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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

November 15, 1994 LF 3015.94-010

Mr. Barney Chan, Hazardous Materials Specialist
Alameda County Health Care Services Agency
Department of Environmental Health
Division of Hazardous Materials
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

Subject: Quarterly Ground-Water Monitoring Technical Report for Autumn Quarter 1994, 625 Hegenberger Road, Oakland, California

Dear Mr. Chan:

This ground-water monitoring technical report is submitted by Levine•Fricke, Inc. ("Levine•Fricke") on behalf of Diversified Investment and Management Corp., for the former fuel service station location at 625 Hegenberger Road, Oakland, California. This report includes the quarterly ground-water monitoring results for the autumn quarter, and the results of tidal influence measurements taken on August 18, 1994. Well sampling data are presented in Appendix A, and laboratory analysis certificates in Appendix B.

Quarterly Ground-Water Monitoring

Summary of Field Activities. Levine•Fricke measured the depth to ground water and collected water samples from all five existing wells on September 27, 1994. Well locations are shown in Figure 1. The sampling procedure for each monitoring well involved measuring the initial water level, purging stagnant water from the well to allow collection of more representative formation water, and collecting water samples.

Before sampling, depth to water and total well depths from the top of the well casings were measured, using an electric water-level meter. Wells were purged and ground-water samples were collected using a clean Teflon bailer fitted with a new nylon rope. Field parameters (temperature, pH, specific conductance, and turbidity) were measured during purging and sampling. After approximately 3 to 4 casing volumes had been removed and field parameters had stabilized, the wells were sampled. A bailer blank and a field duplicate were collected for monitoring well MW-12.

Ground-water samples were then slowly poured into laboratory-supplied bottles for analysis, labeled, and placed

1900 Powell Street, 12th Floor
Emeryville, California 94608
(510) 652-4500
Fax (510) 652-2246

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in an ice-chilled cooler for transportation to the analytical laboratory under standard chain-of-custody protocol. The ground-water samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020, for total petroleum hydrocarbons as gasoline (TPHg) using EPA Method 5030 GCFID, for TPH as diesel and oil (TPHd and TPHo) using EPA Method 3510, and for total lead using EPA Method 6010. The samples were analyzed by American Environmental Network Laboratories of Pleasant Hill, California (AEN; formerly Quanteq), a state-certified laboratory.

Ground water samples from all five wells were analyzed for BTEX, TPHg, TPHd, TPHo, and total lead. The bailer blank and field duplicate from well MW-12 were analyzed for BTEX and TPHg, as was a trip blank.

Field Results. Ground-water elevation data are summarized in Table 1 and shown in Figure 1. The ground-water elevation contours and the ground-water flow direction are shown in Figure 1. A summary of field parameters measured during purging and sampling is presented in Table 2.

Ground-water elevations were determined for all monitoring wells. Well casing elevations for monitoring wells MW-8, MW-10, MW-11, and MW-12 were taken from Subsurface Consultants boring logs for April 25, 1988 through July 16, 1990. The well casing elevation for monitoring well MW-16 was measured by Levine·Fricke personnel on August 18, 1994, by surveying the top of casing relative to monitoring wells MW-11 and MW-12. Ground-water levels ranged from -1.99 to -2.40 feet above mean sea level (msl). These ground-water elevations are lower than the June 1994 levels (-1.48 to -1.69 feet msl).

The general direction of the ground-water flow at the time of measurement was west to northwest. The ground-water hydraulic gradient was approximately 0.002 foot/foot (ft/ft) across the eastern portion of the Site. The gradient is slightly greater in the former underground storage tank (UST) and piping areas (0.003 ft/ft) and has the same orientation. The general direction and gradient are the same as those for June 1994 and December 1993. Previous measurements indicate that the ground-water flow was to the west in May 1993 (HartCrowser, letter to Barney Chan of Alameda County Department of Environmental Health, dated June 16, 1993, reporting ground-water sampling results).

Ground-Water Quality. A summary of ground-water quality data, including available historical data, is presented in Table 3. In general, there has been no significant increase in BTEX,

TPHg, or TPHd concentrations since the June 1994 monitoring event. In well MW-8, most hydrocarbon concentrations have decreased slightly, whereas concentrations in MW-11 appear to have increased slightly. BTEX and TPHg were detected in ground-water samples collected from monitoring wells MW-8 and MW-11. A low concentration of benzene (0.017 parts per million [ppm]) and TPHg (0.07 ppm) were detected in the ground water sampled from MW-16. Low concentrations of TPHd were detected in samples from all five wells. TPHo was not detected in any of the samples. A slight hydrocarbon sheen was observed on the ground-water sample collected from MW-8. More data are needed to judge whether these decreases or increases in concentrations represent a possible trend.

Total Lead. Total lead was not detected in any samples, and has not been [illegible] (since May 1993). Therefore, the ground water samples will no longer be analyzed for lead, in accordance with the requirements and comments outlined by the Alameda County of Environmental Health (ACDEH) in your letter to [illegible] Investment and Management Corp. dated September 30, [illegible].

Tidal Influence Measurements

To assess the effect, if any, of tidal fluctuations in San Francisco Bay on ground-water gradient and direction at the Site, Levine·Fricke personnel measured ground-water levels in wells MW-8, MW-10, MW-11, MW-12, and MW-16 on August 18, 1994. High tide that day at the Oakland Airport was 5.1 feet msl at 11:51 a.m., and low tide was 2.3 feet msl at 4:41 p.m. Measurements were made at approximately one-hour intervals from 9:30 a.m. to 3:45 p.m., and are presented in Tables 4 and 5.

The measurements show a net rise in ground-water levels in all wells, ranging from 0.02 feet (MW-12) to 0.05 feet (MW-8 and MW-16). It is not clear from these data that the changes are produced by tidal influence; there are other effects that could produce minor water level fluctuations of this type. In any case, the measured changes in ground-water elevations are not enough to produce significant changes in the flow direction.

Recommendations

Levine·Fricke recommends continuing quarterly ground-water monitoring. The next quarterly monitoring event is scheduled for December 1994.

Please do not hesitate to call either of the undersigned if you have any questions.

Sincerely,

John Sturman, P.E., R.G.
Senior Geotechnical Engineer

Susan M. Henry, Ph.D.
Senior Project Engineer

Enclosures

cc: James Graeb, Diversified Investment and Management Corp.

TABLE 1
GROUND-WATER ELEVATIONS
DIVERSIFIED INVESTMENT
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA

Well ID	Date	Well Elevation* (ft msl)	Depth to Water (ft)	Ground-water Elevation (ft msl)
MW-8	22-Dec-93	4.88	6.72	-1.84
MW-10	22-Dec-93	4.21	6.00	-1.79
MW-11	22-Dec-93	5.04	6.84	-1.80
MW-12	22-Dec-93	4.58	6.07	-1.49
MW-16	22-Dec-93	NA	7.48	NA
MW-8	30-Jun-94	4.88	6.55	-1.67
MW-10	30-Jun-94	4.21	5.79	-1.58
MW-11	30-Jun-94	5.04	6.73	-1.69
MW-12	30-Jun-94	4.58	6.06	-1.48
MW-16	30-Jun-94	NA	7.28	NA
MW-8	27-Sep-94	4.88	7.20	-2.32
MW-10	27-Sep-94	4.21	6.39	-2.18
MW-11	27-Sep-94	5.04	7.41	-2.37
MW-12	27-Sep-94	4.58	6.57	-1.99
MW-16	27-Sep-94	5.53	7.93	-2.40

NOTES:

ft feet
ft msl feet above mean sea level
NA not available

Well elevation measured from top of casing.

Well elevation levels for MW-8, MW-10, MW-11, MW-12 obtained from Subsurface Consultants boring logs dated April 25, 1988 through July 16, 1990. Well elevation level for MW-16 determined by Levine Fricke on August 18, 1994 . Top of well casing for MW-16 was surveyed relative to wells MW-11 and MW-12.

Data entered by DLM/8 Nov 94 Data proofed by SMH

TABLE 2
WATER-QUALITY PARAMETERS MEASURED DURING SAMPLING
DIVERSIFIED INVESTMENT
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA

Well Number	Date Sampled	Well Volume** (gallons)	Volume Withdrawn (gallons)	Stabilized Temperature (deg. C)	Stabilized pH	Stabilized Specific Conductance (umhos/cm)	Qualitative Turbidity
MW-8	22-Dec-93	1.5	4.5	19.4	6.95	2,440	Turbid*
MW-10	22-Dec-93	1.6	7.0	20.8	7.08	5,430	Moderately turbid
MW-11	22-Dec-93	1.5	4.5	20.2	6.94	3,750	Turbid
MW-12	22-Dec-93	1.6	5.3	20.3	6.87	2,880	Moderately turbid
MW-16	22-Dec-93	1.1	4.5	20.5	6.88	6,550	Turbid
MW-8	30-Jun-94	1.5	8.0	21.0	6.82	2,210	Turbid*
MW-10	30-Jun-94	1.6	6.0	21.0	6.91	6,620	Turbid
MW-11	30-Jun-94	1.4	6.0	20.2	6.86	2,040	Turbid
MW-12	30-Jun-94	1.6	6.0	20.6	6.78	2,880	Moderately turbid
MW-16	30-Jun-94	1.1	4.5	21.8	6.80	6,200	Turbid
MW-8	27-Sep-94	1.4	4.5	21.6	7.11	4,300	Turbid*
MW-10	27-Sep-94	1.5	6.0	22.6	7.19	6,960	Turbid
MW-11	27-Sep-94	1.3	3.0	21.0	7.05	2,470	Turbid
MW-12	27-Sep-94	1.5	6.0	22.5	6.92	3,080	Turbid
MW-16	27-Sep-94	1.0	3.0	22.6	7.02	5,710	Turbid

NOTES:

* A slight hydrocarbon sheen was observed.
** At time of monitoring.

Data entered by DLM/8 Nov 94 Data proofed by SMH

TABLE 3
HISTORICAL WATER QUALITY
DIVERSIFIED INVESTMENT
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA
(concentrations reported in milligrams per li[redacted])

Sample ID	Date Sampled	Consultant/ Lab		Benzene	Toluene	Ethyl-benzene	Xylenes	TPHg	TPHd	TPHo	Total Lead
MW-8	(1)	SUB	(2)	3.7	BDL	0.29	0.69	NA	NA	NA	BDL
	28-May-93	HC/SUP		6.4	0.028	0.16	0.036	19	1	NA	(3)
	22-Dec-93	LF/AEN	(4)	16	5.9993 (5)	0.65	2.7	56	0.3	<0.2	<0.04
	30-Jun-94	LF/AEN	(4)	11	4.8	2.2	8.2	41	<0.05	0.5	<0.04
	27-Sep-94	LF/AEN		[redacted]	0.26	1.6	5.2	[redacted]	0.62	<0.2	<0.04
MW-10	(1)	SUB		0.0017	BDL	BDL	BDL	NA	NA	NA	BDL
	28-May-93	HC/SUP		<0.0003	<0.0003	<0.0003	<0.0009	<0.05	0.054	NA	(3)
	22-Dec-93	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	0.58	<0.2	<0.04
	30-Jun-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	<0.05	0.6	<0.04
	27-Sep-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	0.61	<0.2	<0.04
MW-11	(1)	SUB	(6)	0.053	BDL	BDL	BDL	NA	NA	NA	0.21
	28-May-93	HC/SUP		0.45	0.0017	0.0015	0.0021	1.2	<0.05	NA	(3)
	22-Dec-93	LF/AEN		4.5	0.0383 (5)	0.012	0.043	9.2	0.53	<0.2	<0.04
	30-Jun-94	LF/AEN		1.5	0.013	0.69	1.2	8.8	<0.05	1.1	<0.04
duplicate	30-Jun-94	LF/AEN		1.7	0.014	0.73	1.3	9.7	NA	NA	NA
	27-Sep-94	LF/AEN		[redacted]	0.026	0.87	0.59	[redacted]	0.91	<0.2	<0.04
MW-12	(1)	SUB		BDL	BDL	BDL	BDL	NA	NA	NA	BDL
	28-May-93	HC/SUP		<0.0003	<0.0003	<0.0003	<0.0009	<0.05	<0.05	NA	(3)
	22-Dec-93	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	0.05	0.3	<0.2	<0.04
	30-Jun-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	<0.05	0.4	<0.04
	27-Sep-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	0.4	<0.2	<0.04
duplicate	27-Sep-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	NA	NA	NA
MW-16	(1)	SUB	(7)	BDL	BDL	BDL	BDL	NA	NA	NA	BDL
	28-May-93	HC/SUP		0.0028	<0.0003	0.0007	<0.0009	<0.05	<0.05	NA	(3)
	22-Dec-93	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	2.2	0.52	<0.2	<0.04
	30-Jun-94	LF/AEN		0.008	<0.0005	<0.0005	<0.002	<0.05	<0.05	0.9	<0.04
	27-Sep-94	LF/AEN		0.017	<0.0005	<0.0005	<0.002	0.07	0.59	<0.2	<0.04
BLANKS											
Trip Blank	28-May-93	HC/SUP		<0.0003	<0.0003	<0.0003	<0.0009	<0.05	NA	NA	BDL
MW-12-BB	22-Dec-93	LF/AEN		<0.0005	0.0007	<0.0005	<0.002	<0.05	NA	NA	(3)
MW-16-BB	22-Dec-93	LF/AEN		NA	NA	NA	NA	NA	NA	NA	<0.04
MW-12-BB	30-Jun-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	NA	NA	<0.04
MW-12-BB	27-Sep-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	NA	NA	NA
Trip Blank	27-Sep-94	LF/AEN		<0.0005	<0.0005	<0.0005	<0.002	<0.05	NA	NA	NA

TABLE 3
HISTORICAL WATER QUALITY
DIVERSIFIED INVESTMENT
625 HEGENBERGER ROAD, OAKLAND, CALIFORNIA
(concentrations reported in milligrams per liter [mg/l])

Sample ID	Date Sampled	Consultant/ Lab	Benzene	Toluene	Ethyl-benzene	Xylenes	TPHg	TPHd	TPHo	Total Lead

NOTES:

BDL below detection limit; detection limit undocumented
NA not analyzed
TPHd total petroleum hydrocarbons as diesel
TPHg total petroleum hydrocarbons as gasoline
TPHo total petroleum hydrocarbons as oil

AEN American Environmental Network, Pleasant Hill, California
HC HartCrowser, San Francisco, California
LF Levine-Fricke, Emeryville, California
SUB Subsurface Consultants, Oakland, California
SUP Superior Analytical Laboratories, Martinez, California

(1) Date of ground-water sampling unavailable. Ground-water monitoring results accompanied Subsurface Consultants well development and boring logs dated March 1990 through June 1990.
(2) 18 mg/l total volatile hydrocarbons also detected.
(3) All May 1993 samples also analyzed for total organic lead (DHS Method). The compound was not detected above the detection limit of 4 mg/l.
(4) A slight hydrocarbon sheen was observed on the surface of the well water.
(5) Toluene detections for 22-Dec-93 were qualified using 0.0007 mg/l as a baseline. The bailer blank (MW-12-BB) contained toluene at 0.0007 mg/l.
(6) 0.24 mg/l total volatile hydrocarbons also detected.
(7) 0.38 mg/l total volatile hydrocarbons also detected.

All samples collected by Subsurface Consultants were also analyzed for total lead and organic lead. Both compounds were below detection limits (detection limits unavailable), except as noted.

Data entered by DLM/8 Nov 94 Data proofed by SMH

TABLE 4
TIDAL INFLUENCE MEASUREMENTS
DIVERSIFIED INVESTMENTS

	DEPTH TO WATER (feet) AUGUST 18, 1994				
Time	MW-8	MW-10	MW-11	MW-12	MW-16
09:32				6.46	
09:35			7.29		
09:39	7.1				
09:48					7.84
09:53		6.31			
10:37					7.84
10:40				6.47	
10:41			7.3		
10:42		6.31			
10:44	7.1				
12:09					7.81
12:12				6.45	
12:13			7.28		
12:14	7.08				
12:15		6.29			
13:17					7.81
13:19			7.27		
13:20	7.06				
13:21		6.29			
13:23				6.45	
15:09					7.8
15:11			7.26		
15:12				6.44	
15:14		6.28			
15:15	7.06				
15:47					7.79
15:48			7.26		
15:50				6.44	
15:51		6.28			
15:52	7.05				

NOTES:

At Oakland Airport, high tide (5.1 feet) was at 11:51 and low tide (2.3 feet) was at 16:41 (1994 Boater's Friend Tide and Current Tables, San Francisco Bay & Delta, The Tide Book Company, San Francisco, California).

Data entered by MEK/22 Aug 94 Data proofed by SMH

TABLE 5
NET CHANGE IN GROUND-WATER ELEVATION* (feet)
AUGUST 18, 1994
DIVERSIFIED INVESTMENTS

ELASPED TIME (hours)	MW-8	MW-10	MW-11	MW-12	MW-16
0.0	0.00	0.00	0.00	0.00	0.00
1.1	0.00	0.00	-0.01	-0.01	0.00
2.6	0.02	0.02	0.01	0.01	0.03
3.2	0.04	0.02	0.02	0.01	0.03
5.6	0.04	0.03	0.03	0.02	0.04
6.2	0.05	0.03	0.03	0.02	0.05

NOTES:

* Indicates the net change in water level in each well, based on an initial measurement and corresponding time (9:30 a.m.) as datum. Subsequent measurements were conducted every hour over a six-hour period (until 3:45 p.m.) and the difference in elevation relative to the data was calculated.

Data entered MEK/22 Aug 94 Data proofed by SMH

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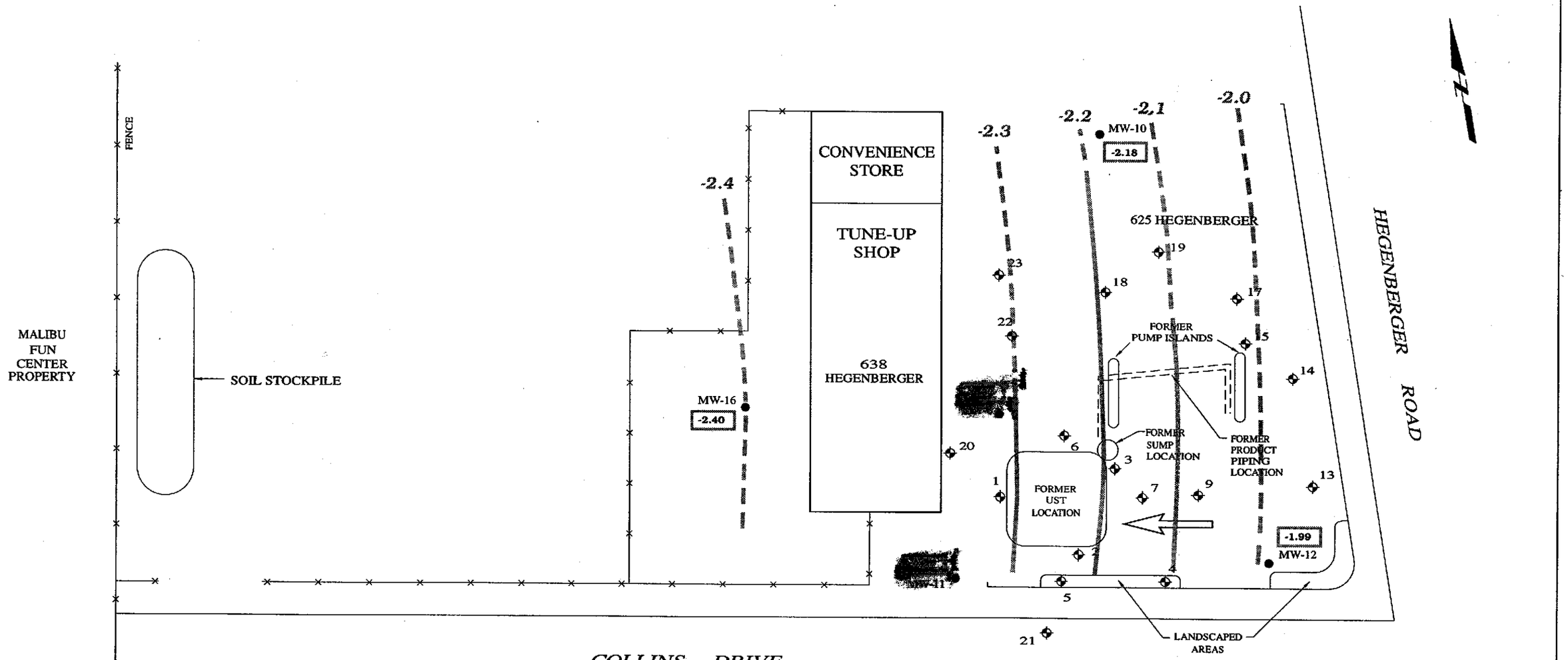

EXPLANATION

- Approximate soil boring location installed 1988 and 1990 by Subsurface Consultants
- Approximate monitoring well location installed 1990 by Subsurface Consultants
- -1.99 — Ground-water elevation (feet, mean sea level)
- -2.0 — Ground-water elevation contour (feet, mean sea level)
- NM — Not measured
- Estimated ground-water flow direction

0 20 40 FEET

Approximate Scale: 1" = 40'

Base Map: Subsurface Consultants, May 9, 1990

Figure 1 :

GROUND-WATER ELEVATIONS AND GRADIENT SEPTEMBER 27, 1994

Project No. 3015

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

3015B001.SMH:DAT 081294

APPENDIX A

WELL SAMPLING SHEETS

WATER-LEVEL MEASUREMENTS

Project Name: 625 HELENBERGER/DIVERSIFIED Project No.: 3015.1D

Field Personnel: JCK Date: 9/27/94

General Observations:

WELL NO.	WELL ELEVATION	DEPTH TO WATER MEASUREMENTS 1	DEPTH TO WATER MEASUREMENTS 2	WATER ELEVATION	REMARKS (UNITS = FEET)
MW-9		7.20	7.20		9:28
10		6.39	6.39		9:30
11		7.41	7.41		9:25
12		6.57	6.57		9:17 AM
16		7.93	7.93		9:38

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name 625 HEGEN BERGER / DIVERSIFIED Project No. 3015.10

Date 9/27/94 Sample No. MW-8

Samplers Name JCK

Sampling Location MW-8

Sampling Method HAND BAIL / TEFLON BAILER

Analyses Requested TPH-G BTEX TPH-D+O Pb

Number and Types of Sample Bottles used 2L. GL. 2 VOA / PL

Method of Shipment COURIER

GROUND WATER

Well No. MW-9

Well Diameter (in.) 2

Depth to Water, Static (ft) 7.20

Water in Well Box NO

Well Depth (ft) 16.10

Height of Water Column in Well 8.90

Water Volume in Well 1.42

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

16.10
7.20
8.90
.16
5340
890
1.4240

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
12:25								START
12:29		1.5	22.0	6.99	3230			TURBID/SL. ODOR
12:34		3.0	21.7	7.08	4120			TURBID / SL. SHEEN
12:36		4.5	21.6	7.11	4300			TURBID / SL SHEEN
12:40	7.25							SAMPLE

Suggested Method for Purging Well

LEVINE-FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name 625 HEGENBERGER / DIVERSIFIED Project No. 3015.10

Date 9/27/94 Sample No. MW-10

Samplers Name JCK, JMR

Sampling Location Oakland, CA

Sampling Method Hand bail / Teflon Bailer

Analyses Requested TPHg + BTEX, TPHd, TPHo, Pb (field filtered)

Number and Types of Sample Bottles used 2 VOA/HCl, 2 Amber - 1 liter HCl, 1 Plastic

Method of Shipment Courier

16.00
6.39
9.61
.16
57 66
96 1
1.53 x 7 6

LOCATION MAP

GROUND WATER

Well No. MW-10

Well Diameter (in.) 2

Depth to Water, Static (ft) 6.39

Water in Well Box no

Well Depth (ft) 16.00

Height of Water Column in Well 9.61

Water Volume in Well 1.53

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
10:39					~~6.810~~			start
10:41		2	22.6	7.22	6.810			turbid
10:44		4	22.6	7.14	6.930			turbid
10:45		6	22.6	7.19	6.960			turbid
10:50	6.42							SAMPLE

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name 625 HEGENBERGER / DIVERSIFIED Project No. 3015.1D

Date 9/27/94 Sample No. MW-11

Samplers Name JC JR

Sampling Location MW-11

Sampling Method HAND BAIL / TEFLON BAILER

Analyses Requested TPH-G BTEX TPH D+O Pb

Number and Types of Sample Bottles used 2 L.G., 2 VOA, 1 PLASTIC

Method of Shipment COURIER

GROUND WATER		SURFACE WATER	
Well No.	MW-11	Stream Width	
Well Diameter (in.)	2	Stream Depth	
Depth to Water, Static (ft)	7.41	Stream Velocity	
Water in Well Box	NO	Rained recently ?	
Well Depth (ft)	15.60	Other	
Height of Water Column in Well	8.19	2-inch casing = 0.16 gal/ft	
Water Volume in Well	1.31	4-inch casing = 0.65 gal/ft	
		5-inch casing = 1.02 gal/ft	
		6-inch casing = 1.47 gal/ft	

15.60
7.41
8.19
.16
4914
819
1.3104

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
11:54								START
11:57		1.5	21.5	6.94	2850			TURBID/ODOR
11:59		3.0	21.2	7.01	2600			TURBID/ODOR
12:03			21.0	7.05	2470			TURBID/ODOR
12:10	7.89							SAMPLE

Suggested Method for Purging Well _____

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name 625 HEGENBERGER / DIVERSIFIED Project No. 3015.11

Date 9/27/94 Sample No. MW-12

Samplers Name JCK

Sampling Location MW-12

Sampling Method HAND BAIL / TEFLON BAILER

Analyses Requested TPH-D+O, TPH-G BTEX Pb

Number and Types of Sample Bottles used

Method of Shipment COURIER

GROUND WATER

Well No. MW-12

Well Diameter (in.) 2

Depth to Water, Static (ft) 6.57

Water in Well Box NO

Well Depth (ft) 16.00

Height of Water Column in Well 9.43

Water Volume in Well 1.51

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

16.00
6.57
9.43
.16
5658
943
15088

LOCATION MAP

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
11:13								START
11:17		2	22.6	6.97	3290			TURBID
11:20		4	22.6	6.93	3140			↓
11:22		6	22.5	6.92	3080			↓
11:30	6.73							SAMPLE
12:30								DUPLICATE
11:10								MW-12-BB

Suggested Method for Purging Well

LEVINE•FRICKE

WATER-QUALITY SAMPLING INFORMATION

Project Name 625 HEGENBERGER/ Project No. 3015.10

Date 9/27/94 Sample No. MW-16

Samplers Name JCK JMR

Sampling Location MW-16

Sampling Method HAND BAIL / TEFLON BAILER

Analyses Requested TPH-G BTEX, TPH-D+O, Pb

Number and Types of Sample Bottles used 2L. A-OGR; 2 VOA; 1 Pt

Method of Shipment COURIER

14.00
7.93
6.07
.16
JC 42
607
.9712

LOCATION MAP

GROUND WATER

Well No. MW-16

Well Diameter (in.) 2

Depth to Water, Static (ft) 7.93

Water in Well Box NO

Well Depth (ft) 14.00

Height of Water Column in Well 6.07

Water Volume in Well .97

SURFACE WATER

Stream Width

Stream Depth

Stream Velocity

Rained recently ?

Other

2-inch casing = 0.16 gal/ft

4-inch casing = 0.65 gal/ft

5-inch casing = 1.02 gal/ft

6-inch casing = 1.47 gal/ft

FIELD FILTERED FOR Pb

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
9:56								START
9:59		1	22.6	6.89	5440			TURBID
10:04		2	22.6	7.00	5650			TURBID
10:06		3	22.6	7.02	5710			TURBID
10:10	7.95							SAMPLE

Suggested Method for Purging Well

Tidal Influence Measurements

WATER-LEVEL MEASUREMENTS

Project Name: Diversified Investments Project No.: 3015

Field Personnel: SCH Date: 8.18.94

General Observations: Clear, warm. Breeze ~15 mph in PM.

TIME	WELL NO.	MW-8 WELL ELEVATION	DEPTH TO WATER MEASUREMENTS MW-10	DEPTH TO WATER MEASUREMENTS MW-11	MW WATER ELEVATION 12	MW-16	REMARKS (UNITS = FEET)
0932					6.46		
0935				7.29			
0939		7.10					
0948						7.84	
0953			6.31				
1037						7.84	
1040					6.47		
1041				7.30			
1042			6.31				
1044		7.10					
1209						7.81	
1212					6.45		
1213				7.28			
1214		7.08					
1215			6.29				
1317						7.81	
1319				7.27			
1320		7.06					
1321			6.29				
1323					6.45		
1509						7.80	
1511				7.26			
1512					6.44		
1514			6.28				
1515		7.06					
1547						7.79	
1548				7.26			
1550					6.44		
1551			6.28				
1552		7.05					
		HIGH TIDE	- 1151 }	of Oakland Airport			
		LOW TIDE	- 1641 }				

waterlevelmsr27oct89

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

APPENDIX B

LABORATORY ANALYSIS CERTIFICATES

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172 AIHA Accreditation: 11134

FILE
3015.10

LEVINE-FRICKE
1900 POWELL ST. 12TH FL.
EMERYVILLE, CA 94608

REPORT DATE: 10/11/94
DATE(S) SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
AEN WORK ORDER: 9409383

ATTN: SUE HENRY
CLIENT PROJ. ID: 3015.10
CLIENT PROJ. NAME: 625 HEGNBERGER
C.O.C. NUMBER: 12379

PROJECT SUMMARY:

On September 28, 1994, this laboratory received 8 water sample(s).

Client requested sample(s) be analyzed for inorganic and organic parameters. Results of analysis are summarized on the following page(s).

Please see quality control report for a summary of QC data pertaining to this project.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

RECEIVED
OCT 12
LEVINE-FRICKE

LEVINE-FRICKE

SAMPLE ID: MW-8
AEN LAB NO: 9409383-01
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	8,500 *	10	ug/L	10/06/94
Toluene	108-88-3	260 *	10	ug/L	10/06/94
Ethylbenzene	100-41-4	1,600 *	10	ug/L	10/06/94
Xylenes, Total	1330-20-7	5,200 *	40	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	28 *	1	mg/L	10/06/94
#Extraction for TPH	EPA 3510	-		Extrn Date	10/03/94
TPH as Diesel	GC-FID	0.62 *	0.05	mg/L	10/05/94
TPH as Oil	GC-FID	ND	0.2	mg/L	10/05/94
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	10/05/94
Lead	EPA 6010	ND	0.04	mg/L	10/06/94

Reporting limits for BTEX/gasoline elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: MW-10
AEN LAB NO: 9409383-02
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/06/94
Toluene	108-88-3	ND	0.5	ug/L	10/06/94
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/06/94
Xylenes, Total	1330-20-7	ND	2	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/06/94
#Extraction for TPH	EPA 3510	-		Extrn Date	10/03/94
TPH as Diesel	GC-FID	0.61 *	0.05	mg/L	10/05/94
TPH as Oil	GC-FID	ND	0.2	mg/L	10/05/94
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	10/05/94
Lead	EPA 6010	ND	0.04	mg/L	10/06/94

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: MW-11
AEN LAB NO: 9409383-03
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	6.500 *	10	ug/L	10/06/94
Toluene	108-88-3	26 *	10	ug/L	10/06/94
Ethylbenzene	100-41-4	870 *	10	ug/L	10/06/94
Xylenes, Total	1330-20-7	590 *	40	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	15 *	1	mg/L	10/06/94
#Extraction for TPH	EPA 3510	-		Extrn Date	10/03/94
TPH as Diesel	GC-FID	0.91 *	0.05	mg/L	10/05/94
TPH as Oil	GC-FID	ND	0.2	mg/L	10/05/94
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	10/05/94
Lead	EPA 6010	ND	0.04	mg/L	10/06/94

Reporting limits for BTEX/gasoline elevated due to high levels of target compounds. Sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: MW-12-BB
AEN LAB NO: 9409383-04
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	ND	0.5	ug/L	10/06/94
Toluene	108-88-3	ND	0.5	ug/L	10/06/94
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/06/94
Xylenes, Total	1330-20-7	ND	2	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/06/94

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: MW-112
AEN LAB NO: 9409383-05
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/07/94
Toluene	108-88-3	ND	0.5	ug/L	10/06/94
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/06/94
Xylenes, Total	1330-20-7	ND	2	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/06/94

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: MW-12
AEN LAB NO: 9409383-06
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/06/94
Toluene	108-88-3	ND	0.5	ug/L	10/06/94
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/06/94
Xylenes, Total	1330-20-7	ND	2	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/06/94
#Extraction for TPH	EPA 3510	-		Extrn Date	10/03/94
TPH as Diesel	GC-FID	0.4 *	0.05	mg/L	10/05/94
TPH as Oil	GC-FID	ND	0.2	mg/L	10/05/94
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	10/05/94
Lead	EPA 6010	ND	0.04	mg/L	10/06/94

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: MW-16
AEN LAB NO: 9409383-07
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED: 09/27/94
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	17 *	0.5	ug/L	10/06/94
Toluene	108-88-3	ND	0.5	ug/L	10/06/94
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/06/94
Xylenes, Total	1330-20-7	ND	2	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	0.07 *	0.05	mg/L	10/06/94
#Extraction for TPH	EPA 3510	-		Extrn Date	10/03/94
TPH as Diesel	GC-FID	0.59 *	0.05	mg/L	10/05/94
TPH as Oil	GC-FID	ND	0.2	mg/L	10/05/94
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	10/05/94
Lead	EPA 6010	ND	0.04	mg/L	10/06/94

ND = Not detected at or above the reporting limit
* = Value above reporting limit

LEVINE-FRICKE

SAMPLE ID: TRIP BLANK
AEN LAB NO: 9409383-08
AEN WORK ORDER: 9409383
CLIENT PROJ. ID: 3015.10

DATE SAMPLED:
DATE RECEIVED: 09/28/94
REPORT DATE: 10/11/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/06/94
Toluene	108-88-3	ND	0.5	ug/L	10/06/94
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/06/94
Xylenes, Total	1330-20-7	ND	2	ug/L	10/06/94
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/06/94

ND = Not detected at or above the reporting limit
* = Value above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9409383

CLIENT PROJECT ID: 3015.10

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

AEN JOB NO: 9409383
DATE EXTRACTED: 10/03/94
INSTRUMENT: C,D
MATRIX: WATER

Surrogate Standard Recovery Summary
Method: EPA 3510 GCFID

Date Analyzed	Client Id.	Lab Id.	Percent Recovery n-Pentacosane
10/05/94	MW-8	01	83
10/05/94	MW-10	02	74
10/05/94	MW-11	03	81
10/05/94	MW-12	06	80
10/05/94	MW-16	07	78

Current QC Limits

Surrogate	Percent Recovery
n-Pentacosane	30-120

QUALITY CONTROL DATA

AEN JOB NO: 9409383
DATE EXTRACTED: 10/03/94
DATE ANALYZED: 10/03/94
INSTRUMENT: C
MATRIX: WATER

Method Spike Recovery Summary
Method: EPA 3510 GCFID

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Diesel	2.00	79	<1	65-103	12

Method Blank Result
Method: EPA 3510 GCFID

Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
100394-BLANK	ND
Reporting Limit	0.05

QUALITY CONTROL DATA

AEN LAB NO: 1006-BLANK
DATE ANALYZED: 10/06/94

BTEX and Hydrocarbons
Method: EPA 8020, 5030 GCFID

	CAS #	Result (ug/L)	Reporting Limit (ug/L)
Benzene	71-43-2	ND	0.5
Toluene	108-88-3	ND	0.5
Ethylbenzene	100-41-4	ND	0.5
Xylenes, Total	1330-20-7	ND	2
Purgeable Hydrocarbons as: Gasoline		ND mg/L	0.05 mg/L

AEN LAB NO: 1007-BLANK
DATE ANALYZED: 10/07/94

BTEX and Hydrocarbons
Method: EPA 8020, 5030 GCFID

	CAS #	Result (ug/L)	Reporting Limit (ug/L)
Benzene	71-43-2	ND	0.5
Toluene	108-88-3	ND	1.0
Ethylbenzene	100-41-4	ND	0.5
Xylenes, Total	1330-20-7	ND	2
Purgeable Hydrocarbons as: Gasoline		ND mg/L	0.05 mg/L

QUALITY CONTROL DATA

AEN JOB NO: 9409383
INSTRUMENT: E,F
MATRIX: WATER

Surrogate Standard Recovery Summary
Method: EPA 8020, 5030 GCFID

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
10/06/94	MW-8	01	96
10/06/94	MW-10	02	97
10/06/94	MW-11	03	100
10/06/94	MW-12-BB	04	96
10/06/94	MW-112	05	100
10/06/94	MW-12	06	98
10/06/94	MW-16	07	93
10/06/94	Trip Blank	08	97

Current QC Limits

Surrogate	Percent Recovery
Fluorobenzene	86-110

QUALITY CONTROL DATA

AEN JOB NO: 9409383
DATE ANALYZED: 10/05/94
SAMPLE SPIKED: 9409390-02
INSTRUMENT: F
MATRIX: WATER

Matrix Spike Recovery Summary
Method: EPA 8020, 5030

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	19	101	12	82-125	15
Toluene	50	102	13	75-126	17
Hydrocarbons as Gasoline	500	95	9	75-132	16

QUALITY CONTROL DATA

AEN JOB NO: 9409383
SAMPLE SPIKED: DI WATER
DATE ANALYZED: 10/09/94
MATRIX: WATER

Method Blank and Spike Recovery Summary

Analyte	Inst./ Method	Blank Result (mg/L)	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Pb. Lead	ICP/6010	ND	0.50	106	4	87-119	7

*** END OF REPORT ***

P. 10/10
FAX NO. 5109300256
AEN CALIFORNIA
OCT-07-94 THU 17:42

R-1,S-H C-1,S-4
R-3,S-2

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

9409383

Project No.: 3015.10	Field Logbook No.:	Date: 9/27/94	Serial No.:
Project Name: 625 HELENSBERGER	Project Location: OAKLAND, CA.		Nº 12379
Sampler (Signature) :			

SAMPLES							ANALYSES								
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE		EPA 601	Pb-EPA	TPH-G	BTEX	TPH-D	TPH-D	HOLD	RUSH	Samplers: REMARKS
MW-8	9/27/94	12:40	01A-E	5			X	X	X	X	X				STD TAT
MW-10		10:50	02A-E	5			X	X	X	X	X				
MW-11		12:10	03A-E	5			X	X	X	X	X				FAX RESULTS TO SUE HENRY
MW-12-DB		11:10	04AB	2				X	X						
MW-112		12:30	05AB	2				X	X						
MW-12		11:30	06A-E	5			X	X	X	X	X				Pb SAMPLES FILTERED & PRESERVED IN FIELD
MW-16		10:10	07A-E	5			X	X	X	X	X				
TRIPBLANK		08:00	08AB	2			TCE	X	X						

RELINQUISHED BY: (Signature)	DATE 9/28/94	TIME 10:25	RECEIVED BY: (Signature)	DATE 9/28/94	TIME 10:25
RELINQUISHED BY: (Signature)	DATE 9/28/94	TIME 10:55	RECEIVED BY: (Signature)	DATE 9-28-94	TIME 1055
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville California 94608
(510) 652-4500

Analytical Laboratory: AEN
PLEASANT HILL, CA.

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

FORM NO. 86/COC/ARF

PAGE.010
OCT 7 '94 17:39