

# WORKPLAN

ENVIRONMENTAL  
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## PROPOSED APPROACH FOR DEVELOPMENT OF SITE-SPECIFIC TARGET LEVELS FOR SOIL AND GROUNDWATER - 40TH STREET RIGHT-OF-WAY EMERYVILLE, CALIFORNIA

*Prepared for*

City of Emeryville Redevelopment Agency  
2200 Powell Street, 12th Floor  
Emeryville, CA 94608-4356

February 5, 1997

**Woodward-Clyde** 

Woodward-Clyde Consultants  
500 12th Street, Suite 100  
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(510) 893-3600  
941114NA



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February 5, 1997  
941114NA

Ms. Susan Hugo  
Division of Environmental Protection  
Department of Environmental Health  
Alameda County Health Agency  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, California 94502

Subject: Transmittal of Proposed RBCA Approach for the  
40th Street Right-of-Way  
Emeryville, California

Dear Ms. Hugo:

On behalf of the City of Emeryville Redevelopment Agency, transmitted herewith is the subject site proposed RBCA approach for your review and approval. The approach has been prepared following the recommendations in the Regional Water Quality Control Board - San Francisco Bay Region's Directive of January 5, 1996.

Please do not hesitate to call me at (510) 874-3060 or Mr. Ignacio Dayrit at (510) 596-4356 for questions or comments.

Sincerely,

Xinggang Tong, P.E., Ph.D.  
Project Manager

Enclosure.



ALAMEDA COUNTY  
HEALTH CARE SERVICES

AGENCY  
DAVID J. KEARS, Agency Director



ENVIRONMENTAL HEALTH SERVICES  
ENVIRONMENTAL PROTECTION (LOP)  
1131 Harbor Bay Parkway, Suite 250  
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March 7, 1997  
STID # 567

Mr. Ignacio Dayrit  
City of Emeryville Redevelopment Agency  
2200 Powell Street, Suite 1200  
Emeryville, California 94608

**RE: Proposed Approach for Development of Site Specific Target Levels for Soil and Groundwater - 40th Street Right-of-Way, Emeryville, California 94608**

Dear Mr. Dayrit:

This agency has reviewed the "Proposed Approach for Development Of Risk Based Site Specific Target Levels (SSTLs) for Soil and Groundwater for the 40th Street Right-of-Way" dated February 5, 1997, prepared and submitted by Woodward Clyde Consultants for the above referenced site.

This office concurs with the proposed RBCA approach for the subject site.

Please call me at (510) 567-6780 if you have any questions regarding this letter or the subject site.

Sincerely,

Susan L. Hugo  
Senior Hazardous Materials Specialist

Madhulla Logan  
Hazardous Materials Specialist

c: Mee Ling Tung, Director, Environmental Health  
Gordon Coleman, Acting Chief, Environmental Protection Division  
Kevin Graves, San Francisco Bay RWQCB  
Xinggang Tong / Marco Lobascio, Woodward Clyde Consultants  
500 12th Street, Suite 100, Oakland, CA 94607

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February 5, 1997  
941114NA

Ms. Susan Hugo  
Senior Hazardous Materials Specialist  
Alameda County Health Agency  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, California 94502

**Subject: Proposed Approach for Development of Site-Specific Target Levels for Soil and Groundwater - 40th Street Right-of-Way, Emeryville, California**

Dear Ms. Hugo:

On behalf of the City of Emeryville Redevelopment Agency (the City), Woodward-Clyde Consultants (WCC) presents a proposed approach for development of risk-based site-specific target levels (SSTLs) for soil and groundwater for the 40th Street Right-of-Way between San Pablo Avenue and Adeline Street in Emeryville, California (the site). Following the recommendations in the Regional Water Quality Control Board (RWQCB) - San Francisco Bay Region's Directive of January 5, 1996, a Risk-Based Corrective Action (RBCA) evaluation based on the ASTM Standard E-1739-95 will be used to develop the SSTLs. The RBCA evaluation approach for the site was described in the Closure Workplan for the Former Celis Alliance Fuel Station (WCC 1996), which was approved by the Alameda County Department of Environmental Health (ACDEH) in a letter to the City dated December 11, 1996. The soil and groundwater SSTLs to be developed will be utilized to evaluate the need (if any) and extent of remediation activities at the site, and ultimately to obtain a no further action (NFA) decision from the ACDEH.

Site-specific approach and parameters for the risk-based evaluation are presented here for your review and approval prior to initiating the evaluation. This letter presents an overview of the site environmental setting, followed by a description of the RBCA approach. Appendix A provides a summary of site investigations results. A list of references is provided at the end of this letter.

## ENVIRONMENTAL SETTING

The site is now the section of 40th Street Right-of-Way between San Pablo Avenue and Adeline Street in Emeryville, California (Figure 1), and is approximately 0.83 acres. Prior to the road construction, the site was occupied by the former Celis Alliance Fuel Station (Former Celis Area), the former Anderson Linoleum and Carpet Sales warehouse (Former Warehouse Area), and a portion of an asphalt-paved parking lot (Former Parking Lot Area). In June 1993, Levine-Fricke (1993a) conducted a Phase I environmental site assessment (ESA) on the site.



# Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 2

Geologically, the Phase I ESA investigation found that the site is underlain by Holocene alluvial deposits, primarily unconsolidated, fine sand, silt, and clayey silt with occasional thin beds of coarse sand. The site is located approximately 1 mile east of the San Francisco Bay and is essentially flat, with an approximate elevation of 40 feet above mean sea level. The area was redeveloped in 1995 into part of the 40th Street Right-of-Way and was paved with asphalt-concrete mixture. Properties next to the site are either streets or parking lots also having asphalt-concrete surface. Subsurface TPH contamination is a regional problem. Several TPH-affected parcels exist in the area. Information about each of the three areas (see Figure 2) are provided below.

## Former Celis Area

The former Celis Alliance Fuel Station was located at 4000 San Pablo Avenue, and occupied an area of approximately 100 feet by 100 feet. A commercial fueling and auto service station operated at the site since 1936 (it ceased operation in April 1994). The station contained a service garage with an attached office and canopy, and one fuel dispenser island, as shown on Figure 2.

Environmental conditions of this area can be summarized as follows:

- All underground storage tanks and associated piping were removed in 1994;
- The area has been extensively characterized. Soil and groundwater samples collected at various times from both on- and off-site locations were analyzed for TPH as gasoline, diesel, motor oil, oil and grease, BTEX, organic lead, PCBs, Creosote, PNAs, halogenated VOCs, and metals (Cd, Cr, Pb, Ni, Zn, and WET CAM 17 metals). Results from these investigations indicate that only petroleum hydrocarbons (TPHg, TPHd, and BTEX) appear to be constituents of concern.
- Three on-site groundwater monitoring wells were installed in 1993 and one downgradient off-site groundwater monitoring well was installed in 1994. Free product was found in one of the on-site monitoring wells (LF-1, now destroyed), but not in others.
- On-site soil from surface to groundwater table was removed and disposed of off-site in 1994. The three on-site monitoring wells were destroyed. Soil samples collected from the side walls and the bottom of the excavation pit showed benzene concentrations up to 3.8 mg/kg, TPHg up to 1,000 mg/kg, and TPHd up to 18,000



## Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 3

mg/kg in the area where the free product was measured in the monitoring well. Clean soil was imported to fill the excavation.

### Former Warehouse Area

The warehouse building, built in 1957 or before, was located in the center of the site, directly behind the fuel station and was occupied by Anderson Linoleum and Carpet Sales in 1993. The entrance to the warehouse faced Adeline Street, and consisted of loading docks and doors. The area directly in front of the loading docks was concrete-paved with remainder of the area paved with asphalt (Levine-Fricke, 1993a). The interior of the warehouse was observed to contain large rolls of linoleum, carpet, padding, and several containers of floor adhesive, and was used for storage (Levine-Fricke, 1993b). A monitoring well, MW-1, located immediately adjacent to the concrete-paved area along the site boundary, was installed in September 1992 to assess soil and groundwater quality in the vicinity of two former 10,000-gallon USTs (one containing diesel and the other gasoline) removed in 1989 (Levine-Fricke, 1993b). The well was sampled on a quarterly basis since September 1992 and was abandoned on November 1994. The two USTs and the monitoring well belonged to the former San Francisco Bread Company site, which was located adjacent to and north of the site.

In 1993, one soil boring was drilled approximately 15 feet southwest of MW-1 and three soil samples were collected at depths of 4, 5, 7, and 12 feet bgs and analyzed for BTEX, TPH-gas, -diesel,-motor oil, TRPH, VOCs, PCBs, and SVOCs (Levine-Fricke, 1993b). Results indicated concentrations of TPH-g (up to 500 mg/kg) and benzene, toluene, ethylbenzene, and xylene at maximum concentrations of 4, 27, 12, and 69 mg/kg, respectively. TRPH was detected at concentrations of 70 mg/kg or less. No other VOCs, nor PCBs were detected in any of the soil samples. Naphthalene, 2-methylnaphthalene, and 4-methylphenol were detected at concentrations of 1.7, 1.8, and 0.4 mg/kg, respectively (Levine-Fricke, 1993b). Results for groundwater samples collected from MW-1 indicated TPH-gas and benzene at concentrations of 2.9 and 0.470 mg/L, respectively (Levine-Fricke, 1993b).

In 1994, Levine-Fricke (1994) drilled 16 soil borings east of the service station, of which 5 were located inside the warehouse, to a depth of approximately 10 feet. The samples near the former San Francisco Bread Company UST location indicated the presence of TPH-gas and benzene, toluene, ethylbenzene, and xylenes (BTEX) at concentrations up to 8,800, 14, 62, 190, and 870 mg/kg, respectively. TPH-gas and BTEX were detected inside the warehouse at maximum concentrations of 690, 12, 50, 18, and 99 mg/kg, respectively.



## **Woodward-Clyde**

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 4

Soil was excavated in the vicinity of B3 (120 cubic yards) and B4 (175 cubic yards) from surface to 8 to 10 feet bgs (Levine-Fricke, 1994). No confirmation samples were taken but relatively elevated PID measurements indicated that some affected soil remains in place.

### **Former Parking Lot Area**

Railroad tracks were crossing San Pablo Avenue and the adjacent sidewalk. Portions of the railroad tracks, present since 1947, have been either paved over in place or removed approximately in 1992 and the roadway or sidewalk surface repaved with asphalt.

Seven soil borings were drilled to depths ranging from 3.5 to 7 feet bgs, and 14 soil samples were collected to depths ranging from 1 foot to 6.5 feet and analyzed for TPH-gas, -diesel, -motor oil, TRPH, and PCBs (Levine-Fricke, 1993b). Results indicated significant concentrations of TPH-gas (up to 6,500 mg/kg), TPH-diesel and TPH-motor oil maximum detections were 560 and 740 mg/kg, respectively. TRPH was detected at concentrations up to 4,600 mg/kg, and PCBs (aroclor 1260) was detected in one sample (SB-14) at a concentration of 0.22 mg/kg (Levine-Fricke, 1993b).

In 1994, soil was excavated in the vicinity of SB-12 (55 cubic yards), SB-15 (55 cubic yards), SB-18 (30 cubic yards), and SB19 (30 cubic yards) to a depth of approximately 6 feet bgs (Levine-Fricke, 1994). Confirmation samples were collected from the excavations in the vicinity of SB-12 and SB-15 and indicate that elevated concentrations of TPH-gas 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 (Levine-Fricke, 1994).

### **PROPOSED APPROACH**

This section describes the proposed approach to develop risk-based SSTLs for soil and groundwater at the site. The SSTLs will be developed according to the methods described in the American Society for Testing and Materials (ASTM) guidance ES 1739-95 "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites" (RBCA, ASTM 1995). The RBCA methodology evaluates sites according to a three tiered approach. We will apply Tier 1 to initially classify the site, and then develop the SSTLs using Tier 2, as appropriate.



# Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 5

## RBCA Tier 1

The scope of the RBCA Tier 1 process is to classify the site in terms of urgency of need of initial corrective action, based on (1) historical information, (2) visual inspection, and (3) site assessment data. Specifically, Tier 1 consists in the following:

- Identification of site-related contaminant sources, environmental impacts, potential transport pathways, and potentially impacted receptors
- Comparison of site-related contaminant concentrations with conservative corrective action goals based on a list of non-site-specific risk-based screening levels (RBSLs) and other appropriate standards.

Tier 1 RBSL concentrations are based on default exposure and site parameters. Since the parameters are not site-specific, Tier 1 RBSLs incorporate a great amount of conservatism, and therefore are quite stringent.

## RBCA Tier 2

Some of the maximum detected chemical concentrations in soil and groundwater at the site may exceed the Tier 1 RBSL concentrations. Therefore, according to the RBCA process, after the initial Tier 1 screening, the site (or the part of the site in which the exceedance occurred) will be evaluated and classified according to Tier 2. In Tier 2, a new set of risk-based site-specific target levels (SSTLs) for the chemicals and exposure pathways of concern is developed based on site-specific input parameters. Comparison of site chemical concentrations in soil and groundwater with the SSTLs will enable risk managers to evaluate whether the site may be closed without need of further consideration or, if appropriate, identify specific areas where additional investigation and/or remedial action is recommended.

## **ASSUMPTIONS FOR THE RISK-BASED EVALUATION**

The RBCA Tier 1 and 2 evaluation will be based on the following assumptions:

### **Overall Approach**

For each of the areas of concern, the maximum detected media concentration will be compared with the appropriate Tier 1 RBSL concentration. If necessary, RBSLs will be developed for





# Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 6

chemicals that do not have published RBSLs. This will be accomplished with a computer software tool developed by WCC. The model reproduces the RBSL values published by the ASTM, and has been already used for risk assessments under Cal-EPA DTSC and Alameda County oversight. If the maximum detections do not exceed RBSL in a given area, the area is considered not of concern. If RBSLs are exceeded, then a new set of SSTLs will be generated according to Tier 2, as appropriate. Soil and groundwater that exceed Tier 2 SSTLs will be recommended for further consideration in terms of additional investigation and/or remedial action.

## Source Characterization

Chemicals of concern for the risk-based assessment will include the following:

- Gasoline and diesel indicator compounds: benzene, toluene, ethylbenzene, xylenes (BTEX), benzo(a)pyrene, and naphthalene.
- MTBE and lead.

In case benzo(a)pyrene and naphthalene data are not available for soil and groundwater in a specific area, concentration for these compounds will be based on available total petroleum hydrocarbon (TPH) as diesel data assuming the following: naphthalene concentration is 0.13 percent of TPH diesel concentration, and benzo(a)pyrene concentration is 0.07 milligrams (mg) for every kilogram (kg) of TPH diesel detected (Guerin et al., 1984).

Due to the historical nature of the hydrocarbon source(s), MTBE is not expected to be a significant concern at the site. However, we will develop SSTLs for MTBE to provide reference criteria for future monitoring activities

For lead in soil we will use the USEPA Region 9 Industrial PRG of 1,000 mg/kg as screening level. If necessary, we will develop a lead SST using the Cal-EPA DTSC Leadsread model.

## Exposure Scenarios and Assumptions

- 1) Soil SSTLs will be developed for an outdoor residential exposure scenario, based on the fact that the present and future land use for the site is to continue to be a city street. It will be conservatively assumed that residents in the area may be spending up to two hours per day at the site, 350 days per year, for 30 years.



# Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 7

- 2) Shallow groundwater SSTLs will be developed for an indoor commercial exposure scenario, since the shallow groundwater may migrate off-site, and the land use of the properties downgradient of the site is commercial.
- 3) We will evaluate a construction worker scenario, to verify that the above described soil and shallow groundwater SSTLs are also protective of construction workers.
- 4) The exposure pathway of concern is inhalation of vapor emissions from soil and from shallow groundwater. It is assumed that the site will remain covered with the existing asphalt pavement.
- 5) Exposure point concentrations for the vapor emission estimations will be based on detected concentrations averaged over the respective area of emission and depth of emission. Where appropriate, particular "hot spots" will be addressed individually.
- 6) Shallow groundwater at the site is not considered a viable source of drinking water.
- 7) Soil and groundwater SSTLs will be calculated for a cancer risk level of  $1 \times 10^{-5}$  and a chronic hazard quotient of 1.

## Use of the Site-Specific Target Levels in Remedial Response

The SSTLs developed in RBCA Tier 2 are site-specific concentrations in soil and shallow groundwater that are estimated to be protective of human health and the environment based on the application of exposure and chemical fate and transport models. The SSTLs are based on conservative exposure assumptions and input parameters (e.g., for a residential scenario: 30 years, 350 days/year, 24 hours/day continuous exposure to an infinite mass, non-degrading chemical source, etc.). However, the SSTLs do not necessarily represent the cleanup goals for the site. In general, if the SSTLs are exceeded, the site conditions may warrant further consideration in terms of additional investigation, monitoring, fate and transport modeling, or remedial action. On the other hand, if the SSTLs are not exceeded, the site does not require further consideration.

Cleanup goals should consider potential effects on human health and the environment as well as other criteria described by the National Contingency Plan (NCP, USEPA 1990). The SSTLs produced by a risk-based evaluation represent only one of the variables in the remedial action equation leading towards cleanup goals. The SSTLs are a conservative initial reference for site cleanup, but the cleanup goals are the outcome of risk management decisions, which consider



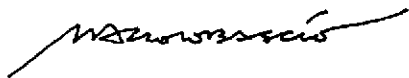
## Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 8

the protection of human health and the environment as well as the other remedial action criteria listed in the NCP (i.e., implementability, cost effectiveness, remediation time frame, public acceptability, etc.). In conclusion, the ASTM RBCA Tier 2 SSTLs developed for the site represent a conservative starting point for remedial decision making.

We appreciate your consideration of the risk assessment approach before we initiate this activity. If you have any questions, please do not hesitate to contact Marco Lobascio at (510) 874-3254 or Xinggang Tong at (510) 874-3060.

Sincerely,



Marco C. Lobascio, R.E.A.  
RBCA Specialist



Xinggang Tong, Ph.D., P.E.  
Project Manager

cc: Ms. Madhulla Logan, Alameda County  
Mr. Ignacio Dayrit, City of Emeryville Redevelopment Agency

### REFERENCES

- ASTM. 1995. "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites". 1739-95. November.
- Calabrese et al. 1993. Hydrocarbon Contaminated Soils. Volume III. Lewis Publishers.
- California State Water Resource Control Board, December 8, 1995. Interim Guidance on Required Cleanup at Low Risk Fuel Sites.
- Guerin, M. R., et al., 1984. Comparative Toxicological and Chemical Properties of Fuels Developed from Coal, Shale, or Petroleum. Oak Ridge National Laboratory. Presented at the 1984 Spring National Meeting of the American Institute of Chemical Engineers, Anaheim, CA, May 20-23.
- Lawrence Livermore National Laboratory, 1995. Environmental Protection Department. Recommendations To Improve the Cleanup Process for California's Leaking Underground Fuel Tanks (LUFTs). October 16.



## Woodward-Clyde

Ms. Susan Hugo  
Alameda County Health Agency  
February 5, 1997  
Page 9

Levine-Fricke, June 1993a. Phase I Environmental Site Assessment, 40th Street Right-of-Way, Emeryville, California.

Levine-Fricke, September 1993b. Phase II Investigation Results, Proposed 40th Street Right-of-Way, Emeryville, California.

Levine-Fricke, March 1994a. Further Soil and Ground-water Investigation, Fuel Station, 40th Street Right-of-Way, Emeryville, California.

Levine-Fricke, July 1994b. Report on Removal of Six Underground Fuel Storage Tanks and Associated Piping, Celis Alliance Fueling Station, 4000 San Pablo Avenue, Emeryville, California.

Regional Water Quality Control Board - North Coast, San Francisco Bay, and Central Valley Regions, August, 1990. Tri-Regional Board Staff Recommendation for Preliminary Evaluation and Investigation of Underground Tank Sites. Appendix A- Reports, August 1991.

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U.S. Environmental Protection Agency (U.S. EPA), 1990. 40 CFR Part 300. Fed. Reg. 55 (46): 8660-1990.

U.S. EPA 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. Intermittent Bulletin, Volume 1, Number 1, Office of Solid Waste and Emergency Response, Washington, D.C. PB92-963373.



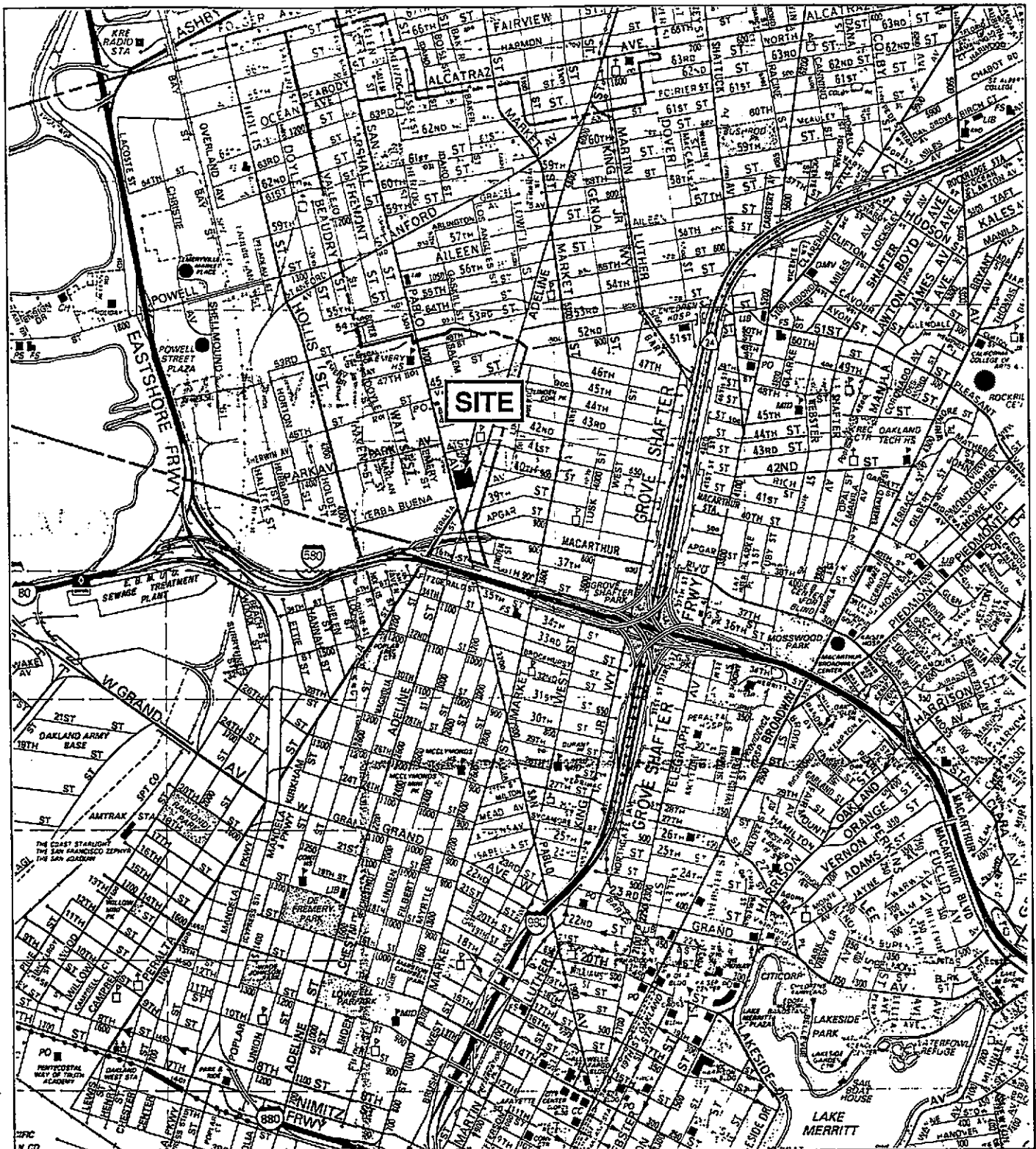
# Woodward-Clyde

Ms. Susan Hugo  
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February 5, 1997  
Page 10

## ATTACHMENTS

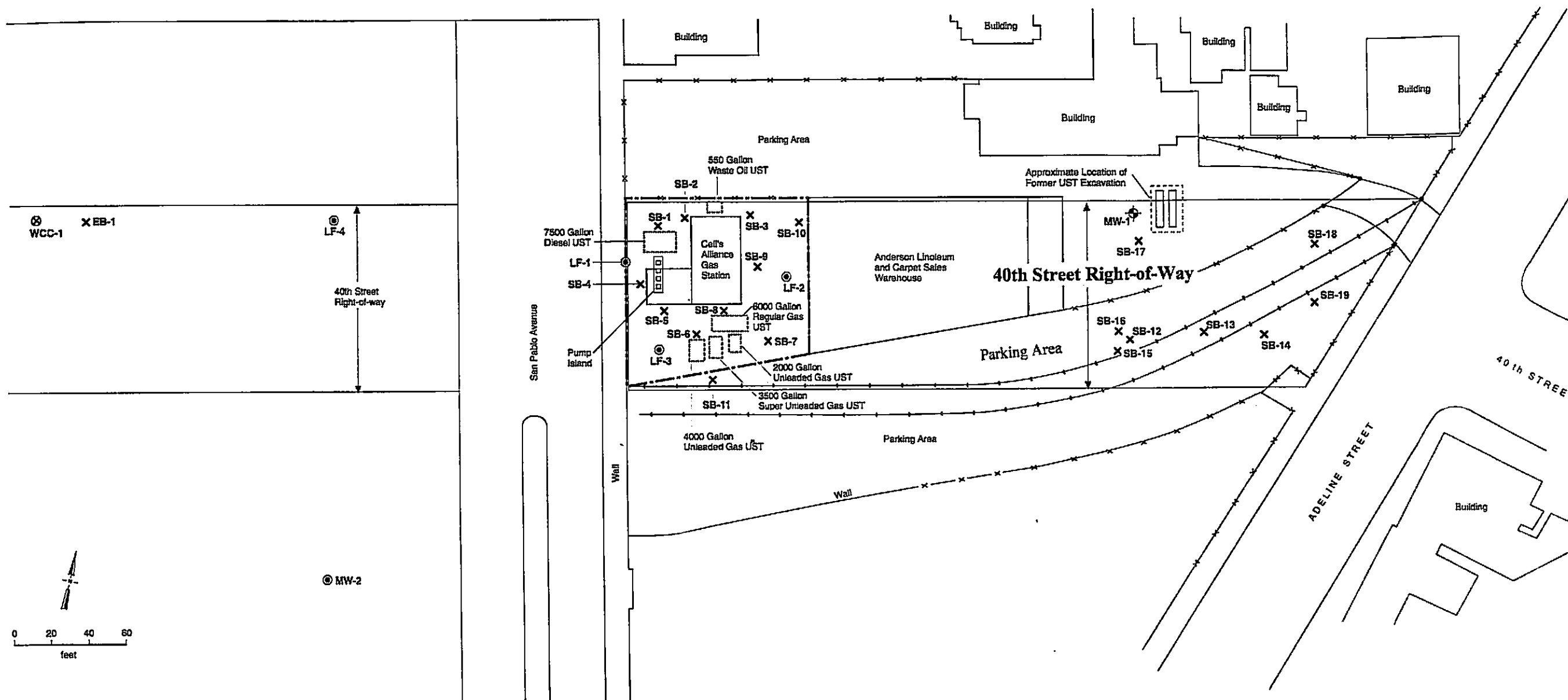
- Figure 1. Site Location Map
- Figure 2. Soil Boring and Monitoring Well Locations
- Appendix A. Summary of Site Investigation and Remediation Results





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mile

|                                   |                 |   |             |
|-----------------------------------|-----------------|---|-------------|
| Project No.<br>941114NA           | 40th Street UST | SITE LOCATION MAP<br>CELI'S ALLIANCE GAS STATION SITE | Figure<br>1 |
| <b>Woodward-Clyde Consultants</b> |                 |   |             |



**EXPLANATION**

- +—+— Approximate Location of Former Railroad Tracks
- x Soil Borings by Levine-Fricke
- o Monitoring Well by Levine-Fricke (LF-1, LF-2, & LF-3 destroyed)
- o Monitoring Well by SECOR (destroyed)
- o Proposed Monitoring Well by WCC in 1994 (not installed)

Source: Levine-Fricke (1992) and Woodward-Clyde Consultants (1994)

|                            |                 |  |             |
|----------------------------|-----------------|--|-------------|
| Project No.<br>941114NA    | 40th Street UST | SOIL BORING AND<br>MONITORING WELL LOCATIONS<br>40TH STREET RIGHT-OF-WAY<br>EMERYVILLE, CALIFORNIA | Figure<br>2 |
| Woodward-Clyde Consultants |                 |  |             |

**APPENDIX A**

**Summary of Site Investigation and Remediation Results**

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**Phase II Investigation Results  
Proposed 40th Street Right-of-Way  
Emeryville, California**

**September 8, 1993  
1649.00-15**

**Prepared for  
Catellus Development Corporation  
201 Mission Street  
San Francisco, California**



**LEVINE·FRICKE**

TABLE 1  
 ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM THE FUEL STATION  
 40TH STREET RIGHT-OF-WAY, 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 |
|-------------|------------|-------------|-------|------|-------|---------|---------|---------------|---------------|------|------|
| LF-1-4.5    | 4.5        | 07-Aug-93   | 550   | 220  | 16    | 0.84    | 1.2     | 5.6           | 2.7           | 77   | NA   |
| LF-1-9.5    | 9.5        | 07-Aug-93   | 470   | 18   | <10   | 0.97    | <0.005  | 6.6           | 8.9           | <30  | NA   |
| LF-1-14.5   | 14.5       | 07-Aug-93   | 8.4   | 16   | <10   | 0.14    | 0.17    | 0.081         | 0.37          | 60   | NA   |
| LF-2-9.5    | 9.5        | 07-Aug-93   | 740   | 14   | <10   | 4.7     | 35      | 13            | 68            | 30   | NA   |
| LF-2-14.5   | 14.5       | 07-Aug-93   | <0.5  | <10  | <10   | 0.009   | 0.012   | <0.005        | 0.015         | <30  | NA   |
| LF-3-9.5    | 9.5        | 07-Aug-93   | 75    | <10  | <10   | 0.062   | 0.28    | 1.1           | 1.1           | 37   | NA   |
| LF-3-14.5   | 14.5       | 07-Aug-93   | <0.5  | <10  | <10   | 0.014   | <0.005  | 0.01          | 0.007         | <30  | NA   |
| SB-1-7      | 7          | 08-Aug-93   | 850   | 240  | 27    | 5.4     | <0.005  | 25            | 42            | 290  | NA   |
| SB-1-9.5    | 9.5        | 08-Aug-93   | 180   | 220  | <50   | 0.89    | 1.1     | 4.3           | 18            | 130  | NA   |
| SB-1-14.5   | 14.5       | 08-Aug-93   | 7.4   | <10  | <10   | 0.44    | 0.44    | 0.14          | 0.61          | 60   | NA   |
| SB-2-7      | 7          | 08-Aug-93   | 780   | 790  | 57    | 8       | <0.005  | 31            | 140           | 160  | ND   |
| SB-2-9.5    | 9.5        | 08-Aug-93   | 720   | 200  | <50   | 2.4     | 5.2     | 14            | 59            | 210  | NA   |
| SB-2-14.5   | 14.5       | 08-Aug-93   | 1     | <10  | 12    | 0.2     | 0.21    | 0.021         | 0.12          | 43   | ND   |
| SB-3-9.5    | 9.5        | 07-Aug-93   | 580   | 11   | <10   | 9.7     | 50      | 15            | 90            | 37   | ND   |
| SB-3-14.5   | 14.5       | 07-Aug-93   | 0.9   | <10  | <10   | 0.092   | 0.16    | 0.031         | 0.17          | 37   | ND   |
| SB-4-7      | 7          | 08-Aug-93   | 380   | 13   | <10   | 3       | 5.2     | 8.2           | 18            | 70   | NA   |
| SB-4-14.5   | 14.5       | 08-Aug-93   | <0.5  | <10  | <10   | 0.026   | 0.005   | 0.019         | 0.023         | 210  | NA   |
| SB-5-7      | 7          | 08-Aug-93   | 410   | 15   | <10   | 2.4     | 0.6     | 16            | 6.3           | 37   | NA   |
| SB-5-14.5   | 14.5       | 08-Aug-93   | <0.5  | <10  | <10   | 0.011   | <0.005  | 0.008         | 0.008         | 93   | NA   |
| SB-6-9.5    | 9.5        | 08-Aug-93   | 490   | 51   | <10   | 2.7     | <0.005  | 15            | 15            | 67   | NA   |
| SB-6-14.5   | 14.5       | 08-Aug-93   | <0.5  | <10  | <10   | <0.005  | <0.005  | <0.005        | <0.005        | <30  | NA   |
| SB-7-9.5    | 9.5        | 07-Aug-93   | 750   | 52   | 66    | 2.5     | 8.5     | 22            | 93            | 170  | NA   |
| SB-7-14.5   | 14.5       | 07-Aug-93   | 2.8   | <10  | <10   | <0.005  | <0.005  | 0.029         | 0.03          | <30  | NA   |
| SB-8-9.5    | 9.5        | 08-Aug-93   | 2,800 | 110  | <50   | 22      | 9.5     | 82            | 290           | 130  | NA   |
| SB-8-14.5   | 14.5       | 08-Aug-93   | <0.5  | <10  | 11    | 0.009   | <0.005  | <0.005        | <0.005        | 37   | NA   |
| SB-9-7      | 7          | 07-Aug-93   | 210   | 14   | <10   | 2.8     | 13      | 5.1           | 29            | <30  | NA   |
| SB-9-9.5    | 9.5        | 07-Aug-93   | 1,200 | NA   | NA    | 14      | 81      | 26            | 140           | 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   |
| SB-10-7     | 7          | 07-Aug-93   | 73    | NA   | NA    | 2.6     | 4.5     | 1.6           | 7.7           | NA   | NA   |
| SB-10-9.5   | 9.5        | 07-Aug-93   | 1,100 | <10  | <10   | <0.005  | 7.8     | <0.005        | 22            | 40   | NA   |
| SB-10-14.5  | 14.5       | 07-Aug-93   | 8.6   | <10  | <10   | 0.48    | 0.29    | 0.1           | 0.48          | <30  | NA   |
| SB-11-14.5  | 14.5       | 09-Aug-93   | <0.5  | <10  | 11    | <0.005  | <0.005  | <0.005        | <0.005        | 40   | NA   |

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  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons  
 PCBs = polychlorinated biphenyls

TABLE 2  
ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM THE EASTERN PORTION OF THE SITE  
40TH STREET RIGHT-OF-WAY, 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 |
|---|------------|-------------|-------|------|-------|---------|---------|---------------|---------------|-------|------|------|-------|
| <b>Railroad Tracks</b>                    |            |             |       |      |       |         |         |               |               |       |      |      |       |
| 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    |
| <b>San Francisco French Bread Company</b> |            |             |       |      |       |         |         |               |               |       |      |      |       |
| 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  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons  
 PCBs = polychlorinated biphenyls  
 VOCs = volatile organic compounds  
 SVOCs = semivolatile organic compounds  
 ND = Not detected above laboratory detection limits

- (1) 2.6 mg/kg methylene chloride
- (2) 2.0 mg/kg methylene chloride
- (3) 0.660 mg/kg methylene chloride
- (4) 0.4 mg/kg 4-methylphenol, 1.6 mg/kg naphthalene, and 1.8 mg/kg 2-methylnaphthalene
- (5) 0.57 mg/kg naphthalene and 0.630 mg/kg 2-methylnaphthalene
- (6) 1.7 mg/kg naphthalene and 1.8 mg/kg 2-methylnaphthalene
- (7) 0.22 mg/kg Aroclor 1260

TABLE 3  
WELL CONSTRUCTION AND GROUND-WATER ELEVATION DATA  
40TH STREET RIGHT-OF-WAY, EMERYVILLE, CALIFORNIA

| Well Number | Well Elevation (feet msl) | Well Depth (feet) | Screened Interval | Date Measured | Depth to Product | Depth to Water | Ground-Water Elevation (feet msl) | Product Thickness (feet) |
|-------------|---------------------------|-------------------|-------------------|---------------|------------------|----------------|-----------------------------------|--------------------------|
| LF-1        | 38.95                     | 20                | 5-20              | 08-Aug-93     | NA               | 9.40           | 29.55                             | NA                       |
|             |                           |                   |                   | 20-Aug-93     | 9.48             | 10.00          | 29.36*                            | 0.52                     |
| LF-2        | 40.25                     | 20                | 5-20              | 08-Aug-93     | NA               | 7.97           | 32.28                             | NA                       |
|             |                           |                   |                   | 20-Aug-93     | NA               | 8.29           | 31.96                             | NA                       |
| LF-3        | 39.35                     | 20                | 5-20              | 08-Aug-93     | NA               | 8.90           | 30.45                             | NA                       |
|             |                           |                   |                   | 20-Aug-93     | NA               | 9.18           | 30.17                             | NA                       |

msl = mean sea level

\* The ground-water elevation for well LF-1 was corrected for the presence of free-phase fuel product using the following equation:

$$G = W + [(PT-D) \cdot DW]$$

where

G = the ground-water elevation

W = the well elevation

PT = the product thickness

D = product density (mg/l)

DW = the depth to water

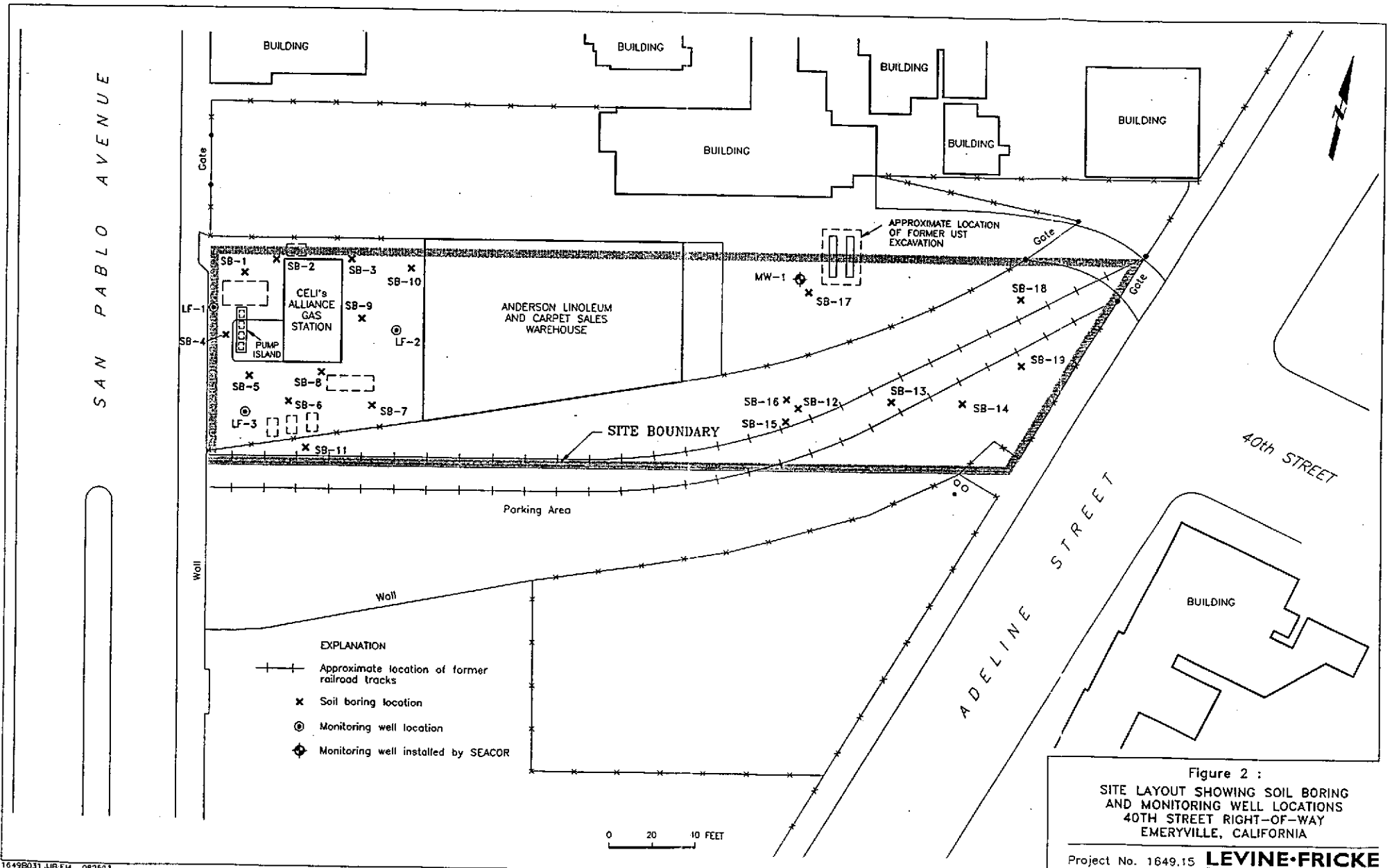
A density of 0.796 mg/l was assumed.

TABLE 4  
 ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES  
 40TH STREET RIGHT-OF-WAY, EMERYVILLE, CALIFORNIA  
 (concentrations in milligrams per liter [mg/L])

| Sample Name | Sample Date | TPHg | TPHd  | TPHmo  | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TRPH |
|-------------|-------------|------|-------|--------|---------|---------|---------------|---------------|------|
| LF-1AG      | 07-Aug-93   | 100  | 41    | <2.5   | 13      | 9.4     | 3.1           | 14            | 11   |
| LF-2AG      | 07-Aug-93   | 13   | 0.095 | <0.50  | 2.4     | 2.9     | 0.5           | 2             | <5   |
| LF-3AG      | 07-Aug-93   | 11   | 0.78  | <0.250 | 1.5     | 0.17    | 2.9           | 5.1           | <5   |

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  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons





Further Soil and Ground-Water Investigation  
Fuel Station  
40th Street Right-of-Way  
Emeryville, California

March 30, 1994  
1649.15

Prepared for  
Catellus Development Corporation  
201 Mission Street, Suite 250  
San Francisco, California 94105



**LEVINE·FRICKE**

TABLE 1  
 ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM MONITORING WELL BORINGS AND SOIL BORING  
 FUEL STATION, 40TH STREET RIGHT-OF-WAY, 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 |
|-------------|------------|-------------|------|------|-------|---------|---------|---------------|---------------|------|
| LF-1-4.5    | 4.5        | 07-Aug-93   | 550  | 220  | 16    | 0.84    | 1.2     | 5.6           | 2.7           | 77   |
| LF-1-9.5    | 9.5        | 07-Aug-93   | 470  | 18   | <10   | 0.97    | <0.005  | 6.6           | 8.9           | <30  |
| LF-1-14.5   | 14.5       | 07-Aug-93   | 8.4  | 16   | <10   | 0.14    | 0.17    | 0.081         | 0.37          | 60   |
| LF-2-9.5    | 9.5        | 07-Aug-93   | 740  | 14   | <10   | 4.7     | 35      | 13            | 68            | 30   |
| LF-2-14.5   | 14.5       | 07-Aug-93   | <0.5 | <10  | <10   | 0.009   | 0.012   | <0.005        | 0.015         | <30  |
| LF-3-9.5    | 9.5        | 07-Aug-93   | 75   | <10  | <10   | 0.062   | 0.28    | 1.1           | 1.1           | 37   |
| LF-3-14.5   | 14.5       | 07-Aug-93   | <0.5 | <10  | <10   | 0.014   | <0.005  | 0.01          | 0.007         | <30  |
| LF-4-5.0    | 5          | 28-Jan-94   | 0.8  | <10  | <10   | 0.083   | <0.005  | <0.005        | 0.034         | NA   |
| LF-4-10.0   | 10         | 28-Jan-94   | 220  | 19   | <10   | 1.7     | 6.7     | 4.5           | 24            | NA   |
| EB-1-5.0    | 5          | 28-Jan-94   | <0.5 | <10  | 17    | <0.005  | <0.005  | <0.005        | <0.005        | NA   |
| EB1-10.0    | 10         | 28-Jan-94   | <0.5 | <20  | 49    | <0.005  | <0.005  | <0.005        | <0.005        | NA   |

Data entered by MEK/18 Feb 94 Data proofed by MEK/18 QA/QC by WEM

NA = not analyzed  
 TPHg = total petroleum hydrocarbons as gasoline  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons



TABLE 2  
 ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES  
 40TH STREET RIGHT-OF-WAY, EMERYVILLE, CALIFORNIA  
 (concentrations in milligrams per liter [mg/L])

| Sample Name | Sample Date | TPHg  | TPHd  | TPHmo  | Benzene | Toluene | Ethyl- benzene | Total Xylenes | TRPH |
|-------------|-------------|-------|-------|--------|---------|---------|----------------|---------------|------|
| LF-1AG      | 07-Aug-93   | 100   | 41    | <2.5   | 13      | 9.4     | 3.1            | 14            | 11   |
| LF-2AG      | 07-Aug-93   | 13    | 0.095 | <0.50  | 2.4     | 2.9     | 0.5            | 2             | <5   |
| LF-3AG      | 07-Aug-93   | 11    | 0.78  | <0.250 | 1.5     | 0.17    | 2.9            | 5.1           | <5   |
| GWEB1       | 28-Jan-94   | <0.05 | 0.081 | <0.05  | <0.0005 | 0.00057 | <0.0005        | 0.0026        | NA   |
| LF-4        | 28-Jan-94   | 18    | 1.4   | 0.16   | 1.0     | 1.9     | 0.88           | 4.7           | NA   |
| LF-4 (dup)  | 28-Jan-94   | 21    | 2.2   | 0.21   | 1.1     | 2       | 0.80           | 4.2           | NA   |

Data entered by MEK/18 Feb 94 Data proofed by AD YH QA/QC by Qe in 3/4/94

NA = not analyzed  
 TPHg = total petroleum hydrocarbons as gasoline  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons

TABLE 1  
 ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM MONITORING WELL BORINGS AND SOIL BORING  
 FUEL STATION, 40TH STREET RIGHT-OF-WAY, 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 |
|-------------|------------|-------------|------|------|-------|---------|---------|---------------|---------------|------|
| LF-1-4.5    | 4.5        | 07-Aug-93   | 550  | 220  | 16    | 0.84    | 1.2     | 5.6           | 2.7           | 77   |
| LF-1-9.5    | 9.5        | 07-Aug-93   | 470  | 18   | <10   | 0.97    | <0.005  | 6.6           | 8.9           | <30  |
| LF-1-14.5   | 14.5       | 07-Aug-93   | 8.4  | 16   | <10   | 0.14    | 0.17    | 0.081         | 0.37          | 60   |
| LF-2-9.5    | 9.5        | 07-Aug-93   | 740  | 14   | <10   | 4.7     | 35      | 13            | 68            | 30   |
| LF-2-14.5   | 14.5       | 07-Aug-93   | <0.5 | <10  | <10   | 0.009   | 0.012   | <0.005        | 0.015         | <30  |
| LF-3-9.5    | 9.5        | 07-Aug-93   | 75   | <10  | <10   | 0.062   | 0.28    | 1.1           | 1.1           | 37   |
| LF-3-14.5   | 14.5       | 07-Aug-93   | <0.5 | <10  | <10   | 0.014   | <0.005  | 0.01          | 0.007         | <30  |
| LF-4-5.0    | 5          | 28-Jan-94   | 0.8  | <10  | <10   | 0.083   | <0.005  | <0.005        | 0.034         | NA   |
| LF-4-10.0   | 10         | 28-Jan-94   | 220  | 19   | <10   | 1.7     | 6.7     | 4.5           | 24            | NA   |
| EB-1-5.0    | 5          | 28-Jan-94   | <0.5 | <10  | 17    | <0.005  | <0.005  | <0.005        | <0.005        | NA   |
| EB1-10.0    | 10         | 28-Jan-94   | <0.5 | <20  | 49    | <0.005  | <0.005  | <0.005        | <0.005        | NA   |

Data entered by MEK/18 Feb 94 Data proofed by MM 3/94 QA/QC by WEM

NA = not analyzed  
 TPHg = total petroleum hydrocarbons as gasoline  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons

TABLE 2  
 ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES  
 40TH STREET RIGHT-OF-WAY, EMERYVILLE, CALIFORNIA  
 (concentrations in milligrams per liter [mg/l])

| Sample Name | Sample Date | TPHg  | TPHd  | TPHmo  | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TRPH |
|-------------|-------------|-------|-------|--------|---------|---------|---------------|---------------|------|
| LF-1AG      | 07-Aug-93   | 100   | 41    | <2.5   | 13      | 9.4     | 3.1           | 14            | 11   |
| LF-2AG      | 07-Aug-93   | 13    | 0.095 | <0.50  | 2.4     | 2.9     | 0.5           | 2             | <5   |
| LF-3AG      | 07-Aug-93   | 11    | 0.78  | <0.250 | 1.5     | 0.17    | 2.9           | 5.1           | <5   |
| GWEB1       | 28-Jan-94   | <0.05 | 0.081 | <0.05  | <0.0005 | 0.00057 | <0.0005       | 0.0026        | NA   |
| LF-4        | 28-Jan-94   | 18    | 1.4   | 0.16   | 1.0     | 1.9     | 0.88          | 4.7           | NA   |
| LF-4 (dup)  | 28-Jan-94   | 21    | 2.2   | 0.21   | 1.1     | 2       | 0.80          | 4.2           | NA   |

Data entered by MEK/18 Feb 94 Data proofed by MP 3/4/94 QA/QC by AEW 3/4/94

NA = not analyzed  
 TPHg = total petroleum hydrocarbons as gasoline  
 TPHd = total petroleum hydrocarbons as diesel  
 TPHmo = total petroleum hydrocarbons as motor oil  
 TRPH = total recoverable petroleum hydrocarbons

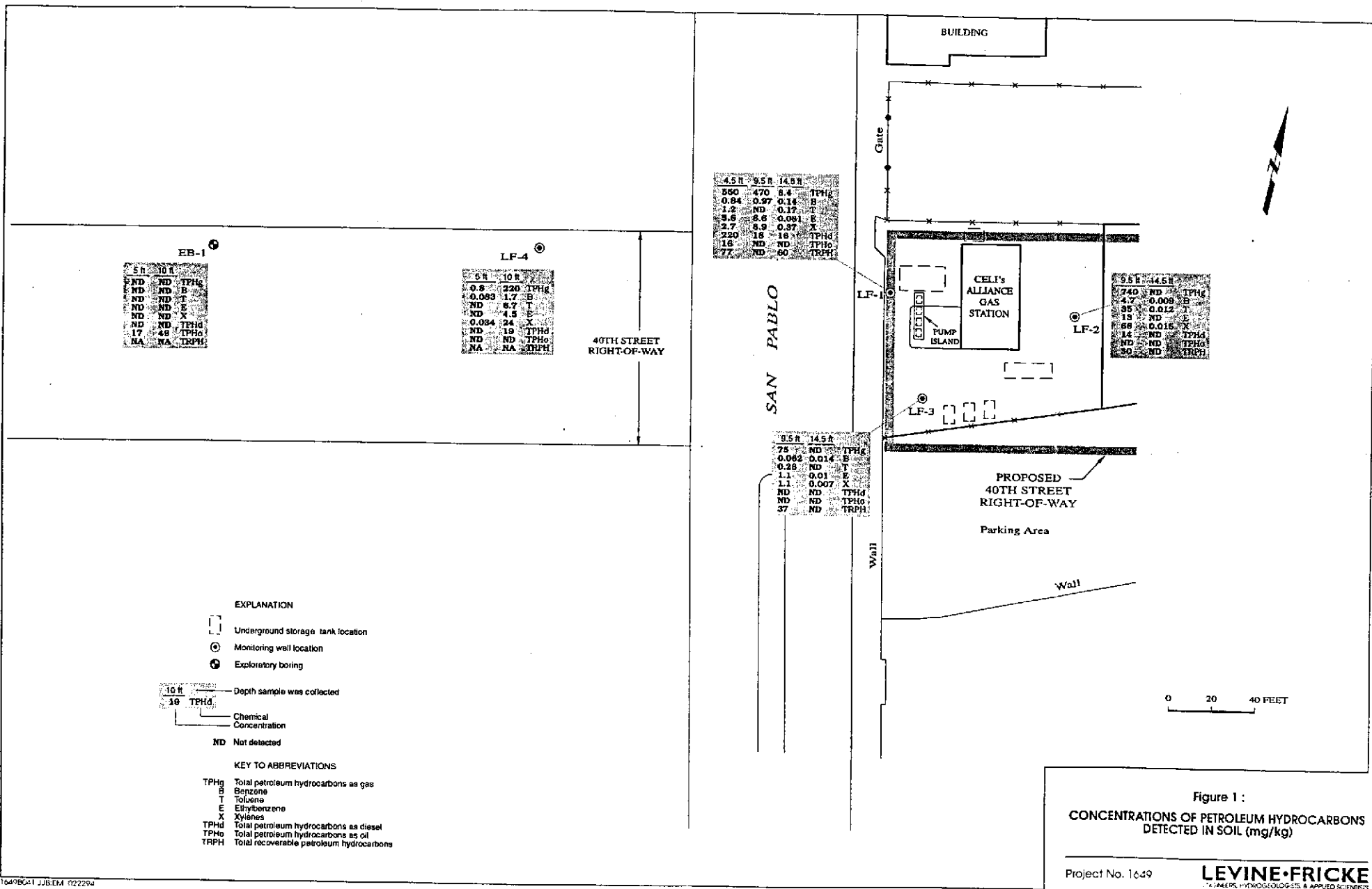


Figure 1:  
CONCENTRATIONS OF PETROLEUM HYDROCARBONS  
DETECTED IN SOIL (mg/kg)



Report on Removal of Six Underground Fuel  
Storage Tanks and Associated Piping  
Celis Alliance Fueling Station  
4000 San Pablo Avenue  
Emeryville, California

July 6, 1994  
LF 3158.00-000

Prepared for  
Catellus Development Corporation  
201 Mission Street  
San Francisco, California 94105



**LEVINE·FRICKE**

TABLE 1  
ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED DURING UST REMOVAL ACTIVITIES  
CELIS ALLIANCE SERVICE STATION, EMERYVILLE, CALIFORNIA  
(all results in parts per million [ppm])

| Sample ID | Date Sampled | TPHg  | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TPHd  | TPHo | Other Tests        |
|-----------|--------------|-------|---------|---------|---------------|---------------|-------|------|--------------------|
| G1-8      | 18-May-94    | 640   | 4.6     | 4.5     | 24            | 21            | NA    | NA   |                    |
| G2-10     | 18-May-94    | 140   | 1.9     | 0.7     | 4.2           | 5.2           | NA    | NA   |                    |
| G3-9.5    | 18-May-94    | 570   | 5.3     | 16      | 18            | 91            | NA    | NA   | (1)                |
| G4-10.5   | 18-May-94    | 3.1   | 0.006   | <0.005  | 0.018         | <0.005        | NA    | NA   |                    |
| G5-8.5    | 20-May-94    | <200* | <2*     | <0.8*   | <4*           | <0.8*         | NA    | NA   |                    |
| G1-9      | 20-May-94    | <60*  | <0.2*   | <0.1*   | <0.05*        | <0.05*        | 1,300 | NA   |                    |
| G2-9.5    | 20-May-94    | <60*  | <0.3*   | <0.3*   | <0.3*         | <0.3*         | 89    | NA   |                    |
| G1-7      | 18-May-94    | 50    | 0.095   | 0.15    | 0.23          | <0.05**       | 29    | <5.0 | (1, 2, 3, 4, 5, 6) |

Data entered by DVN/24-Jun-94. Data proofed by     jcc     QA/QC by     jcc    

Sample G2-10 denotes the second soil sample collected from the gasoline UST excavation at ten feet below the ground surface.

Analyses performed by American Environmental Network of Pleasant Hill, California.

TPHg - total petroleum hydrocarbons as gasoline using EPA Method 5030/GCFID  
 TPHd - total petroleum hydrocarbons as diesel using EPA Method 3550/GCFID  
 TPHo - total petroleum hydrocarbons as oil using EPA Method 3550/GCFID.  
 BTEX - benzene, toluene, ethylbenzene and total xylenes using EPA Method 8020.  
 NA - not analyzed

\* Raised reporting limit due to hydrocarbon interferences.  
 \*\* Raised reporting limit due to high concentrations of non-target compounds.

- (1) Sample analyzed for organic lead in soil using Department of Health Services, Leaking Underground Fuel Tank (DOHS-LUFT) Method. Result is non-detect (detection limit 0.5 ppm).
- (2) Sample analyzed for cadmium, chromium, lead, nickel, and zinc, using EPA Method 6010 Series. Cadmium was not detected (detection limit 0.1 ppm), chromium was detected at 27 ppm, lead at 2 ppm, nickel at 26 ppm, and zinc at 47 ppm.
- (3) Sample analyzed for hydrocarbons and oil and grease by infra-red using Standard Methods 5520F and 5520E, with results of 40 ppm hydrocarbons and 50 ppm oil and grease.
- (4) Sample analyzed for PCBs using EPA Method 8080, with results of non-detect (detection limit 0.05 ppm).
- (5) Sample analyzed for creosote and PNAs using EPA Method 8270, with results of non-detect (detection limit 5 ppm) for creosote and non-detect (detection limit 0.2 ppm) for PNAs.
- (6) Sample analyzed for halogenated volatile organic compounds using EPA Method 8010, with results of non-detect (detection limit 0.005 ppm).

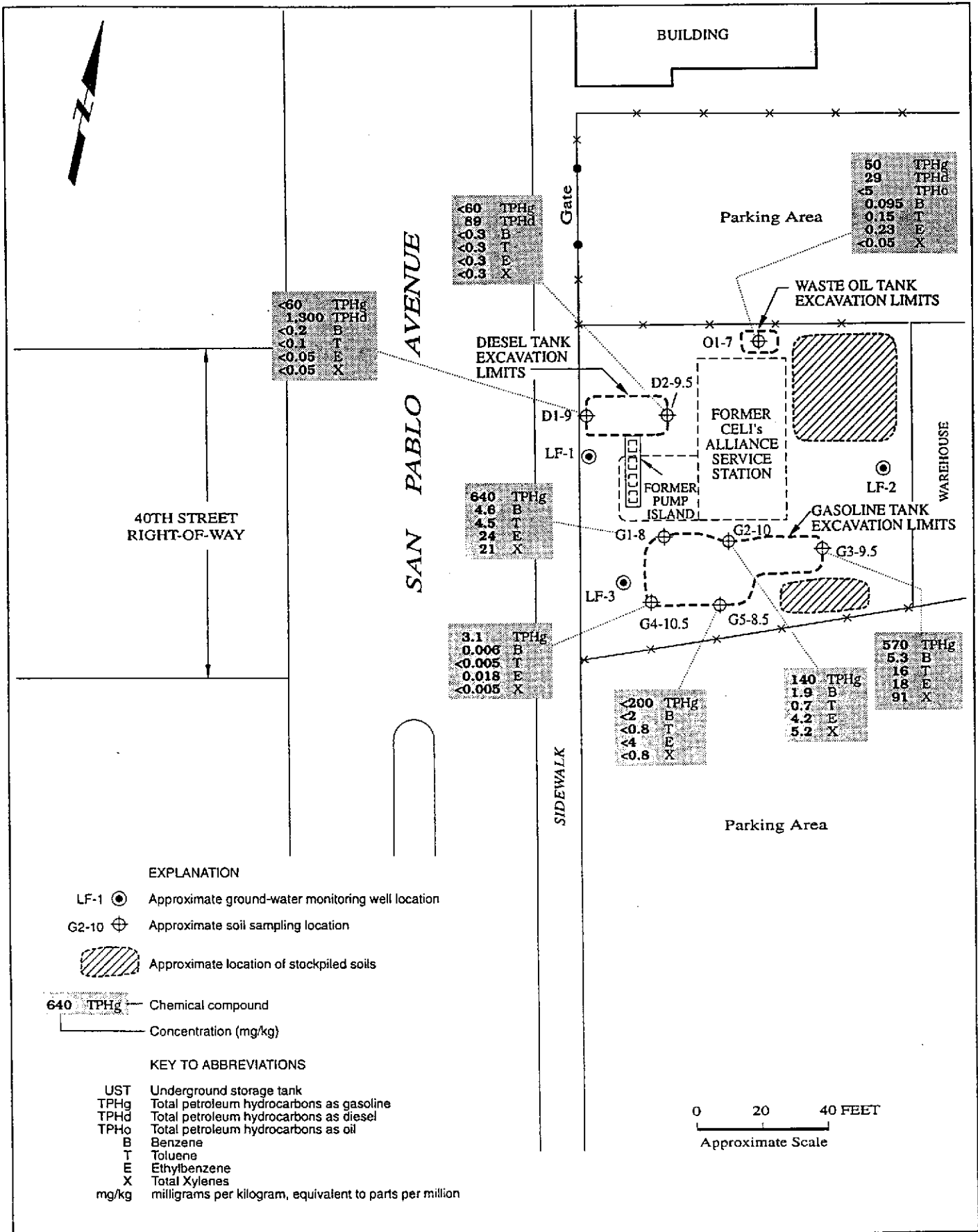


Figure 3 : SITE PLAN SHOWING UST EXCAVATIONS, SOIL SAMPLING LOCATIONS AND TPH AND BTEX CONCENTRATIONS



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

November 22, 1994  
1649.00-034

Prepared for  
Catellus Development Corporation  
201 Mission Street, 30th Floor  
San Francisco, California 94105



**LEVINE·FRICKE**



**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 |
|---|------------|-------------|-------|------|-------|---------|---------|---------------|---------------|-------|------|------|-------|
| <b>Former Celis Service Station</b>       |            |             |       |      |       |         |         |               |               |       |      |      |       |
| 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    |
| <b>Railroad Tracks</b>                    |            |             |       |      |       |         |         |               |               |       |      |      |       |
| 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    |
| <b>San Francisco French Bread Company</b> |            |             |       |      |       |         |         |               |               |       |      |      |       |
| 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 (6) 1.7 mg/kg naphthalene and 1.8 mg/kg 2-methylnaphthalene
- ND = parameter not detected (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:

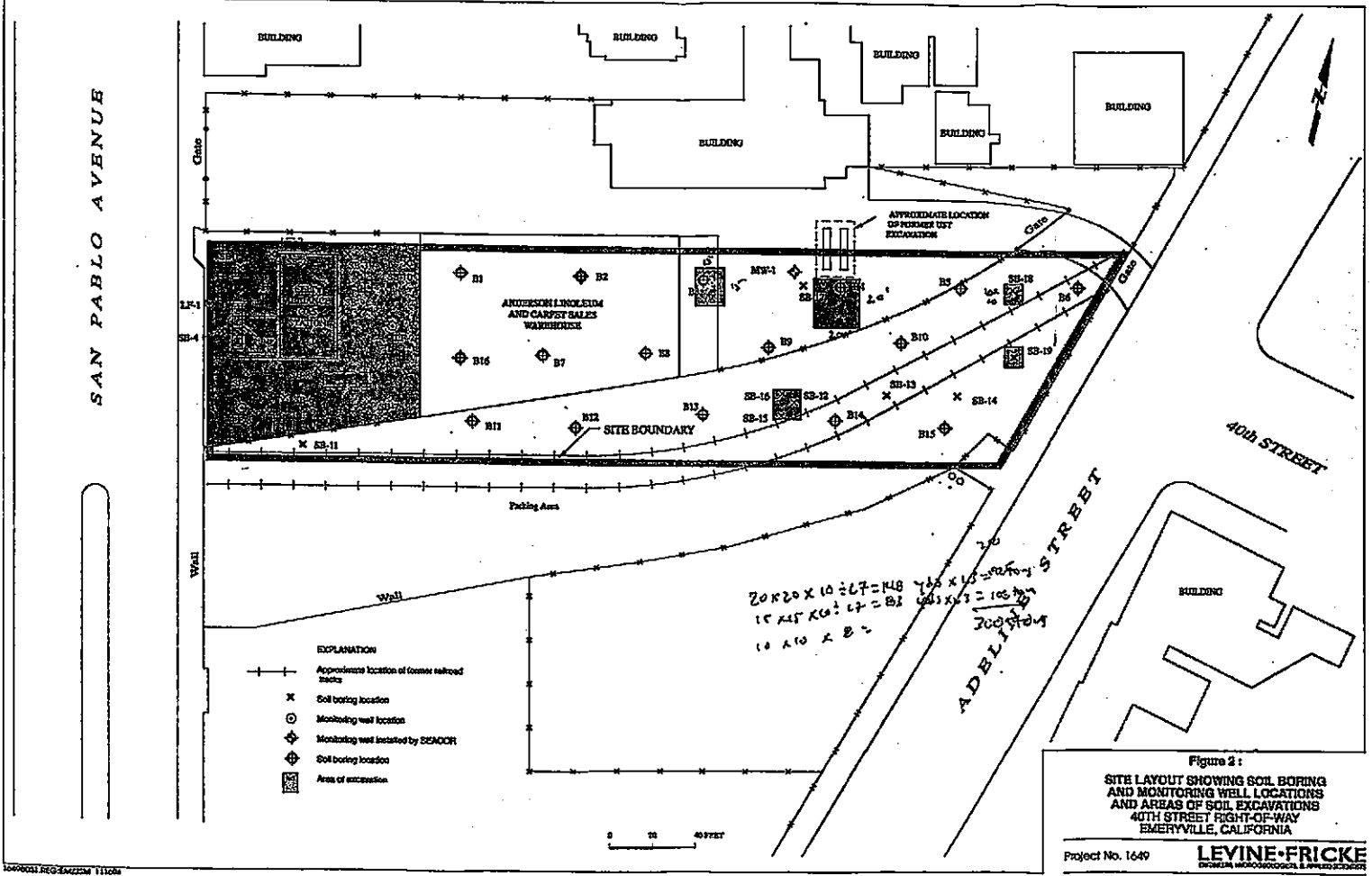
AEN = American Environmental Network, Pleasant Hill, California

ft bgs = feet below ground surface

TPHg = total petroleum hydrocarbons as gasoline

TPHd = total petroleum hydrocarbons as diesel

TPHo = total petroleum hydrocarbons as oil



10000031 REC-ENR22EM 111204



**REPORT ON SOIL  
REMEDICATION AT THE  
FORMER CELIS  
ALLIANCE FUEL  
STATION  
4000 SAN PABLO AVENUE  
EMERYVILLE, CALIFORNIA**

Prepared for

City of Emeryville Redevelopment Agency  
2200 Powell Street, 12th Floor, Suite 1200  
Emeryville, California 94608-4356

January 6, 1995

**Woodward-Clyde**



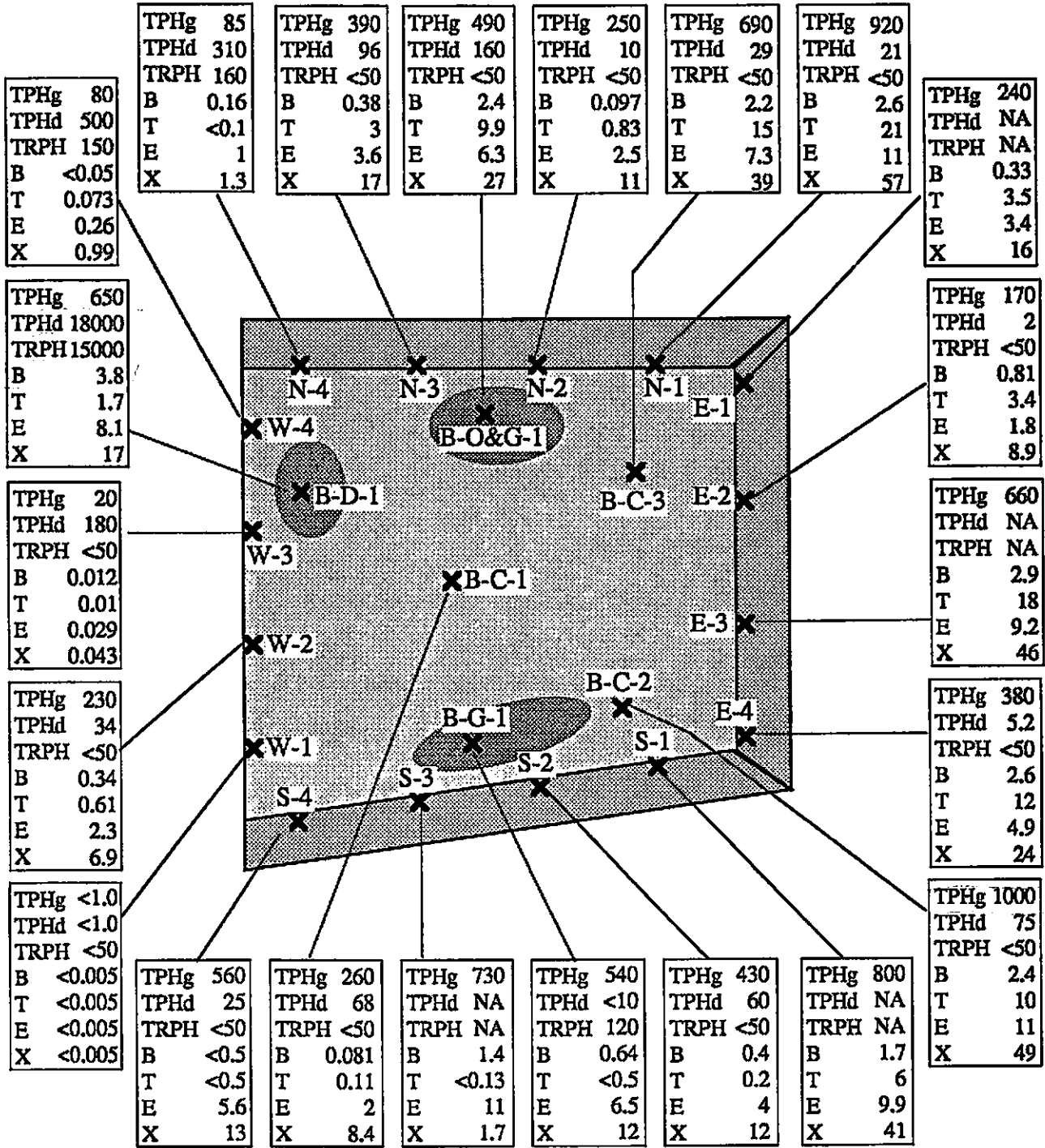
Woodward-Clyde Consultants  
500 12th Street, Suite 100  
Oakland, California 94607-4014

TABLE 6

ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM SIDE WALLS AND BOTTOM OF THE EXCAVATION PIT  
CELIS ALLIANCE FUEL STATION, EMERYVILLE, CALIFORNIA

| Sample ID | Benzene<br>mg/kg | Toluene<br>mg/kg | Ethyl<br>benzene<br>mg/kg | Xylenes<br>mg/kg | TPHg<br>mg/kg | TPHd<br>mg/kg | TRPH (1)<br>mg/kg | Cadmium<br>mg/kg | Chromium<br>(total)<br>mg/kg | Lead<br>mg/kg | Nickel<br>mg/kg | Zinc<br>mg/kg |
|-----------|------------------|------------------|---------------------------|------------------|---------------|---------------|-------------------|------------------|------------------------------|---------------|-----------------|---------------|
| E-1       | 0.33             | 3.5              | 3.4                       | 16               | 240           | NA            | NA                | NA               | NA                           | NA            | NA              | NA            |
| E-2       | 0.81             | 3.4              | 1.8                       | 8.9              | 170           | 2             | ND(50)            | 1.4              | 18                           | 4.3           | 34              | 26            |
| E-3       | 2.9              | 18               | 9.2                       | 46               | 660           | NA            | NA                | NA               | NA                           | NA            | NA              | NA            |
| E-4       | 2.6              | 12               | 4.9                       | 24               | 380           | 5.2           | ND(50)            | 1.4              | 16                           | 5.6           | 17              | 30            |
| N-1       | 2.6              | 21               | 11                        | 57               | 920           | 21            | ND(50)            | 2.1              | 26                           | 6.1           | 37              | 40            |
| N-2       | 0.097            | 0.83             | 2.5                       | 11               | 250           | 10            | ND(50)            | 1.4              | 16                           | 2.8           | 26              | 23            |
| N-3       | 0.38             | 3                | 3.6                       | 17               | 390           | 96            | ND(50)            | 2.6              | 20                           | 7.3           | 25              | 40            |
| N-4       | 0.16             | ND(0.1)          | 1                         | 1.3              | 85            | 310           | 160               | 2.1              | 28                           | 5             | 25              | 29            |
| S-1       | 1.7              | 6                | 9.9                       | 41               | 800           | NA            | NA                | NA               | NA                           | NA            | NA              | NA            |
| S-2       | 0.4              | 0.2              | 4                         | 12               | 430           | 60            | ND(50)            | 2.3              | 28                           | 7             | 39              | 43            |
| S-3       | 1.4              | ND(0.13)         | 11                        | 1.7              | 730           | NA            | NA                | NA               | NA                           | NA            | NA              | NA            |
| S-4       | ND(0.5)          | ND(0.5)          | 5.6                       | 13               | 560           | 25            | ND(50)            | 1.9              | 26                           | 8.3           | 23              | 30            |
| W-1       | ND(0.005)        | ND(0.005)        | ND(0.005)                 | ND(0.005)        | ND(1.0)       | ND(1.0)       | ND(50)            | 2.2              | 27                           | 8             | 34              | 45            |
| W-2       | 0.34             | 0.61             | 2.3                       | 6.9              | 230           | 34            | ND(50)            | 2.3              | 29                           | 5.5           | 26              | 42            |
| W-3       | 0.012            | ND(0.01)         | 0.029                     | 0.043            | 20            | 180           | ND(50)            | 1.4              | 19                           | 5.6           | 21              | 27            |
| W-4       | ND(0.05)         | 0.073            | 0.26                      | 0.99             | 80            | 500           | 150               | 2                | 28                           | 6.2           | 36              | 38            |
| B-C-1     | 0.081            | 0.11             | 2                         | 8.4              | 260           | 68            | ND(50)            | 2.3              | 31                           | 6.7           | 29              | 37            |
| B-C-2     | 2.4              | 10               | 11                        | 49               | 1000          | 75            | ND(50)            | 1.3              | 18                           | 4             | 19              | 25            |
| B-C-3     | 2.2              | 15               | 7.3                       | 39               | 690           | 29            | ND(50)            | 1.8              | 27                           | 5.2           | 25              | 33            |
| B-O&G-1   | 2.4              | 9.9              | 6.3                       | 27               | 490           | 160           | ND(50)            | 2.7              | 35                           | 8.3           | 41              | 39            |
| B-D-1     | 3.8              | 1.7              | 8.1                       | 17               | 650           | 18000         | 15000             | 1.9              | 27                           | 7             | 25              | 27            |
| B-G-1     | 0.64             | ND(0.5)          | 6.5                       | 12               | 540           | ND(10)        | 120               | 2.9              | 25                           | 54            | 21              | 200           |

- NOTES (1) TRPH = total recoverable petroleum hydrocarbons as determined by Standard Method 5520 E&F  
(2) NA = not available; ND = not detected above the quantification limit given in parenthesis following the ND.



TPHg = total petroleum hydrocarbons as gasoline  
 TPHd = total petroleum hydrocarbons as diesel  
 TRPH = total recoverable petroleum hydrocarbons

B = benzene  
 T = toluene  
 E = ethyl benzene  
 X = xylenes

Soil samples on side walls were collected 6-in above the bottom floor

Unit of Concentration: mg/kg

|                            |  |   |             |
|----------------------------|--|---|-------------|
| Project No.<br>941114NA    | CITY OF EMERYVILLE<br>REDEVELOPMENT AGENCY | SOIL SAMPLING LOCATIONS<br>& ANALYTE CONCENTRATIONS | Figure<br>7 |
| Woodward-Clyde Consultants |  |   |             |