoline were not detected at MW-7, MW-12, MW-18, and MW-20 located west of the site.

TPH values in ground-water samples from Extraction Wells EW-12, EW-15, EW-21, and EW-22 increased from the previous sampling round, while concentrations in samples from EW-1, EW-4, EW-6, EW-7, EW-8, EW-9, and EW-19 remained stable or decreased.

4.4 Soil Analysis

Lithologic characterization of soils from confirmation borings and monitoring well borings indicated geologic materials similar to those observed and characterized during previous soil boring and well installation activities at the site, as described in *HLA, 1988* and *1989b.* Predominantly brown and yellowish brown silty clay (CL), silty sands (SM), poorly graded sands (SP), and clayey sands (SC) were encountered to the total depths of the borings.

Results of OVA headspace and laboratory analysis of soil samples from the confirmation borings are presented in Table 7. Locations of the confirmation borings are shown on Plate 1. Laboratory data sheets for soil samples are presented in Appendix B.

Of the eight soil samples analyzed from the confirmation borings, only one had TPH concentrations greater than 1,000 milligrams per kilogram (mg/kg); six samples had TPH concentrations less than 100 mg/kg. The highest measured TPH concentration (as gasoline) was 3,900 mg/kg in the 27 to 27.5-foot sample from BC-22.

BTEX compounds were detected in confirmation boring soil samples. The maximum concentrations of benzene, toluene, ethylbenzene, and xylenes were also measured in the 27 to 27.5-foot sample from Boring BC-22 at 33 mg/kg benzene, 340 mg/kg toluene, 58 mg/kg ethylbenzene, and 510 mg/kg xylenes.

5.0 ACTIVITIES PLANNED FOR FEBRUARY 1990

On the basis of observed performance, selected injection wells will be redeveloped to improve the injection rate efficiency. Wells will be swabbed over the entire screened interval to remove silt from the slotted sections. The wells will be bailed to remove the silt and then pumped until the water is clear.

Monitoring of water levels, flow rates, and inorganic and organic constituent concentrations will continue.

On the basis of inorganic chemistry monitoring results which indicate adequate nutrient concentrations in the treatment zone, nutrient concentrations in the injection water will be reduced in February.

To further reduce usage of nutrients and peroxide, selected injection wells in areas where soil sampling indicates soil TPH concentrations less than 100 ppm will receive water without nutrients. Selected injection wells with low injection rates will be shut off.

Table 1. Injection Well and Infiltration Basin Flow Rates - January 1990

Injection Well Flow Rates

Meter No.	31-Jan-90 Totalizer Reading	02-Jan-90 Totalizer Reading	Elapsed Time (min)	Average Flow Rate (gpm)
IW-1	1561892	1483895	41925	1.86
IW-2	1487893	1402463	41925	2.04
IW-3	1262422	1189260	41925	1.75
IW-4	1473678	1382119	41925	2.18
IW-5	481863	446781	41925	0.84
IW-6	691019	657623	41925	0.80
IW-7	1670811	1578566	41925	2.20
IW-8	552260	528229	41925	0.57
IW-9	836894	836894	41925	0.00
IW-10	106701	104914	41925	0.04
IW-11	557179	557179	41925	0.00
IW-12	273238	143863	41925	3.09
IW-13	211594	119442	41925	2.20
IW-14	223913	121807	41925	2.44
Total (1-9,12-14)	10727477	9890942	41925	19.95
Total (10,11)	663880	662093	41925	0.05
Total (1-14)	11391357	10553035	41925	20.00

Note: Totalizer readings in gallons.

Infiltration Basin Flow Rates

Meter No.	31-Jan-90 Totalizer Reading	02-Jan-90 Totalizer Reading	Elapsed Time (min)	Average Flow Rate (gpm)
BA-1	237109	219990	41925	0.41
BA-2	137359	123442	41925	0.33
BA-3	192380	175619	41925	0.40
BA-4	125683	115548	41925	0.24
BA-5	408683	380205	41925	0.68
BA-6 **			41925	0.00
BA-7	158583	143206	41925	0.37
BA-8	153535	136713	41925	0.40
BA-9	56227	53011	41925	0.08
BA-10	102932	71731	41925	0.74
Total (1-7)	1259797	1158010	41925	2.43
Total (8,9)	209762	189724	41925	0.48
Total (1-10)	1572491	1419465	41925	3.65

Note: Totalizer readings in gallons.

**: Basin flow rate is included in BA-5

Table 2. Extraction Well Flow Rates - January 1990

Meter No.	31-Jan-90 Totalizer Reading	02-Jan-90 Totalizer Reading	Elapsed Time (min)	Average Flow Rate (gpm)
EW-1	429212	387287	41925	1.00
EW-2	478725	434551	41925	1.05
EW-3	788330	714218	41925	1.77
EW-4	561513	507985	41925	1.28
EW-5	560282	526408	41925	0.81
EW-6	192861	186803	41925	0.14
EW-7	163527	152792	41925	0.26
EW-8	424258	387079	41925	0.89
EW-9	521664	478496	41925	1.03
EW-10	397324	369951	41925	0.65
EW-11	450285	405076	41925	1.08
EW-12	371138	332962	41925	0.91
EW-13	380692	348982	41925	0.76
EW-14	435425	400115	41925	0.84
EW-15	744638	663856	41925	1.93
EW-16	1141867	1043499	41925	2.35
EW-17	1021719	920690	41925	2.41
EW-18	996431	897661	41925	2.36
EW-19	759818	695185	41925	1.54
EW-20	388980	355655	41925	0.79
EW-21	142143	126648	41925	0.37
EW-22	85649	66582	41925	0.45
Total (1-20)	11208689	10209251	41925	23.84
Total (21-22)	227792	193230	41925	0.82
Total (1-22)	11436481	10402481	41925	24.66

Note: Totalizer readings in gallons.

Table 3. Water-Level Elevations - January 1989 through January 1990

Well No.	MW-2		MW-3		MW-5		MW-6		MW-7		MW-8		MW-9	
	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING
	40.05	39.55	39.02	38.35	38.45	37.86	39.95	39.59	39.35	39.10	40.63	40.47	38.65	38.50
DATE	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation
05-Jan-89	-	-	32.35	6.00	33.00	4.86	30.22	9.37	31.15	7.95	32.78	7.69	30.58	7.92
02-Feb-89	33.05	6.50	33.01	5.34	31.82	6.04	30.23	9.36	30.51	8.59	32.62	7.85	31.67	6.83
08-Feb-89	33.83	5.72	32.21	6.14	32.02	5.84	31.05	8.54	31.44	7.66	33.03	7.44	30.65	7.85
15-Feb-89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18-Feb-89	30.59	8.96	29.26	9.09	31.90	5.96	30.05	9.54	30.21	8.89	31.96	8.51	30.16	8.34
25-Feb-89	29.85	9.70	28.68	9.67	30.32	7.54	30.57	9.02	31.10	8.00	31.90	8.57	30.80	7.70
02-Mar-89	-	-	-		-	-	-	-	-	-	-	-	30.05	8.45
11-Mar-89	-	-	-		-	-	-	-	-	-	-	-	23.06	15.44
18-Mar-89	-	-	32.20	6.15	32.01	5.85	-	-	31.52	7.58	-	-	22.45	16.05
25-Mar-89	-	-	27.76	10.59	27.53	10.33	-	-	30.08	9.02	-	-	22.62	15.88
30-Mar-89	-	-	-	-	-	-	-	-	-	-	-	-	23.00	15.50
04-Apr-89	28.52	11.03	27.56	10.79	-	-	28.00	11.59	29.00	10.10	30.45	10.02	22.61	15.89
08-Apr-89	-	-	-	-	-	-	-	-	-	-	-	-	23.12	15.38
11-Apr-89	-	-	-	-	-	-	-	-	-	-	-	-	23.37	15.13
12-Apr-89	28.59	10.96	27.63	10.72	-	-	27.17	12.42	28.96	10.14	30.45	10.02	-	-
18-Apr-89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19-Apr-89	-	-	-	-	-	-	-	-	28.13	10.97	-	-	23.36	15.14
25-Apr-89	-	-	-	-	-	-	-	-	-	-	-	-	22.80	15.70
02-May-89	28.71	10.84	26.84	11.51	-	-	27.49	12.10	28.54	10.56	29.80	10.67	22.73	15.77
09-May-89	27.99	11.56	26.58	11.77	26.11	11.75	27.34	12.25	28.34	10.76	29.68	10.79	23.04	15.46
17-May-89	27.80	11.75	26.62	11.73	-	-	27.11	12.48	28.16	10.94	29.27	11.20	23.33	15.17
22-May-89	27.52	12.03	28.17	10.18	25.98	11.88	26.89	12.70	27.69	11.41	28.68	11.79	23.94	14.56
31-May-89	27.99	11.56	26.28	12.07	-	-	27.11	12.48	28.28	10.82	29.31	11.16	24.17	14.33
05-Jun-89	27.60	11.95	25.83	12.52	24.96	12.90	27.00	12.59	28.18	10.92	29.41	11.06	19.72	18.78
14-Jun-89	27.58	11.97	26.00	12.35	25.52	12.34	26.88	12.71	28.09	11.01	29.20	11.27	20.53	17.97
19-Jun-89	-	-	-	-	-	-	-	-	-	-	-	-	20.31	18.19
28-Jun-89	-	-	27.88	10.47	25.39	12.47	-	-	-	-	-	-	21.26	17.24
05-Jul-89	27.34	12.21	25.92	12.43	25.50	12.36	26.66	12.93	27.68	11.42	28.99	11.48	21.88	16.62
21-Jul-89	-	-	24.73	13.62	25.44	12.42	-	-	27.60	11.50	-	-	21.39	17.11
28-Jul-89	-	-	-	-	-	-	-	-	-	-	-	-	21.36	17.14
01-Aug-89	27.22	12.33	26.67	11.68	25.36	12.50	26.61	12.98	27.44	11.66	28.79	11.68	21.60	16.90
09-Aug-89	27.18	12.37	25.91	12.44	25.36	12.50	26.57	13.02	27.40	11.70	28.74	11.73	21.66	16.84
15-Aug-89	27.24	12.31	25.95	12.40	25.48	12.38	27.63	11.96	27.62	11.48	28.79	11.68	21.80	16.70
30-Aug-89	27.21	12.34	-	-	25.69	12.17	26.60	12.99	27.52	11.58	28.66	11.81	22.98	15.52
06-Sep-89	27.22	12.33	25.93	12.42	25.55	12.31	26.61	12.98	27.38	11.72	28.77	11.70	21.97	16.53
28-Sep-89	-	-	-	-	-	-	-	-	-	-	-	-	22.37	16.13
03-Oct-89	26.71	12.84	25.24	13.11	24.75	13.11	26.30	13.29	27.35	11.75	28.29	12.18	22.55	15.95
01-Nov-89	26.49	13.06	25.07	13.28	24.55	13.31	26.12	13.47	26.96	12.14	28.14	12.33	22.33	16.17
20-Nov-89	26.28	13.27	24.91	13.44	-	-	25.96	13.63	26.80	12.30	28.00	12.47	22.46	16.04
04-Dec-89	26.18	13.37	24.76	13.59	24.04	13.82	25.88	13.71	26.87	12.23	27.91	12.56	22.22	16.28
21-Dec-89	26.40	13.15	26.05	12.30	24.55	13.31	25.10	14.49	26.93	12.17	27.98	12.49	22.98	15.52
02-Jan-90	26.40	13.15	25.08	13.27	24.58	13.28	25.00	14.59	26.96	12.14	27.91	12.56	23.38	15.12
31-Jan-90	26.04	13.51	24.74	13.61	24.29	13.57	25.80	13.79	26.61	12.49	27.70	12.77	23.18	15.32

Notes:

Elevations are in feet above mean sea level (MSL).
Depth to water in feet measured from top of casing.

Table 3. Water-Level Elevations - January 1989 through January 1990

Well No.	MW-10		MW-11		MW-12		MW-13		MW-14		MW-15		MW-16	
	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING
	36.74	36.35	37.98	37.55	37.70	37.00	39.79	40.77	39.27	40.26	39.69	40.73	39.55	40.53
DATE	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation
05-Jan-89	27.34	9.01	30.30	7.25	-	-	-	-	-	-	-	-	-	-
02-Feb-89	28.11	8.24	30.03	7.52	-	-	-	-	-	-	-	-	-	-
08-Feb-89	27.65	8.70	29.52	8.03	-	-	-	-	-	-	-	-	-	-
15-Feb-89	-	-	-	-	28.89	8.11	-	-	-	-	-	-	-	-
18-Feb-89	27.65	8.70	28.02	9.53	-	-	-	-	-	-	-	-	-	-
25-Feb-89	27.12	9.23	29.05	8.50	30.87	6.13	32.63	8.14	31.07	9.19	32.83	7.90	32.43	8.10
02-Mar-89	27.23	9.12	28.98	8.57	28.46	8.54	32.79	7.98	32.28	7.98	32.40	8.33	32.50	8.03
11-Mar-89	23.59	12.76	28.93	8.62	28.22	8.78	30.12	10.65	28.64	11.62	27.10	13.63	25.64	14.89
18-Mar-89	23.17	13.18	27.79	9.76	27.85	9.15	30.29	10.48	28.20	12.06	26.62	14.11	24.74	15.79
25-Mar-89	23.19	13.16	28.10	9.45	27.47	9.53	29.76	11.01	27.79	12.47	26.28	14.45	24.88	15.65
30-Mar-89	23.56	12.79	28.48	9.07	27.43	9.57	30.12	10.65	27.99	12.27	26.50	14.23	25.48	15.05
04-Apr-89	23.34	13.01	28.61	8.94	28.44	8.56	29.60	11.17	27.84	12.42	26.84	13.89	25.53	15.00
08-Apr-89	23.50	12.85	29.31	8.24	-	-	30.49	10.28	27.81	12.45	26.81	13.92	25.74	14.79
11-Apr-89	23.64	12.71	29.45	8.10	-	-	30.62	10.15	28.04	12.22	27.21	13.52	26.24	14.29
12-Apr-89	-	-	-	-	28.64	8.36	-	-	-	-	-	-	-	-
18-Apr-89	-	-	-	-	-	-	-	-	-	-	27.08	13.65	26.02	14.51
19-Apr-89	23.41	12.94	26.77	10.78	26.98	10.02	30.19	10.58	27.13	13.13	-	-	-	-
25-Apr-89	23.39	12.96	29.18	8.37	27.47	9.53	30.40	10.37	27.75	12.51	27.01	13.72	25.97	14.56
02-May-89	23.54	12.81	28.44	9.11	27.36	9.64	29.42	11.35	27.50	12.76	25.91	14.82	24.42	16.11
09-May-89	23.86	12.49	27.09	10.46	26.85	10.15	29.86	10.91	27.38	12.88	26.63	14.10	25.37	15.16
17-May-89	23.63	12.72	28.88	8.67	27.63	9.37	29.10	11.67	27.73	12.53	27.25	13.48	26.23	14.30
22-May-89	23.54	12.81	28.56	8.99	27.62	9.38	30.24	10.53	27.95	12.31	27.25	13.48	26.34	14.19
31-May-89	24.54	11.81	29.18	8.37	28.16	8.84	30.34	10.43	27.99	12.27	27.42	13.31	26.31	14.22
05-Jun-89	23.22	13.13	28.92	8.63	28.08	8.92	29.88	10.89	26.18	14.08	25.83	14.90	24.67	15.86
14-Jun-89	22.66	13.69	28.66	8.89	27.97	9.03	29.31	11.46	26.54	13.72	24.54	16.19	24.73	15.80
19-Jun-89	22.74	13.61	28.20	9.35	27.47	9.53	29.06	11.71	26.21	14.05	24.11	16.62	22.06	18.47
28-Jun-89	22.66	13.69	28.57	8.98	27.83	9.17	29.47	11.30	26.65	13.61	24.97	15.76	23.01	17.52
05-Jul-89	23.41	12.94	27.61	9.94	27.10	9.90	29.15	11.62	26.78	13.48	25.23	15.50	23.52	17.01
21-Jul-89	23.04	13.31	27.58	9.97	27.03	9.97	28.71	12.06	26.62	13.64	25.19	15.54	23.42	17.11
28-Jul-89	23.03	13.32	27.48	10.07	-	-	28.61	12.16	26.38	13.88	24.32	16.41	22.29	18.24
01-Aug-89	23.19	13.16	26.64	10.91	26.35	10.65	28.74	12.03	26.43	13.83	24.78	15.95	22.94	17.59
09-Aug-89	21.77	14.58	27.17	10.38	26.85	10.15	29.21	11.56	26.68	13.58	25.28	15.45	23.45	17.08
15-Aug-89	22.86	13.49	27.16	10.39	26.98	10.02	29.42	11.35	26.97	13.29	25.85	14.88	24.07	16.46
30-Aug-89	23.20	13.15	26.87	10.68	26.44	10.56	29.17	11.60	27.42	12.84	26.24	14.49	24.86	15.67
06-Sep-89	23.78	12.57	26.92	10.63	26.33	10.67	28.88	11.89	27.17	13.09	26.00	14.73	24.45	16.08
28-Sep-89	22.40	13.95	28.26	9.29	-	-	29.83	10.94	26.75	13.51	26.28	14.45	24.93	15.60
03-Oct-89	21.60	14.75	27.30	10.25	26.85	10.15	29.53	11.24	26.85	13.41	26.50	14.23	25.19	15.34
01-Nov-89	22.57	13.78	28.12	9.43	27.28	9.72	29.27	11.50	26.97	13.29	26.55	14.18	25.39	15.14
20-Nov-89	22.30	14.05	27.43	10.12	26.73	10.27	29.18	11.59	26.68	13.58	26.45	14.28	25.31	15.22
04-Dec-89	20.89	15.46	27.59	9.96	26.82	10.18	29.16	11.61	26.20	14.06	25.92	14.81	24.83	15.70
21-Dec-89	22.07	14.28	26.38	11.17	26.36	10.64	29.15	11.62	26.84	13.42	26.33	14.40	25.09	15.44
02-Jan-90	22.32	14.03	26.63	10.92	26.79	10.21	29.32	11.45	26.94	13.32	26.15	14.58	25.22	15.31
31-Jan-90	21.76	14.59	26.33	11.22	26.22	10.78	29.09	11.68	26.80	13.46	26.42	14.31	25.25	15.28

Notes:

Elevations are in feet above mean sea level (MSL).

Depth to water in feet measured from top of casing.

Table 3. Water-Level Elevations - January 1989 through January 1990

Well No.	MW-17		MW-18		MW-19		MW-20	
	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING	GROUND SURFACE	TOP OF CASING
	39.16	40.16	36.52	35.88	37.15	36.62	38.32	37.86
DATE	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation	Depth to Water	Elevation
05-Jan-89	-	-	-	-	-	-	-	-
02-Feb-89	-	-	-	-	-	-	-	-
08-Feb-89	-	-	-	-	-	-	-	-
15-Feb-89	-	-	26.89	8.99	-	-	-	-
18-Feb-89	-	-	-	-	-	-	-	-
25-Feb-89	32.02	8.14	26.90	8.98	-	-	-	-
02-Mar-89	-	-	26.66	9.22	-	-	-	-
11-Mar-89	23.45	16.71	26.28	9.60	-	-	-	-
18-Mar-89	23.35	16.81	26.18	9.70	-	-	-	-
25-Mar-89	23.35	16.81	25.70	10.18	-	-	-	-
30-Mar-89	-	-	-	-	-	-	-	-
04-Apr-89	24.18	15.98	26.10	9.78	-	-	-	-
08-Apr-89	24.28	15.88	25.82	10.06	-	-	-	-
11-Apr-89	24.83	15.33	-	-	-	-	-	-
12-Apr-89	-	-	26.16	9.72	-	-	-	-
18-Apr-89	24.64	15.52	-	-	-	-	-	-
19-Apr-89	-	-	25.89	9.99	-	-	-	-
25-Apr-89	24.57	15.59	27.91	7.97	-	-	-	-
02-May-89	22.71	17.45	25.76	10.12	-	-	-	-
09-May-89	23.89	16.27	25.38	10.50	-	-	-	-
17-May-89	24.85	15.31	25.59	10.29	-	-	-	-
22-May-89	25.28	14.88	25.27	10.61	-	-	-	-
31-May-89	24.91	15.25	26.04	9.84	-	-	-	-
05-Jun-89	22.62	17.54	25.98	9.90	-	-	-	-
14-Jun-89	20.44	19.72	25.89	9.99	-	-	-	-
19-Jun-89	19.72	20.44	25.91	9.97	-	-	-	-
28-Jun-89	20.89	19.27	25.76	10.12	-	-	-	-
05-Jul-89	21.56	18.60	25.68	10.20	-	-	-	-
21-Jul-89	21.52	18.64	25.58	10.30	-	-	-	-
28-Jul-89	20.25	19.91	-	-	-	-	-	-
01-Aug-89	21.15	19.01	25.32	10.56	-	-	-	-
09-Aug-89	21.59	18.57	25.31	10.57	-	-	-	-
15-Aug-89	21.21	18.95	25.49	10.39	-	-	-	-
30-Aug-89	23.24	16.92	25.37	10.51	-	-	-	-
06-Sep-89	22.75	17.41	25.24	10.64	-	-	-	-
28-Sep-89	23.34	16.82	-	-	-	-	-	-
03-Oct-89	23.65	16.51	25.38	10.50	-	-	-	-
01-Nov-89	23.98	16.18	25.68	10.20	-	-	-	-
20-Nov-89	23.91	16.25	25.46	10.42	-	-	-	-
04-Dec-89	23.31	16.85	25.45	10.43	-	-	-	-
21-Dec-89	23.53	16.63	25.32	10.56	22.32	14.30	26.63	11.23
02-Jan-90	23.85	16.31	25.37	10.51	22.60	14.02	26.80	11.06
31-Jan-90	23.71	16.45	25.10	10.78	22.20	14.42	26.44	11.42

Notes:

Elevations are in feet above mean sea level (MSL).
Depth to water in feet measured from top of casing.

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
EW-1								
	15-Mar-89	17.6	ND	NT	ND	ND	7.8E+6	1.2E+2
	29-Mar-89	9.7	3.5	NT	NT	ND	1.8E+6	3.8E+2
	04-Apr-89	13.2	3.8	NT	ND	ND	3.3E+5	2.2E+2
	11-Apr-89	24.6	2.8	NT	NT	ND	NT	NT
	18-Apr-89	30.8	1.0	4.1	ND	ND	3.3E+5	7.8E+1
	25-Apr-89	33.4	3.0	4.8	NT	ND	6.8E+4	2.1E+1
	02-May-89	37.0	5.0	4.9	NT	ND	4.5E+5	9.5E+1
	09-May-89	22.9	2.5	9.8*	NT	ND	5.2E+5	7.0E+2
	17-May-89	37.0	1.5	7.5	NT	ND	2.6E+5	1.4E+2
	23-May-89	15.8	5.3	11.1	NT	ND	NT	NT
	31-May-89	52.8	2.8	5.9	NT	ND	7.6E+5	4.6E+2
	05-Jun-89	25.9	ND	14.5	NT	ND	NT	NT
	14-Jun-89	17.6	2.3	12.6	NT	ND	NT	NT
	20-Jun-89	NT	NT	19.3	NT	NT	NT	NT
	27-Jun-89	52.8	NT	16.5	NT	NT	NT	NT
	06-Jul-89	47.3	4.0	13.3	NT	ND	9.3E+5	7.0E+3
	22-Jul-89	33.0	6.7	NT	NT	ND	NT	NT
	03-Aug-89	46.2	7.8	NT	NT	ND	NT	NT
	07-Sep-89	63.8	14.5	17.7	NT	ND	NT	NT
	18-Sep-89	74.8	17.0	12.2	NT	ND	NT	NT
	29-Sep-89	NT	NT	17.3	NT	NT	NT	NT
	05-Oct-89	59.4	21.5	14.9	NT	ND	NT	NT
	02-Nov-89	59.4	24.0	16.2	NT	ND	NT	NT
	04-Dec-89	54.2	21.3	10.2	NT	ND	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	04-Jan-90	58.0	22.4	NT	NT	0.7	NT	NT
	22-Jan-90	NT	NT	9.4	NT	NT	NT	NT
	01-Feb-90	52.4	19.2	NT	NT	ND	NT	NT
EW-2								
	23-May-89	NT	NT	15.8	NT	NT	NT	NT
	31-May-89	NT	NT	12.7	NT	NT	NT	NT
	05-Jun-89	NT	NT	16.3	NT	NT	NT	NT
	14-Jun-89	NT	NT	15.6	NT	NT	NT	NT
	20-Jun-89	NT	NT	19.6	NT	NT	NT	NT
	27-Jun-89	NT	NT	18.9	NT	NT	NT	NT
	06-Jul-89	NT	NT	16.5	NT	NT	NT	NT
	21-Jul-89	NT	NT	16.5	NT	NT	NT	NT
	07-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	18-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	29-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	05-Oct-89	NT	NT	>20.0	NT	NT	NT	NT
	04-Dec-89	NT	NT	19.0	NT	NT	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	02-Jan-90	NT	NT	>20.0	NT	NT	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	22-Jan-90	NT	NT	>20.0	NT	NT	NT	NT
EW-3								
	23-May-89	NT	NT	20.0	NT	NT	NT	NT
	31-May-89	NT	NT	18.3	NT	NT	NT	NT
	05-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	14-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	20-Jun-89	NT	NT	19.7	NT	NT	NT	NT
	27-Jun-89	NT	NT	NT	NT	NT	NT	NT
	06-Jul-89	NT	NT	14.0	NT	NT	NT	NT
	21-Jul-89	NT	NT	>20.0	NT	NT	NT	NT
	07-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	18-Sep-89	NT	NT	19.9	NT	NT	NT	NT
	29-Sep-89	NT	NT	18.5	NT	NT	NT	NT
	05-Oct-89	NT	NT	>20.0	NT	NT	NT	NT
	04-Dec-89	NT	NT	13.5	NT	NT	NT	NT
	21-Dec-89	NT	NT	15.2	NT	NT	NT	NT
	02-Jan-90	NT	NT	11.1	NT	NT	NT	NT
	22-Jan-90	NT	NT	13.4	NT	NT	NT	NT
EW-4								
	15-Mar-89	16.7	0.6	NT	ND	ND	5.1E+6	9.5E+1
	29-Mar-89	25.5	2.8	NT	NT	ND	5.3E+5	1.7E+2
	04-Apr-89	31.7	4.0	NT	ND	ND	2.5E+5	6.8E+1
	11-Apr-89	34.1	3.3	NT	NT	ND	4.3E+4	4.5E+1
	18-Apr-89	43.6	5.3	7.9	ND	ND	4.3E+4	1.1E+2
	25-Apr-89	49.3	5.0	4.8	NT	ND	9.0E+4	1.7E+2
	02-May-89	48.4	9.0	4.9	NT	ND	2.5E+5	2.0E+3
	09-May-89	70.4	11.8	9.8*	NT	ND	NT	NT
	17-May-89	50.6	16.0	7.5	NT	ND	NT	NT
	23-May-89	52.8	17.0	NT	NT	ND	5.8E+6	7.8E+1
	31-May-89	47.9	17.0	18.9	NT	ND	NT	NT
	05-Jun-89	49.1	16.6	>20.0	NT	ND	1.3E+5	4.9E+2
	14-Jun-89	27.1	17.0	14.5	NT	ND	6.1E+5	2.4E+5
	20-Jun-89	48.4	17.0	18.5	NT	ND	2.3E+6	2.2E+4
	27-Jun-89	NT	18.0	16.8	NT	ND	8.0E+5	1.4E+4
	06-Jul-89	48.4	17.0	13.9	NT	ND	NT	NT
	22-Jul-89	45.1	20.5	NT	NT	ND	NT	NT
	03-Aug-89	57.2	20.5	NT	NT	ND	NT	NT
	17-Aug-89	61.6	20.0	NT	NT	0.7	NT	NT
	07-Sep-89	83.6	12.0	9.0	NT	1.3	NT	NT
	18-Sep-89	72.6	24.6	8.1	NT	1.2	NT	NT
	29-Sep-89	NT	NT	8.6	NT	NT	NT	NT
	05-Oct-89	NT	NT	4.8	NT	NT	NT	NT
	23-Oct-89	70.4	17.0	9.1	NT	1.2	2.9E+5	5.4E+3
	02-Nov-89	69.5	18.0	4.7	NT	0.9	1.0E+6	2.3E+2
	04-Dec-89	78.5	20.3	>20.0	NT	1.6	NT	NT
	21-Dec-89	NT	NT	4.1	NT	NT	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	04-Jan-90	72.9	16.5	8.4	NT	1.8	NT	NT
	22-Jan-90	NT	NT	3.0	NT	NT	NT	NT
	01-Feb-90	58.0	10.1	NT	NT	1.6	NT	NT
EW-5								
	29-Mar-89	28.0	3.8	NT	NT	ND	NT	NT
	18-Apr-89	NT	NT	8.6	NT	NT	NT	NT
	25-Apr-89	NT	NT	12.8	NT	NT	NT	NT
	02-May-89	NT	NT	NT	NT	NT	NT	NT
	09-May-89	NT	NT	15.0*	NT	NT	NT	NT
	17-May-89	NT	NT	NT	NT	NT	NT	NT
	23-May-89	NT	NT	>20.0	NT	NT	NT	NT
	31-May-89	NT	NT	17.8	NT	NT	NT	NT
	05-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	14-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	20-Jun-89	NT	NT	19.9	NT	NT	NT	NT
	27-Jun-89	NT	NT	19.6	NT	NT	NT	NT
	06-Jul-89	NT	NT	19.0	NT	NT	NT	NT
	18-Sep-89	NT	NT	18.5	NT	NT	NT	NT
	29-Sep-89	NT	NT	8.5	NT	NT	NT	NT
	05-Oct-89	NT	NT	16.5	NT	NT	NT	NT
	04-Dec-89	NT	NT	19.4	NT	NT	NT	NT
	21-Dec-89	NT	NT	12.0	NT	NT	NT	NT
	02-Jan-90	NT	NT	11.2	NT	NT	NT	NT
	22-Jan-90	NT	NT	12.9	NT	NT	NT	NT
EW-6								
	23-May-89	NT	NT	7.6	NT	NT	NT	NT
	31-May-89	NT	NT	17.5	NT	NT	NT	NT
	05-Jun-89	NT	NT	14.5	NT	NT	NT	NT
	14-Jun-89	NT	NT	12.3	NT	NT	NT	NT
	20-Jun-89	NT	NT	19.5	NT	NT	NT	NT
	27-Jun-89	NT	NT	12.0	NT	NT	NT	NT
	06-Jul-89	NT	NT	8.2	NT	NT	NT	NT
	18-Sep-89	NT	NT	10.3	NT	NT	NT	NT
	29-Sep-89	NT	NT	0.8	NT	NT	NT	NT
	05-Oct-89	NT	NT	0.8	NT	NT	NT	NT
	02-Nov-89	34.8	11.0	2.6	NT	ND	1.6E+7	3.5E+4
	20-Nov-89	33.7	6.7	2.0	NT	0.5	9.5E+6	2.2E+4
	04-Dec-89	29.9	6.4	1.1	NT	0.5	3.8E+6	7.9E+3
	21-Dec-89	2.1	8.0	2.9	NT	0.9	1.5E+5	4.9E+3
	04-Jan-90	2.4	8.8	2.6	NT	1.1	1.9E+5	7.9E+3
	22-Jan-90	NT	NT	1.3	NT	NT	NT	NT
	01-Feb-90	4.3	4.5	NT	NT	1.1	--	--
EW-7								
	23-May-89	NT	NT	1.8	NT	NT	NT	NT
	31-May-89	NT	NT	11.2	NT	NT	NT	NT
	05-Jun-89	NT	NT	5.3	NT	NT	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	14-Jun-89	NT	NT	5.6	NT	NT	NT	NT
	20-Jun-89	NT	NT	1.9	NT	NT	NT	NT
	27-Jun-89	NT	NT	8.0	NT	NT	NT	NT
	06-Jul-89	37.4	3.3	6.2	NT	ND	NT	NT
	18-Sep-89	NT	NT	1.5	NT	NT	NT	NT
	29-Sep-89	NT	NT	1.1	NT	NT	NT	NT
	05-Oct-89	39.2	11.0	1.0	NT	0.6	2.2E+6	7.9E+3
	23-Oct-89	26.9	4.8	0.9	NT	ND	3.5E+5	3.5E+3
	02-Nov-89	17.6	3.5	1.5	NT	ND	1.4E+6	1.7E+4
	20-Nov-89	29.9	1.6	2.9	NT	ND	4.5E+6	3.5E+4
	04-Dec-89	36.5	2.4	4.5	NT	ND	9.3E+6	1.3E+4
	21-Dec-89	41.5	1.6	0.5	NT	ND	5.2E+6	3.5E+4
	04-Jan-90	7.3	4.3	NT	ND	ND	2.2E+6	1.4E+4
	22-Jan-90	NT	NT	3.9	NT	NT	NT	NT
	01-Feb-90	51.4	5.1	NT	NT	ND	--	--
EW-8								
	15-Mar-89	11.4	0.5	NT	ND	ND	NT	NT
	29-Mar-89	28.0	3.5	NT	NT	ND	NT	NT
	04-Apr-89	33.0	3.8	NT	ND	ND	3.1E+5	1.4E+2
	11-Apr-89	37.8	2.8	NT	NT	ND	2.0E+4	4.5E+1
	18-Apr-89	33.4	3.8	4.0	NT	ND	4.1E+5	1.4E+2
	25-Apr-89	47.5	8.0	10.9	NT	ND	3.4E+4	9.5E+1
	02-May-89	39.6	11.0	9.8	NT	ND	6.8E+4	5.6E+2
	09-May-89	39.6	15.5	12.1*	NT	ND	6.5E+5	1.8E+2
	17-May-89	57.2	14.3	6.9	NT	ND	NT	NT
	23-May-89	47.5	13.3	14.9	NT	ND	NT	NT
	31-May-89	57.2	13.0	NT	NT	ND	2.5E+5	3.8E+2
	05-Jun-89	57.2	15.8	15.9	NT	ND	NT	NT
	14-Jun-89	39.6	15.0	16.9	NT	ND	NT	NT
	20-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	27-Jun-89	55.0	15.5	15.6	NT	0.5	NT	NT
	06-Jul-89	36.4	16.4	10.7	NT	0.6	2.3E+6	4.9E+4
	22-Jul-89	33.7	18.3	NT	NT	0.8	6.4E+5	4.9E+4
	03-Aug-89	46.2	25.5	NT	NT	3.1	1.5E+7	1.2E+3
	17-Aug-89	49.5	20.0	NT	NT	1.3	2.9E+6	5.4E+3
	07-Sep-89	29.7	20.0	4.3	NT	2.9	NT	NT
	18-Sep-89	39.6	21.0	14.4	NT	2.0	NT	NT
	29-Sep-89	NT	NT	5.2	NT	NT	NT	NT
	05-Oct-89	59.0	25.0	9.2	NT	2.0	6.3E+6	3.5E+4
	23-Oct-89	46.2	22.0	10.8	NT	1.9	1.2E+6	2.2E+4
	02-Nov-89	40.7	19.6	9.7	NT	1.5	3.8E+6	1.1E+4
	20-Nov-89	39.3	18.1	7.4	NT	2.9	4.1E+6	2.2E+4
	04-Dec-89	28.1	11.2	1.1	NT	5.6	7.1E+6	9.2E+4
	21-Dec-89	43.9	17.1	12.3	NT	2.9	3.7E+6	5.4E+4
	04-Jan-90	45.8	18.1	11.8	NT	4.0	2.7E+6	2.4E+5
	22-Jan-90	NT	NT	3.9	NT	NT	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	01-Feb-90	55.2	19.7	NT	NT	3.5	--	--
EW-9								
	23-May-89	NT	NT	11.9	NT	NT	NT	NT
	31-May-89	NT	NT	17.2	NT	NT	NT	NT
	05-Jun-89	NT	NT	12.7	NT	NT	NT	NT
	14-Jun-89	NT	NT	19.1	NT	NT	NT	NT
	20-Jun-89	NT	NT	NT	NT	NT	NT	NT
	27-Jun-89	NT	NT	15.3	NT	NT	NT	NT
	06-Jul-89	NT	NT	12.8	NT	NT	NT	NT
	18-Sep-89	NT	NT	16.3	NT	NT	NT	NT
	29-Sep-89	NT	NT	14.0	NT	NT	NT	NT
	05-Oct-89	NT	NT	13.6	NT	NT	NT	NT
	04-Dec-89	40.2	16.5	9.3	NT	2.6	NT	NT
	21-Dec-89	50.5	18.1	19.1	NT	3.6	NT	NT
	04-Jan-90	48.6	19.7	13.8	NT	3.8	NT	NT
	22-Jan-90	NT	NT	>20.0	NT	NT	NT	NT
	02-Feb-90	49.6	17.6	NT	NT	3.5	NT	NT
EW-10								
	23-May-89	NT	NT	10.7	NT	NT	NT	NT
	31-May-89	NT	NT	11.1	NT	NT	NT	NT
	05-Jun-89	NT	NT	13.0	NT	NT	NT	NT
	14-Jun-89	NT	NT	16.0	NT	NT	NT	NT
	20-Jun-89	NT	NT	NT	NT	NT	NT	NT
	27-Jun-89	NT	NT	16.4	NT	NT	NT	NT
	06-Jul-89	NT	NT	13.5	NT	NT	NT	NT
	07-Sep-89	42.9	15.5	4.6	NT	ND	NT	NT
	18-Sep-89	48.4	NT	17.2	NT	NT	2.6E+7	2.2E+4
	29-Sep-89	NT	NT	7.2	NT	NT	NT	NT
	05-Oct-89	56.8	21.5	4.5	NT	NT	3.5E+6	1.4E+4
	23-Oct-89	55.0	21.6	14.9	NT	ND	2.8E+6	1.8E+4
	02-Nov-89	51.7	22.6	15.8	NT	0.6	NT	NT
	20-Nov-89	46.8	21.3	10.5	NT	1.2	7.6E+6	1.4E+4
	04-Dec-89	NT	NT	14.7	NT	NT	NT	NT
	21-Dec-89	46.8	17.1	15.4	NT	2.3	5.6E+6	9.2E+4
	02-Jan-90	NT	NT	9.3	NT	NT	--	--
	22-Jan-90	NT	NT	11.6	NT	NT	NT	NT
EW-11								
	23-May-89	NT	NT	11.9	NT	NT	NT	NT
	31-May-89	NT	NT	15.5	NT	NT	NT	NT
	05-Jun-89	NT	NT	16.5	NT	NT	NT	NT
	14-Jun-89	NT	NT	17.4	NT	NT	NT	NT
	20-Jun-89	NT	NT	15.9	NT	NT	NT	NT
	27-Jun-89	NT	NT	12.9	NT	NT	NT	NT
	06-Jul-89	NT	NT	14.8	NT	NT	NT	NT
	07-Sep-89	49.9	14.3	18.1	NT	ND	NT	NT
	18-Sep-89	NT	NT	18.4	NT	NT	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	29-Sep-89	NT	NT	17.7	NT	NT	NT	NT
	05-Oct-89	NT	NT	15.1	NT	NT	NT	NT
	23-Oct-89	57.6	17.0	16.1	NT	ND	NT	NT
	20-Nov-89	43.9	20.8	18.8	NT	1.2	NT	NT
	04-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	ND	NT	NT
	02-Jan-90	NT	NT	>20.0	NT	ND	NT	NT
	22-Jan-90	NT	NT	>20.0	NT	NT	NT	NT
EW-12								
	15-Mar-89	13.2	1.0	NT	ND	ND	NT	NT
	29-Mar-89	22.0	3.3	NT	NT	ND	NT	NT
	04-Apr-89	22.9	3.8	NT	ND	ND	NT	NT
	11-Apr-89	20.2	3.8	NT	NT	ND	NT	NT
	18-Apr-89	28.6	1.3	5.6	NT	ND	NT	NT
	25-Apr-89	39.2	2.8	2.6	NT	ND	NT	NT
	02-May-89	33.4	3.0	4.9	NT	ND	1.0E+6	3.5E+2
	09-May-89	31.7	2.3	5.1*	NT	ND	4.6E+5	2.4E+2
	17-May-89	52.0	1.0	3.5	NT	ND	NT	NT
	23-May-89	34.3	1.3	9.1	NT	ND	NT	NT
	31-May-89	30.3	2.5	11.3	NT	ND	NT	NT
	05-Jun-89	26.4	ND	13.6	NT	ND	NT	NT
	14-Jun-89	45.1	ND	14.1	NT	ND	5.3E+6	2.4E+5
	20-Jun-89	39.2	1.3	16.3	NT	ND	NT	NT
	27-Jun-89	11.0	2.8	NT	NT	ND	6.8E+6	1.7E+4
	06-Jul-89	41.8	3.8	NT	NT	ND	6.4E+5	4.9E+4
	22-Jul-89	26.8	7.0	NT	NT	ND	NT	NT
	03-Aug-89	48.4	8.5	NT	NT	ND	2.3E+5	2.1E+2
	17-Aug-89	59.0	10.6	NT	NT	ND	1.2E+5	2.4E+3
	07-Sep-89	58.3	17.0	3.8	NT	ND	NT	NT
	18-Sep-89	53.9	15.5	19.5	NT	ND	1.8E+5	7.0E+3
	29-Sep-89	NT	NT	18.7	NT	NT	NT	NT
	05-Oct-89	58.3	21.5	18.3	NT	ND	NT	NT
	04-Dec-89	41.1	20.3	>20.0	NT	ND	NT	NT
	21-Dec-89	NT	NT	17.8	NT	NT	NT	NT
	04-Jan-90	48.6	17.1	15.6	NT	ND	6.6E+5	1.3E+4
	22-Jan-90	NT	NT	18.6	NT	NT	NT	NT
	02-Feb-90	41.1	12.8	NT	NT	ND	NT	NT
EW-13								
	23-May-89	NT	NT	14.6	NT	NT	NT	NT
	31-May-89	NT	NT	16.4	NT	NT	NT	NT
	05-Jun-89	NT	NT	17.9	NT	NT	NT	NT
	14-Jun-89	NT	NT	14.5	NT	NT	NT	NT
	20-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	27-Jun-89	NT	NT	14.5	NT	NT	NT	NT
	06-Jul-89	NT	NT	>20.0	NT	NT	NT	NT
	22-Jul-89	40.7	11.8	NT	NT	ND	4.1E+5	1.4E+4

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	07-Sep-89	63.8	21.5	>20.0	NT	ND	NT	NT
	18-Sep-89	NT	NT	19.0	NT	NT	NT	NT
	29-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	05-Oct-89	NT	NT	>20.0	NT	NT	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	02-Jan-90	NT	NT	19.9	NT	NT	NT	NT
	22-Jan-90	NT	NT	8.1	NT	NT	NT	NT
EW-14								
	18-Apr-89	NT	NT	NT	NT	NT	1.1E+7	1.4E+3
	25-Apr-89	NT	NT	4.9	NT	NT	NT	NT
	02-May-89	NT	NT	NT	NT	NT	NT	NT
	09-May-89	NT	NT	9.6*	NT	NT	NT	NT
	17-May-89	48.4	5.0	7.0	NT	ND	2.5E+5	1.1E+3
	23-May-89	39.2	5.8	14.6	NT	ND	3.3E+5	7.9E+2
	31-May-89	44.0	6.8	14.1	NT	ND	NT	NT
	05-Jun-89	46.2	4.8	14.3	NT	ND	3.4E+6	3.5E+4
	14-Jun-89	48.4	5.8	14.3	NT	ND	1.3E+7	1.6E+5
	20-Jun-89	NT	NT	12.9	NT	NT	NT	NT
	27-Jun-89	NT	NT	11.9	NT	NT	NT	NT
	06-Jul-89	63.8	8.0	14.9	NT	ND	8.9E+6	3.3E+4
	22-Jul-89	44.0	12.0	NT	NT	ND	NT	NT
	07-Sep-89	53.9	22.0	14.8	NT	1.1	NT	NT
	18-Sep-89	45.1	18.0	17.4	NT	0.6	1.4E+7	1.1E+4
	29-Sep-89	NT	NT	18.0	NT	NT	NT	NT
	05-Oct-89	63.8	25.0	>20.0	NT	ND	1.9E+7	2.4+5
	21-Dec-89	NT	NT	10.6	NT	NT	--	--
	02-Jan-90	NT	NT	18.1	NT	NT	--	--
	22-Jan-90	NT	NT	17.1	NT	NT	NT	NT
EW-15								
	18-Apr-89	NT	NT	NT	NT	NT	1.1E+6	1.4E+2
	25-Apr-89	45.8	23.0	1.1	ND	NT	1.6E+5	4.7E+2
	02-May-89	NT	NT	NT	NT	NT	NT	NT
	09-May-89	58.1	26.5	>20.0*	NT	1.2	1.8E+6	1.6E+4
	17-May-89	45.4	22.4	8.9	NT	1.8	3.9E+6	3.5E+3
	23-May-89	41.0	19.1	>20.0	NT	2.7	1.3E+7	1.3E+4
	31-May-89	63.8	21.5	>20.0	NT	3.5	6.6E+6	2.4E+5
	05-Jun-89	43.6	28.1	>20.0	NT	3.7	6.4E+6	1.6E+5
	14-Jun-89	48.4	15.8	18.2	NT	2.0	9.2E+6	2.4E+5
	20-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	27-Jun-89	NT	NT	18.5	NT	NT	NT	NT
	06-Jul-89	52.8	25.7	19.3	NT	2.5	4.9E+6	1.7E+5
	22-Jul-89	30.4	33.8	NT	NT	3.4	2.4E+6	2.4E+4
	03-Aug-89	50.6	33.8	NT	NT	4.0	3.3E+5	1.8E+3
	07-Sep-89	56.8	85.8	>20.0	NT	7.2	NT	NT
	18-Sep-89	64.9	38.0	>20.0	NT	5.8	2.1E+7	5.4E+4
	29-Sep-89	NT	NT	14.5	NT	NT	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	05-Oct-89	59.4	45.0	>20.0	NT	5.2	3.5E+6	5.4E+4
	23-Oct-89	52.1	39.0	>20.0	NT	6.1	7.6E+6	4.9E+4
	02-Nov-89	46.9	36.3	>20.0	NT	7.7	1.4E+6	1.3E+4
	20-Nov-89	51.4	29.3	>20.0	NT	7.0	7.0E+6	2.4E+4
	04-Dec-89	61.7	30.7	>20.0	NT	8.0	4.1E+5	2.4E+4
	21-Dec-89	68.3	29.3	16.9	NT	6.7	2.6E+6	2.8E+4
	04-Jan-90	80.4	30.4	17.1	NT	6.8	NT	NT
	22-Jan-90	NT	NT	18.2	NT	NT	NT	NT
	02-Feb-90	87.9	30.4	NT	NT	5.8	--	--
EW-16								
	15-Mar-89	1.8	0.5	NT	ND	ND	NT	NT
	29-Mar-89	18.4	3.0	NT	NT	ND	NT	NT
	04-Apr-89	31.7	5.0	NT	ND	ND	5.7E+5	3.9E+2
	11-Apr-89	28.6	4.8	NT	NT	ND	1.2E+5	2.2E+2
	18-Apr-89	37.8	14.0	1.0	ND	1.2	3.2E+6	1.4E+3
	25-Apr-89	47.5	11.0	NT	NT	ND	8.4E+5	7.0E+2
	02-May-89	46.2	15.0	9.3	NT	ND	3.5E+5	1.4E+4
	09-May-89	46.2	18.5	14.7*	NT	0.6	2.2E+6	1.3E+3
	17-May-89	36.3	13.3	3.7	NT	ND	4.4E+5	2.2E+3
	23-May-89	29.7	11.8	10.1	NT	ND	8.6E+5	1.4E+3
	31-May-89	35.2	11.8	11.1	NT	0.7	5.9E+6	3.5E+3
	05-Jun-89	31.5	12.5	12.6	NT	ND	1.8E+6	2.2E+3
	14-Jun-89	29.7	13.3	11.8	NT	ND	3.7E+7	2.4E+5
	20-Jun-89	8.8	13.5	15.8	NT	ND	2.0E+7	3.5E+4
	27-Jun-89	42.9	13.3	19.7	NT	ND	9.5E+5	2.4E+5
	06-Jul-89	55.0	16.0	15.8	NT	ND	9.1E+6	1.1E+5
	22-Jul-89	23.8	18.3	NT	NT	1.4	NT	NT
	03-Aug-89	42.9	20.0	NT	NT	2.1	NT	NT
	17-Aug-89	52.8	25.6	NT	NT	2.3	8.0E+5	3.1E+3
	07-Sep-89	55.0	25.0	18.8	NT	1.3	NT	NT
	18-Sep-89	NT	NT	19.8	NT	NT	NT	NT
	29-Sep-89	NT	NT	15.1	NT	NT	NT	NT
	05-Oct-89	55.0	25.8	14.0	NT	2.9	NT	NT
	02-Nov-89	28.2	20.0	13.3	NT	2.2	NT	NT
	21-Dec-89	NT	NT	16.7	NT	NT	NT	NT
	02-Jan-90	NT	NT	19.2	NT	NT	NT	NT
	22-Jan-90	NT	NT	19.2	NT	NT	NT	NT
EW-17								
	18-Apr-89	NT	NT	16.8	NT	NT	NT	NT
	25-Apr-89	6.2	8.3	NT	ND	ND	NT	NT
	02-May-89	NT	NT	NT	NT	NT	NT	NT
	09-May-89	66.0	19.8	18.0*	NT	ND	1.2E+6	1.6E+4
	17-May-89	46.2	15.8	7.8	NT	ND	8.5E+5	3.5E+3
	23-May-89	44.0	14.2	18.0	NT	ND	6.5E+5	9.5E+2
	31-May-89	46.2	14.0	19.6	NT	ND	6.5E+5	2.8E+3
	05-Jun-89	52.8	13.2	18.2	NT	ND	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	14-Jun-89	45.1	14.2	17.0	NT	ND	NT	NT
	20-Jun-89	NT	NT	18.5	NT	NT	NT	NT
	27-Jun-89	NT	NT	16.1	NT	NT	NT	NT
	06-Jul-89	NT	NT	16.4	NT	NT	NT	NT
	18-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	29-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	05-Oct-89	NT	NT	>20.0	NT	NT	NT	NT
	21-Dec-89	NT	NT	19.3	NT	NT	NT	NT
	02-Jan-90	NT	NT	16.9	NT	NT	NT	NT
	22-Jan-90	NT	NT	17.1	NT	NT	NT	NT
EW-18								
	18-Apr-89	NT	NT	10.5	NT	NT	NT	NT
	25-Apr-89	6.2	NT	9.2	NT	NT	NT	NT
	02-May-89	NT	NT	NT	NT	NT	NT	NT
	09-May-89	NT	NT	18.2*	NT	NT	NT	NT
	17-May-89	38.4	NT	8.0	NT	ND	NT	NT
	23-May-89	37.0	NT	17.8	NT	ND	7.0E+5	NT
	31-May-89	46.2	NT	17.8	NT	ND	5.4E+6	1.7E+3
	05-Jun-89	NT	NT	19.1	NT	NT	NT	NT
	14-Jun-89	42.9	NT	14.5	NT	ND	NT	NT
	20-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	27-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	06-Jul-89	NT	NT	>20.0	NT	NT	NT	NT
	18-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	29-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	05-Oct-89	NT	NT	>20.0	NT	NT	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	02-Jan-90	NT	NT	>20.0	NT	NT	NT	NT
	22-Jan-90	NT	NT	18.0	NT	NT	NT	NT
EW-19								
	15-Mar-89	NT	NT	NT	NT	NT	NT	NT
	29-Mar-89	NT	NT	NT	NT	NT	NT	NT
	04-Apr-89	18.5	4.0	NT	ND	ND	NT	NT
	11-Apr-89	33.4	4.0	NT	NT	ND	NT	NT
	18-Apr-89	41.8	7.0	9.0	NT	ND	NT	NT
	25-Apr-89	NT	NT	7.2	NT	NT	NT	NT
	02-May-89	50.6	2.5	7.2	NT	ND	NT	NT
	09-May-89	NT	6.8	13.5*	NT	NT	NT	NT
	17-May-89	38.4	3.3	8.3	NT	ND	1.1E+6	1.6E+4
	23-May-89	37.0	2.5	16.5	NT	ND	NT	NT
	31-May-89	NT	NT	>20.0	NT	NT	NT	NT
	05-Jun-89	46.2	3.5	18.5	NT	ND	7.9E+5	1.1E+4
	14-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	20-Jun-89	NT	NT	>20.0	NT	NT	NT	NT
	27-Jun-89	NT	NT	19.5	NT	NT	NT	NT
	06-Jul-89	56.8	8.5	>20.0	NT	ND	2.5E+6	1.6E+6

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	22-Jul-89	44.0	11.0	NT	NT	ND	NT	NT
	03-Aug-89	46.9	16.0	NT	NT	ND	NT	NT
	17-Aug-89	61.6	17.2	NT	NT	NT	2.9E+4	1.7E+3
	07-Sep-89	61.6	24.6	>20.0	NT	>20.0	NT	NT
	18-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	29-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	05-Oct-89	70.4	27.5	>20.0	NT	ND	NT	NT
	23-Oct-89	59.4	27.0	>20.0	NT	ND	NT	NT
	02-Nov-89	57.9	32.5	>20.0	NT	ND	NT	NT
	04-Dec-89	51.4	25.3	>20.0	NT	ND	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	04-Jan-90	54.2	20.3	>20.0	NT	0.9	NT	NT
	22-Jan-90	NT	NT	19.4	NT	NT	NT	NT
	02-Feb-90	60.8	20.3	NT	NT	1.2	NT	NT
EW-20								
	14-Jun-89	NT	NT	19.1	NT	NT	NT	NT
	20-Jun-89	NT	NT	17.9	NT	NT	NT	NT
	27-Jun-89	NT	NT	17.5	NT	NT	NT	NT
	06-Jul-89	NT	NT	16.7	NT	NT	NT	NT
	22-Jul-89	NT	NT	17.1	NT	NT	NT	NT
	07-Sep-89	NT	NT	>20.0	NT	NT	NT	NT
	18-Sep-89	NT	NT	19.9	NT	NT	NT	NT
	29-Sep-89	NT	NT	14.0	NT	NT	NT	NT
	05-Oct-89	NT	NT	>20.0	NT	NT	NT	NT
	21-Dec-89	NT	NT	>20.0	NT	NT	NT	NT
	02-Jan-90	NT	NT	>20.0	NT	NT	NT	NT
	22-Jan-90	NT	NT	19.5	NT	NT	NT	NT
EW-21								
	23-May-89	NT	NT	NT	NT	NT	NT	NT
	31-May-89	17.6	5.0	NT	NT	ND	3.7E+4	2.4E+4
	05-Jun-89	17.6	1.3	NT	NT	ND	9.3E+4	7.9E+3
	14-Jun-89	26.0	1.0	NT	NT	ND	5.8E+4	2.4E+4
	20-Jun-89	29.0	0.8	NT	NT	ND	1.5E+5	7.0E+3
	27-Jun-89	27.1	0.8	NT	NT	ND	NT	NT
	06-Jul-89	43.6	0.5	NT	NT	ND	NT	NT
	22-Jul-89	26.8	0.5	NT	NT	ND	NT	NT
	03-Aug-89	26.8	0.5	NT	NT	ND	NT	NT
	17-Aug-89	48.0	3.0	NT	NT	ND	2.9E+4	1.7E+3
	07-Sep-89	23.8	7.8	9.0	NT	ND	NT	NT
	18-Sep-89	39.2	9.5	9.4	NT	ND	NT	NT
	29-Sep-89	NT	NT	7.9	NT	NT	NT	NT
	05-Oct-89	39.4	9.5	10.3	NT	ND	NT	NT
	23-Oct-89	48.0	9.1	13.8	NT	ND	NT	NT
	02-Nov-89	39.2	12.0	15.4	NT	ND	NT	NT
	20-Nov-89	40.2	10.9	12.4	NT	ND	NT	NT
	05-Dec-89	29.9	8.8	12.6	NT	ND	5.7E+5	1.1E+4

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	21-Dec-89	25.2	7.5	5.8	NT	0.5	5.1E+5	2.2E+3
	04-Jan-90	27.1	6.9	6.7	NT	ND	2.8E+5	4.9E+3
	22-Jan-90	NT	NT	6.4	NT	NT	NT	NT
	02-Feb-90	23.4	6.7	NT	NT	ND	--	--
EW-22								
	20-Nov-89	38.3	7.2	NT	NT	ND	NT	NT
	21-Dec-89	NT	NT	4.9	NT	NT	NT	NT
	02-Jan-90	21.5	4.0	4.5	NT	ND	NT	NT
	22-Jan-90	NT	NT	3.8	NT	NT	NT	NT
	02-Feb-90	9.4	5.1	NT	NT	1.2	NT	NT
Injection Composite								
	21-Mar-89	26.0	42.0	NT	NT	15.0	NT	NT
	18-Apr-89	37.8	110.0	NT	NT	37.4	NT	NT
	24-Apr-89	24.6	45.0	NT	NT	22.0	NT	NT
	01-May-89	23.2	40.0	NT	NT	8.3	NT	NT
	09-May-89	29.9	13.5	NT	NT	1.5	NT	NT
	17-May-89	24.6	37.5	NT	NT	6.1	NT	NT
	23-May-89	31.7	42.5	NT	NT	9.1	NT	NT
	31-May-89	45.1	50.0	NT	NT	14.5	NT	NT
	06-Jun-89	35.9	30.0	NT	NT	10.2	NT	NT
	20-Jun-89	35.9	35.0	NT	NT	8.8	NT	NT
	27-Jun-89	26.4	29.0	NT	NT	9.8	NT	NT
	06-Jul-89	34.8	42.5	NT	NT	9.4	NT	NT
	22-Jul-89	23.8	42.5	NT	NT	10.2	NT	NT
	03-Aug-89	23.8	38.5	NT	NT	10.2	NT	NT
	17-Aug-89	17.6	80.0	NT	NT	16.0	NT	NT
	07-Sep-89	35.0	50.0	NT	NT	10.9	NT	NT
	18-Sep-89	55.0	58.0	NT	NT	17.4	NT	NT
	05-Oct-89	48.4	35.0	NT	NT	5.4	NT	NT
	23-Oct-89	33.4	40.5	NT	NT	6.2	NT	NT
	02-Nov-89	18.7	39.0	NT	NT	7.3	NT	NT
	20-Nov-89	33.7	40.0	NT	NT	9.6	NT	NT
	04-Dec-89	27.1	36.0	NT	NT	8.7	NT	NT
	03-Jan-90	28.1	34.7	NT	NT	6.7	NT	NT
	01-Feb-90	21.5	36.8	NT	NT	5.5	NT	NT
Extraction Composite								
	21-Mar-89	NT	NT	NT	NT	NT	NT	NT
	18-Apr-89	NT	NT	NT	NT	NT	NT	NT
	24-Apr-89	55	6.8	NT	NT	ND	NT	NT
	01-May-89	NT	NT	NT	NT	NT	NT	NT
	09-May-89	44.0	15.6	NT	NT	ND	NT	NT
	17-May-89	44.0	13.0	NT	NT	0.5	NT	NT

Table 4. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from System Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.1(ppm)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	23-May-89	45.4	15.5	NT	NT	ND	NT	NT
	31-May-89	48.4	11.0	NT	NT	ND	NT	NT
	06-Jun-89	38.5	12.0	NT	NT	ND	NT	NT
	20-Jun-89	27.1	14.0	NT	NT	ND	NT	NT
	27-Jun-89	50.6	13.6	NT	NT	ND	NT	NT
	06-Jul-89	66.0	16.6	NT	NT	0.5	NT	NT
	22-Jul-89	37.4	18.0	NT	NT	0.8	NT	NT
	03-Aug-89	48.4	21.4	NT	NT	1.4	NT	NT
	17-Aug-89	39.6	NT	NT	NT	1.7	NT	NT
	18-Sep-89	59.4	28.0	NT	NT	1.9	NT	NT
	05-Oct-89	61.6	27.5	NT	NT	4.0	NT	NT
	23-Oct-89	57.2	26.0	NT	NT	2.9	NT	NT
	20-Nov-89	46.8	21.9	NT	NT	2.2	NT	NT
	04-Dec-89	46.8	22.4	NT	NT	2.9	NT	NT
	21-Dec-89	51.4	21.3	NT	NT	2.1	NT	NT
	02-Jan-90	55.2	20.8	NT	NT	2.1	NT	NT
	01-Feb-90	57.0	21.3	NT	NT	2.7	NT	NT

NOTES:

HCU: Hydrocarbon Utilizers
TC: Total Count
LOD: Limit of Detection.
NA: Limit of Detection not applicable.
ND: Not detected at or above LOD.
NT: Not tested.
*: Dissolved oxygen samples collected on 5/12/89.
--: Results not available.

Inorganic constituents are reported in parts per million (ppm).
Microbial counts are reported in colony-forming units per milliliter of water (CFU/ml).
Analysis performed by HLA Laboratory.

Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
MW-1								
	03-Aug-89	5.3	ND	NT	NT	ND	NT	NT
MW-5								
	06-Jun-89	10.1	2.5	1.7	NT	ND	NT	NT
	06-Jul-89	NT	2.5	1.7	NT	ND	NT	NT
MW-7								
	06-Jun-89	ND	4.8	1.8	NT	ND	NT	NT
	06-Jul-89	ND	ND	1.8	NT	ND	NT	NT
	22-Jul-89	ND	0.5	NT	NT	ND	NT	NT
	03-Aug-89	ND	3.3	NT	NT	ND	NT	NT
	07-Sep-89	ND	9.0	NT	NT	ND	NT	NT
	05-Oct-89	ND	8.0	NT	NT	ND	NT	NT
	02-Nov-89	ND	ND	5.3	NT	ND	NT	NT
	06-Dec-89	ND	5.3	5.9	NT	ND	NT	NT
	03-Jan-90	ND	1.6	NT	NT	ND	NT	NT
	01-Feb-90	ND	1.6	NT	NT	ND	NT	NT
MW-8								
	06-Jun-89	NT	NT	4.2	NT	NT	NT	NT
	06-Jul-89	NT	NT	4.2	NT	NT	NT	NT
	02-Nov-89	NT	NT	6.5	NT	NT	NT	NT
MW-9								
	03-Mar-89	37.0/32.0	1.5	1.0**	ND	ND	5.3E+5	9.5E+2
	15-Mar-89	6.0	6.0	NT	ND	ND	5.9E+6	1.8E+2
	29-Mar-89	37.0	32.0	NT	NT	ND	1.8E+6	2.1E+2
	04-Apr-89	41.8	36.0	NT	ND	ND	3.6E+5	1.1E+2
	11-Apr-89	42.1	60.0	NT	NT	ND	3.6E+5	1.4E+2
	18-Apr-89	56.3	60.0	8.4	ND	0.9	1.2E+6	2.2E+2
	25-Apr-89	88.0	50.0	>20.0	NT	2.9	9.9E+5	3.5E+3
	02-May-89	74.8	62.5	18.2	NT	4.8	3.5E+6	5.4E+3
	09-May-89	44.0	37.5	16.6	NT	6.2	NT	NT
	17-May-89	41.0	21.3	8.5	NT	5.6	NT	NT
	23-May-89	54.1	20.0	NT	NT	3.9	NT	NT
	31-May-89	NT	NT	NT	NT	NT	NT	NT
	06-Jun-89	46.2	34.0	NT	NT	10.8	NT	NT
	14-Jun-89	63.8	14.0	13.9	NT	3.3	NT	NT
	06-Jul-89	56.8	30.0	NT	NT	NT	NT	NT
	22-Jul-89	37.4	29.0	NT	NT	4.4	NT	NT
	03-Aug-89	38.5	25.0	NT	NT	5.5	NT	NT
	17-Aug-89	74.4	20.0	NT	NT	3.9	NT	NT
	07-Sep-89	83.6	39.0	15.5	NT	6.6	NT	NT
	05-Oct-89	105.6	41.3	13.5	NT	5.6	NT	NT
	02-Nov-89	78.3	18.6	18.9	NT	2.3	1.7E+6	7.0E+3
	05-Dec-89	91.6	20.3	11.0	NT	2.0	NT	NT
	02-Jan-90	87.9	26.7	NT	NT	1.3	NT	NT
	31-Jan-90	74.8	24.0	NT	NT	0.9	NT	NT

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Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
MW-10								
	03-Mar-89	8.4/5.5*	1.0	4.0**	ND	ND	2.3E+5	3.5E+2
	15-Mar-89	5.5	1.2	NT	ND	ND	NT	NT
	29-Mar-89	11.4	4.5	NT	NT	ND	NT	NT
	04-Apr-89	15.0	1.3	NT	ND	ND	NT	NT
	11-Apr-89	16.5	2.3	NT	NT	ND	NT	NT
	18-Apr-89	16.0	5.3	5.0	NT	ND	NT	NT
	25-Apr-89	14.1	2.0	2.2	NT	ND	NT	NT
	02-May-89	19.4	6.5	2.6	NT	ND	NT	NT
	09-May-89	17.6	1.8	3.1	NT	ND	NT	NT
	17-May-89	21.1	1.5	1.9	NT	ND	NT	NT
	23-May-89	17.6	1.3	NT	NT	ND	NT	NT
	31-May-89	NT	NT	NT	NT	NT	NT	NT
	06-Jun-89	17.6	2.3	2.0	NT	ND	NT	NT
	14-Jun-89	23.1	ND	2.1	NT	NT	NT	NT
	06-Jul-89	20.9	ND	NT	NT	NT	NT	NT
	22-Jul-89	17.6	0.5	NT	NT	ND	NT	NT
	03-Aug-89	23.8	ND	NT	NT	ND	NT	NT
	17-Aug-89	16.5	1.3	NT	NT	ND	NT	NT
	07-Sep-89	18.0	1.5	6.2	NT	ND	NT	NT
	18-Sep-89	9.9	6.0	NT	NT	ND	NT	NT
	05-Oct-89	21.8	11.0	6.1	NT	0.7	NT	NT
	23-Oct-89	23.8	3.0	6.5	NT	ND	3.2E+6	7.0E+3
	02-Nov-89	21.1	1.5	8.9	NT	ND	NT	NT
	20-Nov-89	7.1	0.5	6.5	NT	ND	1.9E+6	5.4E+4
	05-Dec-89	23.6	7.7	6.5	NT	ND	1.1E+5	2.4E+4
	03-Jan-90	1.1	2.1	NT	NT	0.5	3.1E+6	3.5E+4
	31-Jan-90	8.0	3.2	NT	NT	ND	--	--
MW-11								
	03-Mar-89	ND/ND*	0.8	2.0**	ND	ND	1.1E+6	2.8E+3
	15-Mar-89	ND	1.0	NT	ND	ND	NT	NT
	29-Mar-89	31.7	4.3	NT	NT	ND	NT	NT
	04-Apr-89	37.0	5.0	NT	ND	ND	NT	NT
	11-Apr-89	40.7	24.0	NT	NT	ND	3.8E+5	1.1E+2
	18-Apr-89	56.3	26.0	5.7	ND	ND	1.2E+6	1.7E+2
	25-Apr-89	44.0	29.7	11.8	NT	ND	4.7E+5	1.1E+3
	02-May-89	74.8	41.3	17.1	NT	ND	2.4E+6	5.4E+3
	09-May-89	57.2	29.7	12.5	NT	ND	1.4E+6	5.4E+3
	17-May-89	46.2	21.5	9.9	NT	ND	3.5E+6	1.6E+4
	23-May-89	52.8	15.8	NT	NT	ND	2.0E+6	3.3E+3
	31-May-89	58.3	29.7	>20.0	NT	ND	7.0E+5	2.4E+5
	06-Jun-89	66.0	33.0	NT	NT	ND	5.0E+6	2.8E+4
	14-Jun-89	52.8	25.7	14.9	NT	0.5	1.2E+7	2.4E+5
	20-Jun-89	61.6	24.8	12.8	NT	0.9	7.1E+6	1.1E+4
	06-Jul-89	56.8	32.8	NT	NT	NT	8.5E+6	5.4E+5
	22-Jul-89	33.0	27.2	NT	NT	9.6	NT	NT

Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	03-Aug-89	52.8	19.1	NT	NT	4.3	1.9E+5	1.1E+4
	17-Aug-89	58.3	38.9	NT	NT	5.8	1.1E+6	1.8E+4
	07-Sep-89	61.6	47.2	15.3	NT	7.4	1.3E+6	4.9E+3
	18-Sep-89	56.8	40.6	NT	NT	6.6	9.1E+6	9.5E+3
	05-Oct-89	70.4	47.5	19.4	NT	7.5	2.1E+6	1.1E+4
	23-Oct-89	50.6	41.3	11.4	NT	4.7	NT	NT
	02-Nov-89	56.5	40.0	16.4	NT	6.1	1.7E+6	7.9E+3
	20-Nov-89	52.4	28.0	16.1	NT	4.6	NT	NT
	05-Dec-89	55.2	33.6	14.0	NT	8.0	7.8E+5	1.4E+4
	03-Jan-90	59.8	25.1	NT	NT	3.6	1.2E+6	1.7E+4
	31-Jan-90	67.3	26.7	NT	NT	2.3	--	--
MW-12								
	03-Mar-89	11.4/6.2*	1.0	5.8**	ND	ND	7.1E+5	1.1E+1
	15-Mar-89	12.3	1.1	NT	ND	ND	NT	NT
	29-Mar-89	13.6	4.8	NT	NT	ND	NT	NT
	04-Apr-89	11.4	1.5	NT	ND	ND	NT	NT
	11-Apr-89	7.5	5.0	NT	NT	ND	NT	NT
	18-Apr-89	9.2	6.8	2.1	ND	ND	NT	NT
	25-Apr-89	3.5	1.8	1.4	NT	ND	NT	NT
	02-May-89	12.3	5.0	2.3	NT	ND	NT	NT
	09-May-89	9.7	2.5	2.2	NT	ND	NT	NT
	17-May-89	9.6	2.5	3.5	NT	ND	NT	NT
	23-May-89	8.3	1.3	1.8	NT	ND	NT	NT
	31-May-89	10.3	2.5	2.1	NT	ND	NT	NT
	06-Jun-89	9.2	2.8	NT	NT	ND	NT	NT
	20-Jun-89	8.4	1.0	4.0	NT	ND	NT	NT
	06-Jul-89	4.8	ND	NT	NT	NT	NT	NT
	22-Jul-89	5.3	0.5	NT	NT	ND	NT	NT
	03-Aug-89	7.7	0.5	NT	NT	ND	NT	NT
	17-Aug-89	2.0	1.3	NT	NT	ND	NT	NT
	07-Sep-89	4.5	4.8	NT	NT	ND	NT	NT
	18-Sep-89	4.2	5.8	NT	NT	ND	NT	NT
	05-Oct-89	3.4	5.3	NT	NT	ND	NT	NT
	02-Nov-89	7.0	2.3	4.9	NT	ND	NT	NT
	05-Dec-89	2.6	5.3	5.5	NT	ND	NT	NT
	03-Jan-90	1.7	1.6	NT	NT	ND	NT	NT
	01-Feb-90	0.9	1.3	NT	NT	ND	NT	NT
MW-13								
	03-Mar-89	11.4/8.6*	1.0	2.0**	0.25	ND	4.1E+6	1.7E+2
	15-Mar-89	9.2	1.1	NT	ND	ND	NT	NT
	29-Mar-89	8.8	6.3	NT	NT	ND	NT	NT
	04-Apr-89	9.7	3.5	NT	ND	ND	NT	NT
	11-Apr-89	13.2	2.8	NT	NT	ND	NT	NT
	18-Apr-89	15.0	8.5	6.0	NT	ND	NT	NT
	25-Apr-89	20.2	2.5	NT	NT	ND	NT	NT
	02-May-89	37.8	2.3	6.8	NT	ND	NT	NT

Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	09-May-89	42.1	1.5	9.9	NT	ND	NT	NT
	17-May-89	37.0	1.5	10.3	NT	ND	NT	NT
	23-May-89	33.4	1.3	NT	NT	ND	NT	NT
	06-Jun-89	40.5	3.0	NT	NT	ND	NT	NT
	27-Jun-89	57.2	0.8	18.5	NT	ND	5.9E+5	1.1E+3
	06-Jul-89	36.5	ND	NT	NT	NT	5.6E+5	7.8E+2
	22-Jul-89	33.1	0.5	NT	NT	ND	NT	NT
	03-Aug-89	56.3	3.0	NT	NT	ND	NT	NT
	17-Aug-89	47.4	4.3	NT	NT	ND	NT	NT
	07-Sep-89	59.8	10.0	NT	NT	ND	NT	NT
	05-Oct-89	35.2	9.0	12.8	NT	ND	NT	NT
	02-Nov-89	41.8	3.0	13.1	NT	ND	NT	NT
	06-Dec-89	34.6	6.7	12.6	NT	ND	NT	NT
	03-Jan-90	42.1	0.5	NT	NT	ND	NT	NT
	31-Jan-90	47.7	3.2	NT	NT	ND	NT	NT
MW-14								
	03-Mar-89	37.0/22.0*	0.8	3.0**	ND	ND	3.6E+5	2.2E+2
	15-Mar-89	37.0	1.0	NT	ND	ND	NT	NT
	29-Mar-89	22.8	3.8	NT	NT	ND	NT	NT
	04-Apr-89	29.9	3.8	NT	ND	ND	NT	NT
	11-Apr-89	37.4	2.8	NT	NT	ND	NT	NT
	18-Apr-89	43.6	5.8	NT	NT	ND	NT	NT
	25-Apr-89	35.2	1.3	NT	NT	ND	NT	NT
	02-May-89	40.5	5.3	6.7	NT	ND	NT	NT
	09-May-89	45.8	1.8	11.7	NT	ND	NT	NT
	17-May-89	51.0	1.5	9.2	NT	ND	NT	NT
	23-May-89	52.4	1.5	NT	NT	ND	NT	NT
	31-May-89	70.4	2.5	16.2	NT	ND	4.2E+5	2.4E+5
	06-Jun-89	44.7	2.0	NT	NT	ND	NT	NT
	27-Jun-89	48.4	0.8	12.0	NT	ND	1.1E+6	2.4E+5
	06-Jul-89	22.5	ND	NT	NT	NT	2.5E+6	2.4E+5
	22-Jul-89	33.4	0.5	NT	NT	ND	3.8E+6	9.5E+3
	03-Aug-89	38.7	3.0	NT	NT	ND	NT	NT
	17-Aug-89	35.2	4.3	13.0	NT	ND	NT	NT
	07-Sep-89	59.8	7.5	NT	NT	ND	NT	NT
	05-Oct-89	63.8	14.8	>20.0	NT	ND	NT	NT
	02-Nov-89	72.6	11.0	>20.0	NT	ND	NT	NT
	05-Dec-89	61.7	10.9	16.5	NT	ND	NT	NT
	03-Jan-90	46.8	12.8	NT	NT	ND	NT	NT
	31-Jan-90	35.5	10.7	NT	NT	ND	NT	NT
MW-15								
	03-Mar-89	42.2/19.0	0.9	4.0**	ND	ND	4.5E+5	2.8E+2
	10-Mar-89	40.5	2.2	NT	NT	NT	1.0E+6	2.8E+2
	15-Mar-89	35.2	1.2	NT	ND	ND	6.9E+6	2.8E+2
	29-Mar-89	20.2	4.2	NT	NT	ND	9.1E+5	2.1E+2
	04-Apr-89	24.6	5.3	NT	ND	ND	4.4E+5	1.4E+2

Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	11-Apr-89	23.1	4.0	NT	NT	ND	2.7E+6	1.7E+2
	18-Apr-89	31.9	1.3	6.3	ND	ND	3.1E+6	2.9E+1
	25-Apr-89	42.2	1.8	9.6	ND	ND	2.2E+5	4.6E+1
	02-May-89	50.6	3.5	11.4	NT	ND	8.5E+5	1.2E+2
	09-May-89	33.0	1.8	9.6	NT	ND	2.4E+6	2.4E+3
	17-May-89	48.4	2.3	12.1	NT	ND	4.6E+5	2.8E+3
	23-May-89	48.4	1.8	11.3	NT	ND	1.0E+6	3.3E+2
	06-Jun-89	53.9	2.5	NT	NT	ND	NT	NT
	06-Jul-89	46.9	7.5	NT	NT	ND	3.8E+6	3.3E+4
	22-Jul-89	28.2	10.3	NT	NT	ND	1.7E+6	2.2E+3
	03-Aug-89	38.5	10.8	NT	NT	ND	NT	NT
	17-Aug-89	70.4	18.6	NT	NT	ND	NT	NT
	07-Sep-89	56.8	29.0	16.5	NT	1.6	NT	NT
	18-Sep-89	56.8	32.0	NT	NT	1.6	NT	NT
	05-Oct-89	70.0	29.0	>20.0	NT	1.5	NT	NT
	02-Nov-89	60.7	36.0	>20.0	NT	1.9	1.3E+5	4.9E+3
	05-Dec-89	54.2	30.4	19.2	NT	3.2	NT	NT
	21-Dec-89	43.9	27.2	NT	NT	2.3	1.2E+5	4.9E+3
	02-Jan-90	55.2	28.3	NT	NT	6.7	NT	NT
	31-Jan-90	57.0	28.3	NT	NT	2.7	--	--
MW-16								
	03-Mar-89	49.3/17.0	1.2	2.0**	ND	ND	8.4E+5	1.4E+2
	10-Mar-89	14.5	2.2	NT	ND	ND	1.4E+5	1.2E+3
	15-Mar-89	11.4	3.0	NT	ND	ND	6.0E+6	1.1E+3
	29-Mar-89	33.4	7.2	NT	NT	ND	1.6E+6	3.5E+3
	04-Apr-89	39.6	11.5	NT	0.2	NT	2.2E+6	1.2E+3
	11-Apr-89	37.8	16.0	NT	NT	ND	6.7E+5	1.4E+3
	18-Apr-89	52.8	20.0	14.0	ND	ND	1.3E+6	2.3E+2
	25-Apr-89	49.3	22.0	>20.0	ND	ND	5.1E+5	2.2E+2
	02-May-89	57.2	31.3	14.6	NT	ND	2.2E+6	1.7E+3
	09-May-89	59.4	23.6	15.3	NT	ND	4.0E+6	9.5E+2
	17-May-89	41.8	16.5	9.5	NT	ND	6.8E+5	1.4E+3
	23-May-89	46.2	23.9	17.3	NT	ND	1.0E+6	2.2E+3
	31-May-89	61.6	15.7	16.2	NT	ND	4.4E+5	4.9E+3
	06-Jun-89	43.6	18.2	NT	NT	ND	4.0E+6	2.8E+4
	20-Jun-89	61.6	7.6	5.3	NT	ND	1.1E+7	5.4E+4
	06-Jul-89	55.4	23.1	NT	NT	1.5	5.7E+6	4.9E+4
	22-Jul-89	55.0	10.7	NT	NT	ND	NT	NT
	03-Aug-89	45.8	10.0	NT	NT	1.3	1.1E+5	1.8E+3
	17-Aug-89	74.8	19.0	NT	NT	1.5	8.1E+5	1.4E+4
	07-Sep-89	61.6	52.1	16.6	NT	3.7	8.2E+5	1.1E+4
	18-Sep-89	28.2	42.9	NT	NT	5.4	1.4E+6	5.4E+4
	05-Oct-89	66.0	49.0	>20.0	NT	6.3	1.8E+6	7.9E+3
	23-Oct-89	48.4	36.5	>20.0	NT	4.7	NT	NT
	02-Nov-89	48.4	35.0	>20.0	NT	5.5	NT	NT
	20-Nov-89	42.1	26.7	18.2	NT	4.1	4.4E+5	1.1E+4

Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	05-Dec-89	55.2	32.0	>20.0	NT	5.8	9.2E+5	2.8E+4
	02-Jan-90	65.5	30.4	NT	NT	3.8	2.7E+6	5.4E+4
	31-Jan-90	51.4	29.9	NT	NT	3.3	--	--
MW-17								
	03-Mar-89	NT	NT	NT	NT	NT	NT	NT
	10-Mar-89	12.3	0.8	NT	ND	ND	1.6E+5	1.1E+3
	15-Mar-89	7.5	3.1	NT	ND	ND	1.1E+7	3.5E+3
	29-Mar-89	25.5	3.8	NT	NT	ND	2.6E+6	1.1E+3
	04-Apr-89	35.2	3.5	NT	ND	ND	3.3E+6	6.8E+2
	11-Apr-89	49.4	8.0	NT	NT	ND	1.5E+6	3.9E+2
	18-Apr-89	52.8	16.0	11.8	ND	ND	1.2E+6	1.4E+2
	25-Apr-89	51.0	11.6	13.5	ND	ND	6.0E+5	1.7E+2
	02-May-89	52.8	17.0	13.3	NT	ND	5.1E+6	3.5E+2
	09-May-89	44.9	5.0	6.6	NT	ND	6.5E+6	9.5E+2
	17-May-89	47.7	17.6	8.4	NT	ND	3.0E+6	5.4E+3
	23-May-89	57.2	14.5	17.0	NT	ND	1.1E+6	3.9E+2
	06-Jun-89	46.2	16.0	NT	NT	ND	3.0E+6	3.5E+4
	14-Jun-89	42.9	18.0	15.4	NT	ND	3.0E+6	4.3E+4
	27-Jun-89	56.8	11.0	NT	NT	ND	1.1E+7	9.2E+4
	06-Jul-89	50.6	13.0	NT	NT	ND	7.2E+6	1.1E+5
	22-Jul-89	45.8	20.0	NT	NT	ND	7.3E+5	7.9E+4
	03-Aug-89	70.4	14.0	NT	NT	1.0	8.3E+4	1.3E+3
	17-Aug-89	63.8	20.0	NT	NT	1.7	2.3E+5	9.2E+3
	07-Sep-89	79.2	32.0	NT	NT	1.4	9.2E+6	1.3E+4
	18-Sep-89	71.5	24.6	NT	NT	3.3	6.5E+5	1.7E+4
	05-Oct-89	75.9	39.0	NT	NT	5.8	9.3E+5	2.4E+4
	23-Oct-89	52.8	38.0	>20.0	NT	4.7	8.4E+5	1.6E+5
	02-Nov-89	57.2	36.0	>20.0	NT	6.9	NT	NT
	20-Nov-89	52.4	24.0	15.4	NT	4.8	NT	NT
	05-Dec-89	65.5	28.8	19.4	NT	7.3	NT	NT
	02-Jan-90	53.3	30.4	NT	NT	9.2	NT	NT
MW-18								
	03-Mar-89	15.4/9.3*	0.5	2.9**	ND	ND	1.3E+6	7.9E+1
	15-Mar-89	4.0	1.1	NT	ND	ND	NT	NT
	29-Mar-89	8.8	3.0	NT	NT	ND	NT	NT
	04-Apr-89	6.6	2.8	NT	ND	ND	NT	NT
	11-Apr-89	6.6	3.8	NT	NT	ND	NT	NT
	18-Apr-89	6.6	5.8	5.0	NT	ND	NT	NT
	25-Apr-89	2.2	1.3	3.0	NT	ND	NT	NT
	02-May-89	8.8	4.5	3.4	NT	ND	NT	NT
	09-May-89	11.6	1.8	4.1	NT	ND	NT	NT
	17-May-89	5.8	1.8	3.3	NT	ND	NT	NT
	23-May-89	14.5	1.5	3.9	NT	ND	NT	NT
	31-May-89	NT	NT	NT	NT	NT	NT	NT
	06-Jun-89	17.1	1.3	NT	NT	ND	NT	NT
	27-Jun-89	8.8	0.8	NT	NT	ND	NT	NT

Table 5. Results of Inorganic Chemical and Microbial Analyses of Ground-Water Samples from Monitoring Wells

WELL	DATE	NITRATE	PHOSPHATE	DISSOLVED OXYGEN	DISSOLVED IRON (Fe)	AMMONIA	MICROBIAL ENUMERATION TC	MICROBIAL ENUMERATION HCU
LOD		0.5(ppm)	0.5(ppm)	0.5(mg/l)	0.1(ppm)	0.5(ppm)	NA (CFU/ml)	NA (CFU/ml)
	06-Jul-89	15.7	ND	NT	NT	NT	NT	NT
	22-Jul-89	17.2	0.5	NT	NT	ND	NT	NT
	03-Aug-89	11.0	0.5	NT	NT	ND	NT	NT
	17-Aug-89	16.5	1.3	NT	NT	ND	NT	NT
	07-Sep-89	15.0	3.0	NT	NT	ND	NT	NT
	05-Oct-89	22.0	6.0	NT	NT	ND	NT	NT
	02-Nov-89	15.0	2.3	NT	NT	ND	NT	NT
	06-Dec-89	13.5	5.9	6.1	NT	ND	NT	NT
	03-Jan-90	11.6	1.6	NT	NT	ND	NT	NT
	01-Feb-90	4.9	0.8	NT	NT	ND	NT	NT
MW-19								
	03-Jan-90	ND	2.4	NT	NT	ND	NT	NT
	01-Feb-90	5.8	1.3	NT	NT	ND	NT	NT
MW-20								
	03-Jan-90	10.1	2.1	NT	NT	ND	NT	NT
	01-Feb-90	7.3	1.3	NT	NT	ND	NT	NT

NOTES:

HCU: Hydrocarbon Utilizers
TC: Total Count
LOD: Limit of Detection.
NA: Limit of Detection not applicable.
ND: Not detected at or above LOD.
NT: Not tested.
* : First value from HLA laboratory
Second value from Pace Laboratories, Inc.
**: Results from Pace Laboratories, Inc.
--: Results not available.

Inorganic constituents reported in parts per million (ppm).
Microbial counts reported in colony-forming units per milliliter of water (CFU/ml).
Analyses performed by HLA laboratory unless otherwise indicated.

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
MW-5						
	03-May-89	ND	ND	ND	0.029	ND
	06-Jun-89	ND	ND	ND	ND	ND
MW-7						
	04-Apr-89	ND	0.0007	0.0010	0.0012	ND
	03-May-89	ND	0.0012	0.0018	0.0048	0.27
	06-Jun-89	0.001	0.001	0.0022	0.0011	0.4
	07-Jul-89	0.0002	0.001	0.00034	0.0059	0.56
	02-Aug-89	ND	0.00152	0.0054	0.0059	0.7
	07-Sep-89	ND	ND	ND	0.0015	0.59
	05-Oct-89	ND	0.0011	0.0006	0.0013	0.73
	02-Nov-89	0.0002	0.001	0.0055	0.0036	0.63
	06-Dec-89	0.0006	0.0087	0.0059	0.0036	0.32
	03-Jan-90	0.0007	0.0007	0.0006	0.0013	0.18
	01-Feb-90	ND	0.0009	ND	0.0003	ND
MW-9						
	02-Mar-89	NT	NT	NT	NT	1.2
	04-Apr-89	0.19	0.35	0.041	0.36	1.5
	01-May-89	0.43	0.60	0.033	0.64	4.6
	06-Jun-89	0.36	0.106	0.110	0.10	1.6
	06-Jul-89	0.16	0.084	0.052	1.8	5.2
	02-Aug-89	0.032	0.034	0.012	1.6	4.9
	06-Sep-89	0.007	0.022	ND	0.36	1.5
	04-Oct-89	LT 0.025	0.08	LT 0.025	1.3	4.1
	01-Nov-89	0.0012/0.0007	0.014/0.015	ND/ND	0.67/0.69	3.1/2.9
	05-Dec-89	LT 0.0010	0.006	LT 0.0010	0.39	1.9
	02-Jan-90	0.011	0.041	0.0060	0.22	2.2
	31-Jan-90	0.0048	0.0026	LT 0.0010	0.12	1.0
MW-10						
	02-Mar-89	NT	NT	NT	NT	2.8
	04-Apr-89	1.6	0.76	0.13	0.68	4.2
	01-May-89	1.2	0.67	0.16	0.67	3.4
	06-Jun-89 a	0.66/0.64	0.14/0.14	0.11/0.10	0.24/0.14	4.8/4.3
	06-Jul-89	2.0	2.2	0.54	1.8	12
	02-Aug-89 a	8.8/8.6	1.7/1.7	0.36/0.34	1.5/1.5	19/20
	06-Sep-89 a	8.1/11	5.2/6.3	0.82/0.93	5.5/6.1	36/34
	04-Oct-89	40	79	11	94	620
	01-Nov-89	21	10	2.0	12	95
	05-Dec-89	21	14	2.6	17	90
	03-Jan-90	17	2.2	2.4	9.1	70
	31-Jan-90	8.1	1.2	0.51	1.6	25
MW-11						
	02-Mar-89	NT	NT	NT	NT	15

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
	04-Apr-89	2.5	3.8	0.17	2.4	10
	19-Apr-89	3.8	2.8	ND	5.7	14
	01-May-89	1.3	1.7	0.069	1.7	5.2
	07-Jun-89	0.082	0.097	0.045	0.167	12
	06-Jul-89 @	2.1/2.3	2.5/2.8	0.14/0.16	2.6/3.0	15/15
	02-Aug-89	7.2	7.5	0.26	7.1	37
	06-Sep-89	5.0	6.5	0.41	5.2	47
	04-Oct-89	3.3	2.8	0.15	2.5	11
	01-Nov-89	2.1	2.8	0.11	1.8	13
	05-Dec-89	1.3	1.5	0.084	1.3	7.6
	03-Jan-90	0.11	0.27	0.017	0.53	2.7
	31-Jan-90	0.072	0.18	0.0052	0.31	1.7
MW-12						
	15-Feb-89	ND	ND	ND	ND	ND
	03-Mar-89	NT	NT	NT	NT	ND
	05-Apr-89	0.0014	0.0023	ND	0.0054	ND
	02-May-89	0.026	0.0033	ND	0.0063	0.10
	07-Jun-89	0.034	0.0037	ND	0.012	0.18
	06-Jul-89	0.029	0.0025	ND	0.0059	0.12
	02-Aug-89	0.023	0.002	ND	0.005	ND
	07-Sep-89 @	0.051/0.059	0.0016/0.0022	ND/ND	0.0049/0.0058	ND/ND
	05-Oct-89 @	0.037/0.040	0.0032/0.0031	ND/ND	0.0086/0.0094	ND/ND
	02-Nov-89	0.0056	0.0011	ND	0.0019	0.071
	06-Dec-89	0.0062	0.0012	ND	0.0017	0.06
	03-Jan-90	0.0086	0.0010	ND	0.0012	0.09
	01-Feb-90	0.0018/0.0024	0.0010/0.0004	ND/ND	0.0005/0.0004	ND/ND
MW-13						
	02-Mar-89	NT	NT	NT	NT	1.4
	04-Apr-89	0.041	0.039	0.0038	0.28	0.71
	01-May-89	0.048	0.049	0.013	0.13	0.34
	07-Jun-89	0.051	0.037	0.02	0.082	0.98
	06-Jul-89	0.210	0.054	0.013	0.109	0.76
	02-Aug-89	0.098	0.011	0.0005	0.031	0.27
	07-Sep-89	0.039	0.0020	ND	0.0050	ND
	04-Oct-89	4.0	1.6	0.20	1.5	9.2
	01-Nov-89	1.7	0.086	0.091	0.37	5.6
	06-Dec-89 @	1.2/1.1	0.15/0.14	0.21/0.19	0.46/0.42	5.1/4.4
	03-Jan-90	0.92	0.13	0.20	0.38	3.7
	31-Jan-90	0.29	0.029	0.037	0.062	0.81
MW-14						
	02-Mar-89	NT	NT	NT	NT	ND
	04-Apr-89	0.44	0.063	ND	0.27	1.4
	01-May-89	0.35	0.011	ND	0.094	0.94

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
	07-Jun-89 @	0.057/ND	0.0022/ND	0.0005/ND	0.043/ND	1.1/0.64
	06-Jul-89	3.0	1.7	0.050	3.6	14
	01-Aug-89	0.49	0.084	ND	0.84	4.5
	06-Sep-89	1.0	0.090	ND	1.4	4.9
	04-Oct-89	0.70	0.015	ND	0.75	3.1
	01-Nov-89	0.36	0.0058	ND	0.24	1.4
	05-Dec-89	0.35	0.0065	LT 0.0010	0.25	1.3
	02-Jan-90	0.080	0.0017	ND	0.091	0.63
	31-Jan-90	0.094	0.047	0.0061	0.10	0.42
MW-15						
	03-Mar-89	NT	NT	NT	NT	3.9
	04-Apr-89	0.88	0.97	0.11	0.93	3.7
	02-May-89	1.5	1.1	0.086	0.74	2.7
	07-Jun-89	5.7	4.3	0.3	2.4	22
	05-Jul-89	2.0	3.0	0.26	2.0	12
	03-Aug-89	2.6	2.8	0.75	3.8	24
	06-Sep-89	1.1	1.4	0.23	1.3	7.3
	04-Oct-89	0.59	1.1	0.076	0.59	3.7
	01-Nov-89	1.6	2.3	0.23	1.7	9.7
	05-Dec-89	1.7	2.6	0.22	1.3	10
	02-Jan-90	0.37	0.65	0.053	0.35	2.6
	31-Jan-90	0.45	0.65	0.080	0.17	3.7
MW-16						
	02-Mar-89	NT	NT	NT	NT	2.1
	04-Apr-89	2.1	2.2	0.18	1.4	6.7
	02-May-89	0.74	0.94	0.11	0.95	2.7
	07-Jun-89	0.37	0.56	0.51	0.35	14
	05-Jul-89	1.9	2.7	1.8	4.5	16
	03-Aug-89 @	1.8/1.9	2.6/2.6	0.18/0.19	5.7/6.0	17/17
	06-Sep-89	0.96	3.3	0.26	1.3	8.9
	04-Oct-89	0.72	2.1	0.16	1.3	5.4
	02-Nov-89	0.74	2.8	0.37	2.4	11
	05-Dec-89	0.38	0.79	0.087	0.75	3.6
	02-Jan-90	0.25	0.39	0.037	0.36	1.9
	31-Jan-90	1.2	2.0	0.21	1.5	7.1
MW-17						
	04-Apr-89	3.1	2.9	0.27	3.9	12
	02-May-89	1.2	1.0	0.11	1.4	3.9
	07-Jun-89	1.2	1.2	ND	1.3	6.3
	05-Jul-89	3.0	3.3	2.7	3.9	18
	02-Aug-89	4.8	9.5	0.63	14	47
	03-Aug-89	5.1	6.1	0.73	12	NT
	06-Sep-89	2.8	4.5	0.32	8.4	21

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE		ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *			0.0005/0.0002 *		0.25/0.05**
	04-Oct-89	0.47	0.092		0.018	1.0	2.8
	01-Nov-89	0.19	0.011		0.11	0.18	0.93
	05-Dec-89	0.16	0.036		0.0071	0.13	0.76
	03-Jan-90	0.056	0.0030		0.0010	0.022	0.25
	31-Jan-90	0.13	0.013		0.0014	0.050	0.30
MW-18							
	15-Feb-89	ND	ND		ND	ND	ND
	03-Mar-89	NT	NT		NT	NT	ND
	05-Apr-89	ND	ND		ND	ND	ND
	02-May-89	ND	ND		ND	ND	ND
	07-Jun-89	ND	ND		ND	ND	ND
	06-Jul-89	ND	ND		ND	ND	ND
	02-Aug-89	ND	ND		ND	ND	ND
	06-Sep-89	ND	ND		ND	ND	ND
	05-Oct-89	ND	ND		ND	ND	ND
	01-Nov-89	ND	ND		ND	ND	ND
	06-Dec-89	ND	0.0009		ND	0.0013	ND
	02-Jan-90	0.016	0.0080		0.0014	0.0098	0.10
	01-Feb-90	ND	ND		ND	ND	ND
MW-19							
	15-Dec-89	5.0	0.30		0.078	0.61	12
	03-Jan-90	3.0	0.46		0.12	1.1	13
	01-Feb-90	1.1	0.022	LT	0.0040	0.032	1.9
MW-20							
	15-Dec-89	ND	ND		ND	ND	ND
	03-Jan-90	0.0004	0.0004		ND	0.0008	ND
	01-Feb-90	ND	0.0014		ND	0.0005	ND
EW-1							
	04-Apr-89	1.6	1.0		0.087	1.8	5.9
	01-May-89	3.2	1.2		0.15	1.4	6.3
	05-Jun-89	7.7	5.0		0.2	3.5	24
	05-Jul-89	4.4	5.1		0.32	3.8	24
	02-Aug-89	3.1	4.0		0.4	2.9	23
	06-Sep-89	3.0	3.7		0.26	3.0	11
	05-Oct-89	1.3	1.7	LT	0.10	0.3	7.3
	02-Nov-89	2.4	4.0		0.23	2.1	19
	05-Dec-89	1.3	2.2		0.016	1.3	7.5
	04-Jan-90	1.7	3.2		0.25	1.7	13.0
	01-Feb-90	1.2	1.8		0.073	1.1	7.6
EW-4							
	04-Apr-89	NT	NT		NT	NT	2.5
	01-May-89	0.56	0.28		0.034	0.72	2.0
	05-Jun-89	0.4	0.2		ND	0.6	3.1

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
	05-Jul-89	0.29	0.15	0.021	1.2	4.3
	02-Aug-89	0.23	0.1	0.023	1.1	6.3
	06-Sep-89	0.17	0.038	LT 0.0005	0.80	3.0
	02-Nov-89	0.12	0.089	0.009	0.48	5.3
	05-Dec-89	0.17	0.029	0.011	0.62	3.5
	04-Jan-90	0.17/0.2	0.027/0.0085	0.0085/0.0027	0.19/0.21	1.4/1.7
	01-Feb-90	0.38	0.035	0.0080	0.38	1.6
EW-6						
	02-Nov-89	20	22	0.54	12	100
	05-Dec-89	20	24	1.3	13	93
	04-Jan-90	25	34	2.0	16	160
	01-Feb-90	26	49	3.1	22	120
EW-7						
	05-Jul-89	18	16	0.67	10	74
	05-Oct-89	38	46	LT 0.50	11	210
	02-Nov-89	30	39	1.8	15	170
	05-Dec-89	27	36	1.9	17	130
	04-Jan-90	11	11	0.36	7.0	59
	01-Feb-90	9.4	8.2	0.19	4.4	38
EW-8						
	01-May-89	1.1	0.49	0.021	0.30	2.3
	05-Jun-89	2.5	2.0	ND	1.4	8.3
	05-Jul-89	3.3	2.9	0.22	3.1	19
	02-Aug-89	5.7	5.6	0.33	5.8	37
	06-Sep-89	5.7	5.5	0.19	10	38
	05-Oct-89	13	4.6	LT 0.25	7.0	71
	02-Nov-89	8.1	8.6	0.21	6.2	56
	05-Dec-89	8.8	0.51	0.037	3.0	8.8
	04-Jan-90	2.3	2.0	0.078	1.8	14
	01-Feb-90	4.0	3.8	0.020	5.3	15
EW-9						
	21-Nov-89	ND	ND	ND	ND	ND
	05-Dec-89	4.5	6.7	0.35	5.7	27
	04-Jan-90	3.0	3.5	0.17	2.9	17
	02-Feb-90	2.0	2.9	0.17	2.4	14
EW-10						
	07-Sep-89	8.1	7.4	0.80	9.2	42
	05-Oct-89	6.1	4.6	0.20	7.0	19
	02-Nov-89	1.7	1.2	0.048	3.3	14
EW-11						
	07-Sep-89	7.7	8.0	0.52	5.3	25
EW-12						
	01-May-89	1.8	0.66	0.048	0.62	3.6

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**
	05-Jun-89	25	20	0.8	11	71
	05-Jul-89	5.2	5.6	0.38	3.4	25
	02-Aug-89	4.5	5.4	0.39	3.3	25
	07-Sep-89	2.2	1.8	0.059	2.2	9.9
	05-Oct-89	4.4	5.5	LT 0.10	2.0	21
	05-Dec-89	3.2	4.7	0.20	2.3	17
	04-Jan-90	1.8	2.4	0.10	1.7	9.1
	02-Feb-90	4.8	6.6	3.9	4.5	17
EW-13						
	19-Apr-89	0.068	0.0064	ND	0.20	0.79
	07-Sep-89	3.3	3.2	1.8	0.026	15
EW-14						
	05-Jul-89	1.8	1.7	0.08	1.1	8.7
	07-Sep-89	4.1	3.5	0.20	3.7	16
	05-Oct-89	4.3	5.2	LT 0.10	0.74	24
EW-15						
	19-Apr-89 #	13080	61000	16000	140000	660000
	05-Jul-89	2.0	2.8	0.26	2.9	19
	02-Aug-89	1.7	3.4	0.68	2.5	15
	07-Sep-89	8.4	7.6	0.20	6.3	37
	05-Oct-89	2.6	1.7	LT 0.10	0.62	12
	02-Nov-89	ND	0.0014	ND	0.0029	0.16
	05-Dec-89	3.1	4.1	0.32	3.0	19
	04-Jan-90	0.72	0.69	0.026	0.43	3.5
	02-Feb-90	2.7	3.9	0.19	2.4	16
EW-16						
	04-Apr-89 @	2.8/3.3	2.0/2.6	0.10/0.14	0.99/1.2	8.9/8.8
	19-Apr-89	0.002	0.0027	ND	0.0021	0.57
	01-May-89	5.0	4.6	0.34	2.5	12
	05-Jun-89	2.5	2.6	ND	1.8	9.5
	05-Jul-89	2.8	3.6	0.28	1.8	16
	02-Aug-89	1.1	1.2	0.86	1.2	6.6
	07-Sep-89	2.6	2.7	0.21	1.9	11
	05-Oct-89	3.6	2.9	0.15	2.4	16
	02-Nov-89	1.8	1.7	0.82	0.33	11
EW-19						
	01-May-89	1.4	1.2	0.068	0.77	3.4
	05-Jun-89	0.9	0.6	ND	0.6	2.9
	05-Jul-89 @	2.2/1.4	0.62/0.71	0.041/0.043	0.72/0.8	4.8/5.3
	02-Aug-89	1.7	1.1	0.039	0.95	7.4
	07-Sep-89	2.5	2.1	0.15	1.5	9.1
	05-Oct-89	5.1	3.7	0.048	3.0	13
	02-Nov-89	0.35	0.29	0.028	0.31	3.2

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE		ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *			0.0005/0.0002 *		0.25/0.05**
	05-Dec-89	1.2	0.84		0.092	0.92	5.3
	04-Jan-90	1.0	1.5		0.082	0.9	5.3
	02-Feb-90	0.56	0.47		0.044	0.64	2.1
EW-20							
	04-Jan-90	1.3	11.0		0.83	8.4	36.0
EW-21							
	05-Jun-89	ND	ND		ND	0.3	3.2
	05-Jul-89	0.0026	0.015		0.017	0.095	1.1
	02-Aug-89	0.0027	0.012		0.0054	0.031	0.48
	07-Sep-89	0.0060	0.0095		0.0020	0.0026	0.34
	05-Oct-89	0.0009	0.0098		0.0012	0.0093	0.50
	02-Nov-89	0.002	0.028		0.0068	0.14	0.88
	05-Dec-89	0.0034	0.064		0.019	0.14	0.97
	04-Jan-90	0.004	0.10		0.041	0.35	1.8
	02-Feb-90	0.0053	0.33		0.13	0.84	3.6
EW-22							
	21-Nov-89	0.056	0.015	LT	0.005	0.12	6.1
	02-Feb-90	2.1	17		1.1	13	43
BLANK							
	05-Apr-89	0.5	ND		ND	ND	ND
	01-May-89	ND	ND		ND	ND	ND
	06-Jun-89	ND	ND		ND	ND	ND
	06-Jul-89	ND	ND		ND	ND	ND
	01-Aug-89	ND	ND		ND	ND	ND
	02-Aug-89	ND	ND		ND	ND	ND
	03-Aug-89	ND	ND		ND	ND	ND
	06-Sep-89	ND	ND		ND	ND	ND
	07-Sep-89	ND	ND		ND	ND	ND
	04-Oct-89	ND	ND		ND	ND	ND
	02-Nov-89	ND	ND		ND	ND	ND
	05-Dec-89	ND	ND		ND	ND	ND
	03-Jan-90	ND	0.0006		ND	0.0017	ND
EW COMPOSITE							
	01-Feb-90	0.16	0.045		0.0009	0.38	0.64

NOTES:

LOD: Limit of Detection.
ND: Not detected at or above LOD.
NT: Not tested.
*: LOD Changed to 0.0002 on 01-May-89
**: LOD Changed to 0.05 on 01-May-89
@: Two values indicate results of duplicate analyses.

Table 6. Results of Organic Chemical Analyses of Ground-water Samples from Monitoring and System Wells

Purgeable Aromatics (EPA Method 8020)
Petroleum Hydrocarbons (EPA Method 8015)

WELL	DATE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH AS GASOLINE
LOD	(mg/l)	0.0005/0.0002 *		0.0005/0.0002 *		0.25/0.05**

LT: Less than the concentration indicated.
#: Free product observed in well.
Organic constituents reported in milligrams per liter.
Analyses performed by PACE Laboratories, Inc.

Table 7. Results of Organic Chemical Analyses of Soil Samples from Confirmation Borings

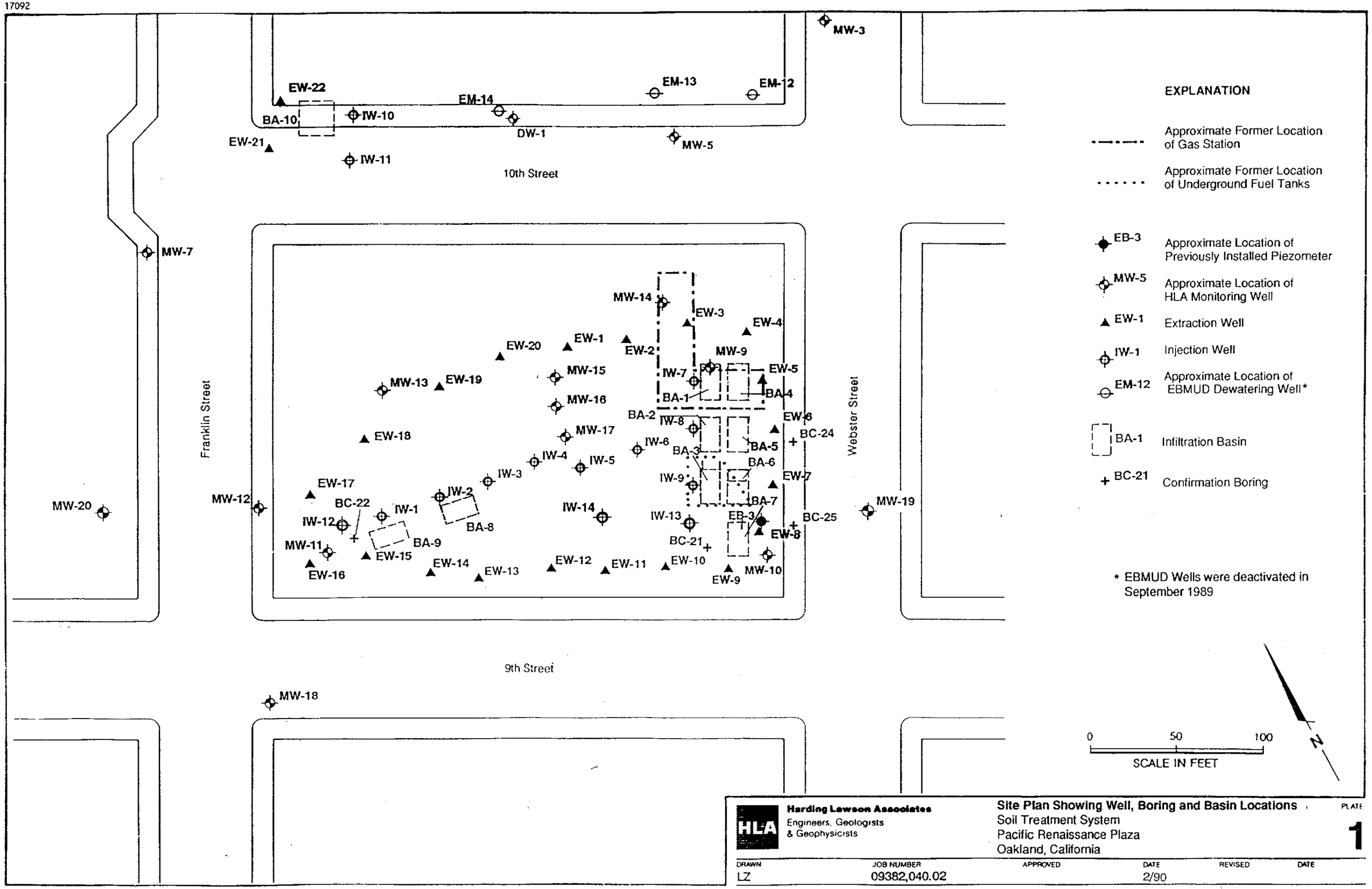
Harding Lawson Associates

Purgeable Aromatics (EPA Method 8020) Petroleum Hydrocarbons (EPA Method 8015)

LOCATION		DEPTH (ft)	OVA HEADSPACE	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES, TOTAL	TPH as GASOLINE
LOD		(mg/kg)		0.005	0.005	0.005	0.005	1.0
CONFIRMATION BORINGS								
BC-21	*	23-23.5	10	NT	NT	NT	NT	NT
1/22/90	*	24.5-25	>1000	NT	NT	NT	NT	NT
		25.5-26	120	0.22	0.65	0.11	3.1	26
	*	26-26.5	120	NT	NT	NT	NT	NT
	*	27.5-28		NT	NT	NT	NT	NT
		Composite (23-28 feet)		0.18	0.014	0.35	5.1	47
BC-22	*	23-23.5	9	NT	NT	NT	NT	NT
1/22/90	*	24.5-25	700	NT	NT	NT	NT	NT
		27-27.5	>1000	33	340	58	510	3900
	*	27.5-28	>1000	NT	NT	NT	NT	NT
	*	28.5-29		NT	NT	NT	NT	NT
		Composite (23-29 feet)		LT 0.50	LT 0.50	13	140	910
BC-24	*	23-23.5	17	NT	NT	NT	NT	NT
1/23/90	*	24-24.5	20	NT	NT	NT	NT	NT
		25.5-26	100	0.015	0.018	ND	0.055	1.5
	*	26-26.5	100	NT	NT	NT	NT	NT
	*	27.5-28	100	NT	NT	NT	NT	NT
		Composite (23-28 feet)		0.028	0.031	LT 0.025	0.24	30
BC-25	*	23-23.5	15	NT	NT	NT	NT	NT
1/23/90	*	24-24.5	>1000	NT	NT	NT	NT	NT
		25.5-26	700	LT 0.025	0.82	0.84	6.0	42
	*	26-26.5	700	NT	NT	NT	NT	NT
	*	27.5-28	900	NT	NT	NT	NT	NT
		Composite (23-28 feet)		0.056	0.42	0.41	3.0	24

NOTES - LOD: Limit of Detection unless otherwise noted
ND: Not detected at or above limit of detection (LOD)
NT: Not tested
LT: Not detected at or above concentration shown
*: Sample used in composite sample
OVA Headspace in parts per million (ppm)
Organic constituents reported in milligrams per kilogram (mg/kg)
Laboratory analyses performed by PACE Laboratories.

17092



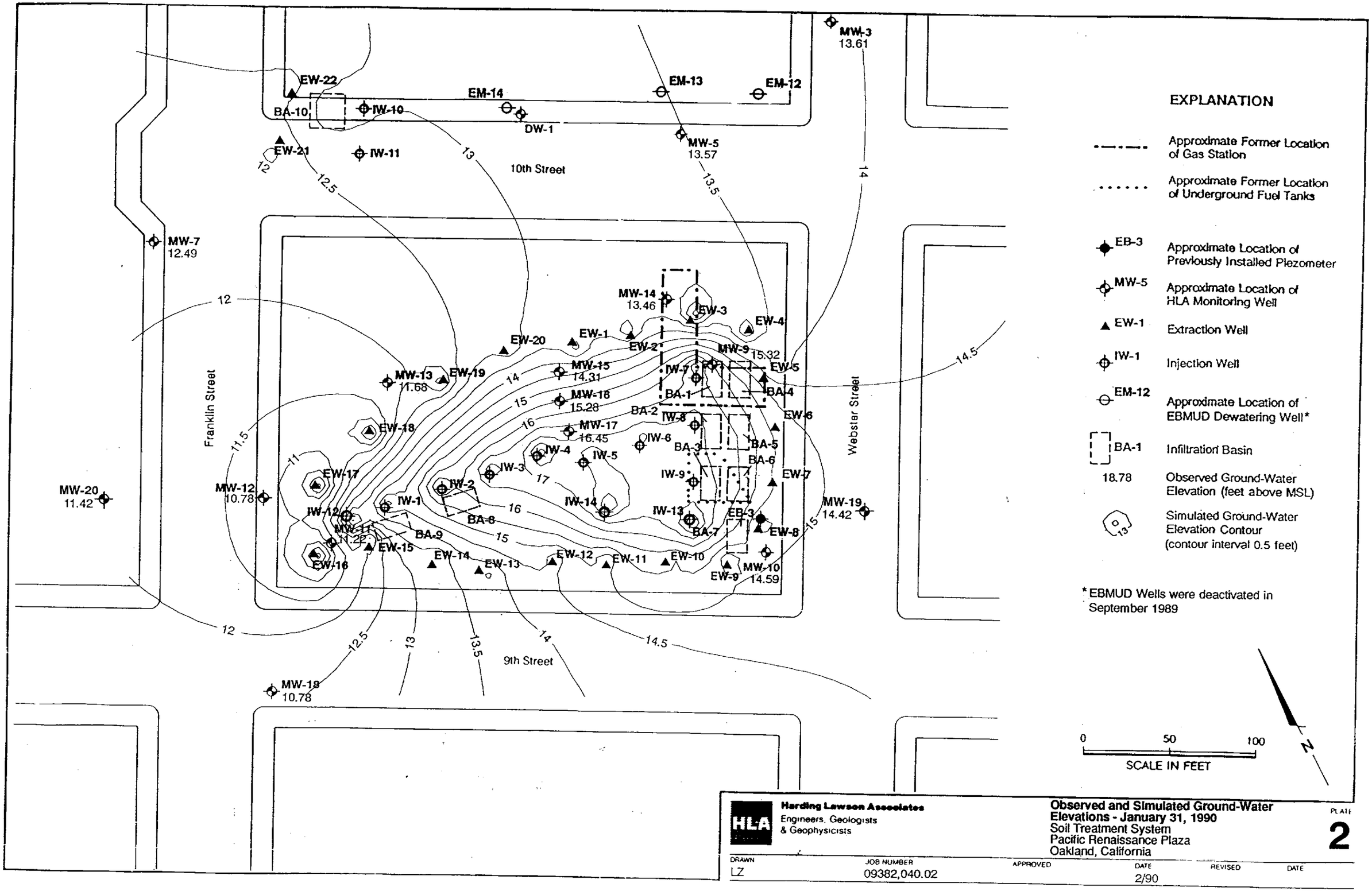
Harding Lawson Associates
Engineers, Geologists & Geophysicists

Site Plan Showing Well, Boring and Basin Locations
Soil Treatment System
Pacific Renaissance Plaza
Oakland, California

PLATE **1**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
LZ	09382,040.02		2/90		

17093

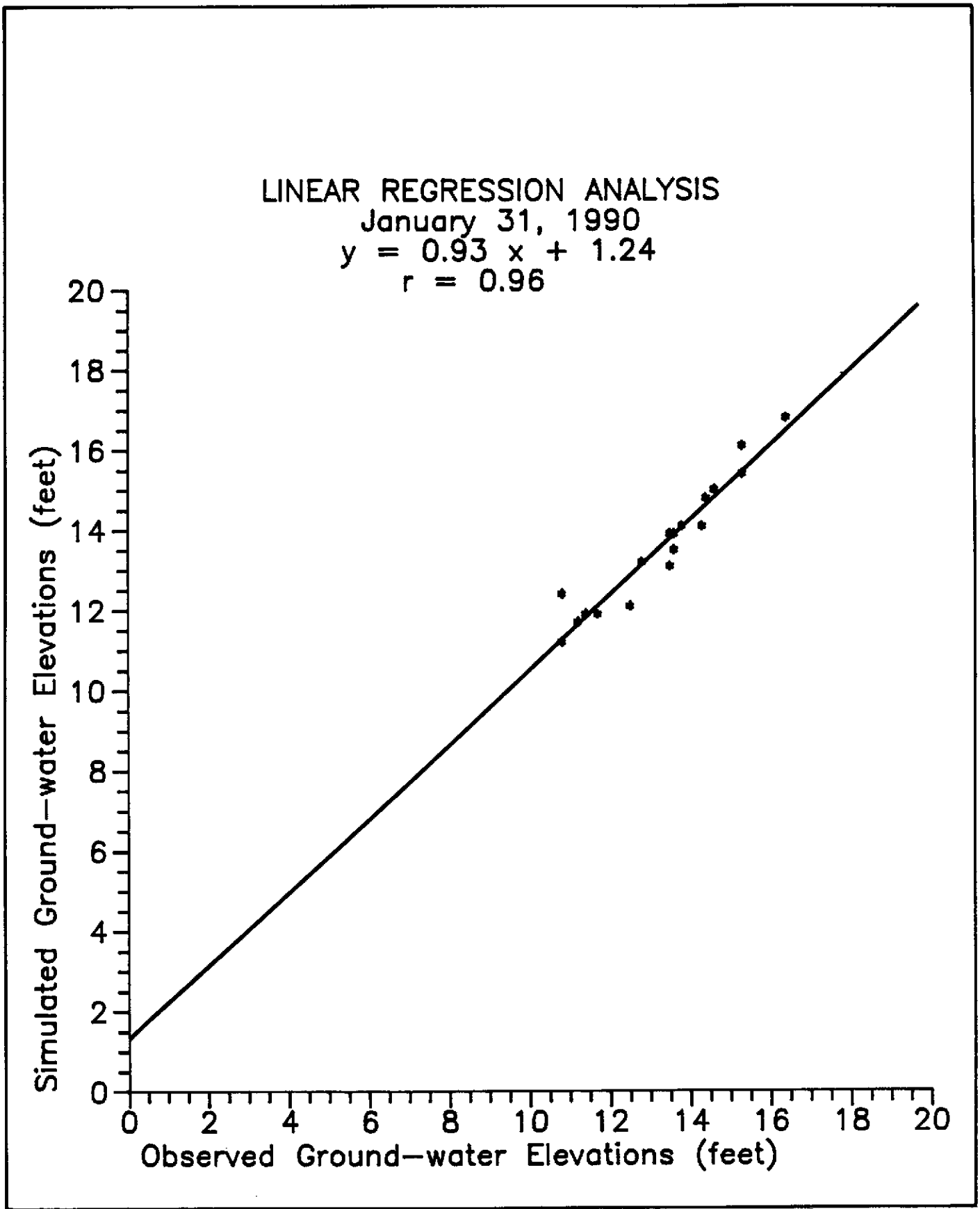


Harding Lawson Associates
Engineers, Geologists & Geophysicists

Observed and Simulated Ground-Water Elevations - January 31, 1990
Soil Treatment System
Pacific Renaissance Plaza
Oakland, California

PLATE **2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
LZ	09382,040.02		2/90		



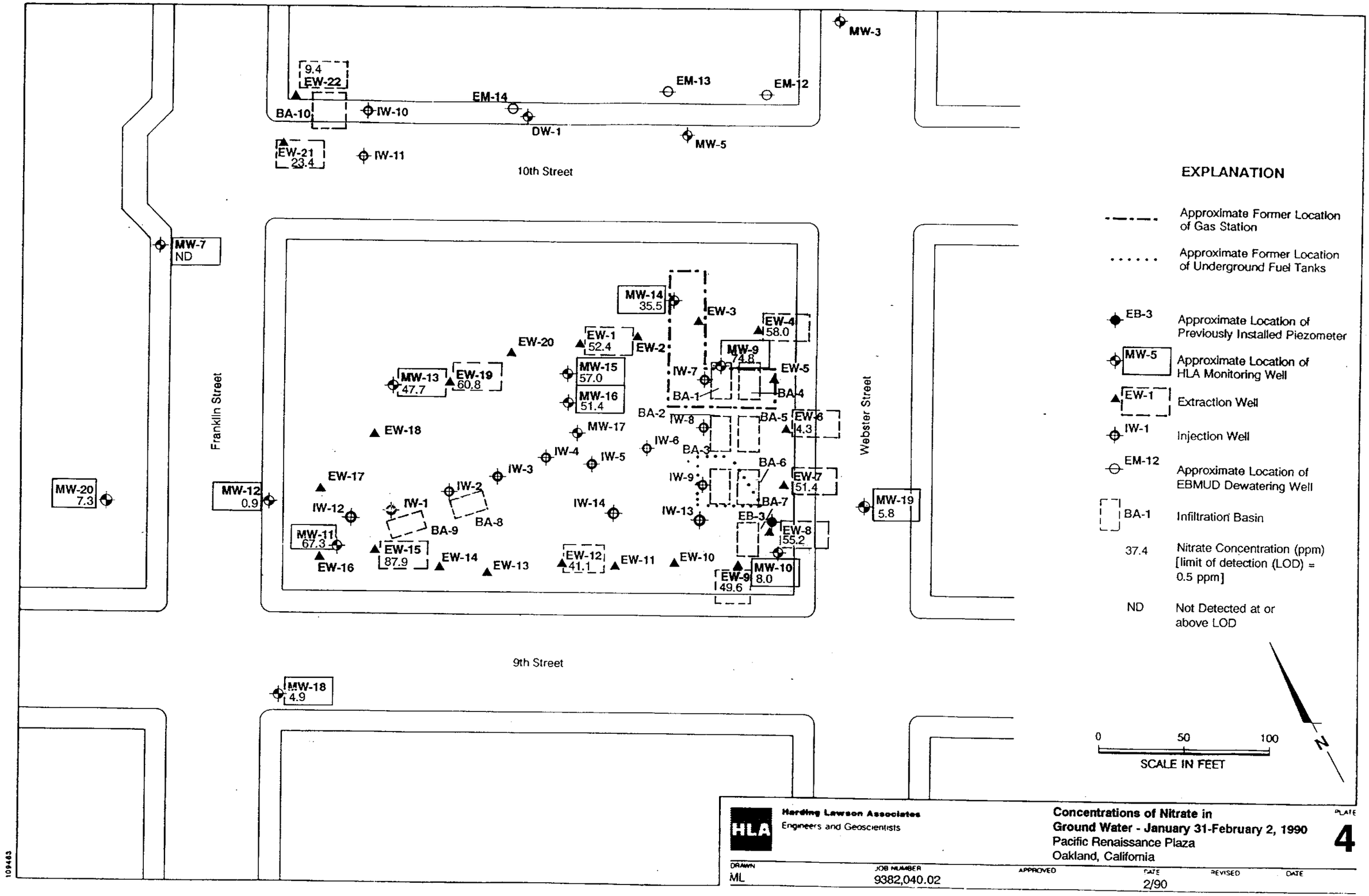
Harding Lawson Associates
Engineering and Environmental Services

Linear Regression of Observed Versus Simulated Ground-Water Elevations - January 31, 1990
Soil Treatment System
Pacific Renaissance Plaza
Oakland, California

PLATE **3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	9382,040.02		2/90	

17094



109463

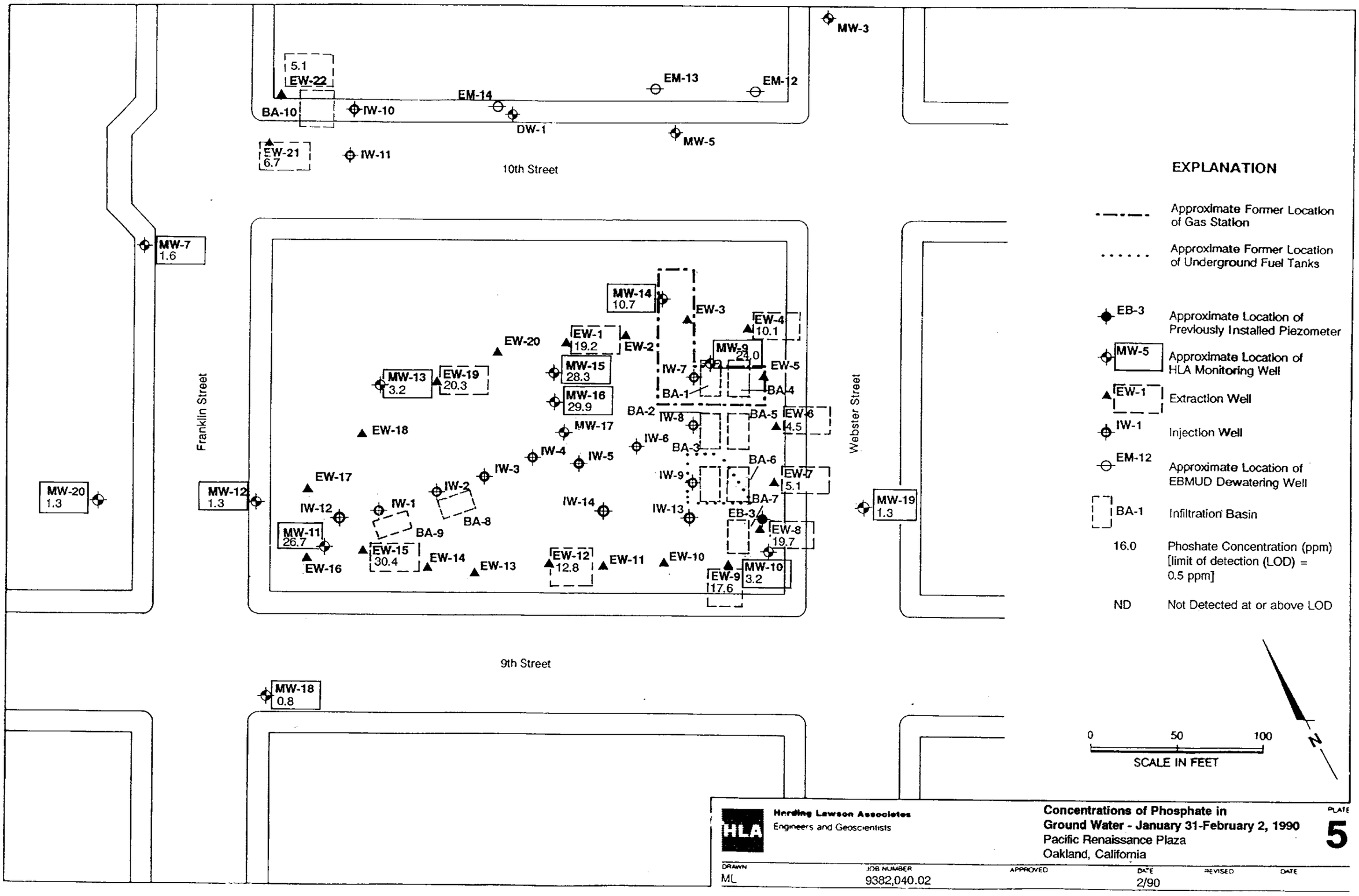
HLA Harding Lawson Associates
Engineers and Geoscientists

Concentrations of Nitrate in Ground Water - January 31-February 2, 1990
Pacific Renaissance Plaza
Oakland, California

PLATE **4**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ML	9382,040.02		2/90		

17095



HLA

Harding Lawson Associates
Engineers and Geoscientists

Concentrations of Phosphate in Ground Water - January 31-February 2, 1990
Pacific Renaissance Plaza
Oakland, California

PLATE **5**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ML	9382,040.02		2/90		

108483

17096

MW-3

43
EW-22

BA-10

IW-10

EM-14

EM-13

EM-12

DW-1

MW-5

EW-21
3.6

IW-11

10th Street

MW-7
ND

Franklin Street

MW-14
0.42

EW-3

EW-4
1.6

EW-20

EW-1
7.6

EW-2

MW-9
1.0

EW-5

MW-13
0.81

EW-19
2.1

MW-15
3.7

IW-7

BA-4

MW-16
7.1

BA-1

BA-2

IW-8

BA-5

EW-6
120

MW-17
0.30

EW-18

IW-6

BA-3

IW-4

IW-5

IW-3

BA-6

EW-17

IW-9

EW-7
38

MW-20
ND

MW-12
ND/ND

IW-2

IW-1

BA-7

IW-12

IW-14

IW-13

EB-3

BA-8

BA-9

MW-11
1.7

EW-8
15

EW-15
16

EW-14

EW-12
17

EW-11

EW-10

EW-16

EW-13

EW-9
14

MW-10
25

MW-19
1.9

Webster Street

9th Street

MW-18
ND

EXPLANATION

- Approximate Former Location of Gas Station
- Approximate Former Location of Underground Fuel Tanks
- EB-3 — Approximate Location of Previously Installed Piezometer
- MW-5 — Approximate Location of HLA Monitoring Well
- EW-1 — Extraction Well
- IW-1 — Injection Well
- EM-12 — Approximate Location of EBMUD Dewatering Well
- 12 — Petroleum Hydrocarbon Concentration (mg/l) as Gasoline [limit of detection (LOD) = 0.05 mg/l] Two Values Indicate Duplicate Samples
- ND — Not Detected at or above LOD
- BA-1 — Infiltration Basin

0 50 100
SCALE IN FEET

N

109463

HLA Harding Lawson Associates
Engineers and Geoscientists

Concentrations of Petroleum Hydrocarbons in Ground Water - January 31-February 2, 1990
Pacific Renaissance Plaza
Oakland, California

PLATE **6**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
ML	9382,040.02		2/90		

Appendix A

LABORATORY ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES

pace laboratories, inc

REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas
Irvine, California
Asheboro, North Carolina

February 28, 1990

Mr. David Leland
Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

RE: PACE Project No. 400131.501A
PRP HLA#09382,039.02

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received January 31, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephen Nackord

Stephen F. Nackord
Director, Sampling and Analytical Services

Enclosures

pace laboratories, inc

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas
Irvine, California
Asheboro, North Carolina

REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

Attn: Mr. David Leland

February 28, 1990
PACE Project
Number: 400131501A
PACE WP Number: WPPLAB 1227

PRP HLA#09382,039.02

Parameter	Units	MDL	MW-14	MW-9	MW-10
PACE Sample Number:			712390	712400	712410
Date Collected:			01/31/90	01/31/90	01/31/90
Date Received:			01/31/90	01/31/90	01/31/90
ORGANIC ANALYSIS			90013101	90013102	90013103
PURGEABLE FUELS AND AROMATICS					
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	0.42	1.0	25
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-	-
Benzene	mg/L	0.0002	0.094	0.0048	8.1
Ethylbenzene	mg/L	0.0002	0.0061	LT 0.0010	0.51
Toluene	mg/L	0.0002	0.047	0.0026	1.2
Xylenes, Total	mg/L	0.0002	0.10	0.12	1.6

MDL Method Detection Limit
LT Less than.

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REPORT OF LABORATORY ANALYSIS

Mr. David Leland
Page 2

February 28, 1990
PACE Project Number: 400131501A

PRP HLA#09382,039.02

Parameter	Units	MDL	MW-11	MW-13	MW-15
PACE Sample Number:			712420	712430	712440
Date Collected:			01/31/90	01/31/90	01/31/90
Date Received:			01/31/90	01/31/90	01/31/90
			90013104	90013105	90013106
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS					
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	1.7	0.81	3.7
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-	-
Benzene	mg/L	0.0002	0.072	0.29	0.45
Ethylbenzene	mg/L	0.0002	0.0052	0.037	0.080
Toluene	mg/L	0.0002	0.18	0.029	0.65
Xylenes, Total	mg/L	0.0002	0.31	0.062	0.17

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

February 28, 1990
PACE Project Number: 400131501A

PRP HLA#09382,039.02

Parameter	Units	MDL	MW-16	MW-17
PACE Sample Number:			712450	712460
Date Collected:			01/31/90	01/31/90
Date Received:			01/31/90	01/31/90
			90013107	90013108
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Chlorine, Total Residual	mg/L	0.05	-	-
Oxygen, Dissolved	mg/L	0.1	-	-
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	7.1	0.30
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-
Benzene	mg/L	0.0002	1.2	0.13
Ethylbenzene	mg/L	0.0002	0.21	0.0014
Toluene	mg/L	0.0002	2.0	0.013
Xylenes, Total	mg/L	0.0002	1.5	0.050
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dichlorodifluoromethane	ug/L	2.0	-	-
Chloromethane	ug/L	2.0	-	-
Vinyl Chloride	ug/L	2.0	-	-
Bromomethane	ug/L	2.0	-	-
Chloroethane	ug/L	2.0	-	-
Trichlorofluoromethane (Freon 11)	ug/L	2.0	-	-
1,1-Dichloroethene	ug/L	0.5	-	-
Methylene Chloride	ug/L	0.5	-	-
trans-1,2-Dichloroethene	ug/L	0.5	-	-
1,1-Dichloroethane	ug/L	0.5	-	-
Chloroform	ug/L	0.5	-	-
1,1,1-Trichloroethane (TCA)	ug/L	0.5	-	-
Carbon Tetrachloride	ug/L	0.5	-	-
1,2-Dichloroethane (EDC)	ug/L	0.5	-	-
Trichloroethene (TCE)	ug/L	0.5	-	-

MDL Method Detection Limit
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

February 28, 1990
PACE Project Number: 400131501A

PRP HLA#09382,039.02

Parameter	Units	MDL	MW-16	MW-17
PACE Sample Number:			712450	712460
Date Collected:			01/31/90	01/31/90
Date Received:			01/31/90	01/31/90
ORGANIC ANALYSIS			90013107	90013108
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
1,2-Dichloropropane	ug/L	0.5	-	-
Bromodichloromethane	ug/L	0.5	-	-
2-Chloroethylvinyl ether	ug/L	0.5	-	-
trans-1,3-Dichloropropene	ug/L	0.5	-	-
cis-1,3-Dichloropropene	ug/L	0.5	-	-
1,1,2-Trichloroethane	ug/L	0.5	-	-
Tetrachloroethene	ug/L	0.5	-	-
Dibromochloromethane	ug/L	0.5	-	-
Chlorobenzene	ug/L	0.5	-	-
Bromoform	ug/L	0.5	-	-
1,1,2,2-Tetrachloroethane	ug/L	0.5	-	-
1,3-Dichlorobenzene	ug/L	0.5	-	-
1,4-Dichlorobenzene	ug/L	0.5	-	-
1,2-Dichlorobenzene	ug/L	0.5	-	-
Bromochloromethane (Surrogate Recovery)			-	-
1,4-Dichlorobutane (Surrogate Recovery)			-	-
1,2-DIBROMOETHANE (EDB) EPA METHOD 504				
1,2-Dibromoethane	ug/L	0.01	-	-
Date Extracted			-	-

MDL Method Detection Limit
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

February 21, 1990
PACE Project
Number: 400201502

Attn: Mr. David Leland

PRP; 09382.039.02

Parameter	Units	MDL	MW-19	MW-18	MW-20
PACE Sample Number:			712690	712700	712710
Date Collected:			02/01/90	02/01/90	02/01/90
Date Received:			02/01/90	02/01/90	02/01/90
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS					
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	1.9	ND	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-	-
Benzene	mg/L	0.0002	1.1	ND	ND
Ethylbenzene	mg/L	0.0002	LT 0.0040	ND	ND
Toluene	mg/L	0.0002	0.022	ND	0.0014
Xylenes, Total	mg/L	0.0002	0.032	ND	0.0005

MDL Method Detection Limit
ND Not detected at or above the MDL.
LT Less than.

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REPORT OF LABORATORY ANALYSIS

February 21, 1990
PACE Project Number: 400201502

PRP; 09382.039.02

Parameter	Units	MDL	MW-12 712720 02/01/90 02/01/90 90020104	MW-7 712730 02/01/90 02/01/90 90020105	MW-12 712740 02/01/90 02/01/90 90020106
PACE Sample Number:					
Date Collected:					
Date Received:					
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS					
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	ND	ND	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-	-
Benzene	mg/L	0.0002	0.0018	ND	0.0024
Ethylbenzene	mg/L	0.0002	ND	ND	ND
Toluene	mg/L	0.0002	0.0010	0.0009	0.0004
Xylenes, Total	mg/L	0.0002	0.0005	0.0003	0.0004

MDL Method Detection Limit
ND Not detected at or above the MDL.

Harding Lawson Associates
200 Rush Landing Road
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415/892-0821
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CHAIN OF CUSTODY FORM

Lab: PACE

Samplers: Bill Keller Tim Anderson

Job Number: 09382.039.02

Name/Location: PRP

Project Manager: Dave Leland

Recorder: (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCl	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 601/8010	EPA 602/8020 BTXE	EPA 624/8240	EPA 625/8270	Priority Pllmt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. 8015
2 3	X							2	9 1	0 2	0 1 0 1	9 1	0 2	0 1	0 7 4 3	MW-19		X					X
2 3	X							2	9 1	0 2	0 1 0 2	9 1	0 2	0 1	0 8 2 5	MW-18		X					X
2 3	X							2	9 1	0 2	0 1 0 3	9 1	0 2	0 1	0 9 4 5	MW-20		X					X
2 3	X							2	9 1	0 2	0 1 0 4	9 1	0 2	0 1	1 0 2 7	MW-12		X					X
2 3	X							2	9 1	0 2	0 1 0 5	9 1	0 2	0 1	1 1 3 0	MW-7		X					X
2 3	X							2	9 1	0 2	0 1 0 6	9 1	0 2	0 1	1 1 4 8	Duplicate MW-12		X					X
2 3	X							2	9 1	0 2	0 1 0 7	9 1	0 2	0 1	1 3 5 0	EW-1		X					X
2 3	X							2	9 1	0 2	0 1 0 8	9 1	0 2	0 1	1 4 0 9	EW-4		X					X
2 3	X							2	9 1	0 2	0 1 0 9	9 1	0 2	0 1	1 4 2 8	EW-6		X					X
2 3	X							2	9 1	0 2	0 1 1 0	9 1	0 2	0 1	1 4 4 5	EW-7		X					X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

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RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) DATE/TIME	RECEIVED FOR LAB BY: (Signature) PACE	DATE/TIME 2/1 17:15

METHOD OF SHIPMENT: Cooler w/Blue Ice

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CHAIN OF CUSTODY FORM

Lab: PACE

Samplers: Bill Fella, Jim Anderson

Job Number: 09372.036.02

Name/Location: PUP

Project Manager: Dave Leland

Recorder: _____ (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	HCl	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 601/8010 + BTXE	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. 8015
23	X							2	9	00	2	01	1	1	1	7	0	2	01	1	5	1	1	EW 8		X					X
23	X							2	9	00	2	01	1	1	2	9	0	2	01	1	5	2	5	EW COMPOSIT		X					X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

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RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
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/TIME 2/1 17:15

METHOD OF SHIPMENT: Coolers w/ Blue Ice

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February 20, 1990

Mr. David Leland
Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

RE: PACE Project No. 400202.501
PRP (HLA#09382039.02

Dear Mr. Leland:

Enclosed is the report of laboratory analyses for samples received February 02, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephen Nackord

Stephen F. Nackord
Director, Sampling and Analytical Services

Enclosures

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REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94945

February 20, 1990
PACE Project
Number: 400202501

Attn: Mr. David Leland

PRP (HLA#09382039.02

Parameter	Units	MDL	EW-9	EW-12	EW-15
PACE Sample Number:			713060	713070	713080
Date Collected:			02/02/90	02/02/90	02/02/90
Date Received:			02/02/90	02/02/90	02/02/90
			900202	900202	900202
			01	02	03
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS					
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	14	17	16
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-	-
Benzene	mg/L	0.0002	2.0	4.8	2.7
Ethylbenzene	mg/L	0.0002	0.17	3.9	0.19
Toluene	mg/L	0.0002	2.9	6.6	3.9
Xylenes, Total	mg/L	0.0002	2.4	4.5	2.4

MDL Method Detection Limit

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REPORT OF LABORATORY ANALYSIS

Mr. David Leland
Page 2

February 20, 1990
PACE Project Number: 400202501

PRP (HLA#09382039.02

			EW-19	EW-21	EW-22
PACE Sample Number:			713090	713100	713110
Date Collected:			02/02/90	02/02/90	02/02/90
Date Received:			02/02/90	02/02/90	02/02/90
			900202	900202	900202
Parameter	Units	MDL	04	05	06
ORGANIC ANALYSIS					
PURGEABLE FUELS AND AROMATICS					
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	-	-
Total Purgeable Fuels, as Gasoline	mg/L	0.05	2.1	3.6	43
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	-	-
Benzene	mg/L	0.0002	0.56	0.0053	2.1
Ethylbenzene	mg/L	0.0002	0.044	0.13	1.1
Toluene	mg/L	0.0002	0.47	0.33	17
Xylenes, Total	mg/L	0.0002	0.64	0.84	13

MDL Method Detection Limit

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Douglas E. Oram, Ph.D.
Organic Chemistry Manager

Appendix B

LABORATORY ANALYTICAL RESULTS FOR SOIL SAMPLES

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February 01, 1990

Mr. Peter Mote
Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94948

RE: PACE Project No. 400123.505
PRP Oakland

Dear Mr. Mote:

Enclosed is the report of laboratory analyses for samples received January 23, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephen Nackord

Stephen F. Nackord
Director, Sampling and Analytical Services

Enclosures

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REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94948

February 01, 1990
PACE Project
Number: 400123505

Attn: Mr. Peter Mote

PRP Oakland

			Boring	BC-24	BC-24	BC25
PACE Sample Number:				708240	708250	708260
Date Collected:				01/23/90	01/23/90	01/23/90
Date Received:				01/23/90	01/23/90	01/23/90
				Composite 903BC24-1+2+4+5	903BC243	903BC253
Parameter	Units		MDL	Depth (23-28)	25.5-26	25.5-26
ORGANIC ANALYSIS						
PURGEABLE FUELS AND AROMATICS						
TOTAL FUEL HYDROCARBONS, (LIGHT):				-	-	-
Purgeable Fuels, as Gasoline (EPA 8015)	mg/kg	wet	1.0	30	1.5	42
PURGEABLE AROMATICS (BTXE BY EPA 8020):				-	-	-
Benzene	mg/kg	wet	0.005	0.028	0.015	LT 0.025
Ethylbenzene	mg/kg	wet	0.005	LT 0.025	ND	0.84
Toluene	mg/kg	wet	0.005	0.031	0.018	0.82
Xylenes, Total	mg/kg	wet	0.005	0.24	0.055	6.0

MDL - Method Detection Limit
LT Less than.
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Mr. Peter Mote
Page 2

February 01, 1990
PACE Project Number: 400123505

PRP Oakland

			Boring BC-25
PACE Sample Number:			708310
Date Collected:			01/23/90
Date Received:			01/23/90
			Composite 903BC25-2+4+1+5
Parameter	Units	MDL	Depth (23-28)
ORGANIC ANALYSIS			
PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	mg/kg wet	1.0	24
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	mg/kg wet	0.005	0.056
Ethylbenzene	mg/kg wet	0.005	0.41
Toluene	mg/kg wet	0.005	0.42
Xylenes, Total	mg/kg wet	0.005	3.0

MDL Method Detection Limit

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Douglas E. Oram, Ph.D.
Organic Chemistry Manager

Harding Lawson Associates
200 Rush Landing Road
P.O. Box 6107
Novato, California 94948
415/892-0821
Telecopy: 415/892-1586

CHAIN OF CUSTODY FORM

Lab: PACE

Samplers: JEFFERY FENTON

Job Number: 09397.039.07

Name/Location: PRP OAKLAND

Project Manager: PETER MOTE

Recorder: _____ (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene+E	Total Petrol. Hydrocarb. GAS
SO			X		1			90	3	BC241	90	01	23	1013	23.0-23.5 COMPOSITE						X	X
SO			X		1			90	3	BC242	90	01	23	1026	24.5-25.0 COMPOSITE						X	X
SO			X		1			90	3	BC244	90	01	23	1040	26.0-26.5 COMPOSITE						X	X
SO			X		1			90	3	BC245	90	01	23	1045	27.5-28.0 COMPOSITE						X	X
SO			X		1			90	3	BC243	90	01	23	1035	25.5-26.0 DISCRETE						X	X
SO			X		1			90	3	BC253	90	01	23	1547	25.5-26.0 DISCRETE						X	X
SO			X		1			90	3	BC252	90	01	23	1534	24.5-25.0 COMPOSITE						X	X
SO			X		1			90	3	BC254	90	01	23	1553	26.0-26.5 COMPOSITE						X	X
SO			X		1			90	3	BC251	90	01	23	1523	23.0-23.5 COMPOSITE						X	X
SO			X		1			90	3	BC255	90	01	23	1555	27.5-28.0 COMPOSITE						X	X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						ANY QUESTIONS CALL DAVE KELAND OR JOHN SKALBECK AT HLA (415)892-0821
						SAD DAT

CHAIN OF CUSTODY RECORD

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METHOD OF SHIPMENT	PACE Lab.	

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REPORT OF LABORATORY ANALYSIS

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January 30, 1990

Mr. Peter Mote
Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94948

RE: PACE Project No. 400122.506
PRP Oakland

Dear Mr. Mote:

Enclosed is the report of laboratory analyses for samples received January 22, 1990.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephen Nackord

Stephen F. Nackord
Director, Sampling and Analytical Services

Enclosures

pace laboratories, inc.

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REPORT OF LABORATORY ANALYSIS

Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94948

January 30, 1990
PACE Project
Number: 400122506

Attn: Mr. Peter Mote

PRP Oakland

			Boring	BC-22	BC-22	BC-21
PACE Sample Number:				707920	707930	707940
Date Collected:				01/22/90	01/22/90	01/22/90
Date Received:				01/22/90	01/22/90	01/22/90
Parameter	Units	MDL		Composite 903BC22-1+2+4+5	903BC223	903BC213
ORGANIC ANALYSIS			Depth	(23-29)	27-27.5	25.5-26
PURGEABLE FUELS AND AROMATICS						
TOTAL FUEL HYDROCARBONS, (LIGHT):				-	-	-
Purgeable Fuels, as Gasoline (EPA 8015)	mg/kg wet	1.0		910	3900	26
PURGEABLE AROMATICS (BTXE BY EPA 8020):				-	-	-
Benzene	mg/kg wet	0.005		LT 0.50	33	0.22
Ethylbenzene	mg/kg wet	0.005		13	58	0.11
Toluene	mg/kg wet	0.005		LT 0.50	340	0.65
Xylenes, Total	mg/kg wet	0.005		140	510	3.1

MDL Method Detection Limit
LT Less than.

pace laboratories, inc.

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REPORT OF LABORATORY ANALYSIS

January 30, 1990
PACE Project Number: 400122506

PRP Oakland

			Boring BC-21
PACE Sample Number:			707990
Date Collected:			01/22/90
Date Received:			01/22/90
			Composite 903BC21-1+2+4+5
Parameter	Units	MDL	Depth (23-28)
ORGANIC ANALYSIS			
PURGEABLE FUELS AND AROMATICS			
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	mg/kg wet	1.0	47
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	mg/kg wet	0.005	0.18
Ethylbenzene	mg/kg wet	0.005	0.35
Toluene	mg/kg wet	0.005	0.014
Xylenes, Total	mg/kg wet	0.005	5.1

MDL Method Detection Limit

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Douglas E. Oram, Ph.D.
Organic Chemistry Manager

Harding Lawson Associates
200 Rush Landing Road
P.O. Box 6107
Novato, California 94948
415/892-0821
Telecopy: 415/892-1586

CHAIN OF CUSTODY FORM

Lab: PACE

Samplers: JEFF FENTON

Job Number: 09382.039.07

Name/Location: PRP OAKLAND

Project Manager: PETER MOTE

Recorder: [signature] (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene + E	Total Petrol. Hydrocarb. GAS
50		X			1			90	3BC	221	90	01	22	1028	F/23-23.5 COMPOSITE						X	X
50		X			1			90	3BC	222	90	01	22	1039	F/24-24.5 COMPOSITE						X	X
50		X			1			90	3BC	224	90	01	22	1135	F/27.5-28.0 COMPOSITE						X	X
50		X			1			90	3BC	225	90	01	22	1145	F/28.5-29.0 COMPOSITE						X	X
50		X			1			90	3BC	223	90	01	22	1130	F/27-27.5 DISCRETE						X	X
50		X			1			90	3BC	213	90	01	22	1345	25.5-26.0 DISCRETE						X	X
50		X			1			90	3BC	211	90	01	22	1320	23.0-23.5 COMPOSITE						X	X
50		X			1			90	3BC	212	90	01	22	1333	24.5-25.0 COMPOSITE						X	X
50		X			1			90	3BC	214	90	01	22	1350	26.0-26.5 COMPOSITE						X	X
50		X			1			90	3BC	215	90	01	22	1400	27.5-28.0 COMPOSITE						X	X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS
						ANY QUESTIONS CONTACT DAVE LELAND OR JOHN SKALBECK AT HLA (415) 892-0821
						DAT

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
[signature]		
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	[signature]	11/27/90 1415
METHOD OF SHIPMENT	PACE Lab.	

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DISTRIBUTION

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JANUARY 1990
SOIL TREATMENT SYSTEM
PACIFIC RENAISSANCE PLAZA
OAKLAND, CALIFORNIA
March 6, 1990

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QUALITY CONTROL REVIEWER

Tamara L. Williams

Tamara L. Williams
Geologist - 3954