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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

November 22, 1994

LF 1649.00-034

Ms. Susan Hugo  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Second Floor  
Alameda, California 94502

Subject: Summary of Environmental Activities, Proposed 40th  
Street Extension, Emeryville, California

Dear Susan:

The attached report summarizes the environmental activities conducted at the proposed 40th Street extension in Emeryville, California. The scope of work included soil and ground-water sampling and analysis, abandonment of one ground-water monitoring well, and excavation and disposal of approximately 410 cubic yards of petroleum hydrocarbon-affected soil.

The scope of work was presented and agreed upon in a meeting on September 22, 1994, among representatives of the Alameda County Health Care Services Agency, the City of Emeryville, Levine-Fricke, and Catellus Development Corporation. Work was conducted in accordance with Levine-Fricke's "Work Plan to Conduct Soil Excavation for the proposed 40th Street Extension Emeryville, California," dated October 3, 1994.

If you have any questions or comments concerning the attached report, please do not hesitate to call me or Ms. Kimberly Brandt at Catellus Development Corporation at 415-974-4500.

Sincerely,

Ron Goloubow  
Senior Project Geologist

cc: Ms. Kimberly Brandt, Catellus Development  
Mr. Ignacio Dayrit, City of Emeryville  
Mr. Sumadhu Arigala, Regional Water Quality Control Board

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## CERTIFICATION

All hydrogeologic and geologic information, conclusions, and recommendations have been prepared under the supervision of and reviewed by a Levine·Fricke California Registered Geologist.



Andrew L. Wright  
Principal Geologist  
California Registered Geologist (4592)

11-22-98  
Date

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## SUMMARY OF ENVIRONMENTAL ACTIVITIES PROPOSED 40TH STREET EXTENSION EMERYVILLE, CALIFORNIA

This report presents the results of the environmental work performed at the proposed 40th Street extension in Emeryville, California ("the Site"; Figure 1). Environmental work performed at the Site included the collection and analysis of soil and ground-water samples, excavation and off-site disposal of localized areas of soil affected by total petroleum hydrocarbons (TPH), and the abandonment of well MW-1.

### 1.0 BACKGROUND

The City of Emeryville Redevelopment Agency ("the City") requested that 40th Street be extended between Adeline Street and San Pablo Avenue. To identify potential concerns in this area, Levine·Fricke conducted a Phase I and Phase II Investigation of soil and ground-water quality beneath the Site in June and August 1993. At that time, the Site was occupied by the Celis Service Station and Anderson Linoleum and Carpet (ALC) Sales Warehouse (Figure 2). The Celis Service Station and the ALC warehouse were demolished in May and September 1994, respectively, to prepare the Site for road construction.

### 1.1 Investigation at the Former Celis Service Station

In August 1993, Levine·Fricke collected soil samples from borings SB-1 through SB-11 and installed ground-water monitoring wells LF-1, LF-2, and LF-3 at the former Celis Service Station. In addition, soil samples were collected from borings SB-12 through SB-19, east of the former ALC warehouse (see Figure 2). Analytical results for samples collected during that investigation are presented in Table 1. Details regarding the results of that investigation were presented in the Levine·Fricke report "Phase II Investigation Results Proposed 40th Street Right-of-Way, Emeryville, California," dated September 8, 1993. In general, the results of this investigation identified several localized areas of TPH-affected soil, and elevated concentrations of TPH as gasoline (TPHg), of benzene, toluene, ethylbenzene, and xylenes (BTEX), and of TPH as diesel (TPHd) in shallow ground water beneath the service station.

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To address remediation of petroleum hydrocarbon-affected soil in the vicinity of the former Celis Service Station, the six former fuel underground storage tanks (USTs) were removed in June 1994 in accordance with regulatory guidelines, as described in Levine-Fricke's "Report on Removal of Six Underground Fuel Storage Tanks and Associated Piping, Celis Fuel Station, 4000 San Pablo Avenue, Emeryville, California," dated July 6, 1994. Affected soil was excavated to approximately 9 feet below ground surface (bgs) within the service station property boundary in July 1994 under the direction of the City of Emeryville and Woodward-Clyde Consultants.

## 1.2 Recent Soils Investigation

To further characterize soil quality east of the service station and west of Adeline Avenue, Levine-Fricke drilled an additional 16 soil borings (B1 through B16) in August 1994 to a depth of approximately 10 feet bgs. The locations of these borings are presented on Figure 2, and a summary of analytical results for these borings is presented in Table 2. These analytical results were transmitted to the Alameda County Health Care Services Agency (ACHA) on September 20, 1994, and were discussed in a meeting on September 22, 1994, among representatives of the ACHA, the City, Levine-Fricke, and Catellus Development Corporation.

Analytical results for soil samples collected from 2 feet, 5 feet, and 10 feet bgs at boring B3 and from 5 feet and 10 feet bgs at boring B4 contained elevated concentrations of TPHg and BTEX (up to 8,800 parts per million [ppm] TPHg and up to 1,074 ppm total BTEX compounds in the sample collected from boring B4 at 5 feet bgs). Elevated concentrations of TPHg and BTEX were also detected in samples collected at 10 feet bgs from borings B1, B7, B8, B9, B11, and B16 (up to 690 ppm TPHg and up to 179 ppm total BTEX compounds in boring B1).

Ground water beneath the Site is present at approximately 9 to 10 feet bgs. The analytical results for ground-water samples previously collected by Levine-Fricke from well MW-1, which is located within 20 feet of the former San Francisco Bread Company (SFBC) USTs, and from monitoring wells located at the Celis Service Station indicate that shallow ground water has been affected by TPHg and BTEX. Therefore, concentrations of TPHg and BTEX reported for soil samples collected 10 feet bgs are likely a result of soil being affected by contact with petroleum-affected ground water.

## 2.0 SOIL EXCAVATION ACTIVITIES AND RESULTS

To reduce concentrations of TPH in shallow soil, limited excavations were planned for certain areas of the Site. The locations of these areas of excavation are illustrated on Figure 2. The scope of the proposed excavation work for the Site was presented to the ACHA in a meeting on September 22, 1994. The scope of this excavation work was approved during the meeting and was summarized in Levine·Fricke's "Work Plan to Conduct Soil Excavation for the Proposed 40th Street Extension, Emeryville, California," dated October 3, 1994.

The scope of work included the excavation of soil in the vicinity of soil borings B3 and B4 to a depth of 8 to 10 feet bgs, the approximate depth of ground water beneath the Site. In addition, soil in the vicinity of soil borings B5, SB-12, SB-15, SB-18, and SB-19 was to be excavated to a depth of approximately 6 feet bgs. The depths of these excavations were determined based on analytical results for soil samples collected from these borings.

It was agreed in the September 22 meeting and specified in the October 3 work plan that a maximum of five confirmation soil samples were to be collected from final excavations in the vicinity of former soil borings SB-12 and SB-15, where the vertical extent of petroleum-affected soil had not been assessed. Confirmation soil samples were not collected from excavations in the vicinity of former borings B3, B4, B5, where the vertical extent of affected soil had been assessed to 10 feet bgs, the approximate depth to ground water, or near former borings SB-18 and SB-19, where only TPH as motor oil had been detected.

### 2.1 Soil Excavation

A total of approximately 410 cubic yards of TPH-affected soil was excavated and stockpiled on site on October 10 through 14, 1994 (see Figure 2). Approximately 120 cubic yards of soil were removed in the vicinity of boring B3, 175 cubic yards were removed in the vicinity of boring B4, 30 cubic yards were removed in the vicinity of borings SB-18 and SB-19, and approximately 55 cubic yards were removed in the vicinity of borings SB-12 and SB-15.

The excavated soil was transported to REMCO in Richmond, California, for thermal treatment on October 26, 1994.

The excavations were backfilled to approximately 3 feet below the current grade with soil from the upper 2 feet in the

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vicinity of borings B1, B11, and B16. Fill soil below 5 feet below grade at each excavation was compacted to 90 percent relative compaction. Fill soil above 5 feet below grade was compacted to 95 percent relative compaction.

## 2.2 Confirmation Sampling

Field measurements (i.e., photoionization detector [PID] readings), visual observations, and analytical results for soil samples collected from soil borings SB-18 and SB-19 indicate that TPH-affected soil in those areas has been adequately removed.

PID readings and visual observations indicate that affected soil remains in western sidewalls of the excavations in the vicinity of borings B3 and B4. PID measurements ranging from 120 to 440 ppm were detected in samples collected from the western sidewall of each excavation.

Confirmation soil samples were collected from the excavation in the vicinity of former borings SB-12 and SB-15. These analytical results are summarized in Table 3; the laboratory certificates are in Appendix A. These results indicate that soils containing elevated concentrations of TPHg and BTEX remain at the southern and western sidewalls at approximately 7 feet bgs, and at the base of the excavation at approximately 8 feet bgs. The results may also indicate the seasonal fluctuation of affected ground water in this area of the Site. Lower concentrations of these compounds were detected in confirmation samples collected from the northern and eastern sides of this excavation.

## 2.3 Well Abandonment

Monitoring well MW-1 was abandoned on November 4, 1994, to prepare for road construction activities. Well MW-1, located just east of the former ALC warehouse, had been installed on behalf of the SFBC, former tenants at the property, to monitor a release from two USTs owned and operated by the SFBC. The USTs were reportedly removed in 1989.

Before well abandonment, Levine·Fricke collected a water sample from this well for chemical analysis on September 13, 1994. The analytical results indicated that TPHg was present at 2.3 ppm, benzene at 0.510 ppm, and toluene, ethylbenzene, and xylenes at 0.068 ppm, 0.100 ppm, and 0.160 ppm, respectively. These analytical results are consistent with the analytical results for a ground-water sample collected from the well in June 1993. Additionally, total oil and

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grease and TPHd were detected at 1 ppm and 0.2 ppm, respectively. The laboratory certificate for this sample is included in Appendix A.

The well was abandoned in accordance with the State of California Department of Water Resources Bulletins 74-90, June 1991, and 74-81, December 1981, and under permit number 94462, issued by the Alameda County Flood Control and Water Conservation District, Zone 7. Below are the procedures used to destroy the well:

- The existing 2-inch-diameter polyvinyl chloride well casing was drilled out to the total depth of the well, approximately 25 feet below grade.
- The borehole was then grouted from the bottom to approximately 2 feet bgs with neat cement grout containing approximately 5 percent bentonite. The grout was pumped into the borehole through a tremie pipe (or hose) set 5 to 10 feet above the base of the borehole.

Following road construction activities, a ground-water monitoring well is to be reinstalled as a replacement well at a similar location.

### 3.0 CONCLUSIONS

Analytical results for soil samples collected in August 1993 and August 1994 indicate that soil and shallow ground water at the Site are affected by TPHg and BTEX. Most of the affected soil is present at 10 feet bgs, which coincides with the depth of the saturated sediments. Thus it appears that soil at that depth has been affected by TPHg and BTEX present in shallow ground water.

In accordance with the agreement reached with the ACHA, soil was excavated in the vicinity of borings B3, B4, SB-12, SB-15, SB-18, and SB-19. A total of approximately 410 cubic yards was removed from the Site and treated at REMCO. The purpose of this work was to remove TPH-affected soil identified above the saturated sediments.

PID measurements, visual observations, and soil samples collected from soil borings SB-18 and SB-19 indicate that TPH-affected soil in the vicinity of the borings has been adequately removed.



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Analytical results for confirmation samples collected from the excavation in the vicinity of borings SB-12 and SB-15 indicate that soil containing elevated concentrations of TPHg and BTEX remains approximately 7 feet bgs at the southern and western sidewalls, and approximately 8 feet bgs at the base of the excavation. These results may be due to seasonal fluctuation in affected ground water in this area of the Site. Lower concentrations of these compounds were detected in confirmation samples collected from the northern and eastern sides of this excavation.

Although no soil samples were collected in the western sidewalls of the excavations in the vicinity of borings B3 and B4, PID and visual observations indicate that affected soil remains there.

No further excavation work was conducted at the Site based on a prior agreement with the ACHA and the City.

Well MW-1 was abandoned in accordance with regulatory guidelines in preparation for road construction activities. It is our understanding that this well will be replaced in a similar location after road construction has been completed.

TABLE 1  
 ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM PHASE II SOIL BORINGS  
 PROPOSED 40TH STREET EXTENSION, EMERYVILLE, CALIFORNIA  
 (concentrations in milligrams per kilogram [mg/kg])

Sample Name	Depth (ft)	Sample Date	TPHg	TPHd	TPHmo	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TRPH	PCBs	VOCs	SVOCs
Former Celis Service Station													
LF-1-4.5	4.5	07-Aug-93	550	220	16	0.84	1.2	5.6	2.7	77	NA	NA	NA
LF-1-9.5	9.5	07-Aug-93	470	18	<10	0.97	<0.005	6.6	8.9	<30	NA	NA	NA
LF-1-14.5	14.5	07-Aug-93	8.4	16	<10	0.14	0.17	0.081	0.37	60	NA	NA	NA
LF-2-9.5	9.5	07-Aug-93	740	14	<10	4.7	35	13	68	30	NA	NA	NA
LF-2-14.5	14.5	07-Aug-93	<0.5	<10	<10	0.009	0.012	<0.005	0.015	<30	NA	NA	NA
LF-3-9.5	9.5	07-Aug-93	75	<10	<10	0.062	0.28	1.1	1.1	37	NA	NA	NA
LF-3-14.5	14.5	07-Aug-93	<0.5	<10	<10	0.014	<0.005	0.01	0.007	<30	NA	NA	NA
SB-1-7	7	08-Aug-93	850	240	27	5.4	<0.005	25	42	290	NA	NA	NA
SB-1-9.5	9.5	08-Aug-93	180	220	<50	0.89	1.1	4.3	18	130	NA	NA	NA
SB-1-14.5	14.5	08-Aug-93	7.4	<10	<10	0.44	0.44	0.14	0.61	60	NA	NA	NA
SB-2-7	7	08-Aug-93	780	790	57	8	<0.005	31	140	160	ND	NA	NA
SB-2-9.5	9.5	08-Aug-93	720	200	<50	2.4	5.2	14	59	210	NA	NA	NA
SB-2-14.5	14.5	08-Aug-93	1	<10	12	0.2	0.21	0.021	0.12	43	ND	NA	NA
SB-3-9.5	9.5	07-Aug-93	580	11	<10	9.7	50	15	90	37	ND	NA	NA
SB-3-14.5	14.5	07-Aug-93	0.9	<10	<10	0.092	0.16	0.031	0.17	37	ND	NA	NA
SB-4-7	7	08-Aug-93	380	13	<10	3	5.2	8.2	18	70	NA	NA	NA
SB-4-14.5	14.5	08-Aug-93	<0.5	<10	<10	0.026	0.005	0.019	0.023	210	NA	NA	NA
SB-5-7	7	08-Aug-93	410	15	<10	2.4	0.6	16	6.3	37	NA	NA	NA
SB-5-14.5	14.5	08-Aug-93	<0.5	<10	<10	0.011	<0.005	0.008	0.008	93	NA	NA	NA
SB-6-9.5	9.5	08-Aug-93	490	51	<10	2.7	<0.005	15	15	67	NA	NA	NA
SB-6-14.5	14.5	08-Aug-93	<0.5	<10	<10	<0.005	<0.005	<0.005	<0.005	<30	NA	NA	NA
SB-7-9.5	9.5	07-Aug-93	750	52	66	2.5	8.5	22	93	170	NA	NA	NA
SB-7-14.5	14.5	07-Aug-93	2.8	<10	<10	<0.005	<0.005	0.029	0.03	<30	NA	NA	NA
SB-8-9.5	9.5	08-Aug-93	2,800	110	<50	22	9.5	82	290	130	NA	NA	NA
SB-8-14.5	14.5	08-Aug-93	<0.5	<10	11	0.009	<0.005	<0.005	<0.005	37	NA	NA	NA
SB-9-7	7	07-Aug-93	210	14	<10	2.8	13	5.1	29	<30	NA	NA	NA
SB-9-9.5	9.5	07-Aug-93	1,200	NA	NA	14	81	26	140	NA	NA	NA	NA
SB-9-14.5	14.5	07-Aug-93	<0.5	<10	<10	0.079	0.059	0.011	0.041	77	NA	NA	NA
SB-10-7	7	07-Aug-93	73	NA	NA	2.6	4.5	1.6	7.7	NA	NA	NA	NA
SB-10-9.5	9.5	07-Aug-93	1,100	<10	<10	<0.005	7.8	<0.005	22	40	NA	NA	NA
SB-10-14.5	14.5	07-Aug-93	8.6	<10	<10	0.48	0.29	0.1	0.48	<30	NA	NA	NA
SB-11-14.5	14.5	09-Aug-93	<0.5	<10	11	<0.005	<0.005	<0.005	<0.005	40	NA	NA	NA
Railroad Tracks													
SB-12-1	1	09-Aug-93	<0.5	<200	400	NA	NA	NA	NA	4,600	ND	NA	NA
SB-12-3	3	09-Aug-93	6,500	560	64	NA	NA	NA	NA	420	ND	NA	NA
SB-13-5	5	09-Aug-93	23	<10	<10	NA	NA	NA	NA	63	ND	NA	NA
SB-13-6.5	6.5	09-Aug-93	13	<10	<10	NA	NA	NA	NA	37	ND	NA	NA
SB-14-2	2	09-Aug-93	42	<200	480	NA	NA	NA	NA	2,200	(7)	NA	NA
SB-14-4.5	4.5	09-Aug-93	<0.5	<10	<10	NA	NA	NA	NA	47	ND	NA	NA
SB-15-4.5	4.5	09-Aug-93	4,700	140	12	NA	NA	NA	NA	480	ND	NA	NA
SB-15-6	6	09-Aug-93	3,700	59	14	NA	NA	NA	NA	120	ND	NA	NA
SB-16-4.5	4.5	09-Aug-93	9	<10	<10	NA	NA	NA	NA	60	ND	NA	NA
SB-16-6	6	09-Aug-93	8	<10	<10	NA	NA	NA	NA	53	ND	NA	NA
SB-18-1	1	09-Aug-93	1	<200	320	NA	NA	NA	NA	2,200	ND	NA	NA
SB-18-3	3	09-Aug-93	<0.5	<200	390	NA	NA	NA	NA	1,100	ND	NA	NA
SB-19-1.5	1.5	09-Aug-93	<0.5	<200	530	NA	NA	NA	NA	2,200	ND	NA	NA
SB-19-3	3	09-Aug-93	1	<200	740	NA	NA	NA	NA	3,600	ND	NA	NA
San Francisco French Bread Company													
SB-17-4.5	4.5	09-Aug-93	260	40	<10	2	22	12	69	70	ND	(1)	(4)
SB-17-7	7	09-Aug-93	440	17	<10	4	27	8	43	50	ND	(2)	(5)
SB-17-12	12	09-Aug-93	500	130	190	2	9	4	23	47	ND	(3)	(6)

Data entered by MEK/20-Aug-93. Data proofed by JJB/26-Aug-93. QA/QC by JJB/08-Sep-93.

TPHg = total petroleum hydrocarbons as gasoline

(1) 2.6 mg/kg methylene chloride

TPHd = total petroleum hydrocarbons as diesel

(2) 2.0 mg/kg methylene chloride

TPHmo = total petroleum hydrocarbons as motor oil

(3) 0.660 mg/kg methylene chloride

TRPH = total recoverable petroleum hydrocarbons

(4) 0.4 mg/kg 4-methylphenol, 1.6 mg/kg naphthalene, and 1.8 mg/kg 2-methylnaphthalene

PCBs = polychlorinated biphenyls

(5) 0.57 mg/kg naphthalene and 0.630 mg/kg 2-methylnaphthalene

NA = parameter not analyzed

ND = parameter not detected

(6) 1.7 mg/kg naphthalene and 1.8 mg/kg 2-methylnaphthalene

(7) 0.22 mg/kg Aroclor 1260

TABLE 2  
ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM ADDITIONAL SOIL BORINGS  
PROPOSED 40TH STREET EXTENSION, EMERYVILLE, CALIFORNIA  
(concentrations in milligrams per kilogram [mg/kg])

Sample Name	Depth (ft)	Sample Date	TPHg	TPHd	TRPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total BTEX
B1-2	2	29-Aug-94	0.8	<1	<10	0.008	<0.005	0.016	0.085	0.109
B1-5	5	29-Aug-94	110	<1	30	0.840	0.520	3.200	12.000	16.560
B1-10	10	29-Aug-94	690	<1	30	12.000	50.000	18.000	99.000	179.000
B2-2	2	29-Aug-94	110	<1	10	0.600	2.900	3.300	16.000	22.800
B2-5	5	29-Aug-94	66	1	10	0.370	0.800	0.790	3.500	5.460
B2-10	10	29-Aug-94	830	<1	30	13.000	52.000	21.000	110.000	196.000
B3-2	2	29-Aug-94	440	<1	80	8.500	36.000	12.000	58.000	114.500
B3-5	5	29-Aug-94	810	8	200	14.000	62.000	22.000	100.000	198.000
B3-10	10	29-Aug-94	390	<1	50	7.100	22.000	7.200	38.000	74.300
B4-2	2	29-Aug-94	49	<1	40	0.140	0.120	2.300	11.000	13.560
B4-5	5	29-Aug-94	8,800	28	1,300	6.800	7.300	190.000	870.000	1,074.100
B4-10	10	29-Aug-94	510	3	110	1.100	0.960	3.400	13.000	18.460
B5-2	2	29-Aug-94	0.4	<1	10	<0.005	<0.005	<0.005	<0.005	<0.005
B5-5	5	29-Aug-94	<0.2	<1	2,400	<0.005	<0.005	<0.005	<0.005	<0.005
B5-10	10	29-Aug-94	<0.2	<1	<10	<0.005	<0.005	<0.005	<0.005	<0.005
B6-2 *	2	29-Aug-94	<0.2	<1	20	<0.005	<0.005	<0.005	<0.005	<0.005
B6-5 *	5	29-Aug-94	<0.2	<1	10	<0.005	<0.005	<0.005	<0.005	<0.005
B6-10*	10	29-Aug-94	<0.2	<1	<10	<0.005	<0.005	<0.005	<0.005	<0.005
B7-2	2	30-Aug-94	27	<1	10	0.420	<0.010	0.750	0.050	1.220
B7-5	5	30-Aug-94	16	<1	<10	0.670	<0.020	<0.020	0.025	0.695
B7-10	10	30-Aug-94	520	<1	20	7.400	30.000	14.000	78.000	129.400
B8-2	2	29-Aug-94	3.4	<3	50	0.200	<0.005	0.560	0.020	0.780
B8-5	5	29-Aug-94	14	<1	<10	0.300	0.010	0.260	<0.020	0.570
B8-10	10	29-Aug-94	140	<1	20	2.100	5.800	4.000	21.000	32.900
B9-2	2	29-Aug-94	2.8	<1	20	0.330	0.005	0.410	0.070	0.815
B9-5	5	29-Aug-94	40	5	<10	1.200	0.013	2.600	0.150	3.963
B9-10	10	29-Aug-94	190	<1	20	4.300	11.000	5.500	28.000	48.800
B10-2	2	29-Aug-94	29	<1	150	0.038	0.048	0.180	1.200	1.466
B10-5	5	29-Aug-94	13	<1	30	<0.010	0.020	0.050	<0.010	0.070
B-10-10	10	29-Aug-94	<0.2	<1	<10	<0.005	<0.005	<0.005	<0.005	<0.005
B11-2	2	30-Aug-94	<0.2	<1	20	<0.005	<0.005	<0.005	<0.005	<0.005
B11-5	5	30-Aug-94	1	<1	<10	<0.005	<0.005	<0.005	<0.005	<0.005
B11-10	10	30-Aug-94	250	<1	40	1.100	0.350	4.400	21.000	26.850
B12-2	2	30-Aug-94	<0.2	<1	30	<0.005	<0.005	<0.005	<0.005	<0.005
B12-5	5	30-Aug-94	0.9	<1	<10	<0.005	<0.005	<0.005	<0.005	<0.005
B12-10	10	30-Aug-94	160	<1	30	0.970	0.190	4.100	20.000	25.260
B13-2	2	30-Aug-94	<1	220	600	<0.005	<0.005	<0.005	<0.005	<0.005
B13-5	5	30-Aug-94	4.2	10	40	<0.005	<0.005	0.020	<0.005	0.020
B13-10	10	30-Aug-94	6.9	3	20	0.360	<0.005	0.450	0.130	0.940
B14-2 *	(1) 2	30-Aug-94	<1	<100	410	<0.005	<0.005	<0.005	<0.005	<0.005
B14-5 *	5	30-Aug-94	1.6	<1	<10	0.010	<0.005	<0.005	<0.005	0.010
B14-10*	(2) 10	30-Aug-94	2.9	<1	<10	0.006	<0.005	0.010	<0.005	0.016
B15-2	2	30-Aug-94	<0.2	<10	420	<0.005	<0.005	<0.005	<0.005	<0.005
B15-5	5	30-Aug-94	<0.2	<1	<10	<0.005	<0.005	<0.005	<0.005	<0.005
B15-10	10	30-Aug-94	<0.2	<1	20	<0.005	<0.005	<0.005	<0.005	<0.005
B16-2	2	30-Aug-94	<0.2	10	50	<0.005	<0.005	<0.005	<0.005	<0.005
B16-5	5	30-Aug-94	28	<1	<10	0.160	<0.010	0.960	0.037	1.157
B16-10	10	30-Aug-94	130	<1	20	2.500	5.400	2.600	15.000	25.500

Data entered by DLM/19 SEP 94 Data proofed by REG QA/QC by REG

Notes:

- \* denotes that the sample was analyzed for semivolatile organic compounds using EPA method 8270
- (1) 2-Methylnaphthalene detected at 0.670 ppm.
- (2) 2-Methylnaphthalene detected at 1.100 ppm.

NA = not analyzed

TPHg = total petroleum hydrocarbons as gasoline

TPHd = total petroleum hydrocarbons as diesel

TRPH = total recoverable petroleum hydrocarbons

TABLE 3

CONFIRMATION SOIL SAMPLES FROM THE EXCAVATION  
 IN THE VICINITY OF SB-12 AND SB-15  
 PROPOSED 40TH STREET EXTENSION  
 EMERYVILLE, CALIFORNIA

(concentrations expressed in parts per million)

Sample ID	Sample Depth (ft bgs)	Date	Lab	TPHg (1)	TPHd (2)	TPHo (3)	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	Total BTEX
North	7	11-Oct-94	AEN(4)	54	16	50	0.027	0.010	0.140	0.090	0.267
South	7	11-Oct-94		7,900	66	64	13.000	210.000	220.000	1,200.000	1,643.000
East	7	11-Oct-94		37	6	10	0.010	0.038	0.052	0.670	0.770
West	7	11-Oct-94		12,000	150	180	16.000	170.000	360.000	1,700.000	2,246.000
Bottom	8	11-Oct-94		2,400	140	160	0.520	66.000	73.000	500.000	639.520

NOTES:

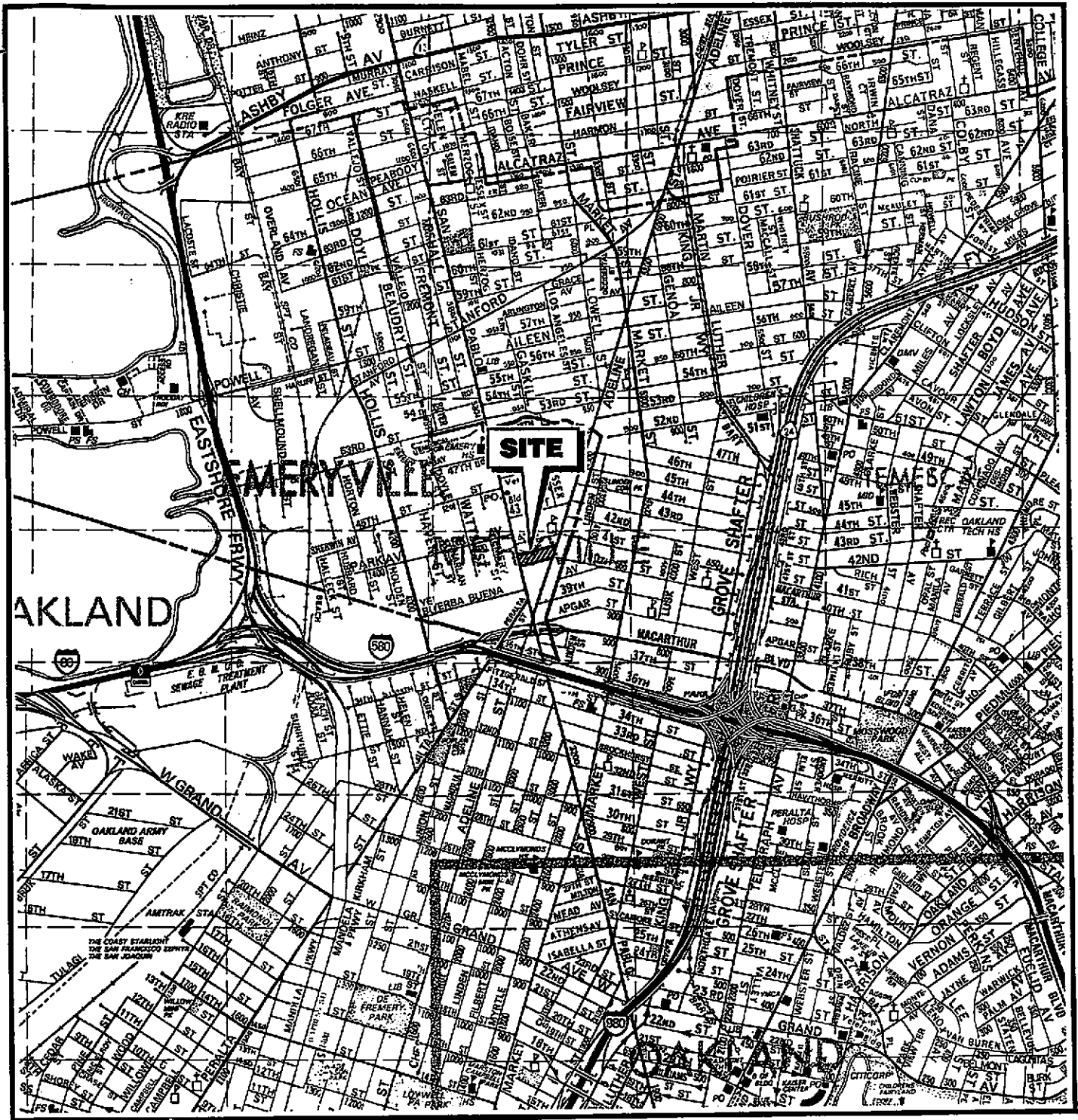
AEN = American Environmental Network, Pleasant Hill, California

ft bgs = feet below ground surface

TPHg = total petroleum hydrocarbons as gasoline

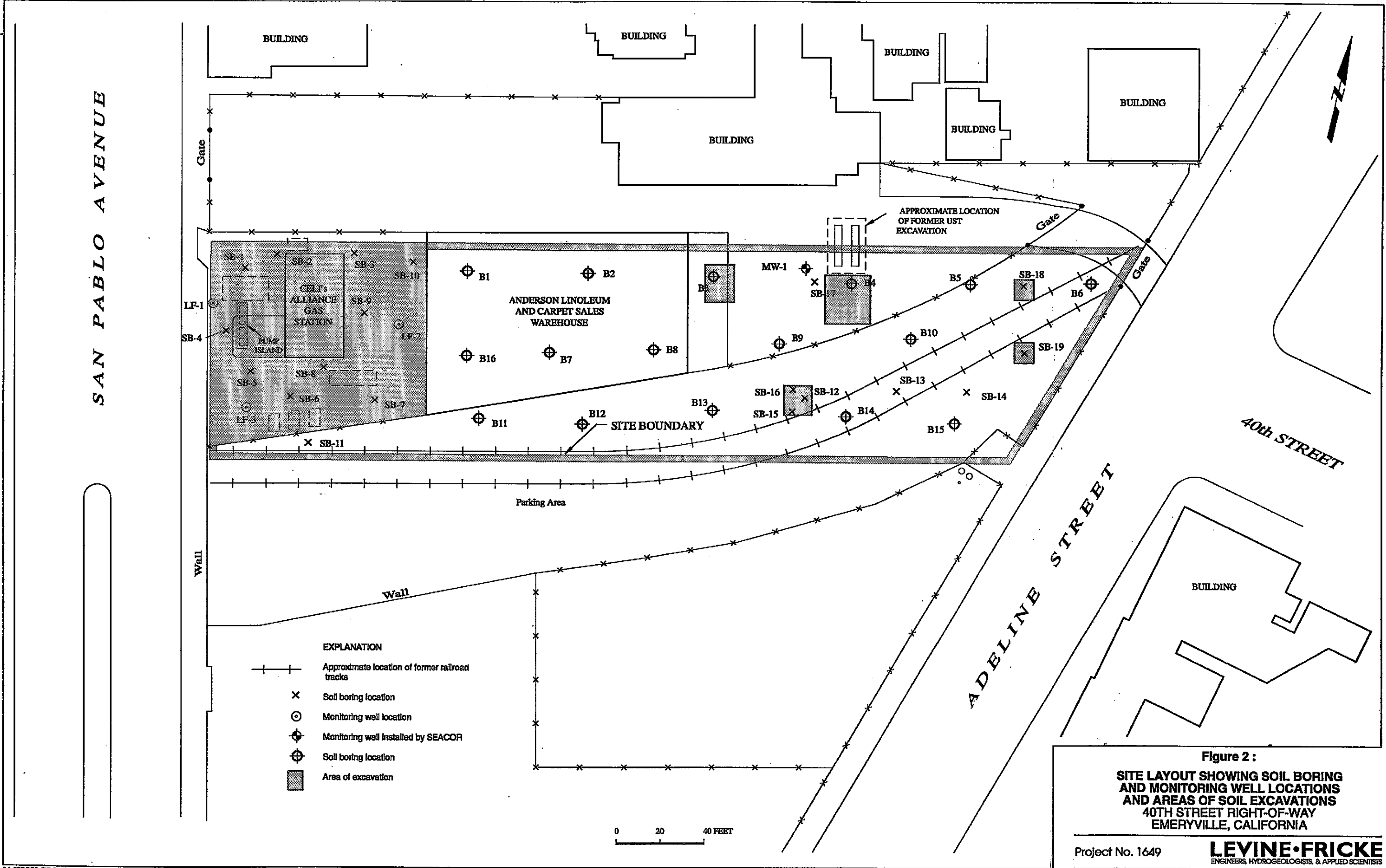
TPHd = total petroleum hydrocarbons as diesel

TPHo = total petroleum hydrocarbons as oil



MAP SOURCE:  
 Thomas Bros. Map  
 Alameda and Contra Costa Counties  
 1992 Edition

**Figure 1: SITE LOCATION MAP**  
 YERBA BUENA PROJECT SITE



**Figure 2 :**  
**SITE LAYOUT SHOWING SOIL BORING AND MONITORING WELL LOCATIONS AND AREAS OF SOIL EXCAVATIONS 40TH STREET RIGHT-OF-WAY EMERYVILLE, CALIFORNIA**

**APPENDIX A**

**LABORATORY CERTIFICATES**

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

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

ATTN: RON GOLOUBOW  
CLIENT PROJ. ID: 1649.34  
CLIENT PROJ. NAME: EAST BAY BRDG.  
C.O.C. NUMBER: 12577

REPORT DATE: 09/30/94

DATE(S) SAMPLED: 09/13/94

DATE RECEIVED: 09/14/94

AEN WORK ORDER: 9409156


### PROJECT SUMMARY:

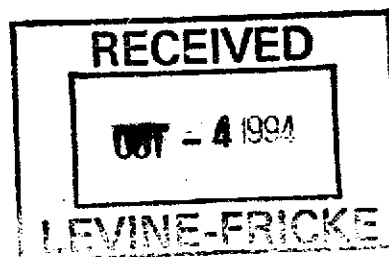
On September 14, 1994, this laboratory received 1 water sample(s).

Client requested sample(s) be analyzed for 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





## LEVINE-FRICKE

SAMPLE ID: SFBC-MW1  
 AEN LAB NO: 9409156-01  
 AEN WORK ORDER: 9409156  
 CLIENT PROJ. ID: 1649.34

DATE SAMPLED: 09/13/94  
 DATE RECEIVED: 09/14/94  
 REPORT DATE: 09/30/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	510 *	0.5	ug/L	09/20/94
Toluene	108-88-3	68 *	0.5	ug/L	09/17/94
Ethylbenzene	100-41-4	100 *	0.5	ug/L	09/17/94
Xylenes, Total	1330-20-7	160 *	2	ug/L	09/17/94
Purgeable HCs as Gasoline	5030/GCFID	2.3 *	0.05	mg/L	09/17/94
#Extraction for TPH	EPA 3510	-		Extrn Date	09/21/94
TPH as Diesel	GC-FID	0.2 *	0.05	mg/L	09/21/94
#Water Extrn for HCs (IR)	SM 5520CF	-		Extrn Date	09/18/94
Hydrocarbons (IR)	SM 5520CF	1 *	0.5	mg/L	09/18/94

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

AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9409156

CLIENT PROJECT ID: 1649.34

Quality Control 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: 9409156  
DATE EXTRACTED: 09/21/94  
INSTRUMENT: C  
MATRIX: WATER

Surrogate Standard Recovery Summary  
Method: EPA 3510 GCFID

---

Date Analyzed	Client Id.	Lab Id.	Percent Recovery
			n-Pentacosane
09/21/94	SFBC-MW1	01	104

---

Current QC Limits

<u>Surrogate</u>	<u>Percent Recovery</u>
n-Pentacosane	30-120

QUALITY CONTROL DATA

AEN JOB NO: 9409156  
 DATE EXTRACTED: 09/20/94  
 DATE ANALYZED: 09/21/94  
 INSTRUMENT: D  
 MATRIX: WATER

Method Spike Recovery Summary  
 Method: EPA 3510 GCFID

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Diesel	1.62	99	6	63-109	10

Method Blank Result

Lab Id.	Extractable Hydrocarbons as Diesel (mg/L)
092194-BLANK	ND
Reporting Limit	0.05

QUALITY CONTROL DATA

AEN JOB NO: 9409156  
 DATE EXTRACTED: 09/18/94  
 DATE ANALYZED: 09/18/94  
 INSTRUMENT: IR  
 MATRIX: WATER

Matrix Spike Recovery Summary  
 Method: SM 5520

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Oil	7.5	93	2	83-107	5

Method Blank Result  
 Method: SM 5520

Lab Id.	Hydrocarbons (mg/L)
091894-BLANK	ND
Reporting Limit	0.5

QUALITY CONTROL DATA

AEN JOB NO: 9409156  
INSTRUMENT: F  
MATRIX: WATER

Surrogate Standard Recovery Summary  
Method: EPA 8020, 5030 GCFID

---

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
09/17/94	SFBC-MW1	01	105

---

Current QC Limits

<u>Surrogate</u>	<u>Percent Recovery</u>
Fluorobenzene	86-110

QUALITY CONTROL DATA

AEN JOB NO: 9409156  
 DATE ANALYZED: 09/15/94  
 SAMPLE SPIKED: 9409113-07  
 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	RPD
Benzene	18	97	6	82-125	15
Toluene	47	99	6	75-126	17
Hydrocarbons as Gasoline	500	98	4	75-132	16

AEN LAB NO: 0917-BLANK  
 DATE ANALYZED: 09/17/94

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





# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

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

REPORT DATE: 10/24/94

DATE(S) SAMPLED: 10/11/94

DATE RECEIVED: 10/11/94

AEN WORK ORDER: 9410115

ATTN: RON GOLOUBOW  
CLIENT PROJ. ID: 1649.34  
CLIENT PROJ. NAME: 40TH ST. EXT.  
C.O.C. NUMBER: 013048

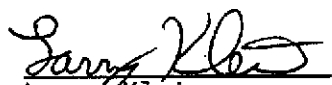
### PROJECT SUMMARY:

On October 11, 1994, this laboratory received 5 soil sample(s).

Client requested sample(s) be analyzed for 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



## LEVINE-FRICKE

SAMPLE ID: SB15+12 NORTH  
 AEN LAB NO: 9410115-01  
 AEN WORK ORDER: 9410115  
 CLIENT PROJ. ID: 1649.34

DATE SAMPLED: 10/11/94  
 DATE RECEIVED: 10/11/94  
 REPORT DATE: 10/24/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	27 *	10	ug/kg	10/19/94
Toluene	108-88-3	10 *	10	ug/kg	10/19/94
Ethylbenzene	100-41-4	140 *	10	ug/kg	10/19/94
Xylenes, Total	1330-20-7	90 *	10	ug/kg	10/19/94
Purgeable HCs as Gasoline	5030/GCFID	54 *	2	mg/kg	10/19/94
#Extraction for TPH	EPA 3550	-		Extrn Date	10/15/94
TPH as Diesel	GC-FID	16 *	1	mg/kg	10/20/94
TPH as Oil	GC-FID	50 *	5	mg/kg	10/20/94

Reporting limits elevated for gasoline/BTEX 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: SB15+12 SOUTH  
 AEN LAB NO: 9410115-02  
 AEN WORK ORDER: 9410115  
 CLIENT PROJ. ID: 1649.34

DATE SAMPLED: 10/11/94  
 DATE RECEIVED: 10/11/94  
 REPORT DATE: 10/24/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	13,000 *	2000	ug/kg	10/20/94
Toluene	108-88-3	210,000 *	2000	ug/kg	10/20/94
Ethylbenzene	100-41-4	220,000 *	2000	ug/kg	10/20/94
Xylenes, Total	1330-20-7	1,200,000 *	2000	ug/kg	10/20/94
Purgeable HCs as Gasoline	5030/GCFID	7,900 *	400	mg/kg	10/20/94
#Extraction for TPH	EPA 3550	-		Extrn Date	10/15/94
TPH as Diesel	GC-FID	66 *	1	mg/kg	10/20/94
TPH as Oil	GC-FID	64 *	5	mg/kg	10/20/94

Reporting limits elevated for gasoline/BTEX 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: SB15+12 EAST  
 AEN LAB NO: 9410115-03  
 AEN WORK ORDER: 9410115  
 CLIENT PROJ. ID: 1649.34

DATE SAMPLED: 10/11/94  
 DATE RECEIVED: 10/11/94  
 REPORT DATE: 10/24/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	10 *	10	ug/kg	10/19/94
Toluene	108-88-3	38 *	10	ug/kg	10/19/94
Ethylbenzene	100-41-4	52 *	10	ug/kg	10/19/94
Xylenes, Total	1330-20-7	670 *	10	ug/kg	10/19/94
Purgeable HCs as Gasoline	5030/GCFID	37 *	2	mg/kg	10/19/94
#Extraction for TPH	EPA 3550	-		Extrn Date	10/15/94
TPH as Diesel	GC-FID	6 *	1	MG/kg	10/20/94
TPH as Oil	GC-FID	10 *	5	mg/kg	10/20/94

Reporting limits elevated for gasoline/BTEX 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: SB15+12 WEST  
 AEN LAB NO: 9410115-04  
 AEN WORK ORDER: 9410115  
 CLIENT PROJ. ID: 1649.34

DATE SAMPLED: 10/11/94  
 DATE RECEIVED: 10/11/94  
 REPORT DATE: 10/24/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	16,000 *	1000	ug/kg	10/19/94
Toluene	108-88-3	170,000 *	1000	ug/kg	10/19/94
Ethylbenzene	100-41-4	360,000 *	1000	ug/kg	10/19/94
Xylenes, Total	1330-20-7	1,700,000 *	1000	ug/kg	10/19/94
Purgeable HCs as Gasoline	5030/GCFID	12,000 *	200	mg/kg	10/20/94
#Extraction for TPH	EPA 3550	-		Extrn Date	10/15/94
TPH as Diesel	GC-FID	150 *	1	mg/kg	10/20/94
TPH as Oil	GC-FID	180 *	5	mg/kg	10/20/94

Reporting limits elevated for gasoline/BTEX 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: SB15+12 BOTTOM  
 AEN LAB NO: 9410115-05  
 AEN WORK ORDER: 9410115  
 CLIENT PROJ. ID: 1649.34

DATE SAMPLED: 10/11/94  
 DATE RECEIVED: 10/11/94  
 REPORT DATE: 10/24/94

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	520 *	500	ug/kg	10/20/94
Toluene	108-88-3	66,000 *	500	ug/kg	10/20/94
Ethylbenzene	100-41-4	73,000 *	500	ug/kg	10/20/94
Xylenes, Total	1330-20-7	500,000 *	500	ug/kg	10/20/94
Purgeable HCs as Gasoline	5030/GCFID	2.400 *	100	mg/kg	10/20/94
#Extraction for TPH	EPA 3550	-		Extrn Date	10/15/94
TPH as Diesel	GC-FID	140 *	1	mg/kg	10/20/94
TPH as Oil	GC-FID	160 *	5	mg/kg	10/20/94

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

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

AEN (CALIFORNIA)  
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9410115

CLIENT PROJECT ID: 1649.34

Quality Control 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

METHOD: EPA 3550 GCFID

AEN JOB NO: 9410115  
AEN LAB NO: 1015-BLANK  
DATE EXTRACTED: 10/15/94  
DATE ANALYZED: 10/19/94

Method Blank

	Result (mg/kg)	Reporting Limit (mg/kg)
Diesel	ND	1



QUALITY CONTROL DATA

METHOD: EPA 3550 GCFID

AEN JOB NO: 9410115  
 DATE EXTRACTED: 10/15/94  
 INSTRUMENT: C  
 MATRIX: SOIL

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery
			n-Pentacosane
10/20/94	SB15+12 North	01	66
10/20/94	SB15+12 South	02	80
10/20/94	SB15+12 East	03	63
10/20/94	SB15+12 West	04	81
10/20/94	SB15+12 Bottom	05	79
QC Limits:			45-120

DATE EXTRACTED: 10/14/94  
 DATE ANALYZED: 10/20/94  
 SAMPLE SPIKED: LCS  
 INSTRUMENT: C

Laboratory Control Sample

Analyte	Spike Added (mg/kg)	Average Percent Recovery	QC Limits
			Percent Recovery
Diesel	31.0	98	53-103

## QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9410115  
AEN LAB NO: 1019-BLANK  
DATE ANALYZED: 10/19/94

## Method Blank

	CAS #	Result (ug/kg)	Reporting Limit (ug/kg)
Benzene	71-43-2	ND	5
Toluene	108-88-3	ND	5
Ethylbenzene	100-41-4	ND	5
Xylenes, Total	1330-20-7	ND	5
Purgeable Hydrocarbons as: Gasoline		ND mg/kg	0.2 mg/kg

AEN LAB NO: 1020-BLANK  
DATE ANALYZED: 10/20/94

## Method Blank

	CAS #	Result (ug/kg)	Reporting Limit (ug/kg)
Benzene	71-43-2	ND	5
Toluene	108-88-3	ND	5
Ethylbenzene	100-41-4	ND	5
Xylenes, Total	1330-20-7	ND	5
Purgeable Hydrocarbons as: Gasoline		ND mg/kg	0.2 mg/kg

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9410115  
 INSTRUMENT: E  
 MATRIX: SOIL

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery
			Fluorobenzene
10/19/94	SB15+12 North	01	97
10/20/94	SB15+12 South	02	98
10/19/94	SB15+12 East	03	97
10/19/94	SB15+12 West	04	104
10/20/94	SB15+12 Bottom	05	99
QC Limits:			84-117

DATE ANALYZED: 10/19/94  
 SAMPLE SPIKED: LCS  
 INSTRUMENT: E

Laboratory Control Sample

Analyte	Spike Added (ug/kg)	Percent Recovery	QC Limits
			Percent Recovery
Benzene	35.5	90	69-108
Toluene	95.7	90	70-106
Hydrocarbons as Gasoline	1000	91	69-110

\*\*\* END OF REPORT \*\*\*

K-15-N

# CHAIN OF CUSTODY / ANALYSES REQUEST FORM

9410115

Project No.: 1649134	Field Logbook No.:	Date: 10/11/94	Serial No.:
Project Name: 40th St. Extension	Project Location: Emeryville CA		No: 013048

SAMPLES					ANALYSES							SAMPLERS:		
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH	TPHs	BTEX	TPHms	HOLD	RUSH	REMARKS
SB15 H2 North	10/11		01A	1	Soil			X	X	X	X			Normal TAT
SB15 H2 South	↓		02A	1				X	X	X	X			
SB15 H2 East	↓		03A	1				X	X	X	X			Results to Rough
SB15 H2 West	↓		04A	1				X	X	X	X			
SB15 H2 Bottom	↓		05A	1				X	X	X	X			

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE: 10/11/94	TIME: 1300	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE: 10-11-94	TIME: 1300
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
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: <i>ASU</i>				