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SUMMARY

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LEVINE·FRICKE

Summary of Environmental Investigation Results for Area C of the Yerba Buena Project Site Emeryville and Oakland, California

March 9, 1994
1649.06

Prepared for
Catellus Development Corporation
201 Mission Street, Suite 250
San Francisco, California 94533

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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

March 9, 1994 1649.06

Ms. Susan Hugo
Hazardous Materials Specialist
Department of Environmental Health
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, California 94621

Subject: Transmittal of the Report "Summary of Environmental Investigation Results for Area C of the Yerba Buena Project Site, Emeryville and Oakland, California"

Dear Ms. Hugo:

Levine•Fricke has prepared the subject report on behalf of Catellus Development Corporation. It is our understanding that we will meet with you and your staff and representatives of Catellus, including Mansour Sepehr, on Monday, March 14, 1994, to discuss this report with regard to a risk assessment for Area C.

If you have any questions in the interim, please call me.

Sincerely,

Jenifer Beatty

Jenifer Beatty
Project Hydrogeologist

Enclosure

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SUMMARY OF ENVIRONMENTAL INVESTIGATION RESULTS FOR AREA C OF THE YERBA BUENA PROJECT SITE EMERYVILLE AND OAKLAND, CALIFORNIA

1.0 INTRODUCTION

A comprehensive environmental investigation, including a historical site review and extensive soil and ground-water sampling, has been conducted to evaluate the environmental conditions in Area C of the Yerba Buena Project site ("the Site"), located in Oakland and Emeryville, California (Figure 1). Area C is to be developed for commercial use, with a large retail building in the center surrounded by a large parking lot and smaller retail buildings on the eastern portion of the Site.

This report summarizes the soil and ground-water quality data collected during investigation of Area C and provides a limited discussion of the affected areas and the remedial measures undertaken. The location of Area C is shown in Figure 2.

Since the early 1900s, the Site has experienced a variety of industrial and commercial uses. These uses included warehouse storage of predominantly dry goods and limited quantities of hazardous materials (e.g., oxides and acids); an automobile warehouse and service shop; a bus and truck service garage; a coal storage yard; and several rail transit lines for transporting passengers and freight. Further information concerning previous usage of the Site is presented in Levine·Fricke's Phase I and Phase II Environmental Investigation report (Levine·Fricke 1990).

1.1 Environmental Site Conditions

Investigation results indicated localized areas of soil had been affected by lead, zinc, or total petroleum hydrocarbons (TPH) (typically oil), and that shallow ground water contained low concentrations of volatile organic compounds (VOCs), apparently from an off-site source, and TPH as diesel (TPHd). Low concentrations of VOCs were detected in soil samples collected at depths generally below the depth to ground water.

Remediation of affected soil was successfully completed in 1993 in accordance with the Site Remedial Plan (SRP) (Levine·Fricke 1991b) approved by the Alameda County Health Care Services Agency (ACHA) in March 1991 (Appendix A) and/or ACHA-approved cleanup goals for petroleum hydrocarbons in soil. Generally, affected soil was excavated and removed from the Site.

Figure 2 presents ground-water elevation contours for the Site on July 9, 1993. As indicated in Figure 2, the ground-water flow direction beneath Area C is toward the southwest, which is consistent with the ground-water flow direction historically observed at the Site. Depth to ground water beneath Area C measured in ground-water monitoring wells historically has ranged from approximately 4 to 8 feet below ground surface. However, the depth to ground water observed during excavation activities at the Site has been approximately 8 to 10 feet below ground surface, indicating that ground water in the area is under semiconfined conditions. Well logs for on-site wells LF-10, LF-11, LF-31 and LF-32 and abandoned wells LF-9, LF-12, and LF-16 are provided in Appendix B.

The VOCs detected in ground water beneath Area C appear to be from an upgradient source based on the concentration, distribution, and type of compounds detected, the apparent absence of VOCs in soil samples collected from the Site (i.e., no source identified), and the upgradient location of a known VOC source. As outlined in the approved SRP (Levine·Fricke 1991b), Levine·Fricke will monitor the environmental investigation currently being conducted by consultants for the owners of the upgradient property (Electro Coatings, Inc.) and will conduct periodic sampling of well LF-10 to monitor VOC concentrations in ground water at the northern property boundary.

TPH concentrations detected in ground-water samples were very low and, therefore, remediation of TPH in ground water was not warranted or included in the SRP. However, periodic monitoring of wells installed downgradient from on-site, former underground storage tank (UST) locations will be continued in accordance with ACHA guidelines.

1.2 Scope of Previous Investigations

Levine·Fricke conducted the environmental investigation ("the Investigation") in three phases: Phase I, Phase II, and Phase III. Investigation activities were initiated in September 1989, and investigation and remediation activities have

continued over the past five years. Site development and remediation activities have included removing USTs and associated piping, hydraulic lifts, and an oil/water separator from Area C (see Section 4.0).

The sampling and analysis plan developed for Phase I was based on the results of a background information review and consisted of targeted and nontargeted soil and ground-water sampling.

Soil samples were analyzed for one or more of the following:

- volatile organic compounds (VOCs) using EPA Method 8240
- semivolatile organic compounds (SVOCs) using EPA Method 8270
- TPH using EPA Method 8015
- metals using EPA Method 7000 Series

The Phase II and III investigations were conducted to better assess areas of potential environmental concern revealed during Phase I of the Investigation, and consisted of targeted sampling and the use of analyses methods similar to those used during Phase I.

To assess shallow ground-water quality in Area C, ground-water samples were collected from five monitoring wells (LF-9, LF-10, LF-11, LF-12, and LF-16) and four grab ground-water sampling locations (C-10, C-15, C-18, and C-20) during Phase I investigation activities in 1989 and 1990. In addition, following removal of four USTs in 1991 and 1992, monitoring wells LF-31 and LF-32 were installed in 1993 to assess ground-water quality downgradient from the former UST locations (see Section 2.3).

Sampling and analysis results of the Phase I, II, and III environmental investigations are summarized in Sections 2.0 and 3.0. UST removal activities are described in Section 4.0. Soil remediation activities for the Site are summarized in Section 5.0. Remediation of affected ground water is described in Section 6.0.

2.0 SOIL QUALITY

With the exception of the few localized areas discussed below, concentrations of compounds detected in soil in Area C would not be expected to adversely affect ground-water quality, given the current and intended uses of the Site. Soils identified as containing elevated concentrations of lead, zinc, or TPH have generally been removed from the Site in accordance with the SRP and/or cleanup goals established for the Site and approved by the ACHA (discussed in Section 5.1).

Analytical results for soil samples collected during Phase I are presented in Tables 1, 2, 3A, and 4A and shown on Figures 3 through 6. Laboratory data sheets for chemical analyses of soil samples collected at the Site are contained in Appendix E of the Phase I and II Investigation Report (Levine·Fricke 1990) and Appendix B of the Phase III Investigation Report (Levine·Fricke 1991a).

Sections 2.1 through 2.4 summarize analysis results by compound.

2.1 VOCs

Table 1 and Figure 3 present analytical results for VOCs detected in soil samples collected during Phase I. With the exception of toluene (a common laboratory contaminant), VOCs (TCE and 1,2-DCE) were detected in only 7 of the 35 samples collected and analyzed for VOCs. Concentrations ranged from 0.007 parts per million (ppm) to 0.24 ppm.

When detected, VOCs were found in samples collected at depths ranging from 8 to 13 feet below ground surface, the approximate depth of ground water. Soil samples collected from shallower depths at these locations generally did not contain detectable concentrations of VOCs. In addition, VOCs generally were detected at sampling locations along the northern property boundary of Area C.

To further investigate VOC concentrations in Area C, an additional nine soil samples were collected from nine locations, following completion of the Investigation (Section 4.1). VOCs (1,2-dichloroethene [1,2-DCE] and trichloroethene [TCE]) were reported above laboratory detection limits in only 1 of the 9 samples, at concentrations of approximately 0.004 ppm for both compounds. However, it

should be noted that this sample was collected at a depth of 12 feet (from beneath a UST formerly located near Beach Street). At this depth, the soil was likely in direct contact with ground water in the area.

The source of VOCs detected in soil samples collected in Area C likely is VOC-affected ground water that appears to have migrated from an off-site source located north of the property boundary because VOCs were not detected in shallow soil samples.

2.2 SVOCs

Table 2 and Figure 4 present analytical results for SVOCs. SVOCs were not detected above method detection limits in the 20 soil samples collected and analyzed for these compounds, with the exception of one sample (C-21) reported to contain 0.2 ppm PCB Aroclor. In accordance with the SRP, the cleanup goal established for PCBs in soil at the Site is 1 ppm, well below the EPA guidance level of 10 ppm.

2.3 Lead and Zinc

Lead (8,800 ppm) and zinc (47,000 ppm) were detected in shallow soils (1 foot deep) in one location (C-17) in Area C (Table 3A and Figure 5). Additional sampling and analysis for lead and zinc in this area was conducted during Phase II of the Investigation (Table 3B). Results of this sampling indicated the elevated lead and zinc concentrations were limited laterally to a localized area measuring less than 20 feet by 20 feet and vertically to an apparent depth of less than 3 feet below grade (Levine·Fricke 1991c).

Remediation of lead- and zinc-affected soil is described in Section 5.2.1.

2.4 Petroleum Hydrocarbons

Heavy fraction TPH characterized as oil (TPHo) was detected in 7 of the 27 soil samples collected during Phase I from Area C and analyzed for TPH (Table 4A and Figure 6). TPHo concentrations generally ranged from 50 ppm to 680 ppm. A concentration of 2,600 ppm TPHo was detected in the soil sample collected from Phase I sampling location C-19 at 4 feet below grade. However, no petroleum hydrocarbons were detected in soil samples collected from borings located approximately 80 feet northwest (at a depth of 3 feet bgs) and 60 feet southeast (at a depth of 4 feet bgs) of boring C-19 (Levine·Fricke 1990).

To further assess the lateral extent of TPH-affected soil in the vicinity of boring C-19, soil samples were collected during Phase III from borings located approximately 80 feet northeast (at depths of 2.5 and 4 feet bgs) and 80 feet southwest (at depths of 2.75 and 4.75 feet bgs) of boring C-19 (Table 4B). Low concentrations of TPHo were detected in three of the four samples, at concentrations ranging from 50 ppm to 70 ppm. Therefore, the TPH-affected soil in the vicinity of boring C-19 appeared to be localized and no further investigation appeared warranted in this area (Levine·Fricke 1991a). Management of TPH-affected soil in this area is discussed in Section 5.2.3.

TPH characterized as gasoline (TPHg) was detected at low concentrations (equal to or less than 1 ppm) in two locations in Area C (well LF-12 and boring C-19). TPHd was detected in two samples at concentrations of 0.8 ppm (LF-12) and 490 ppm (C-13).

Perched ground water with an oily sheen and strong fuel odor was detected during the Phase I investigation in shallow sediments (less than 3 feet deep) near former well LF-9. The extent of hydrocarbons detected in the perched water was further assessed during the Phase II and Phase III investigations. Soil and perched ground water within this area were remediated in accordance with the SRP.

Remedial activities conducted in this area are discussed in Section 5.2.2.

3.0 GROUND-WATER QUALITY

Laboratory data sheets for chemical analysis of ground-water samples collected during Phase I are contained in Appendix F of the Phase I and II Investigation Report (Levine·Fricke 1990). These results are briefly summarized in Sections 3.1 through 3.3.

3.1 Metals

Results from Phase I and II of the Investigation did not indicate the presence of elevated concentrations of selected metals in ground water in this area. Table 5 presents results for metals analysis conducted for ground-water samples collected during the Phase I Investigation.

3.2 VOCs

Several VOCs were detected in ground-water samples collected from well LF-10, located on the upgradient (northern) boundary of Area C (notably, up to 7.6 ppm of TCE in 1990). Some of the same compounds also were detected in wells LF-12, LF-11, and LF-9 (formerly located east of well LF-10), and in a grab sample collected from boring C-15, located near the center of Area C (Figure 7). Based on the distribution of the concentrations of these compounds in Area C, the southwesterly ground-water gradient, and the absence of VOCs in soil samples collected from the Site, it appears that these compounds most likely originated from an off-site source.

Table 6 presents a historical summary of analytical data for wells LF-10, LF-11, and LF-12. As indicated in Table 6, concentrations for VOCs detected in these wells have decreased over the years.

Management of VOC-affected ground water beneath Area C is described in Section 6.1.

3.3 Petroleum Hydrocarbons

Table 7 presents analytical results for TPH analysis conducted for ground-water samples collected during the Phase I Investigation. TPH in ground water generally was detected at a concentration of less than 1 ppm (1.5 ppm TPH was detected in well LF-10). Because no specific guidelines currently are available for allowable concentrations of heavy fraction petroleum hydrocarbons in ground water, remediation of these low concentrations was not included in the SRP.

4.0 UST AND HYDRAULIC LIFT REMOVAL ACTIVITIES

A total of six USTs were removed from three areas within Area C: the former Bashland property, the former Bay Area Warehouse (BAW) property, and the Beach Street area. All USTs were removed in accordance with applicable UST closure regulations and under the observation of representatives of the ACHA and either the Oakland or Emeryville fire departments.

To assess ground-water quality in the vicinity of the former USTs, monitoring wells have been installed within 10 feet downgradient from two of the former UST locations (Bashland and BAW). UST removal reports have been submitted to the ACHA

for review. A third monitoring well will be installed downgradient from the third former UST location (Beach Street area) during the second quarter 1994 (April to June 1994).

4.1 Former Bashland Property

Three fuel USTs and associated piping were removed from the former Bashland property (Figure 2) on April 7, 1992, under the supervision of a Levine·Fricke geotechnical engineer (Levine·Fricke 1992). Nine soil samples were collected from the UST excavation under the direction of the Emeryville Fire Department and the ACHA and submitted for chemical analysis (Table 8 and Figure 8). Analytical results of soil samples collected from the final excavation sidewalls indicated trace (2 ppm) to nondetectable concentrations of diesel and nondetectable concentrations of oil, gasoline, BTEX, VOCs, and SVOCs in the samples analyzed for these compounds (Table 8 and Figure 8). Selected samples were additionally analyzed for cadmium, chromium, nickel, lead, and zinc. Results did not indicate elevated concentrations of these compounds. The excavation was backfilled upon approval from the ACHA.

Analytical results for grab ground-water samples collected from the UST excavation are presented in Table 9. These results indicated the presence of low concentrations of TPHo (less than 0.5 ppm), TPHd (up to 1.2 ppm), cis-1,2-DCE (up to 0.008 ppm), and TCE (up to 0.022 ppm).

In accordance with a request from the ACHA, one shallow ground-water monitoring well (LF-31) was installed in February 1993 downgradient from and within 10 feet of the UST excavation to assess whether shallow ground water in the vicinity of the USTs had been affected by a possible release of petroleum hydrocarbons. In addition, soil samples were collected for analysis of TPH and VOCs from beneath the retaining wall located just north of the former USTs at the time of well installation (Levine·Fricke 1993a).

Analytical results for the five soil samples collected from beneath the wall did not indicate the presence of TPHg or BTEX above laboratory detection limits (Table 10). No VOCs were detected (using EPA Method 8010) in any of samples, with the exception of methylene chloride, which was detected at concentrations of 2.4 parts per billion (ppb) or less. However, the analytical laboratory QA/QC summary report indicated that these concentrations of methylene chloride are within normal laboratory background concentrations. TPHd was

detected in only one sample at a low concentration of 31 ppm (and is probably a laboratory artifact), and oil and grease (O&G) was detected in all samples at concentrations of 100 ppm or less.

Well LF-31 has been monitored on a quarterly basis since March 1993. Analytical results are included in Table 11. Results do not indicate the presence of TPHg, oil and grease, or BTEX above laboratory detection limits. Initial samples collected from the well also were analyzed for SVOCs, cadmium, chromium, nickel, lead, and zinc. Analytical results did not indicate the presence of these compounds, with the exception of bisphthalate, an SVOC. However, bisphthalate was detected at a concentration of 0.008 ppm, which is below the reporting limit of 0.01 ppm for this compound. Based on conversations with the analytical laboratory, bisphthalate is a common laboratory contaminant and the concentration detected in this sample likely is the result of laboratory error.

TPHd and motor oil have been detected in samples collected from well LF-31 at concentrations of up to 0.4 ppm and 0.1 ppm (the detection limit), respectively.

Two hydraulic lifts, an oil/water separator, and a concrete inspection pit were encountered and subsequently removed from beneath the concrete floor slab of the former Bashland Warehouse building during demolition activities. These structures appear to be associated with a former bus and truck service garage that operated at the Site from as early as 1957 until 1983.

Analytical results for soil samples collected from beneath the subsurface structures are presented in Table 10 and shown on Figure 9. Soil remediation activities conducted in those areas are discussed in Section 5.2.3.

4.2 Former Bay Area Warehouse Property

On November 20, 1991, a gasoline UST was removed from the former BAW property by consultants retained by BAW (Figure 2). UST removal activities are described in the December 1991 "Report of Findings, Underground Storage Tank Removal," prepared by the consultants for BAW and submitted to the ACHA (The Environmental Construction Company 1991).

Results presented in the UST removal report indicated that benzene was not detected in any soil samples collected by BAW from the UST excavation, and that TPHg concentrations in these soil samples were 3 ppm or less. Results for the grab

ground-water sample collected from the UST excavation by BAW indicated the presence of benzene and TPHg at concentrations of 0.24 ppm and 8.8 ppm, respectively. Soil and ground-water samples were not submitted for laboratory analysis of TPHd.

Levine·Fricke, on behalf of Catellus, installed monitoring well LF-32 on May 20, 1993, within 10 feet downgradient from the former UST excavation (Levine·Fricke 1993a,c). A quarterly ground-water monitoring program was implemented for the well in May 1993. Analytical results are presented in Table 11. Results from three quarters of monitoring do not indicate the presence of TPHg or BTEX compounds above laboratory detection limits. TPHd has been detected in samples collected from well LF-32 at concentrations up to 0.66 ppm.

4.3 Beach Street Area

Two 12,000-gallon fuel USTs, formerly located along Beach Street in the northwestern corner of Area C (Figure 9), were removed on August 31, 1993, and disposed of by a licensed hazardous waste transportation company under a hazardous waste manifest (Levine·Fricke 1993d). Inspection of the USTs after removal indicated that both USTs had several holes at the bottom and top of each tank.

Approximately 6,000 cubic yards of petroleum-affected soil were removed from the vicinity of the USTs when the USTs were removed. Figure 10 presents the approximate extent of soil excavated from the property and analytical results for verification samples collected from the final excavation. Soil samples collected from the final excavation bottom and sidewalls indicated that concentrations of petroleum hydrocarbons were reduced to cleanup goals for the Site, with the exception of approximately 90 cubic yards of soil along the western property boundary. This material was left in place due to geotechnical considerations concerning stability of the excavation sidewalls and the adjacent sidewalk and street. The area of on-site affected soil is located at a depth of 7.5 to 15 feet bgs, and extends from the western property line approximately 5.5 feet east. The excavation was backfilled in October 1993. Further work to be conducted in this area is described in Section 6.2.

5.0 SOIL REMEDIATION

As described previously, soils identified as containing elevated concentrations of lead and zinc in localized areas have been removed from the Site in accordance with the SRP. In addition, localized areas of perched oily water have been addressed and petroleum-affected soil has been removed from the Site. A brief discussion of cleanup goals established for the Site and soil remediation activities conducted in Area C is presented in Sections 5.1 and 5.2, respectively. Soil remediation activities associated with UST removal activities were previously described within Section 4.0.

5.1 Soil Cleanup Levels

5.1.1 Metals

Available regulatory guidelines were reviewed along with site-specific data to determine appropriate cleanup levels for lead- and zinc-affected soil in Area C. Soils containing elevated concentrations of lead and zinc were first compared to Department of Health Services Total Threshold Limit Concentrations (TTLCs), which are used to classify hazardous waste in accordance with Title 22 California Code of Regulations. Although TTLCs are not intended as cleanup levels, they do provide a basis for comparison.

The TTLCs for lead and zinc are 1,000 ppm and 5,000 ppm, respectively. Additionally, the U.S. Environmental Protection Agency (U.S. EPA) issued an interim guidance for establishing soil lead cleanup levels at Superfund sites; the cleanup guidance level established for total lead in soil is 500 to 1,000 ppm (U.S. EPA 1989).

Based on these guidelines and the fact that the lead- and/or zinc-affected soils in Area C appeared to be limited to shallow soil (less than 3 feet deep) and did not appear to have affected shallow ground water, soil cleanup levels of 1,000 and 5,000 ppm for lead and zinc, respectively, were selected to achieve the remedial objective. These cleanup levels were presented in the SRP; the SRP was approved by the ACHA by letter dated March 5, 1991 (Appendix A).

A more detailed discussion of soil cleanup levels is presented in the February 11, 1991 SRP (Levine·Fricke 1991b).

5.1.2 Petroleum Hydrocarbons

For large areas of soil containing elevated concentrations of petroleum hydrocarbons, soil was removed to reduce concentrations of petroleum hydrocarbons in soil to cleanup goals previously established for the Site. These cleanup goals for site soils, as approved by the ACHA, are as follows:

- less than 100 ppm TPHd
- less than 1,000 ppm O&G
- less than 10 ppm TPHg
- combined BTEX concentration less than 1 ppm

Management of very localized areas of TPH-affected soil left in place (i.e., in the vicinity of Phase I sampling location C-19) consists of containing the soil beneath a low permeability cap to reduce surface-water infiltration (Section 5.2.2).

5.2 Soil Remediation Activities

Soils containing chemical concentrations above the cleanup levels were generally excavated and removed from the Site. Figure 11 indicates areas of the Site where chemically affected soil was remediated.

5.2.1 Lead- and Zinc-Affected Soil

Approximately 120 cubic yards of lead- and zinc-affected soil was excavated from an area measuring approximately 20 feet by 20 feet. The final depth of the excavation was approximately 4 feet. Analytical results indicated lead and zinc concentrations in soil samples collected from the final excavation sidewalls and floor were less than 7 ppm and 42 ppm, respectively (Levine·Fricke 1991c). These concentrations are well below the cleanup levels for lead and zinc of 1,000 ppm and 5,000 ppm, respectively.

5.2.2 Soil Excavation Near Monitoring Well LF-9

Monitoring well LF-9 was abandoned on June 18, 1991, so that soil excavation could be conducted in this area (Figure 11). Oil-affected soil and associated perched water were excavated to within one foot of the wall separating the Site from the adjacent Bashland property and disposed of at a Class I landfill. Approximately 20 cubic yards of soils were removed from this location. Analytical results for verification soil samples collected from the final excavation indicated TPHo at concentrations of less than 450 ppm, which is below the

cleanup goal of 1,000 ppm for TPHo. Analytical results and the approximate extent of the excavation are presented in Figure 12.

5.2.3 Petroleum-Affected Soil

Levine·Fricke addressed management of TPH-affected soil in the vicinity of boring C-19 in Section 2.1.3 of the regulatory-approved SRP (Levine·Fricke 1991b). As presented in the SRP, soil in the vicinity of location C-19 will be contained under building foundations or low permeability asphalt paving or concrete. Containment of this localized area of oil-affected soil in this manner will minimize possible exposure to the affected soils and mitigate future effects to shallow ground water by reducing surface-water infiltration through soil.

Oil-affected soil encountered beneath the former Bashland building slab was excavated and removed in 1993 (Figure 11). Analytical results for initial soil samples collected from beneath the building slab are presented in Table 12 and shown on Figure 9. Based on these initial results, additional excavation was conducted in the vicinity of an on-site hydraulic lift. Table 13 and Figure 13 present results for verification samples collected from the hydraulic lift excavation. As presented in Table 13, concentrations of oil and grease in soil were generally reduced to cleanup goals for the Site (Levine·Fricke 1993b). However, soil containing concentrations of oil and grease exceeding the cleanup goal of 1,000 ppm was left in place at a depth of 11 feet in one location within the hydraulic lift excavation. Samples BS-3-10.5 and BS-13 (collected from the same location) contained concentrations of oil and grease up to 1,600 ppm. Soil in the vicinity of these sample locations was excavated to 11 feet (approximately 2 feet below ground water). Based on the nature of soil at the Site (silty clay), the low permeability of oil, and the localized extent of affected soil, these concentrations would not be expected to significantly affect ground-water quality.

6.0 GROUND-WATER REMEDIATION

6.1 VOC-Affected Ground Water

VOC concentrations up to 7.6 ppm have been detected in ground-water samples collected from well LF-10, located just north of the property boundary (Figure 7). Some of the same compounds have also been detected in ground-water samples collected from wells LF-11, LF-12, and LF-31, and grab ground-water sampling

location C-15. Based on the distribution of the concentrations of these compounds in ground water, the absence of these compounds in soil samples collected from the vicinity of the wells (i.e., no known on-site source for VOCs), and the upgradient location of a known on-site source for VOCs (Electro-Coatings, Inc.), it appears that the VOCs have migrated from an upgradient, off-site source.

This off-site source, the Electro-Coatings, Inc. (ECI) property, was investigated by Woodward-Clyde Consultants beginning in 1977. Results of these environmental investigations indicated the presence of VOCs in shallow ground water at the ECI property. Reportedly, VOCs were detected in both on- and off-site wells, installed in 1977, 1982, and 1983 to assess shallow soil and ground-water quality at the ECI property. Since that time, investigations of the ECI property have been intermittent, and the wells have not been routinely monitored since 1985.

American Environmental Management Consultants (AEMC) of Sacramento, California, initiated a ground-water monitoring program at the property on behalf of ECI in October 1991 and submitted an investigation report to the Regional Water Quality Control Board (RWQCB) in January 1992. Results of ECI's investigation indicated the presence of VOCs in ground water at concentrations up to 19 ppm (TCE). Based on these results, AEMC recommended in its report that the existing wells be sampled on a semiannual basis.

Based on several telephone conversations between representatives of Levine·Fricke and ECI in 1992 and early 1993, the response from the RWQCB reportedly has been slow and ECI has not authorized its consultants to conduct further work at the ECI site. Based on conversations among representatives of Levine·Fricke, Catellus, the RWQCB, and the ACHA, it appears that because ECI has or intends to declare bankruptcy, the RWQCB is unwilling to proceed with enforcement actions.

To address the issue of VOC-affected ground water beneath Area C, it is anticipated that selected monitoring wells will continue to be monitored for the presence of VOCs on a periodic basis. However, there are no plans to conduct further investigation or remediation in this area. Given the low concentrations of VOCs detected in ground water, the nature of soil in Area C (silty clay), and the intended site use (commercial use with the majority of the Site cover with asphalt paving or buildings), it is not expected that the low concentrations of VOCs in ground water beneath Area C would threaten human health or the environment.

6.2 Petroleum-Affected Ground Water

TPH was detected in ground water in portions of Area C at concentrations less than 1.6 ppm. Because no specific guidelines are currently available for allowable concentrations of petroleum hydrocarbons in ground water, ground-water remediation for TPH in ground water in Area C did not appear to be warranted and was not included in the approved SRP. However, ground-water monitoring activities will be continued as described below.

Monitoring well LF-31 will continue to be monitored for the presence of diesel on a quarterly basis for one more year. Samples collected from well LF-31 also will be analyzed for VOCs on a periodic basis to maintain a database for these compounds.

One year of quarterly monitoring for well LF-32 will be completed in March 1994. Ground-water quality results will then be evaluated to assess whether further monitoring is warranted.

To assess ground-water quality downgradient from the former USTs removed from the Beach Street area (Section 4.3), one monitoring well will be installed west of the former location of the two 12,000-gallon USTs, in the sidewalk along Beach Street or in the street. The well will be monitored for petroleum hydrocarbons on a quarterly basis for a minimum of one year, beginning with the second quarter (April through June) of 1994. Quarterly reports will be prepared on behalf of Catellus and submitted to the ACHA and the RWQCB.

7.0 SUMMARY

Investigations have been conducted to evaluate environmental conditions at the Site. Where appropriate, agency-approved remedial measures have been undertaken. The environmental conditions at the Site are as follows:

- Zinc- and lead-affected soil identified in Area C have been removed.
- Soils containing residual TPH concentrations above cleanup levels will be left on site and capped beneath paved parking areas and building slabs during site development.

- No on-site source for VOCs in ground water has been identified, indicating that VOC-affected ground water beneath Area C likely migrated onto Area C from a known, off-site, upgradient source north of the Site.

- Remediation of heavy fraction TPH in ground water does not appear to be warranted because of the very low concentrations detected and was not included in the SRP because no regulatory guidelines for remediation of heavy fraction TPH in ground water have been established.

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TABLE 1
VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION ID	NOTES	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (feet)	Benzene	Toluene	Ethyl Benzene	Total Xylenes	1,1-DCA	1,1-DCE	TCE	1,2-DCE
C1		C1(3.5)B	31-Jan-90	3.5	*ND	*ND	*ND	**ND	ND	ND	ND	ND
C5		C5(4)B	30-Jan-90	4.0	*ND	0.013	*ND	**ND	ND	ND	ND	ND
C8		C8(4)B	06-Feb-90	4.0	*ND	0.54	*ND	**ND	ND	ND	ND	ND
C9	(1)	C9(3.5)B	08-Feb-90	3.5	ND	ND	ND	ND	NA	NA	NA	NA
C9	(1)	C9(9)C	08-Feb-90	9.0	ND	ND	ND	ND	NA	NA	NA	NA
C10	(1)	C10(4)B	08-Feb-90	4.0	ND	0.045	ND	ND	NA	NA	NA	NA
C10	(1)	C10(9.5)C	08-Feb-90	9.5	ND	ND	ND	ND	NA	NA	NA	NA
C12		C12(3.5)B	31-Jan-90	3.5	*ND	0.012	*ND	**ND	ND	ND	ND	ND
C15		C15(9.5)C	31-Jan-90	9.5	*ND	0.15	*ND	**ND	ND	ND	ND	ND
C17		C17(1)A	08-Feb-90	1.0	*ND	0.18	*ND	**ND	ND	ND	ND	ND
C17		C17(4)B	08-Feb-90	4.0	*ND	0.006	*ND	**ND	ND	ND	ND	0.034
C17		C17(9)C	08-Feb-90	9.0	*ND	0.033	*ND	**ND	ND	ND	0.24	0.039
C18		C18(3.5)B	07-Feb-90	3.5	*ND	0.085	*ND	**ND	ND	ND	ND	ND
C19		C19(4)B	08-Feb-90	4.0	*ND	0.052	*ND	**ND	ND	ND	ND	ND
C19	(1)	C19(4)B	08-Feb-90	4.0	ND	0.078	ND	ND	NA	NA	NA	NA
C20		C20(3)B	07-Feb-90	3.0	ND	0.027	ND	ND	ND	NA	NA	NA
C21		C21(4)B	08-Feb-90	4.0	*ND	0.078	*ND	**ND	ND	ND	ND	ND
C21		C21(8)C	08-Feb-90	8.0	*ND	0.073	*ND	**ND	ND	ND	ND	0.022
C21		C21(13)	08-Feb-90	13.0	*ND	0.12	*ND	*ND	ND	ND	0.18	0.034
C23		C23(10)C	07-Feb-90	10.0	*ND	0.006	*ND	**ND	ND	ND	ND	ND
C24		C24(10)C	22-Feb-90	10.0	*ND	0.07	*ND	*ND	ND	ND	0.009	ND
C24		C24(3.5)B	22-Feb-90	3.5	*ND	0.25	*ND	*ND	ND	ND	ND	ND
C25		C25(4.5)B	30-Jan-90	4.5	*ND	0.005	*ND	**ND	ND	ND	ND	ND
C26		C26(3)B	22-Feb-90	3.0	*ND	0.083	*ND	*ND	ND	ND	ND	ND
C27		C27(10)C	07-Feb-90	10.0	*ND	0.014	*ND	**ND	ND	ND	ND	ND
C27		C27(3)B	07-Feb-90	3.0	*ND	0.015	*ND	**ND	ND	ND	ND	ND
C28	(1)	C28(4)B	12-Feb-90	4.0	ND	0.55	ND	ND	NA	NA	NA	NA
LF9		LF9(10)C	30-Jan-90	10	*ND	*ND	*ND	**ND	ND	ND	0.007	ND
LF10		LF10(4.5)B	31-Jan-90	4.5	*ND	0.035	*ND	**ND	ND	ND	ND	ND
LF11		LF11(4)B	01-Feb-90	4.0	*ND	0.014	*ND	**ND	ND	ND	ND	ND
LF12		LF12(4.5)B	12-Feb-90	4.5	*ND	0.068	*ND	*ND	ND	ND	ND	ND
Detection Limit					0.001	0.001	0.001	0.003	0.005	0.005	0.005	0.005

NOTES:
All samples analyzed by Med-Tox Associates of Pleasant Hill, California, using EPA Method 8240 unless otherwise noted.

Key to Abbreviations:
NA = not analyzed
ND = not detected
(*) Detection Limit 0.005 ppm
(**) Detection Limit 0.01 ppm
(1) Sample analyzed using EPA Method 8020

1,1-DCA = 1,1-DICHLOROETHANE
1,1-DCE = 1,1-DICHLOROETHENE
TCE = TRICHLOROETHENE
1,2-DCE = 1,2-DICHLOROTHENE

TABLE 2
SEMIVOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (feet)	PYRENE	PCB AROCLOR 1260
C1	C1(3.5)B	31-Jan-90	3.5	ND	NA
C2	C2(4)B	30-Jan-90	4.0	ND	NA
C3	C3(4)B	31-Jan-90	4.0	ND	NA
C4	C4(4)B	30-Jan-90	4.0	ND	NA
C5	C5(4)B	30-Jan-90	4.0	ND	NA
C6	C6(1)A	15-Feb-90	1.0	ND	ND
C6	C6(3)B	15-Feb-90	3.0	ND	ND
C8	C8(4)B	06-Feb-90	4.0	ND	NA
C12	C12(3.5)B	31-Jan-90	3.5	ND	ND (+)
C15	C15(.5)A	31-Jan-90	0.5	ND	NA
C15	C15(4)B	31-Jan-90	4.0	ND	ND (+)
C16	C16(4)B	31-Jan-90	4.0	NA	ND
C17	C17(1)A	08-Feb-90	1.0	ND	NA
C17	C17(4)B	08-Feb-90	4.0	ND	NA
C17	C17(9)C	08-Feb-90	9.0	ND	NA
C18	C18(3.5)B	07-Feb-90	3.5	ND	NA
C19	C19(4)B	08-Feb-90	4.0	ND	NA
C21	C21(1)A	08-Feb-90	1.0	NA	0.2
C21	C21(4)B	08-Feb-90	4.0	ND	NA
C21	C21(8)C	08-Feb-90	8.0	ND	NA
C21	C21(13)	08-Feb-90	13.0	ND	NA
C23	C23(10)C	07-Feb-90	10.0	ND	NA
C24	C24(3.5)B	22-Feb-90	3.5	ND	NA
C24	C24(10)C	22-Feb-90	10.0	ND	NA
C25	C25(4.5)B	30-Jan-90	4.5	ND	NA
C26	C26(3)B	22-Feb-90	3.0	ND	NA
C27	C27(3)B	07-Feb-90	3.0	ND	NA
C27	C27(10)C	07-Feb-90	10.0	ND	NA
LF10	LF10(4.5)B	31-Jan-90	4.5	ND	NA
LF11	LF11(1.5)A	31-Jan-90	1.5	ND	NA
LF11	LF11(4)B	01-Feb-90	4.0	ND	NA
LF12	LF12(4.5)B	12-Feb-90	4.5	ND	ND
Detection Limit				0.33	0.05

NOTES:

NA - not analyzed
ND - not detected
(+) - Estimated Detection Limit 1.6 ppm

TABLE 3A
METALS COMPOUNDS DETECTED IN SOIL SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (feet)	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Zn
C1	C1(3.5)B	31-Jan-90	3.5	2.0	0.3	ND	30	12	5	ND	15	ND	ND	24
C2	C2(1)A	30-Jan-90	1.0	25	2.1	0.2	36	30	56	0.2	31	ND	ND	89
C2	C2(4)B	30-Jan-90	4.0	3	0.5	ND	36	13	6	0.2	24	ND	ND	28
C3	C3(4)B	31-Jan-90	4.0	3.8	0.4	ND	34	15	6	ND	24	ND	ND	30
C4	C4(4)B	30-Jan-90	4.0	1.6	0.4	ND	30	9	4	ND	18	ND	ND	18
C5	C5(4)B	30-Jan-90	4.0	1.6	0.4	ND	39	16	4	ND	21	ND	ND	30
C6	C6(1)A	15-Feb-90	1.0	ND	0.3	0.2	39	21	14	ND	33	ND	ND	42
C6	C6(3)B	15-Feb-90	3.0	ND	0.4	ND	43	11	4	ND	32	ND	ND	25
C7	C7(4)B	31-Jan-90	4.0	2.1	0.6	ND	42	15	5	ND	25	ND	ND	32
C8	C8(4)B	06-Feb-90	4.0	1.3	0.4	0.3	33	29	27	ND	38	ND	ND	68
C9	C9(3.5)B	08-Feb-90	3.5	NA	NA	NA	NA	NA	5.0	NA	NA	NA	NA	NA
C9	C9(9)C	08-Feb-90	9.0	NA	NA	NA	NA	NA	3.0	NA	NA	NA	NA	NA
C10	C10(4)B	08-Feb-90	4.0	NA	NA	NA	NA	NA	5.0	NA	NA	NA	NA	NA
C10	C10(9.5)C	08-Feb-90	9.5	NA	NA	NA	NA	NA	4.0	NA	NA	NA	NA	NA
C12	C12(3.5)B	31-Jan-90	3.5	6.8	0.4	0.3	45	27	9	ND	33	ND	ND	58
C13	C13(3)B	15-Feb-90	3.0	2	0.3	ND	41	16	5	ND	30	ND	ND	29
C14	C14(4)B	05-Feb-90	4.0	ND	ND	ND	33	29	27	ND	38	ND	ND	27
C15	C15(.5)A	31-Jan-90	0.5	22	0.4	0.9	39	72	240	0.2	42	ND	ND	420
C15	C15(4)B	31-Jan-90	4.0	ND	0.5	ND	33	29	5	ND	29	ND	ND	38
C16	C16(4)B	31-Jan-90	4.0	5.6	0.6	0.2	36	24	7	ND	32	ND	ND	44
C17	C17(1)A	08-Feb-90	1.0	14	0.4	5.4	46	310	8800	0.5	33	ND	1	47000
C17	C17(4)B	08-Feb-90	4.0	ND	ND	ND	28	7.0	3.0	ND	14	1	ND	16
C17	C17(9)C	08-Feb-90	9.0	3.4	0.3	0.5	22	20	3	ND	35	2	ND	50
C18	C18(2)A	07-Feb-90	2.0	1.4	0.3	ND	21	64	9.0	ND	35	ND	ND	84
C18	C18(3.5)B	07-Feb-90	3.5	1	0.3	ND	18	8.0	3.0	ND	16	ND	ND	15
C20	C20(3)	07-Feb-90	3.0	NA	NA	NA	NA	NA	10	NA	NA	NA	NA	NA
C21	C21(1)A	08-Feb-90	1.0	7	0.2	1	35	120	190	0.6	58	ND	ND	300
C21	C21(4)B	08-Feb-90	4.0	1.7	0.3	ND	19	30	8	ND	31	ND	ND	48
C21	C21(8)C	08-Feb-90	8.0	1.2	0.3	ND	17	12	6	ND	35	ND	ND	18
C21	C21(13)	08-Feb-90	13.0	2.4	0.3	0.3	20	22	3	ND	25	ND	ND	37
C23	C23(10)C	07-Feb-90	10.0	0.7	0.5	ND	27	21	4.0	ND	29	ND	ND	43
C24	C24(10)C	23-Feb-90	10.0	1.6	0.4	ND	28	13	3.0	ND	21	ND	ND	30
C25	C25(4.5)B	30-Jan-90	4.5	1.4	0.3	ND	38	10	4	ND	15	ND	ND	22
C26	C26(3)B	23-Feb-90	3.0	ND	0.4	ND	24	11	4	ND	21	ND	ND	33
C27	C27(10)C	07-Feb-90	10.0	0.8	0.4	ND	23	11	4.0	ND	12	ND	ND	16

TABLE 3A
METALS COMPOUNDS DETECTED IN SOIL SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (feet)	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Zn
LF10	LF10(4.5)B	31-Jan-90	4.5	3.8	0.5	ND	31	17	6	ND	37	ND	ND	38
LF11	LF11(1.5)A	31-Jan-90	1.5	2.2	0.6	0.2	35	30	6	ND	32	ND	ND	50
LF11	LF11(4)B	01-Feb-90	4.0	2.3	0.2	ND	36	8	4	ND	16	ND	ND	20
LF12	LF12(4.5)B	12-Feb-90	4.5	2	ND	ND	61	36	18	ND	43	ND	ND	80
Background * observed range			low	6.5	<1	0.01	150	30	30	0.082	30	<0.1	NL	120
			high	65.0	<1	0.7	1,500	700	700	5.1	700	0.5	NL	3,500
			TTLC	500	75	100	2,500	2,500	1,000	20	2,000	100	500	5,000
			STLC	5.0	0.75	1.0	560	25	5.0	0.2	20	1.0	5.0	250
Detection Limit				0.5	0.2	0.2	1.0	1.0	1.0	0.2	1.0	1.0	0.3	2.0
Method Reference				7060	7090	7130	7190	7210	7420	7471	7520	7740	7760	7950

NOTES:

NL - not listed
NA - not analyzed
ND - not detected
* Shacklette, H.T., and J.G. Boerngen, 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 1270.

Key to Abbreviations:

As = Arsenic
Be = Beryllium
Cd = Cadmium
Cr = Chromium
Cu = Copper
Pb = Lead
Hg = Mercury
Ni = Nickel
Se = Selenium
Ag = Silver
Zn = Zinc

TABLE 3B
LEAD AND ZINC DETECTED IN SOIL SAMPLES
PHASE II INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in mg/kg)

SAMPLE LOCATION ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (feet)	LEAD	ZINC
SS-12	SS-12-0.5	18-Apr-90	1.0	50	75
SS-12	SS-12-3.0	18-Apr-90	3.5	6	NA
SS-13	SS-13-0.5	18-Apr-90	1.0	40	71
SS-14	SS-14-0.5	18-Apr-90	1.0	400	990
SS-14	SS-14-3	18-Apr-90	3.5	8	NA
SS-15	SS-15-0.5	18-Apr-90	1.0	63	84
SS-16	SS-16-0.5	18-Apr-90	1.0	41	94
SS-17	SS-17-0.5	18-Apr-90	1.0	83	180
SS-17	SS-17-3	18-Apr-90	3.5	10	NA
Detection Limit				5	2
Testing Methods				7420	7950

NOTES:

NA - not analyzed
ND - not detected

TABLE 4A
PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION ID	SAMPLE ID	DATE SAMPLED	SAMPLE DEPTH (feet)	TPH as GASOLINE	TPH as DIESEL	TPH as OIL
C3	C3(4)B	31-Jan-90	4.0	NA	ND	ND
C4	C4(4)B	30-Jan-90	4.0	NA	ND	ND
C5	C5(4)B	30-Jan-90	4.0	NA	ND	ND
C6	C6(3)B	15-Feb-90	3.0	NA	ND	ND
C8	C8(4)B	06-Feb-90	4.0	NA	ND	60
C9	C9(3.5)B	08-Feb-90	3.5	ND	ND	ND
C9	C9(9)C	08-Feb-90	9.0	ND	ND	ND
C10	C10(4)B	08-Feb-90	4.0	ND	ND	ND
C10	C10(9.5)C	08-Feb-90	9.5	ND	ND	ND
C11	C11(4)B	08-Feb-90	4.0	ND	ND	ND
C12	C12(3.5)B	31-Jan-90	3.5	NA	ND	ND
C13	C13(3)B	15-Feb-90	3.0	NA	490	ND
C14	C14(4)B	05-Feb-90	4.0	NA	ND	50
C15	C15(4)B	31-Jan-90	4.0	NA	ND	ND
C17	C17(1)A	08-Feb-90	1.0	NA	ND	60
C17	C17(4)B	08-Feb-90	4.0	NA	ND	ND
C17	C17(9)C	08-Feb-90	9.0	NA	ND	ND
C18	C18(3.5)B	07-Feb-90	3.5	NA	ND	ND
C19	C19(4)B	08-Feb-90	4.0	0.2	ND	2600
C20	C20(3)	07-Feb-90	3.0	NA	ND	ND
C23	C23(10)C	07-Feb-90	10.0	NA	ND	ND
C25	C25(4.5)B	30-Jan-90	4.5	NA	ND	ND
C26	C26(3)B	22-Feb-90	3.0	NA	ND	ND
C27	C27(10)C	07-Feb-90	10.0	ND	ND	ND
C28	C28(4)B	12-Feb-90	4.0	@@1.0	ND	670
LF9	LF9(10)C	30-Jan-90	10.0	ND	ND	ND
LF12	LF12(4.5)B	12-Feb-90	4.5	0.8	ND	620
Detection Limit				0.2	10	20

NOTES:

NA - not analyzed
ND - not detected
@@ - Gasoline result is due primarily to presence of toluene

TABLE 4B
PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLES
PHASE II INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION ID	DATE SAMPLED	SAMPLE DEPTH (feet)	TPH as DIESEL	TPH as OIL
BB-45	28-Nov-90	2.5	NA	50
	28-Nov-90	4.0	NA	ND
BB-46	28-Nov-90	2.75	NA	50
	28-Nov-90	4.5	30	70
Detection Limit			10	20

NOTES:

NA - not analyzed
ND - not detected

TABLE 5

METALS COMPOUNDS DETECTED IN GROUND-WATER SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in parts per million)

Sample Location	Sample ID	Date Sampled	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
C10	C10W	08-Feb-90	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
C15	C15W	30-Jan-90	ND	0.002	ND	ND	ND	ND	ND	ND	0.02	ND	ND	ND	0.009
C18	C18W	07-Feb-90	ND	0.001	ND	ND	ND	ND	ND	ND	0.02	ND	ND	ND	0.017
C20	C20W	07-Feb-90	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA
LF9	LF9-7501	08-Feb-90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.016
LF10	LF10-7501	08-Feb-90	ND	ND	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	0.021
LF11	LF11-7501	09-Feb-90	ND	ND	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	0.007
LF12	LF12W	23-Feb-90	ND	0.003	ND	ND	ND	0.011	ND	ND	0.02	ND	ND	ND	0.005
LF16	LF16W	23-Feb-90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005
Detection Limit			0.5	0.001	0.003	0.003	0.02	0.005	0.01	0.0003	0.01	0.003	0.01	0.02	0.003
Method Reference			7040	760	7090	7130	7190	7210	7420	7471	7520	7740	7760	7840	7950
MCL			NA	0.05	NA	0.01	0.050 (4)	1.30	0.05	0.002	NA	0.01	0.05	NA	5.0
Ocean Plan (1)			---	0.008	---	0.003	0.002 (4)	0.005	0.008	0.14 (5)	0.020	---	---	---	0.020 (6)
Basin Plan (2)			---	0.036	---	0.0093	0.05 (4)	---	0.0056	0.025 (5)	---	---	0.45 (5)	---	---
EPA Criteria (3)			---	0.036	---	0.0093	0.002 (4)	---	0.0056	0.025 (5)	0.0083	0.071	---	---	0.086

NA - not analyzed
ND - not detected

MCl = California Maximum Contaminant Level for Drinking Water

(1) California Ocan Plan Limiting Concentration - 6 month median concentration
(2) RWQCB Water Quality Control Plan, Water Quality Objectives
San Francisco Bay Basin - 4 day average concentration
(3) EPA Natural Water Quality Criteria to Protect Salt Water
Aquatic Life - 4 day average concentration
(4) Cr VI
(5) Unit in parts per billion
(6) Secondary Standard (taste and odor)

Key to Abbreviations

Sb - Antimony
As - Arsenic
Be - Beryllium
Cd - Cadmium
Cr - Chromium
Cu - Copper
Pb - Lead
Hg - Mercury
Ni - Nickel
Se - Selenium
Ag - Silver
Tl - Thallium
Zn - Zinc

TABLE 6
VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUND-WATER SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in milligrams per liter [mg/l])

Sample Location	Date Sampled	Lab	Sample Method	1,1-DCE	1,2-DCE	TCE	PCE	1,1,2-TCA	Vinyl Chloride
LF10	08-Feb-90	MED	8240	0.031	3.2	7.6	0.041	0.007	1.0
	29-Nov-90	BCA	8010	<0.0005	4.7	5.9	<0.005	<0.005	0.29
	10-Feb-93	ANA	8010	<0.025	0.368	1.6	<0.025	<0.025	<0.025
	13-Jul-93	ANA	8010	<0.025	0.322	1.5	<0.025	<0.025	<0.025
LF11	09-Feb-90	MED	8240	<0.005	0.051	0.31	<0.005	<0.005	<0.01
	10-Feb-93	ANA	8010	<0.0025	0.0359	0.14	<0.0025	<0.0025	<0.0025
LF12	09-Feb-90	MED	8240	<0.005	0.067	0.008	<0.005	<0.005	<0.01
	10-Feb-93	ANA	8010	<0.0005	0.0358	0.002	<0.0005	<0.0005	<0.0005
	13-Jul-93	ANA	8010	<0.0005	0.0435	0.0017	<0.0005	<0.0005	<0.0005

Milligrams per liter is equivalent to parts per million.

ANA - Anametrix, Inc. of San Jose, California
BCA - BC Analytical of Emeryville, California
MED - Med-Tox Associates of Pleasant Hill, California

* MCL for cis-1,2-DCE (MCL for trans-1,2-DCE is 0.010 mg/l).
** Effective January 1994.

(1) = Maximum Contaminant Level for drinking water (California Department of Health Services)

Key to Abbreviations:
1,1-DCE = 1,1-Dichloroethene
1,2-DCE = 1,2-Dichloroethene
TCE = Trichloroethene
PCE = Tetrachloroethene
1,1,2-TCA = 1,1,2-Trichloroethane

TABLE 7
PETROLEUM HYDROCARBONS DETECTED IN GROUND-WATER SAMPLES
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROJECT SITE
(concentrations in ppm)

SAMPLE LOCATION	SAMPLE ID	DATE SAMPLED	TPH as GASOLINE	TPH as DIESEL	TPH as OIL	STODDARD SOLVENT
C10	C10W	08-Feb-90	ND	NA	NA	NA
C16	C16W	31-Jan-90	ND	ND	0.7	NA
C18	C18W	07-Feb-90	ND	ND (*)	NA	NA
C20	C20W	07-Feb-90	0.2	NA	NA	NA
C28	C28W	12-Feb-90	ND	ND	ND	NA
C29	C29W	15-Feb-90	ND	ND	ND	NA
LF9	LF9-7501	08-Feb-90	ND	ND	0.5	NA
LF9	LF9G	30-Jan-90	ND (**)	ND	7.8	3.6
LF10	LF10-7501	08-Feb-90	ND	ND	1.5	NA
LF11	LF11-7501	09-Feb-90	0.1	ND	0.6	NA
LF12	LF12W	23-Feb-90	ND	0.5	ND	NA
LF16	LF16W	23-Feb-90	ND	ND	ND	NA
Detection Limit			0.1	0.3	0.5	0.1

NOTES:

NA - Not Analyzed
ND - Not Detected
(*) - Detection Limit 0.5 ppm
(**) - Detection Limit 4 ppm

TABLE 8
SOIL CHEMICAL ANALYSIS RESULTS
UST REMOVAL ACTIVITIES, APRIL 7, 1992
FORMER BASHLAND PROPERTY
(All results expressed in milligrams per kilogram [mg/kg])

	EPA Method 8015			EPA Method 8020				EPA Method 5520E	EPA Method 5520F	EPA Method	EPA Method					
Sample ID	TPH as Oil	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene	Oil and Grease	TPH	8010	8270	Cd	Cr	Ni	Pb	Zn
Excavation Samples																
AEW-1-W-9	<5	<1	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	8	NA
AEW-2-S-9	<5	2	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	8	NA
AEW-3-S-9	<5	<1	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	11	NA
B/CEB-4-W-8*	<5	<1	<0.2	<0.005	<0.005	<0.005	<0.005	20	<10	<5	NA	0.4	46	41	10	45
B/CEB-5-E-8*	1,500	<1	<0.2	<0.005	<0.005	<0.005	<0.005	1,300	1,200	<5	ND	<0.2	34	17	9	30
DEW-6-W-9	<5	2	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	11	NA
DEW-7-S-9	<5	<1	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	10	NA
DEW-8-E-9	<5	<1	<0.2	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	9	NA
P-1-1.5	86	8	<0.2	<0.005	<0.005	<0.005	<0.005	70	50	<5	ND	0.3	47	34	8	30
Stockpile Samples																
SP1	<50	<10	1.0	<0.005	0.009	0.036	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SP2	<50	18	2.4	<0.005	0.018	0.107	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SP3	<50	<10	1.1	<0.005	0.012	0.092	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA
SP4	<50	<10	<1	<0.005	0.013	0.097	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

NA - Not analyzed
ND - Not detected
TPH - Total Petroleum Hydrocarbons.
* - Soil beneath and adjacent to sampling location excavated and removed on April 27, 1992.

Excavation soil sample locations shown on Figure 3.

Soil samples analyzed by Quanteq Laboratory of Pleasant Hill, California and Precision Analytical Laboratory of Richmond, California, both state-certified laboratories.

See laboratory data sheets for EPA Method 8010 analytes.

See laboratory data sheets for EPA Method 8270 analytes and detection limits

Table 9

ANALYTICAL RESULTS OF GRAB GROUND-WATER SAMPLES
FORMER BASHLAND PROPERTY, EMERYVILLE, CALIFORNIA
APRIL 8, 1992
(all results expressed in milligrams per liter [mg/l])

Sample ID	EPA Modified Method 8015			EPA Method 624	EPA Method 5520 C	EPA Method 5520 F
	THP as Oil	THP as Diesel	THP as Gasoline		Oil & Grease	Total Petroleum Hydrocarbons
AGW(1)	<0.1	1.2	<0.05	cis-1,2-Dichloroethene - 0.007 Trichloroethene - 0.016	<0.5	<0.5
DGW(2)	0.4	0.3	<0.05	cis-1,2-Dichloroethene - 0.008 Trichloroethene - 0.022	<0.5	<0.5

AGW(1) - grab ground-water sample collected from beneath the former location of the western-most 12,000-gallon tank.

DGW(2) - grab ground-water sample collected from beneath the former location of the eastern-most 12,000-gallon tank.

Only detectable compounds are listed for EPA Method 624; see laboratory data sheets in Levine-Fricke 1992.

Ground-water samples analyzed by Quanteq Laboratories of Pleasant Hill, California, a state-certified laboratory.

TABLE 10

ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM BENEATH
THE RETAINING WALL LOCATED NORTH OF THE FORMER TANK EXCAVATION
FORMER BASHLAND PROPERTY, EMERYVILLE, CALIFORNIA
(results expressed in milligrams per kilograms [mg/kg])

Sample ID	Depth (ft bgs)	TPHg	TPHd	O & G	Benzene	Toluene	Ethyl-benzene	Xylenes	VOCs
SS-1	4.5	<0.5	<10	30	<0.005	<0.005	<0.005	<0.005	ND*
SS-2	4.5	<0.5	<10	50	<0.005	<0.005	<0.005	<0.005	ND*
SS-3	4.5	<0.5	<10	87	<0.005	<0.005	<0.005	<0.005	ND*
SS-4	4.5	<0.5	31	50	<0.005	<0.005	<0.005	<0.005	ND*
SS-6	4.5	<0.5	<10	100	<0.005	<0.005	<0.005	<0.005	ND*

Data entered by MEK/16-Mar-93. Data proofed by MEK/16-Mar-93. QA/QC by JJB/16-Mar-93.

mg/kg - milligrams per kilogram; equivalent to parts per million.
ft bgs - feet below ground surface
TPHg - Total petroleum hydrocarbons as gasoline; analyzed using Modified EPA Method 8015/5030
TPHd - Total petroleum hydrocarbons as diesel; analyzed using EPA Method 3550
O & G - Oil and grease; analyzed using Standard Method 5520EF
Benzene, toluene, ethylbenzene, and xylenes analyzed using Modified EPA Method 8020/5030.
VOC - volatile organic compounds; analyzed using EPA Method 8010.

* No VOCs were detected above laboratory detection limits, with the exception of trace concentrations of methylene chloride (2.4 parts per billion), as discussed in Section 4.1 of this report.

TABLE 11
GROUND-WATER QUALITY DATA
PHASE I INVESTIGATION, AREA C
YERBA BUENA PROEJCT SITE
(concentrations expressed in milligrams per liter [mg/l])

Well Number	Date Sampled	Notes	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Oil and Grease	TPH(g)	TPH(d)	TCE	1,2-DCE
FORMER BASHLAND PROPERTY											
LF-16	14-May-92		<0.0003	<0.0003	<0.0003	<0.001	6.6	<0.05	NA	NA	NA
	28-May-92		<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.05	0.05	NA	NA
	22-Oct-92		<0.0003	<0.0003	<0.0003	<0.001	<0.5	<0.05	0.05	NA	NA
	12-Feb-93		<0.0005	<0.0005	<0.0005	<0.0005	NA	<0.05	<0.05*	NA	NA
	26-May-93		<0.0005	<0.0005	<0.0005	<0.0005	NA	<0.05	0.054	NA	NA
	14-Jul-93		<0.0005	0.0017	<0.0005	<0.0005	<0.005	0.05	<0.05	NA	NA
LF-31	12-Feb-93	(1)	<0.0005	<0.0005	<0.0005	<0.0005	<5	<0.05	<0.05	NA	NA
	26-May-93		NA	NA	NA	NA	<5	NA	0.200	0.020	0.0039
	Duplicate		NA	NA	NA	NA	<5	NA	0.310	0.020	0.0034
	14-Jul-93	(2)	NA	NA	NA	NA	<5	NA	0.150	0.0073	0.0024
	Duplicate		NA	NA	NA	NA	<1	NA	0.400	0.0100	0.0020
	09-Dec-93		<0.0005	<0.0005	<0.0005	<0.0005	<5	<0.05	0.200	NA	NA
FORMER BAY AREA WAREHOUSE PROPERTY											
LF-32	26-May-93	ANA	<0.0005	<0.0005	<0.0005	<0.0005	NA	0.050	0.440	NA	NA
	14-Jul-93	AEN	<0.0005	<0.0005	<0.0005	<0.002	NA	<0.050	<0.20	NA	NA
Duplicate	14-Jul-93	ANA	<0.0005	<0.0005	<0.0005	<0.005	NA	<0.050	0.230	NA	NA
	09-Oct-93	ANA	<0.0005	<0.0005	<0.0005	<0.005	NA	<0.050	0.660	NA	NA

NOTES:

(1) Ground-water samples also were analyzed for cadmium, chromium, nickel, lead, and zinc, and for semivolatile organic compounds using EPA Method 8270. None of these compounds were detected above laboratory detection limits.
(2) Tetrachloroethene (PCE) detected at a concentration of 0.0063 ppm.

Milligrams per liter is equivalent to parts per million.

TPH(g) - Total petroleum hydrocarbons as gasoline.
TPH(d) - Total petroleum hydrocarbons as diesel (diesel = extractable hydrocarbons as diesel)
TCE - Trichloroethene (EPA Method 8010)
1,2-DCE - 1,2-dichloroethene (EPA Method 8010)
NA - not analyzed

(*) - 0.33 ppm of an unknown compound was detected during analysis of sample LF-16 for TPHd. The laboratory confirmed that its detection most likely is the result of instrument contamination.

ANA - Anametrix, Inc., of San Jose, California
AEN - American Environmental Network of Pleasant Hill, California

TABLE 12
ANALYTICAL RESULTS FOR INITIAL SOIL SAMPLES
FORMER BASHLAND PROPERTY, EMERYVILLE, CALIFORNIA
(results expressed in milligrams per kilograms [mg/kg])

Sample ID	Depth (ft bgs)	Sample Date	TPHg	MS	TPHd	O & G	TRPH	Benzene	Toluene	Ethyl-benzene	Xylenes	Organic Lead	PCBs
Concrete Inspection Pit Excavation													
BS-3-5.5	5.5	10-Feb-93	<0.5	NA	<10	NA	<30	<0.005	<0.005	<0.005	<0.005	<0.30	<0.08/<0.16
Oil/Water Separator													
Pipe-2-3.5	3.5	10-Feb-93	<0.5	NA	<10	NA	120	<0.005	<0.005	<0.005	<0.005	<0.30	<0.08/<0.16
SB-1E-3.0	3.0	23-Mar-93	<0.5	<0.5	<10	NA	60	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
SB-2W-4.0	4.0	23-Mar-93	<0.5	<0.5	<10	NA	180	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
SB-3N-3.0	3.0	23-Mar-93	<0.5	<0.5	<10	NA	<30	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
SB-4S-5.0	5.0	23-Mar-93	<0.5	<0.5	<10	NA	33	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
SB-5B-5.5	5.5	23-Mar-93	<0.5	<0.5	<10	NA	<30	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
SB-6B-7.5	7.5	23-Mar-93	<0.5	<0.5	<10	NA	<30	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
SB-7-3.0	3.0	24-Mar-93	<0.5	<0.5	<10	NA	70	<0.005	<0.005	<0.005	<0.005	NA	<0.08/<0.16
Hydraulic Lift Excavation													
SW-1-5.5	5.5	03-Feb-93	NA	NA	1000 (1)	1300	1100	NA	NA	NA	NA	NA	NA
SW-2-7	7.0	03-Feb-93	<0.3	NA	3600 (1)	2400	2300	<0.005	<0.005	<0.005	<0.005	NA	NA
SW-3-8	8.0	03-Feb-93	NA	NA	NA	170	170	NA	NA	NA	NA	<2	<0.05
WS-6	6.0	12-Apr-93	NA	NA	<1	2600	2400	NA	NA	NA	NA	NA	NA
WS4-11	11.0	16-Apr-93	NA	NA	NA	<10	<10	NA	NA	NA	NA	NA	NA
WS5-7	7.0	16-Apr-93	NA	NA	NA	1300	1300	NA	NA	NA	NA	NA	NA
WS8-4	4.0	16-Apr-93	NA	NA	NA	<10	<10	NA	NA	NA	NA	NA	NA
NS2-6.5	6.5	12-Apr-93	NA	NA	<1	1300	1100	NA	NA	NA	NA	NA	NA
SS2-7	7.0	12-Apr-93	NA	NS	<1	700	590	NA	NA	NA	NA	NA	NA
SS4-7	7.0	16-Apr-93	NA	NA	NA	<10	<10	NA	NA	NA	NA	NA	NA
SS5-13	13.0	16-Apr-93	NA	NA	NA	<10	<10	NA	NA	NA	NA	NA	NA
SS6-7	7.0	16-Apr-93	NA	NA	NA	1100	1000	NA	NA	NA	NA	NA	NA

Data entered by MEK/21-Apr-93, 6-May-93, 25-May-93.

NOTES

ft bgs = feet below ground surface.

mg/kg = milligrams per kilogram; equivalent to parts per million.

TPHg = Total petroleum hydrocarbons as gasoline; analyzed using Modified EPA method 8015/5030 (GCFID).

MS = Mineral spirits; analyzed using modified EPA Method 8015/5030 (GCFID).

TPHd = Total petroleum hydrocarbons as diesel; analyzed using EPA Method 3550.

Total O & G = Total oil and grease: all oil and grease compounds (including animal fat, vegetable oil, and/or petroleum hydrocarbons); analyzed using Standard Method 5520E (Quanteq Laboratories - American Environmental Network).

TRPH = Total recoverable petroleum hydrocarbons as oil and grease (only the petroleum components of oil and of grease; analyzed using Standard Method 5520EF).

Benzene, toluene, ethylbenzene, and xylenes analyzed using Modified EPA Method 8020/5030.

(1) Results reported by laboratory to be a mixture of diesel and light oil. The laboratory reviewed chromotographs for subsequent samples collected from the site (WS-6, NS2-6.5, SS-2-7) and determined that only oil was present in the samples.

TABLE 13

ANALYTICAL RESULTS FOR VERIFICATION SOIL SAMPLES COLLECTED FROM THE HYDRAULIC LIFT EXCAVATION
FORMER BASHLAND PROPERTY, EMERYVILLE, CALIFORNIA
(results expressed in milligrams per kilograms [mg/kg])

Sample ID	Depth (ft bgs)	Sample Date	TPHg	TPHd	O & G	TRPH	Benzene	Toluene	Ethyl-benzene	Xylenes	PCBs
BS-5-8	8.0	16-Feb-93	NA	<10	NA	30	NA	NA	NA	NA	<0.08/<0.16
BS-3-10.5*	10.5	13-Apr-93	<0.2	<1	1400	1400	<0.005	<0.005	<0.005	<0.005	<0.05
B5-13*	13.0	16-Apr-93	NA	NA	1600	1500	NA	NA	NA	NA	NA
BN-8	8.0	15-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
B4-11	11.0	15-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
B6-7	7.0	16-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
BW-13	13.0	15-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
B8-9.5	9.5	12-May-93	NA	NA	970	920	NA	NA	NA	NA	NA
B10-9	9.0	12-May-93	NA	NA	220	210	NA	NA	NA	NA	NA
NS1-4	4.0	12-Apr-93	NA	<1	<10	<10	NA	NA	NA	NA	NA
SS1-5	5.0	12-Apr-93	NA	<1	<10	<10	NA	NA	NA	NA	NA
ES-5	5.0	12-Apr-93	NA	<1	<10	<10	NA	NA	NA	NA	NA
NS3-6.5	6.5	15-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
ES-2-7.5	7.5	15-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
WS6-7	7.0	16-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
ES3-10	10.0	16-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
NS4-11	11.0	16-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
WS7-13	13.0	16-Apr-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
WS9-8	8.0	12-May-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
WS12-7	7.0	18-May-93	NA	NA	<10	<10	NA	NA	NA	NA	NA
WS13-9	9.0	18-May-93	NA	NA	<10	<10	NA	NA	NA	NA	NA

Data entered by MEK/21-Apr-93, 6-May-93, 25-May-93. Data proofed by MEK/24-May-93. QA/QC by MEK/25-May-93.

NOTES

ft bgs = feet below ground surface.

mg/kg = milligrams per kilogram; equivalent to parts per million.

TPHg = Total petroleum hydrocarbons as gasoline; analyzed using Modified EPA Method 8015/5030 (GCFID).

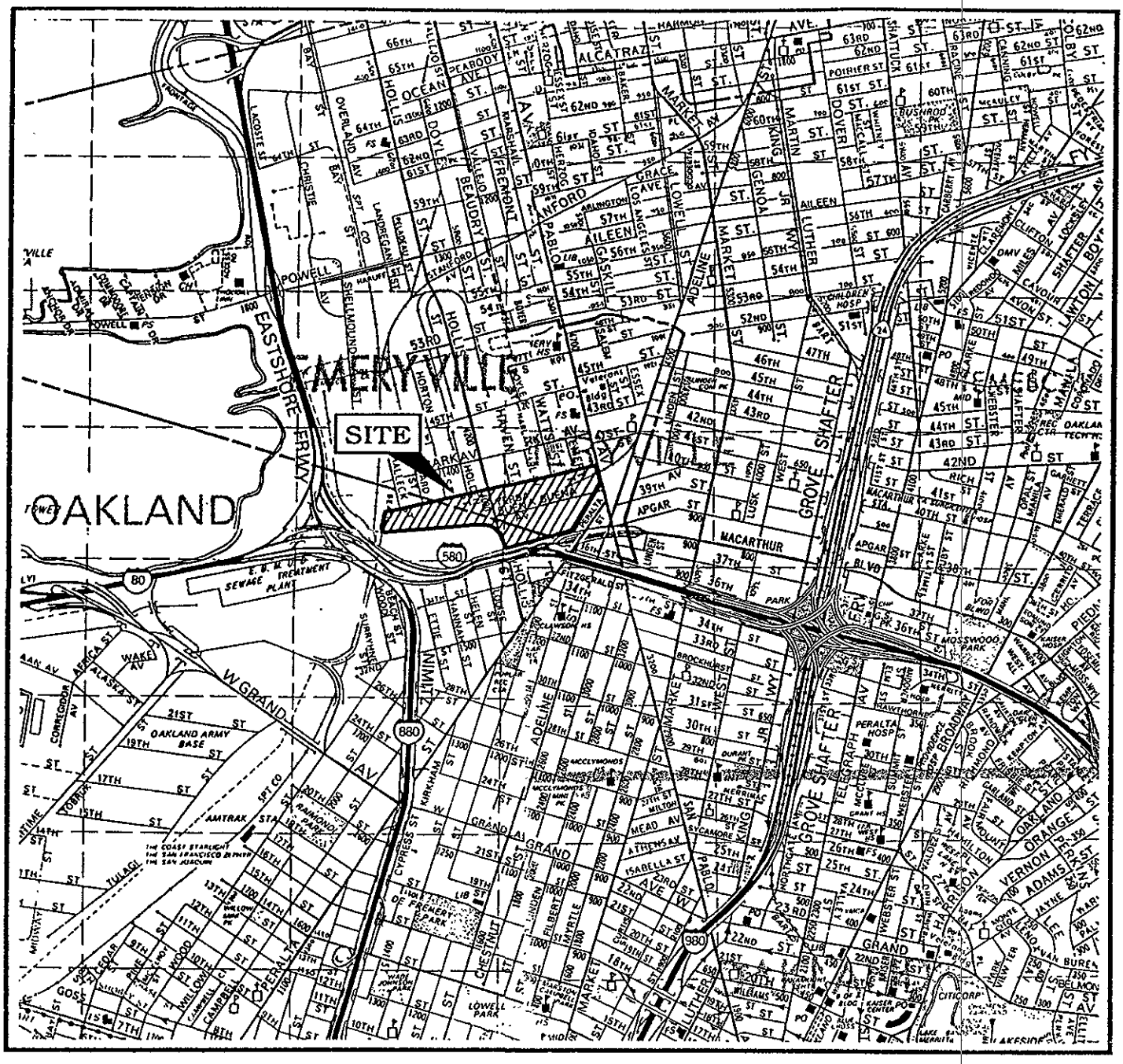
TPHd = Total petroleum hydrocarbons as diesel; analyzed using EPA Method 3550.

Total O & G = Total oil and grease: all oil and grease compounds (including animal fat and/or vegetable oil); analyzed using Standard Method 5520E (Quanteq Laboratories - American Environmental Network).

TRPH = Total recoverable petroleum hydrocarbons as oil and grease: only the petroleum components of "Total Oil and Grease"; using Standard Method 5520F.

Benzene, toluene, ethylbenzene, and xylenes analyzed using Modified EPA Method 8020/5030.

* Soil samples collected from same location (see Figure 4). This area was excavated to a depth of of approximately 11 feet bgs.



MAP SOURCE:
Alameda & Contra Costa Counties,
Thomas Bros. map, 1990 Edition

Figure 1 : SITE LOCATION MAP
YERBA BUENA PROJECT SITE

Project No. 1649

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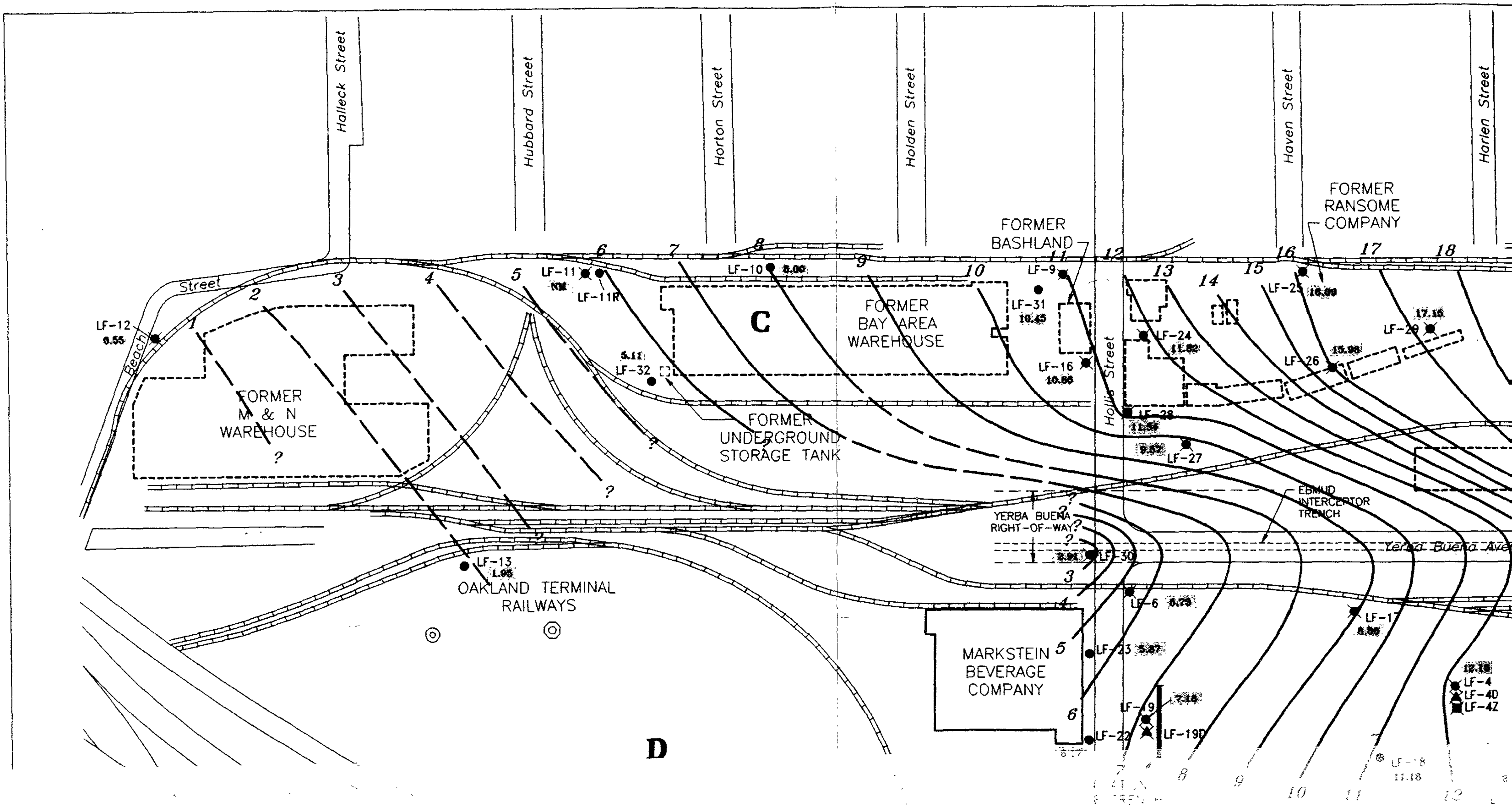
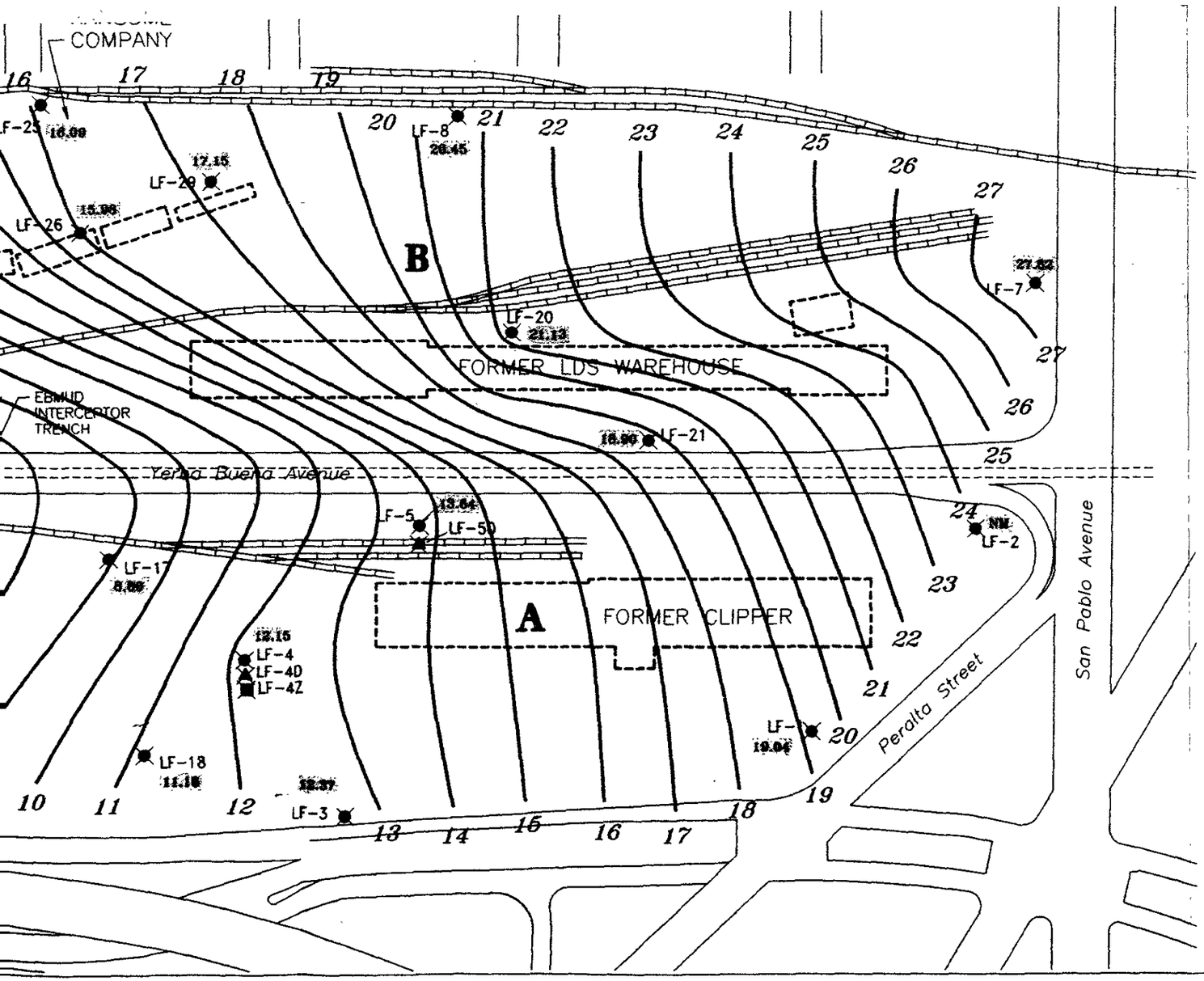


Halleck Street
Hubbard Street
Horton Street
Holden Street
Haven Street
Harlen Street
Beach Street
Hollis Street
Yerba Buena Ave
FORMER RANSOME COMPANY
FORMER BASHLAND
FORMER M & N WAREHOUSE
FORMER BAY AREA WAREHOUSE
FORMER UNDERGROUND STORAGE TANK
OAKLAND TERMINAL RAILWAYS
YERBA BUENA RIGHT-OF-WAY
EBMUD INTERCEPTOR TRENCH
MARKSTEIN BEVERAGE COMPANY
C
D
LF-12
LF-11
LF-11R
LF-10
LF-9
LF-31
LF-32
LF-24
LF-16
LF-25
LF-26
LF-29
LF-28
LF-27
LF-13
LF-30
LF-6
LF-23
LF-22
LF-19
LF-19D
LF-17
LF-4
LF-4D
LF-4Z



MONITORING WELL LOCATION

ABANDONED WELL

LOCATION OF FORMER BUSINESSES

20.45 GROUND-WATER ELEVATION (FEET, MEAN SEA LEVEL)

22 GROUND-WATER ELEVATION CONTOUR (FEET, MEAN SEA LEVEL)

NM NOT MEASURED

0 150 300 FEET

Figure 3 :
SHALLOW GROUND-WATER ELEVATION CONTOUR MAP
JULY 9,1993
YERBA BUENA PROJECT SITE
EMERYVILLE AND OAKLAND, CALIFORNIA

Oakland 10/29/93

Project No. 1649

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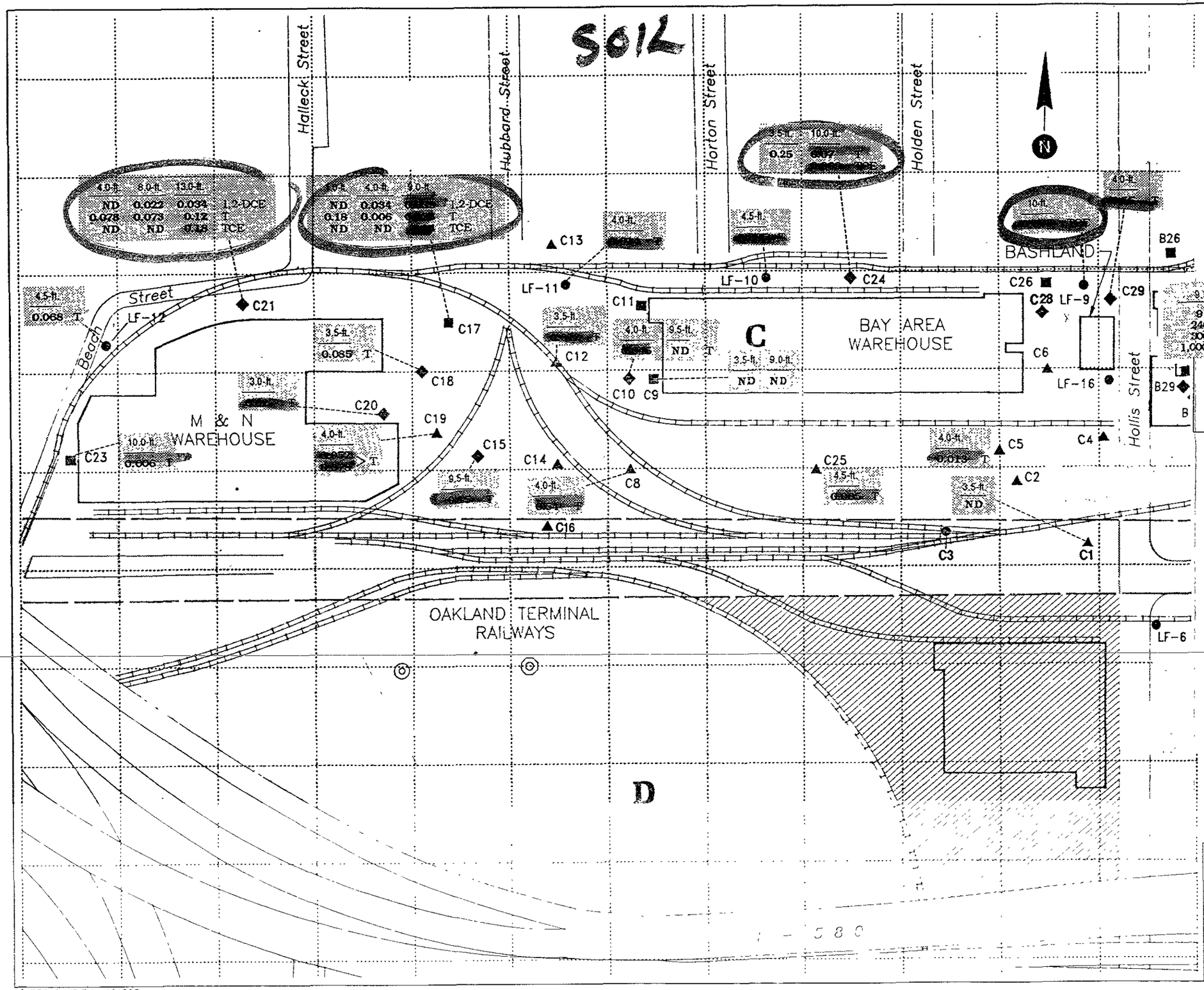
SOIL



EXPLANATION

- MONITORING WELL LOCATION
- PHASE I INVESTIGATION SHALLOW SOIL SAMPLING LOCATION (LESS THAN 5 FEET)
- PHASE I INVESTIGATION DEEPER SOIL SAMPLING LOCATION (6 TO 18 FEET)
- PHASE I INVESTIGATION DEEPER SOIL SAMPLING LOCATION (13 TO 18 FEET) AND GRAB GROUND-WATER SAMPLE LOCATION
- NON-ACCESSIBLE AREA
- DEPTH OF SAMPLE
- BENZENE / TOLUENE / ETHYLBENZENE / XYLENES
- CHEMICAL COMPOUND
- DUPLICATE ANALYSIS
- CONCENTRATION DETECTED IN SOIL SAMPLES (PPM)
- ND NOT DETECTED

KEY TO ABBREVIATIONS

1,1-DCA 1,1-DICHLOROETHANE
1,2-DCE 1,2-DICHLOROETHENE
TCE TRICHLOROETHENE

0 150 300 FEET

Figure 3 :

VOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES (ppm) PHASE I INVESTIGATION

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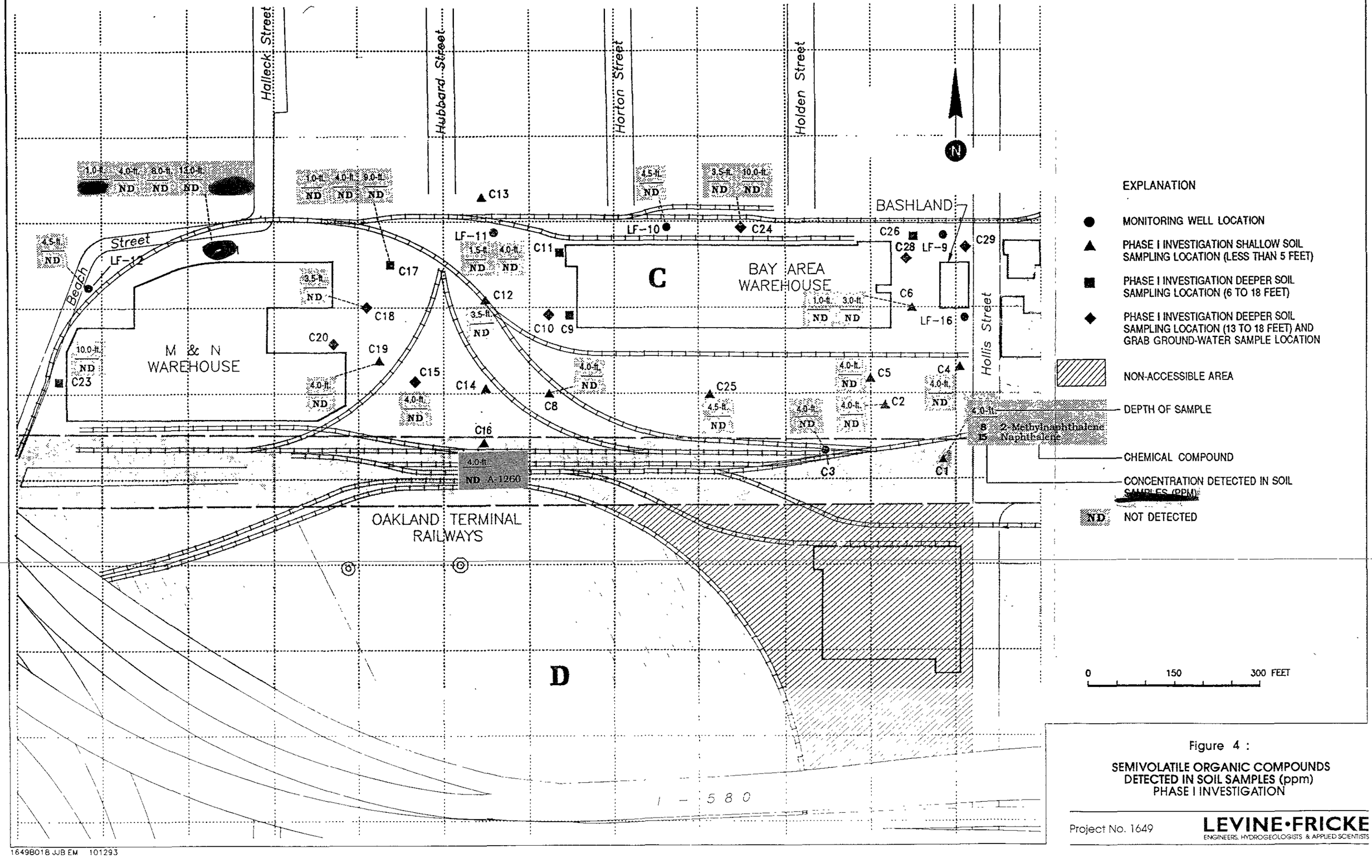

Figure 4 :

SEMIVOLATILE ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES (ppm) PHASE I INVESTIGATION

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1649B018 JJB EM 101293

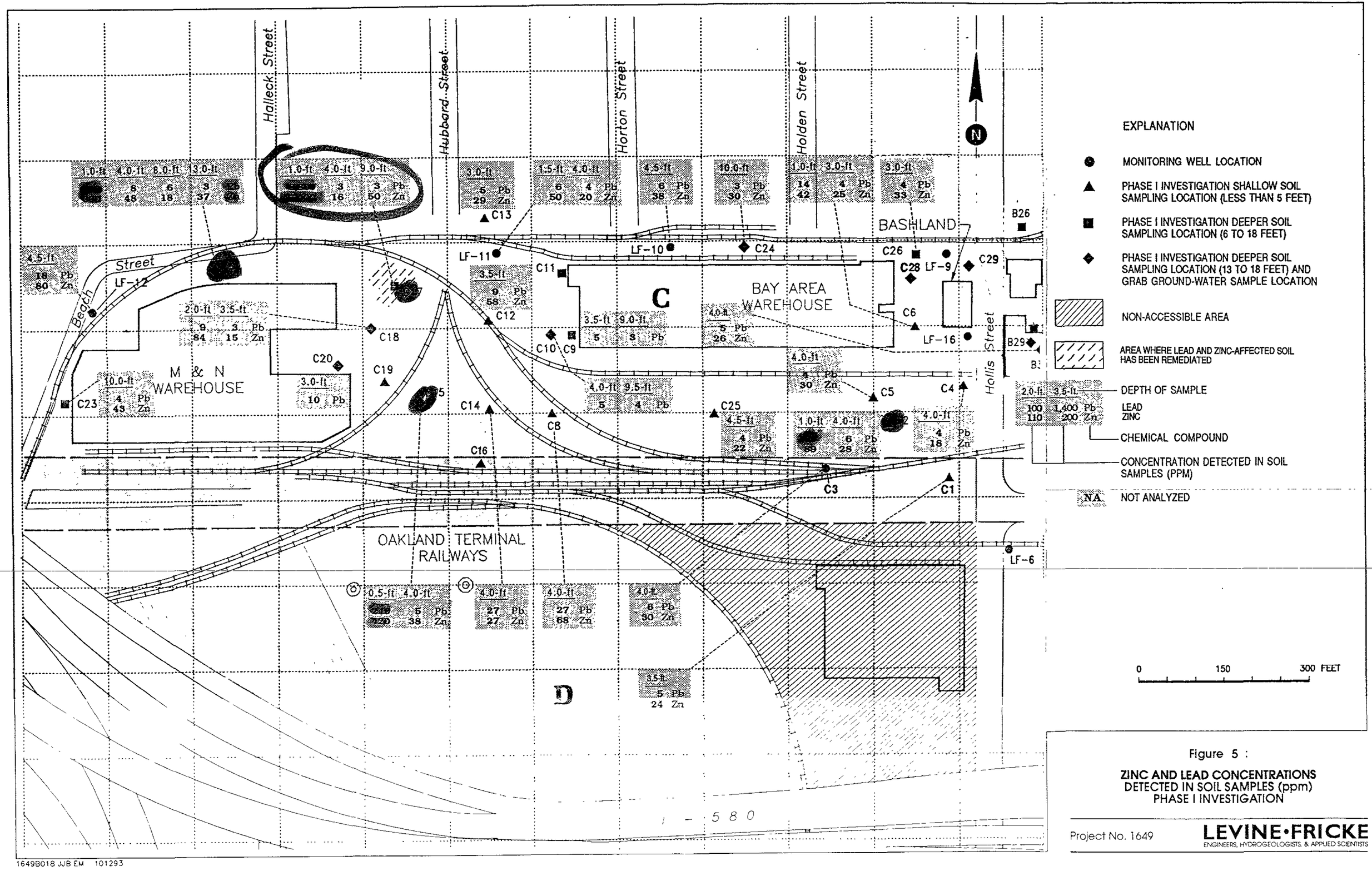

Figure 5 :

ZINC AND LEAD CONCENTRATIONS DETECTED IN SOIL SAMPLES (ppm) PHASE I INVESTIGATION

Project No. 1649

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS, & APPLIED SCIENTISTS

1649B018 JJB EM 101293

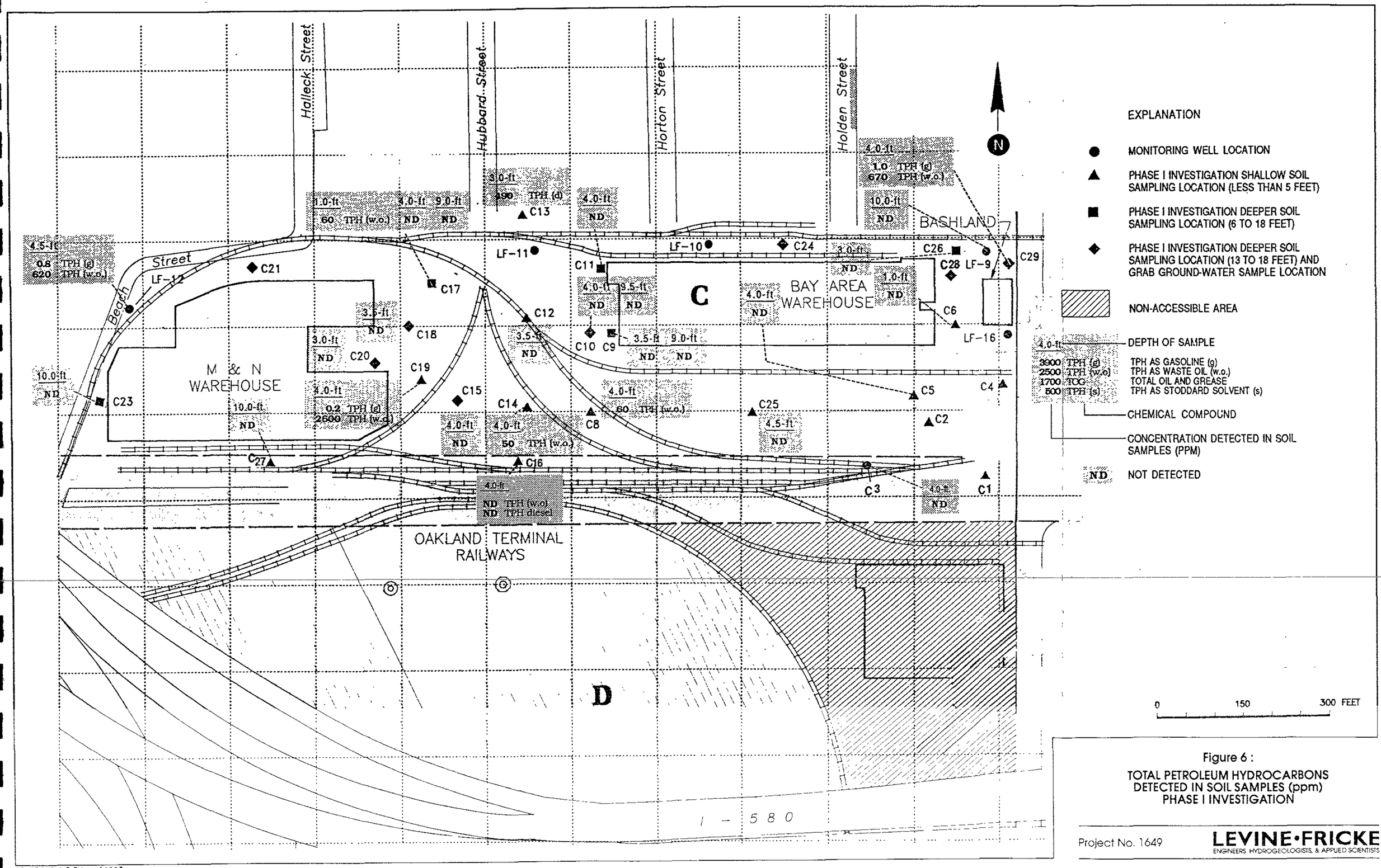

Figure 6 :

TOTAL PETROLEUM HYDROCARBONS DETECTED IN SOIL SAMPLES (ppm) PHASE I INVESTIGATION

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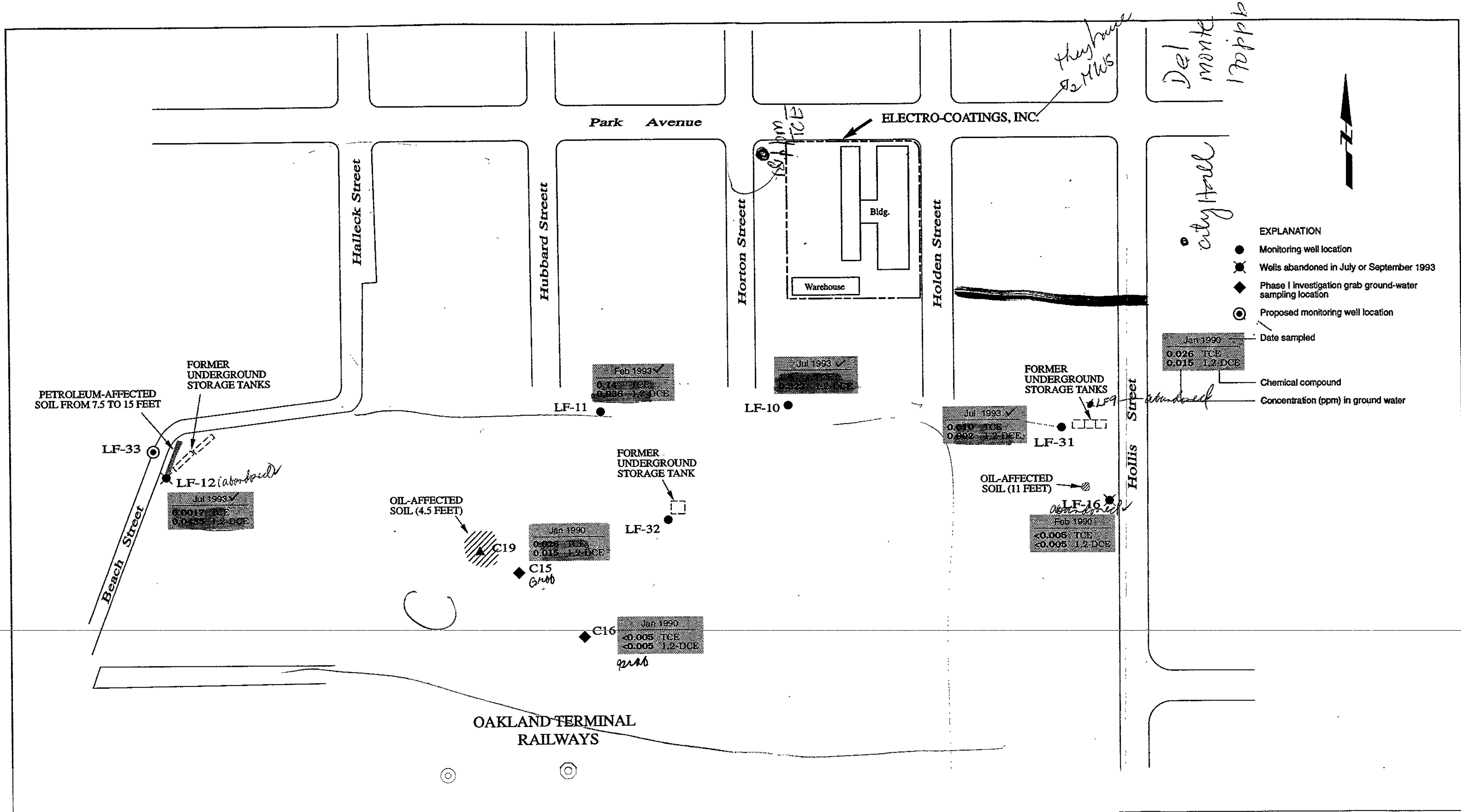
1649B018 JJB EM 101293



Park Avenue
ELECTRO-COATINGS, INC.
Halleck Street
Hubbard Street
Horton Street
Holden Street
Hollis Street
Beach Street
Bldg.
Warehouse
EXPLANATION
Monitoring well location
Wells abandoned in July or September 1993
Phase I investigation grab ground-water sampling location
Proposed monitoring well location
Date sampled
Chemical compound
Concentration (ppm) in ground water
Jan 1990
0.026 TCE
0.015 1,2-DCE
FORMER UNDERGROUND STORAGE TANKS
PETROLEUM-AFFECTED SOIL FROM 7.5 TO 15 FEET
LF-33
LF-12
Jul 1993
0.0017 TCE
0.0455 1,2-DCE
LF-11
Feb 1993
0.14 TCE
0.036 1,2-DCE
LF-10
Jul 1993
FORMER UNDERGROUND STORAGE TANK
LF-32
OIL-AFFECTED SOIL (4.5 FEET)
C19
C15
Jan 1990
0.015 1,2-DCE
C16
Jan 1990
<0.005 TCE
<0.005 1,2-DCE
LF-31
Jul 1993
0.002 1,2-DCE
OIL-AFFECTED SOIL (11 FEET)
LF-16
Feb 1990
<0.005 TCE
<0.005 1,2-DCE
OAKLAND TERMINAL RAILWAYS
0 50 100 150 FEET
1649B040 JJB EM 030994

Figure 7 :

CURRENT ENVIRONMENTAL CONDITIONS AREA C

Project No. 1649

LEVINE•FRICKE ENGINEERS HYDROGEOLOGISTS, & APPLIED SCIENTISTS

1649C011 JJB EM 030994

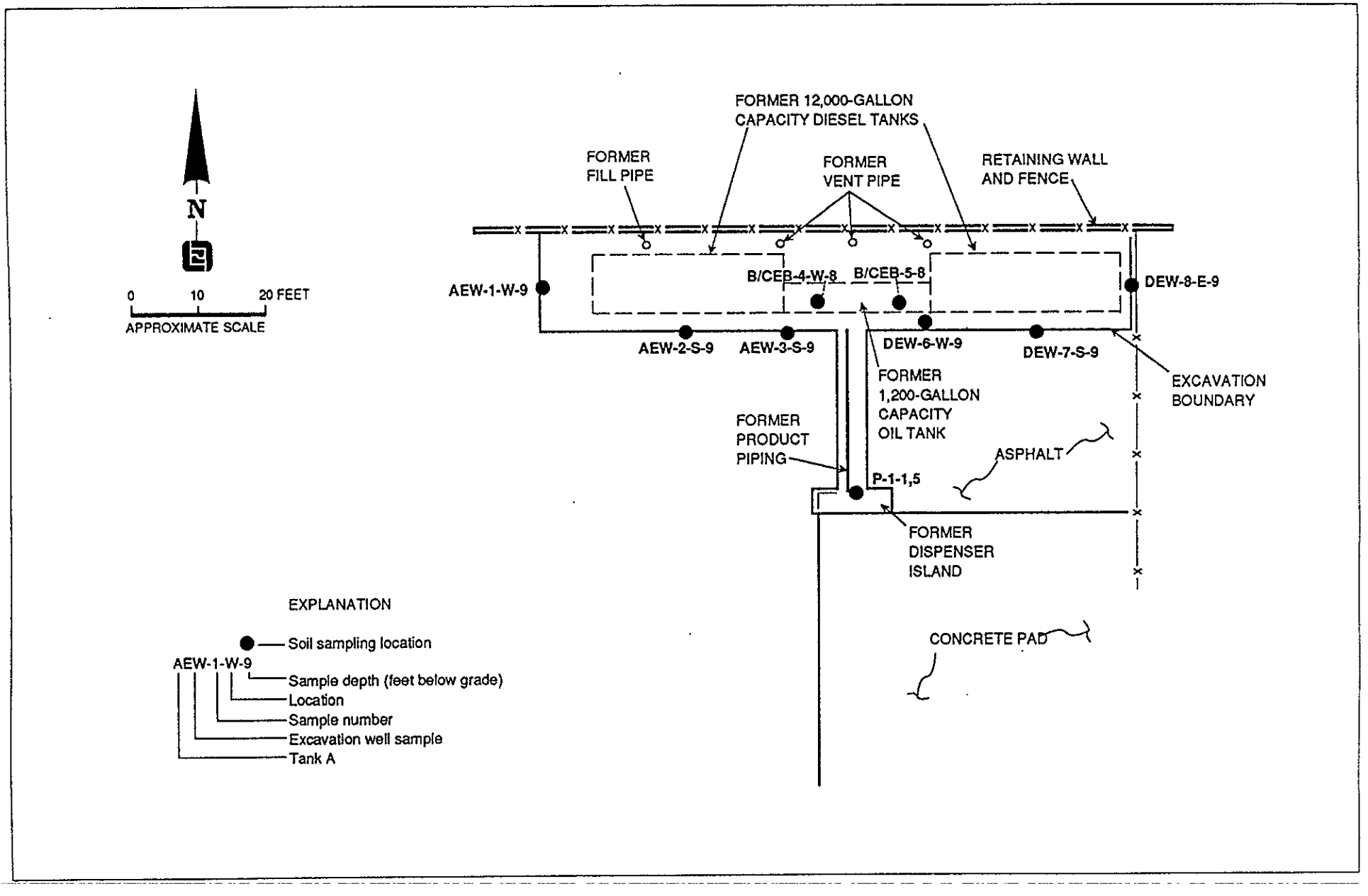


Figure 8 : SITE PLAN SHOWING FORMER TANK AND SOIL SAMPLING LOCATIONS AND EXCAVATION BOUNDARIES

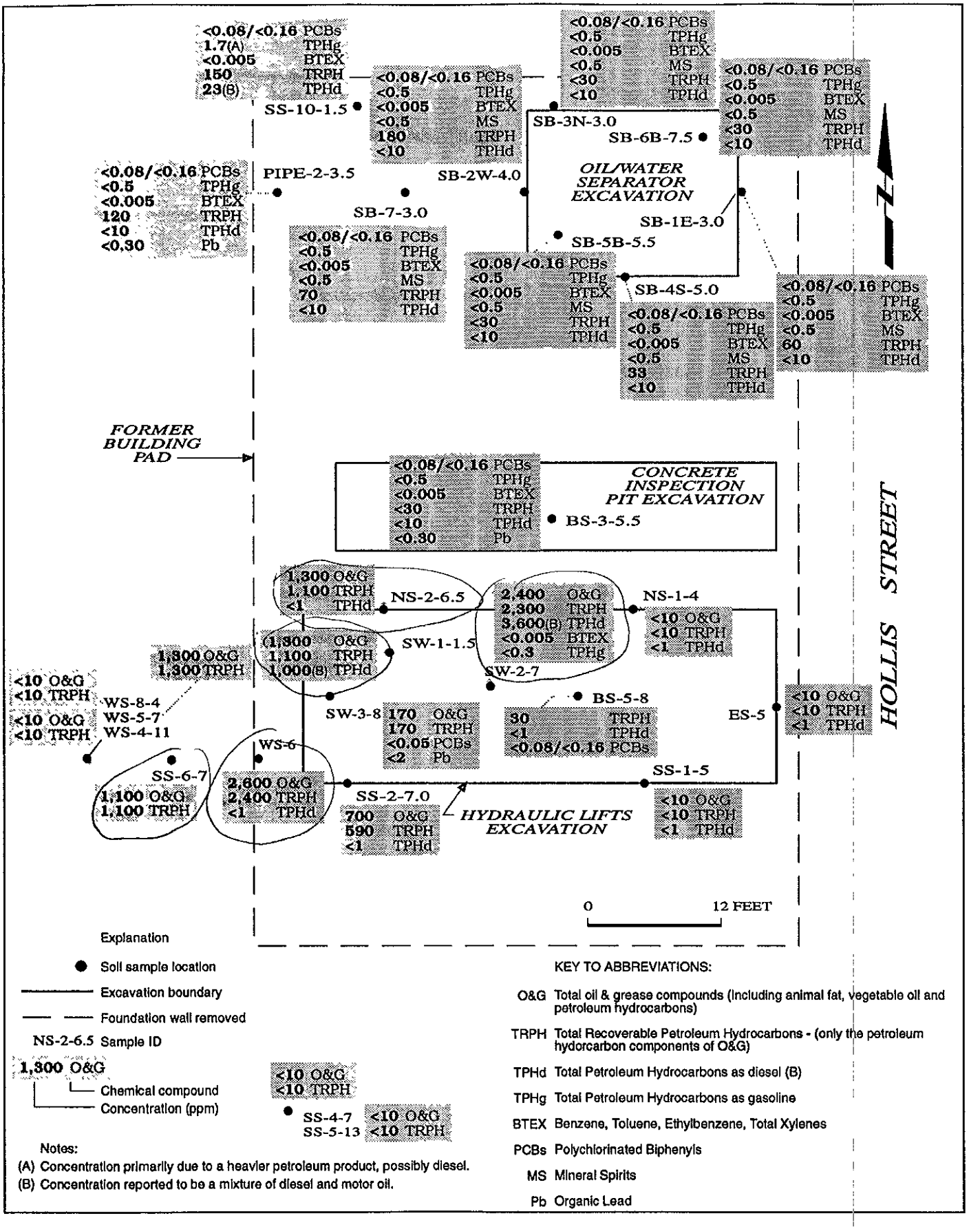
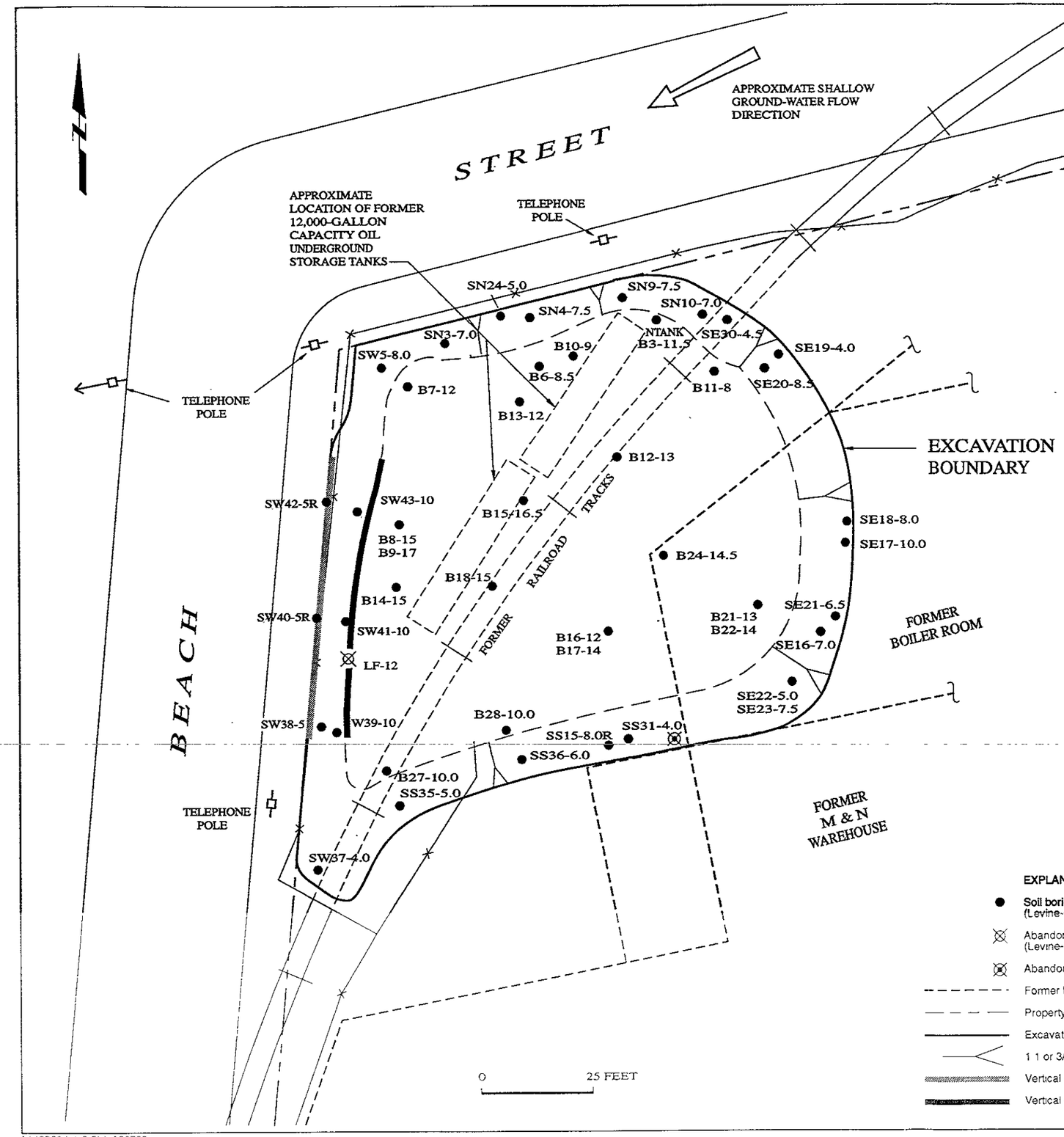


Figure 9 : INITIAL EXCAVATIONS AND SOIL SAMPLE RESULTS FORMER BASHLAND PROPERTY



ANALYTICAL RESULTS FOR FINAL EXCAVATION SOIL SAMPLES
BEACH STREET AREA, OAKLAND, CALIFORNIA
(concentrations reported in milligrams per kilogram [mg/kg])

Sample ID	Date	Depth	Notes	TPHd	Oil & Grease	TPHmo	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
NTANK B3-11.5	31-Aug-93	11.5		<10	<30	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B6-8.5	01-Sep-93	8.5		<10	30	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B7-12	07-Sep-93	12.0		<10	<30	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B8-15	07-Sep-93	15.0		73	420	91	8.7	<0.005	<0.005	0.031	0.070
B9-17	07-Sep-93	17.0	(1)	31	190	63	5.6	0.12	0.16	0.18	0.19
B11-8	08-Sep-93	8.0		<10	40	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B12-13	08-Sep-93	13.0		<10	53	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B10-9	08-Sep-93	9.0		<10	<30	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B13-12	09-Sep-93	12.0		<10	240	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B14-15	09-Sep-93	15.0		<10	90	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B15-16.5	09-Sep-93	16.5		40	140	98	<0.5	<0.005	<0.005	<0.005	<0.005
B17-14	10-Sep-93	14.0		<10	73	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B18-15.0	10-Sep-93	15.0		<10	67	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B16-12	10-Sep-93	12.0		<10	43	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B22-14	13-Sep-93	14.0		<10	230	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B21-13	13-Sep-93	13.0		<10	220	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B24-14.5	16-Sep-93	14.5		<10	73	<10	<0.5	<0.005	<0.005	<0.005	<0.005
B27-10.0	23-Sep-93	10.0		18	43	11	<0.5	<0.005	<0.005	<0.005	<0.005
B28-10.0	23-Sep-93	10.0		<10	67	31	<0.5	<0.005	<0.005	<0.005	<0.005
SN4-7.5	01-Sep-93	7.5		<10	53	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SN3-7.0	01-Sep-93	7.0		<10	60	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SW5-8.0	01-Sep-93	8.0		<10	67	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SN10-7	08-Sep-93	7.0		<10	43	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SN9-7.5	08-Sep-93	7.5		<10	47	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE17-10.0	13-Sep-93	10.0		<10	63	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE18-8.0	13-Sep-93	8.0		<10	210	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE16-7.0	13-Sep-93	7.0		<10	210	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SS-15-8.0R	13-Sep-93	8.0		<10	73	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE19-4.0	15-Sep-93	4.0		<10	90	13	0.6	<0.005	<0.005	0.008	0.03
SE22-5.0	16-Sep-93	5.0		<10	160	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE21-6.5	16-Sep-93	6.5		<10	87	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE23-7.5	16-Sep-93	7.5		<10	120	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SN24-5.0	17-Sep-93	5.0		<10	220	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SE30-4.5	17-Sep-93	4.5		<10	43	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SS31-4.0	20-Sep-93	4.0		<10	120	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SW37-4.0	23-Sep-93	4.0	(1)	44	430	86	3.1	<0.005	<0.005	0.022	0.081
SS35-5.0	23-Sep-93	5.0		<10	77	11	<0.5	<0.005	<0.005	<0.005	0.013
SS36-6.0	23-Sep-93	6.0		<10	150	<10	<0.5	<0.005	<0.005	<0.005	<0.005
SW38-5	12-Oct-93	5.0		<10	650	12	<0.5	<0.005	0.007	0.010	0.017
SW39-10	12-Oct-93	10.0		<10	280	12	0.51	<0.005	<0.005	<0.005	0.036
SW41-10	12-Oct-93	10.0	(2)	290	790	460	7.6	<0.012	<0.012	0.044	0.110
SW43-10	12-Oct-93	10.0	(2)	710	1300	1400	100	<0.5	<0.5	1.7	5.6
SW-40-5R	18-Oct-93	5.0	(1,2,3)	710	4100	1300	38	<0.025	0.14	0.76	3.0
SW-42-5R	18-Oct-93	5.0	(1,2,3)	750	1700	1300	68	<0.12	0.13	0.22	1.2

1,2,3 - For Notes See Table 2 of Text

EXPLANATION

- Soil boring location (Levine-Fricke, June 1993)
- Abandoned monitoring well location (Levine-Fricke, February 1990)
- Abandoned steel-cased water supply well
- Former building location (approximately)
- Property line
- Excavation boundary
- 1 1 or 3/4 1 slope
- Vertical wall from 0-7.5 feet bgs
- Vertical wall from 7.5-15 feet bgs

KEY TO ABBREVIATIONS

TPHd	Total petroleum hydrocarbons as diesel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil

Figure 10 :
SITE MAP SHOWING
EXCAVATION BOUNDARY,
FORMER UNDERGROUND STORAGE TANKS
AND SOIL SAMPLE LOCATIONS,
BEACH STREET AREA

Project No. 1649

LEVINE·FRICKE
ENGINEERS HYDROGEOLOGISTS & APPLIED SCIENTISTS

1649B034 JJB EM 102793

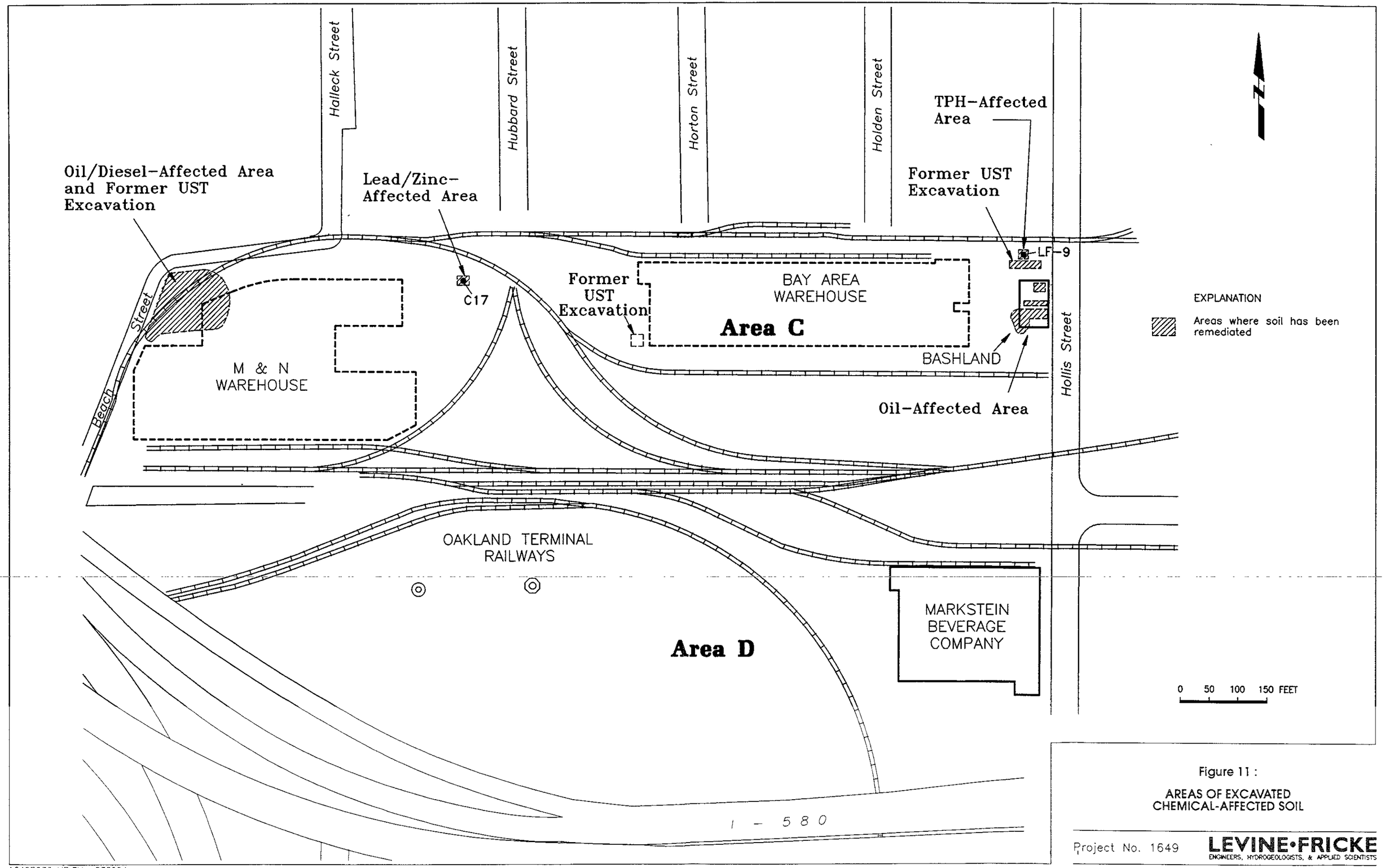


Figure 11 :

AREAS OF EXCAVATED CHEMICAL-AFFECTED SOIL

Project No. 1649

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS, & APPLIED SCIENTISTS

1649B033 JJB EM 030994

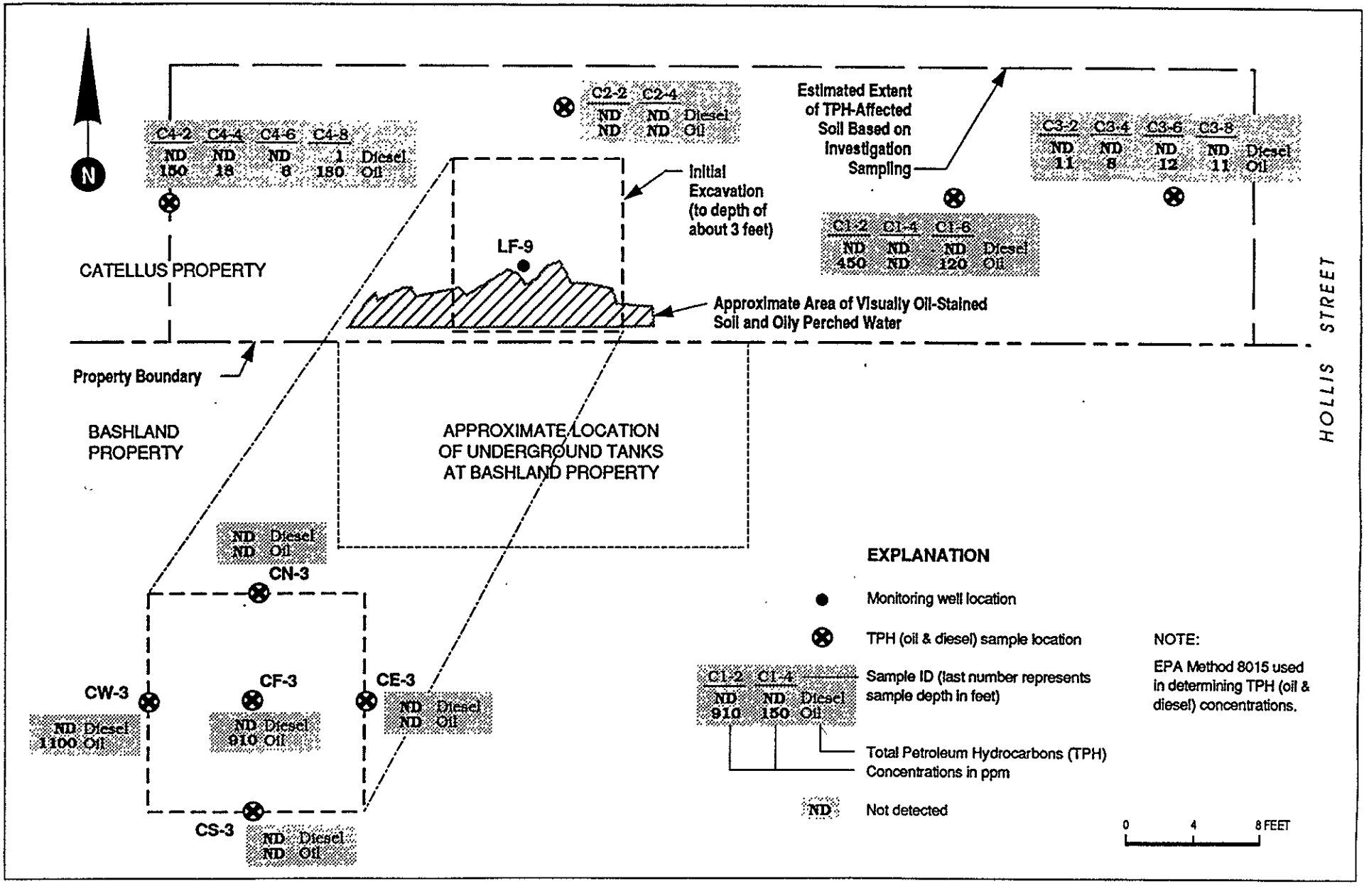


Figure 12 : INITIAL EXCAVATION OF TPH-AFFECTED SOIL AND PERCHED GROUND WATER NEAR THE FORMER LOCATION OF WELL LF-9 IN AREA C, YERBA BUENA PROJECT SITE

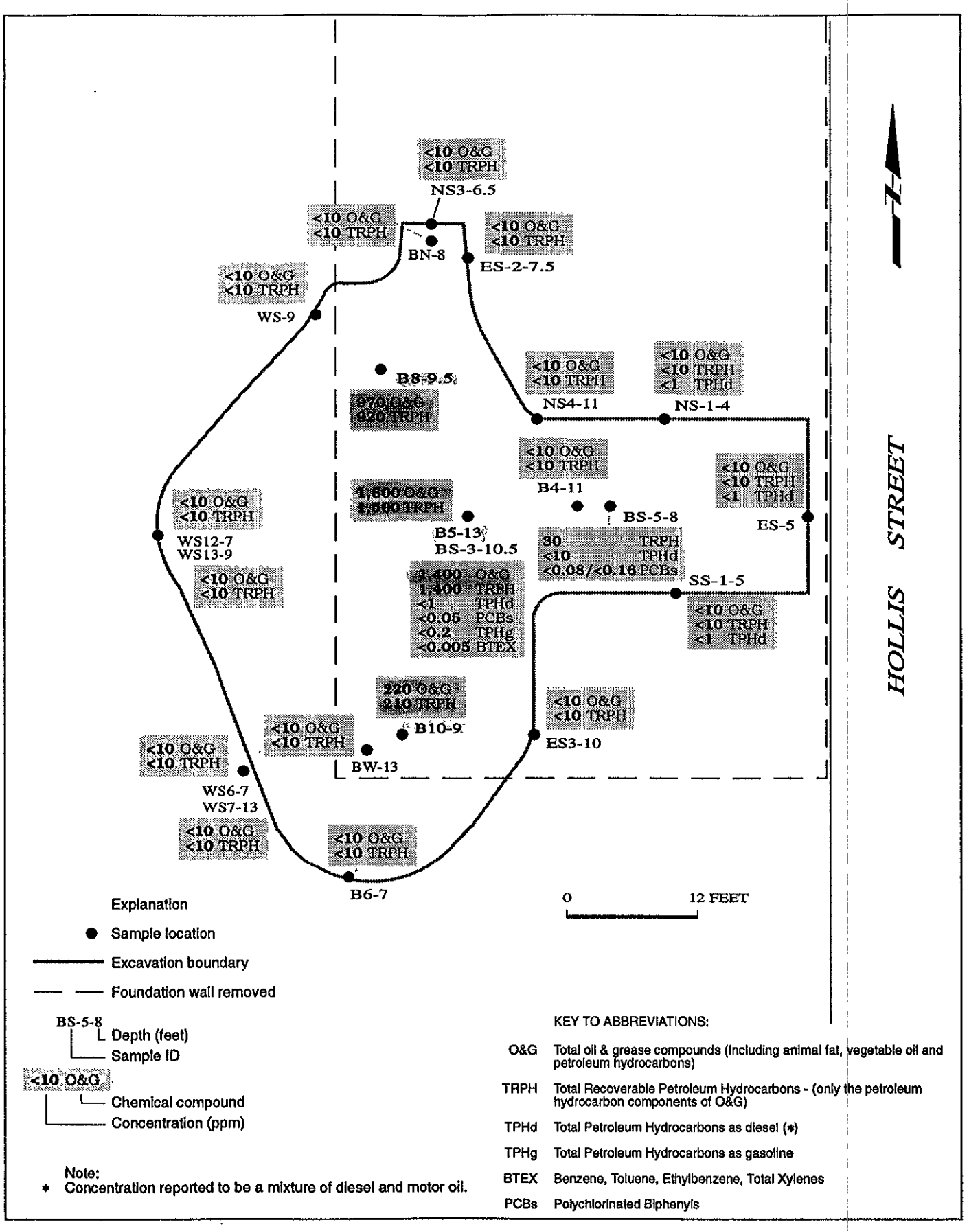


Figure 13 : HYDRAULIC LIFT EXCAVATION AND VERIFICATION SAMPLE RESULTS FORMER BASHLAND PROPERTY,

APPENDIX A

ACHA LETTER OF APPROVAL FOR SITE REMEDIAL PLAN

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

5 March 1991

Rick Notini
Catellus Development Corporation
201 Mission Street
Suite 250
San Francisco, CA 94105

Subject: Remedial Plan for the Yerba Buena Project in Oakland.

Dear Mr. Notini:

Thank you for the remedial plan, dated 11 February 1991, prepared by Levine-Fricke and submitted to this office. A review of this plan has been completed and approval is granted for implementation of the following components:

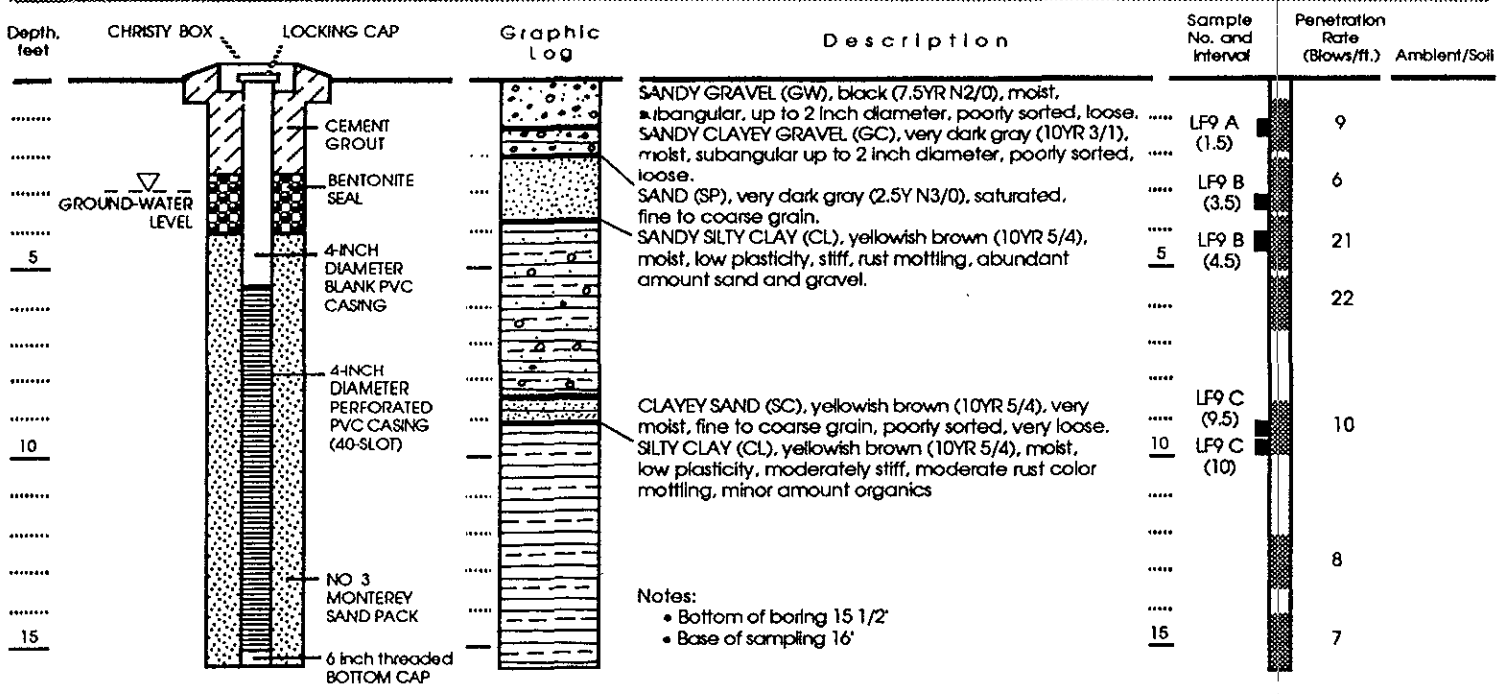
* The physical excavation of lead and zinc contaminated soils for disposal as hazardous waste.
* The physical excavation of PCB contaminated soil to a residue of no greater than one part per million.
* The installation of a French Drain along the west side of Hollis Street for the collection of ground water.
* The installation of additional ground water monitoring wells.

Approval of the proposed encapsulation of hydrocarbon contaminated soil as described in the remedial plan will be granted upon the completion of the fish bioassay study and submittal of this data for review.

APPENDIX B

LITHOLOGIC WELL LOGS AND WELL CONSTRUCTION DATA FOR MONITORING WELLS LF-10, LF-11, LF-31, AND LF-32

LF-9 LF-12 L-16



Date well drilled: 30 January 1990

Date water level measured: 23 April 1990

Well elevation: 14.59

LF Geologist: Larry Lapuyade

EXPLANATION

Clay

Silt

Sand

Gravel

Sample interval

Sample retained for analysis

Approved by:

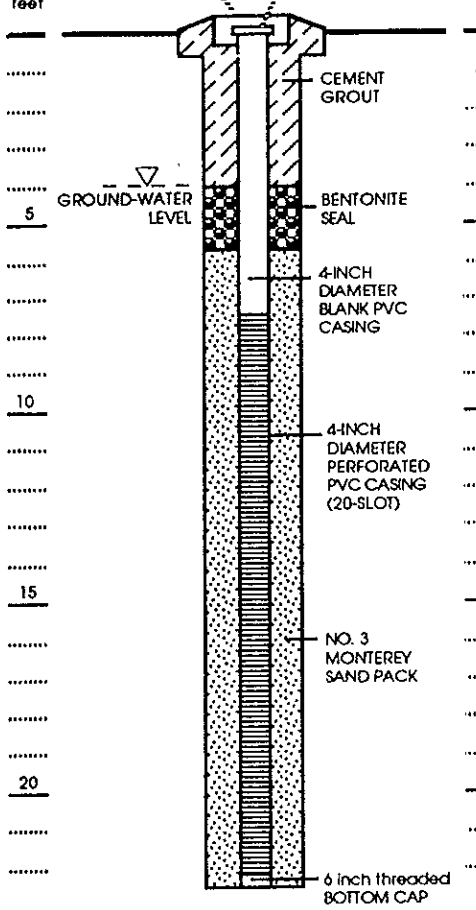
: WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-9

Project No. 1649

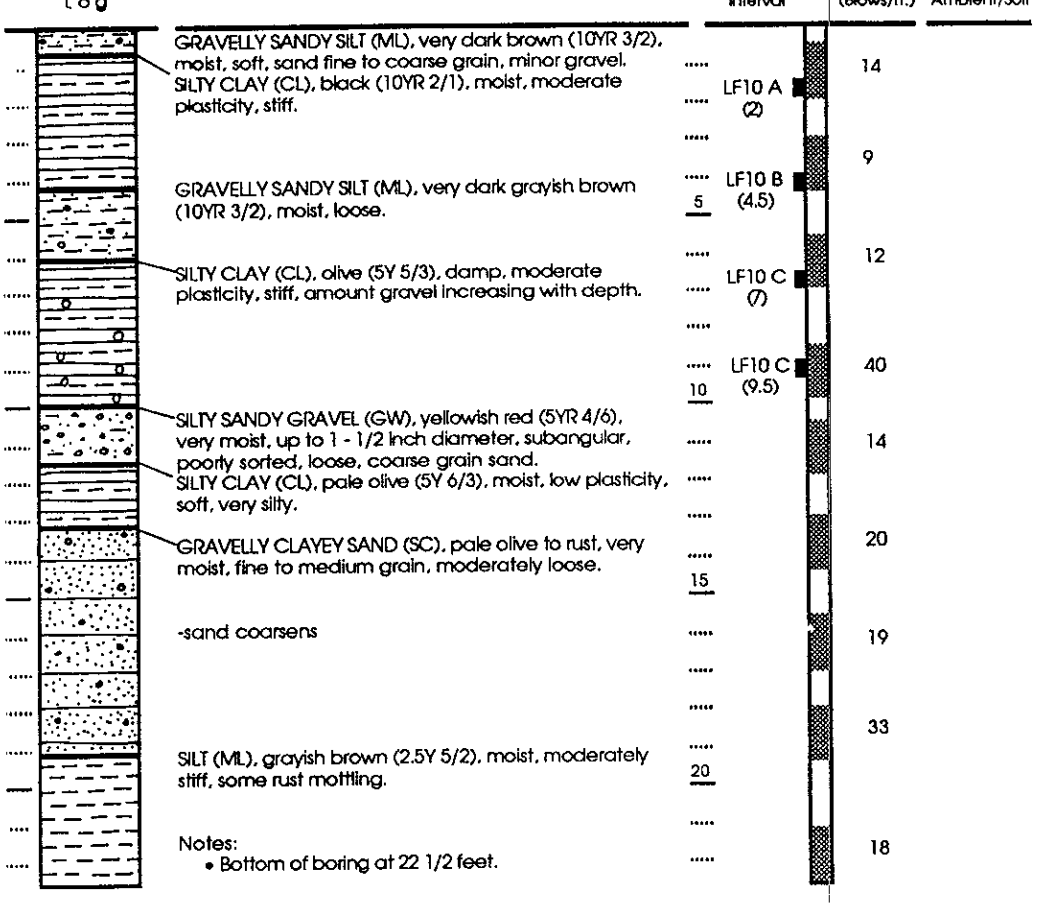
LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1649AS14May90kgb•LF9

WELL CONSTRUCTION



LITHOLOGY



EXPLANATION

Clay
Silt
Sand
Gravel

Sample interval

Sample retained for analysis

Date well drilled: 31 January 1990

Date water level measured: 23 April 1990

Well elevation: 14.09

LF Geologist: Larry Lapuyade

Approved by:

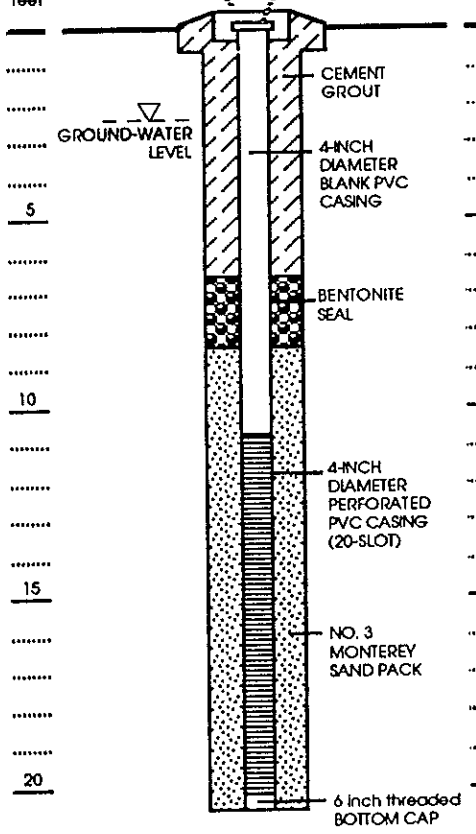
WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-10

Project No. 1649

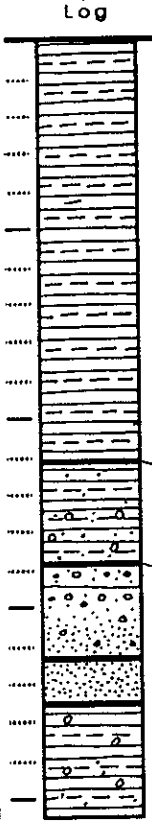
LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1649AS15May90kgb•LF10

WELL CONSTRUCTION



LITHOLOGY



Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	Ambient/Soil
SILTY CLAY (CL), black (10YR 2/1), moist, moderate plasticity, moderately stiff.	LF11 A (1.5)	8	
-color change to greenish gray (5G 5/1), very mottled with tan silt, organic matter present (roots).	LF11 B (4)		
-increasing silt context low plasticity, color change to light olive brown (2.5Y 5/4), damp, very stiff, mottling with greenish gray and dark brown organics.	LF11 B (4.5)	9	
	LF11 C (7.5)	17	
-abundant rust color mottling, very silty minor organics -color change to olive (5Y 5/3).	LF11 C (10)	17	
SANDY SILTY CLAY (CL), olive (5Y 5/3), damp, low plasticity, moderately stiff to stiff, increasing angular gravel with depth, increasing rust mottling with depth increasing sand with depth.		19	
CLAYEY SANDY GRAVEL/GRAVELLY SAND (GW/SW), very moist, coarse grain sand, gravel up to 1inch diameter, predominantly pea size, subangular.		10	
SAND (SP), dark yellowish brown (10YR 4/4), very moist, fine to coarse grain, well sorted coarsens with depth. SILTY CLAY (CL), dark yellowish brown (10YR 4/6), moist, low plasticity, moderately stiff, very mottled with gray, increasing silt with depth.		9	
-amount gravel and sand increase with depth.		20	

Notes:
- Bottom of boring at 20 1/2 feet.

EXPLANATION

Clay
Silt
Sand
Gravel

Sample interval
Sample retained for analysis

Date well drilled: 31 January 1990

Date water level measured: 23 April 1990

Well elevation: 10.06

LF Geologist: Larry Lapuyade

Approved by:

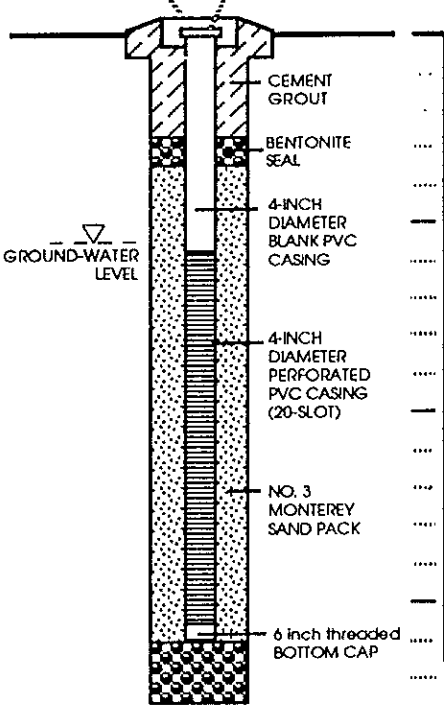
WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-11

Project No. 1649

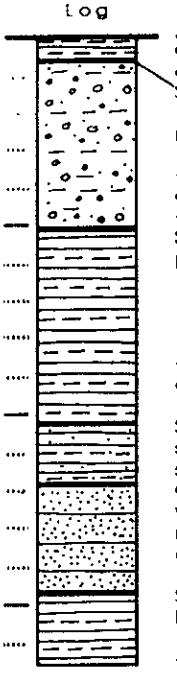
LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1649AS16May90kgb-LF11

WELL CONSTRUCTION



LITHOLOGY



Depth, feet	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	Ambient/Soil
	CLAYEY SILT (ML), very dark grayish brown (10YR 3/2), damp, soft, minor amount gravel.			
	SANDY SILTY GRAVEL (GM), very dark grayish brown (10YR 3/2), damp, subangular, up to 2 inch diameter, poorly sorted.	LF12 A (2)	42	
	-increasing amount silt, decreasing amount sand and gravel -increasing amount gravel	LF12 B (4.5)	24	
5	SILTY CLAY (CL), black (7.5YR N2/0), moist, moderate plasticity, soft.	LF12 (6.5)	5	
		LF12 (7)		
	-color change to dark gray greenish silt, minor organics, minor gravel.	LF12 C (9)	5	
10		LF12 C (9.5)		
	SANDY SILTY CLAY (CL), dark greenish gray (5GY 4/1), slightly moist, low plasticity, stiff, moderate gravel, sand and silt, gravel increases with depth.			
	CLAYEY SAND (SC), dark yellowish brown (10YR 3/6), very moist, fine to coarse grain, poorly sorted, moderate gravel subround to subangular 1/2" diameter and smaller.	LF12 C (12)	20	
			13	
15	SILTY CLAY (CL), light olive brown (2.5Y 5/6), very moist, low plasticity, soft minor rust color mottling.			
	-color change to olive (5Y 5/4), increasing silt.		9	
	Notes: • Bottom of boring at 16 feet.			
20				

EXPLANATION

Clay
Silt
Sand
Gravel

Sample interval
Sample retained for analysis

Date well drilled: 12 February 1990

Date water level measured: 23 February 1990

Well elevation: 8.18

LF Geologist: Larry Lapuyade

Approved by:

: WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-12

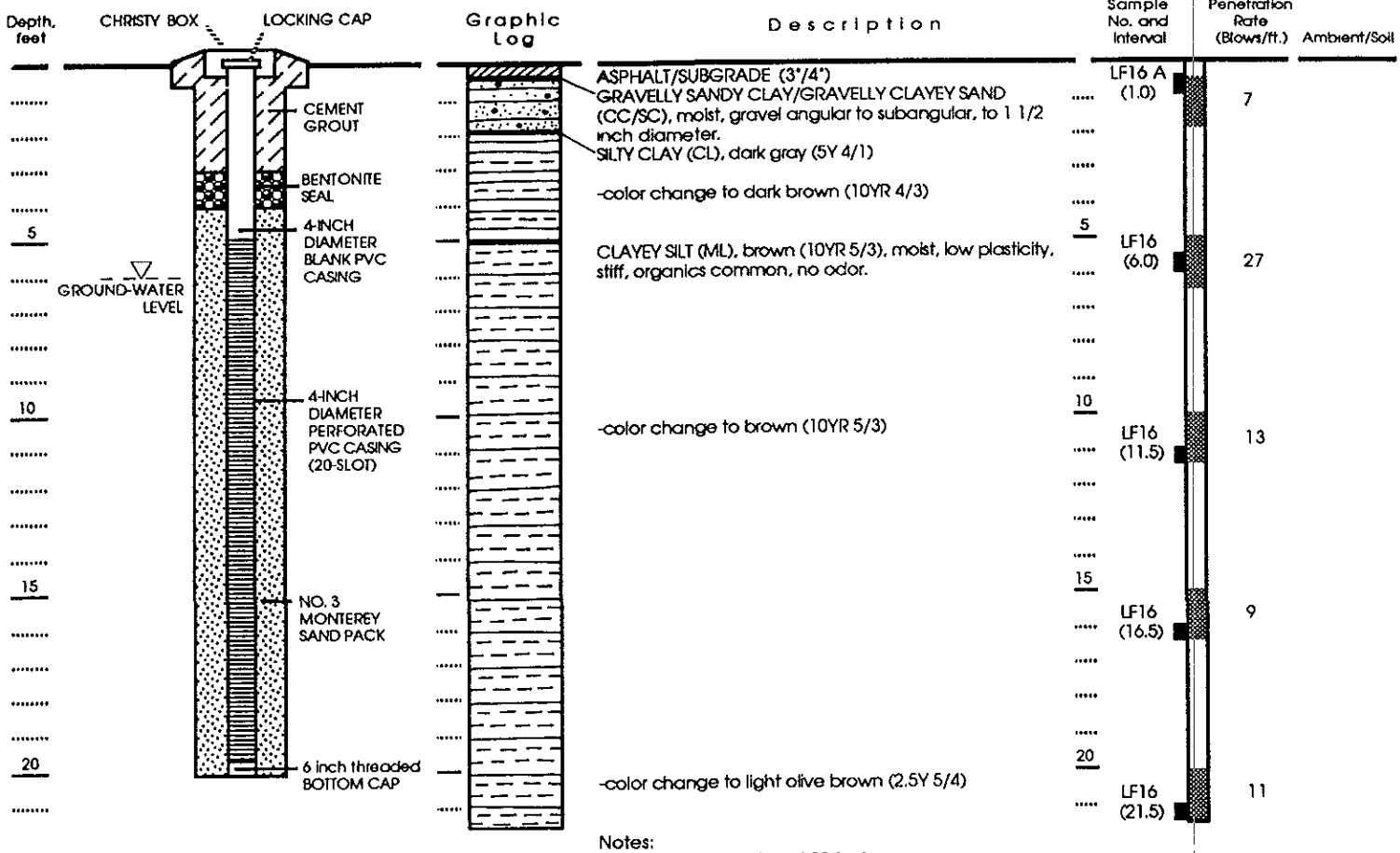
Project No. 1649

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1649AS16May90kgb•LF12

WELL CONSTRUCTION

LITHOLOGY



Notes:
- Bottom of boring at 20 feet.

Date well drilled: 13 February 1990

Date water level measured: 23 February 1990

Well elevation: 17.56

LF Geologist: Chris Goodrum

EXPLANATION

Clay
Silt
Sand
Gravel

Sample interval

Sample retained for analysis

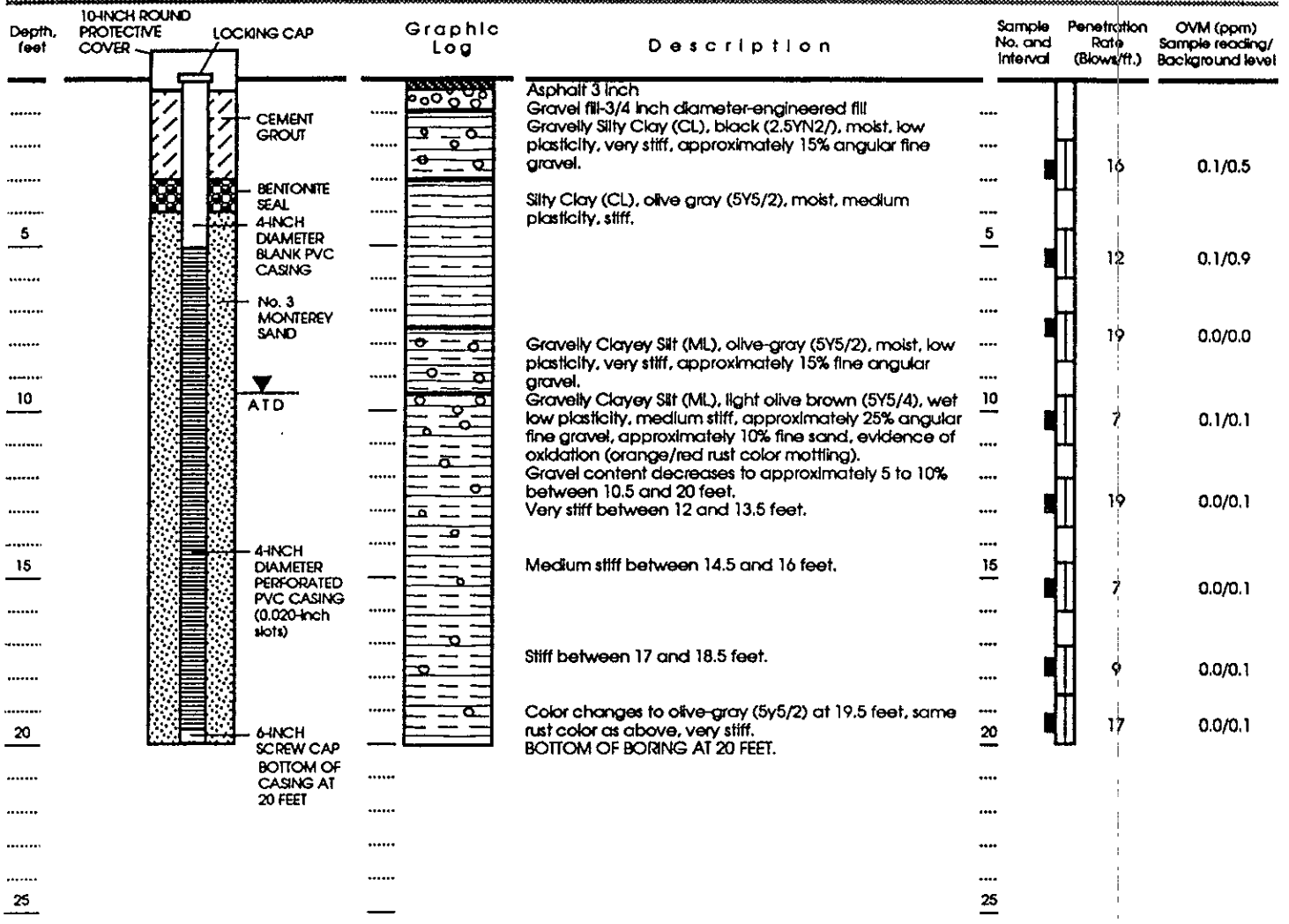
Approved by:

: WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-16

Project No. 1649

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1649AS16May90kgb•LF16



EXPLANATION

Clay
Silt
Sand
Gravel

Well Permit No: 93048
Date well drilled: February 8, 1993
Date water level measured: February 8, 1993
Hammer weight: 140 lbs/30-inch
LF Geologist: William Madison

Split Spoon Sampler
Sample retained for chemical analysis
ATD First water observed in boring at time of drilling
OVM (ppm) Organic Vapor Meter reading in parts per million

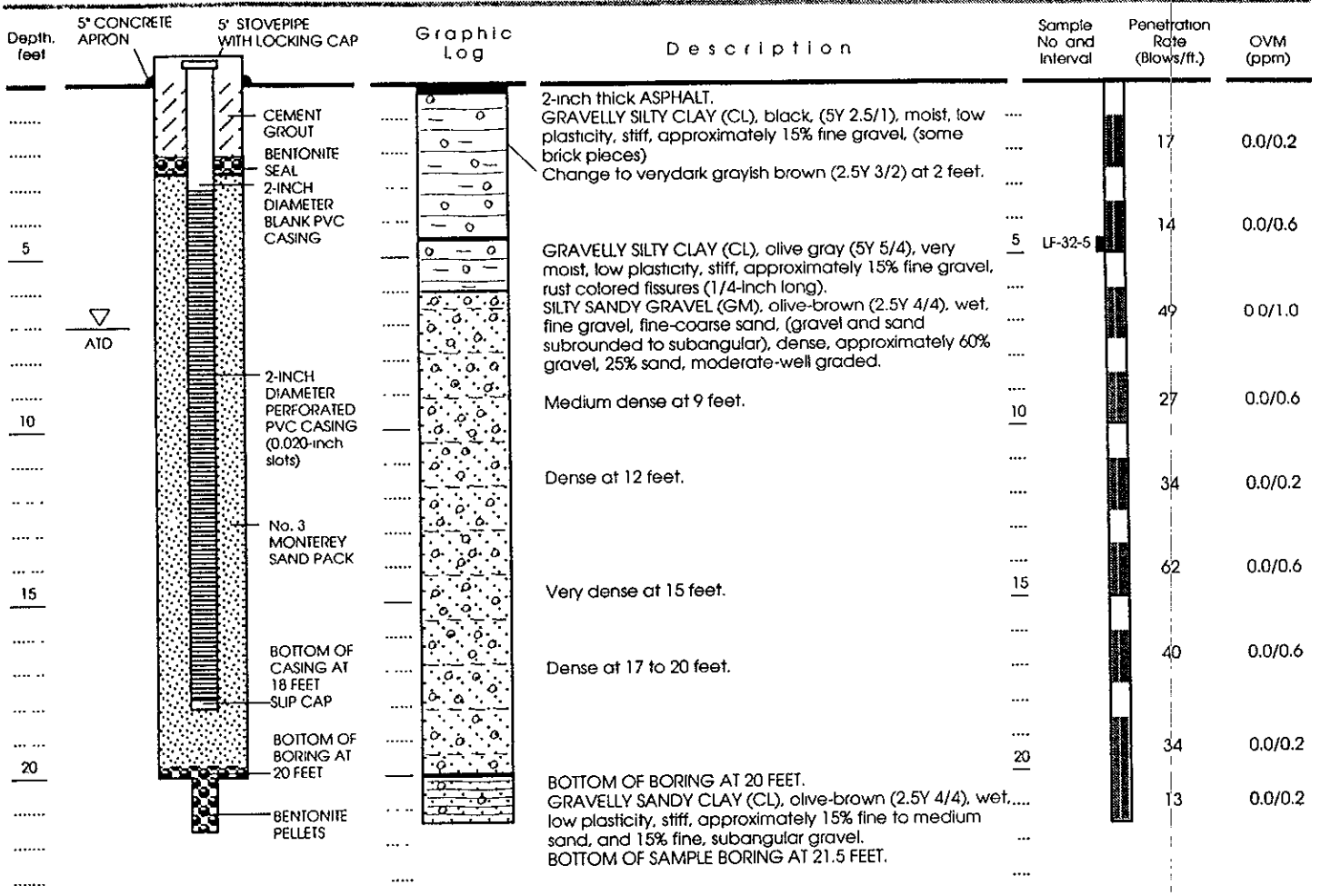
Approved by: Katherine Graves — RG # 5106

WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-31

Project No. 1649.10

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM 05APR93 jam/mp



EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Well Permit No.. 93262
Date well drilled: MAY 20, 1993
LF Geologist. W.E.Madison
Sampling method. Split Spoon with Hammer
Drilling method: Hollow Stem Auger
Drilling company: Gregg Drilling
Driller: Chris St. Pierre
Boring size: 8"

- Split Spoon Sampler
- OVM (ppm) Organic Vapor Meter reading in parts per million (ppm)
- ATD Water level at time of drilling
- Sample retained for chemical analysis

Approved by: David L. Bradley R.G. 5300

WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-32

Cattelus/Yerba Buena
Project No. 1649.13

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WEM 03JUN93 JSM/LF32