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**Work Plan to
Install One Monitoring Well and
Two Soil Borings in the Beach Street Area
Yerba Buena/East Bay Bridge Project Site
Oakland, California**

**March 31, 1994
1649.25**

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



LEVINE·FRICKE



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ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

March 31, 1994

1649.25

Ms. Susan Hugo
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California 94621

Subject: Work Plan to Install One Monitoring Well and Two Soil Borings in the Beach Street Area, Yerba Buena Project Site, Oakland, California

Dear Ms. Hugo:

The enclosed work plan describes the tasks necessary to install, develop, and sample one monitoring well, and to drill two soil borings west of two fuel underground storage tanks formerly located in the northwest portion (Beach Street Area) of the Yerba Buena/East Bay Bridge Project Site in Oakland, California. This work was requested by the Alameda County Health Care Services Agency in a letter dated February 22, 1994 to Ms. Kimberly Brandt of Catellus Development Corporation, the property owners.

If you have questions, please contact me or Ron Goloubow.

Sincerely,

Jenifer J. Beatty
Senior Project Hydrogeologist

Enclosure

cc: Kimberly Brandt, Catellus
Pat Cashman, Catellus

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March 31, 1994

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**WORK PLAN TO INSTALL ONE MONITORING WELL AND
TWO SOIL BORINGS IN THE BEACH STREET AREA,
YERBA BUENA/EAST BAY BRIDGE PROJECT SITE
OAKLAND, CALIFORNIA**

INTRODUCTION

This work plan describes the tasks necessary to install, develop, and sample one monitoring well, and to drill two soil borings west of two fuel underground storage tanks (USTs) formerly located in the northwest portion (Beach Street Area) of the Yerba Buena/East Bay Bridge Project Site ("the Site") in Oakland, California (Figures 1 and 2). This work was requested by the Alameda County Health Care Services Agency (ACHA) in a letter dated February 22, 1994, to Ms. Kimberly Brandt of Catellus Development Corporation, the property owners.

The objective of the proposed work is to assess the extent of petroleum-affected soil and ground water downgradient from the former USTs. To meet this objective, it is proposed that monitoring well LF-33 and soil borings EB-1 and EB-2 be installed in Beach Street just east of the western curb.

PREVIOUS INVESTIGATIONS

During excavation of petroleum-affected soil identified during previous investigations conducted by Levine-Fricke, two 12,000-gallon fuel USTs were encountered in the northwestern portion of the Site (Figure 2). The USTs were removed and disposed of by a licensed hazardous waste transportation company under a hazardous waste manifest. Inspection of the USTs after removal indicated several holes at the bottom and top of each UST.

Approximately 6,000 cubic yards (cy) of petroleum-affected soil was removed from the UST excavation and in the vicinity of the USTs. 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 cy 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 below ground surface (bgs), and extends from the western property line approximately 5.5 feet east. The excavation was backfilled in October 1993.

A report describing UST removal and soil remediation activities was prepared by Levine·Fricke and submitted to the ACHA and Regional Water Quality Control Board (RWQCB) for review (Levine·Fricke 1993b). In that report, Levine·Fricke recommended that one well be installed downgradient (west) from the former USTs to assess the potential effect of petroleum hydrocarbons on shallow ground-water quality. It was proposed that ground-water samples be collected from the monitoring well for analysis of petroleum hydrocarbons on a quarterly basis for at least one year. In addition, in response to the ACHA request, it is proposed that two soil borings (EB-1 and EB-2) be drilled west of the former USTs to assess the possible lateral extent of petroleum-affected soil in the vicinity of the USTs.

This work plan describes the tasks necessary to complete this work.

SCOPE OF WORK

The proposed scope of work consists of the following tasks:

- Task 1: Install One Monitoring Well and Drill Two Soil Borings
- Task 2: Conduct Quarterly Monitoring and Prepare Quarterly Reports

These tasks are described below.

Task 1: Installation of One Monitoring Well and Two Soil Borings

Shallow ground-water monitoring well LF-33 will be installed in Beach Street, just east of the western curb, to assess the extent of petroleum-affected soil and ground water downgradient from the former fuel USTs. Additionally, two soil borings will be installed north and south of the proposed well to assess the possible lateral extent of the petroleum-affected soil west of the former USTs. The proposed locations of monitoring well LF-33 and soil borings EB-1 and EB-2 are illustrated in Figure 2. Field methods to be used are described below.

Borehole Drilling

The appropriate permits will be obtained from the Alameda County Flood Control and Water Conservation District, Zone 7, before drilling begins. In addition, an encroachment permit will be obtained from the City of Oakland for installing the monitoring well and drilling the soil borings in Beach Street. The proposed well and soil boring locations will be cleared by Underground Services Alert and a qualified subcontract underground utility locator.

As required by the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120, Hazardous Waste Operations and Emergency Responses, Levine·Fricke prepared a Site Health and Safety Plan (HSP), dated April 12, 1993, for proposed site characterization and remediation activities (Levine·Fricke 1993a). That HSP will be followed in performing the work described in the work plan. The HSP contains information, precautions, and procedures for maintaining a safe work environment while conducting the task proposed herein.

Drilling activities will be conducted under the supervision of a Levine·Fricke California Registered Geologist. The boreholes will be drilled by a licensed well drilling contractor using a truck-mounted drilling rig equipped with 8-inch-diameter hollow-stem augers. All downhole drilling and sampling equipment will be steam cleaned before use at each drilling location. The well boring for well LF-33 will be advanced to a depth of approximately 25 feet bgs. It is anticipated that borings EB-1 and EB-2 will be advanced to depths between 15 and 20 feet bgs.

Soil Sampling and Laboratory Analysis

Soil samples will be collected at approximately 2.5-foot intervals for lithologic description and possible laboratory analysis. The samples will be collected by driving a brass-tube-lined split-spoon sampler ahead of the auger into undisturbed soil. A maximum of three samples for each boring will be submitted for chemical analysis.

The samples selected for chemical analysis will be submitted to a state-certified analytical laboratory in an ice-chilled cooler and under strict chain-of-custody procedures. The soil will be analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylene (BTEX) using modified EPA Methods 8015/8020, and for TPH as diesel and motor oil (TPHd/mo) using EPA Method 3550.

Well Installation and Development

All downhole drilling and sampling equipment will be cleaned using high-pressure hot water or washed with laboratory-grade detergent (Alconox) and rinsed with distilled water before use in the boring.

Ground-water monitoring well LF-33 will be installed in the well boring located downgradient from the former fuel USTs. The well will be constructed of flush-threaded, 2-inch-diameter polyvinyl chloride (PVC) casing with a 0.020-inch factory-slotted well screen. The well will be completed at a total depth of approximately 25 feet bgs. The length of the slotted PVC screen will be approximately 15 feet long and will extend across the top of the ground-water table.

The well casing will be placed in the completed borehole through the hollow-stem auger. After the well casing has been placed in the completed borehole, the well annulus will be backfilled with clean sand to a height of approximately 1 foot above the screened interval. Approximately 6 inches to 1 foot of bentonite seal will be placed on top of the sand to isolate the sand from the material above and to prevent the entrance of grout into the sand pack. A cement-bentonite grout will be placed above the bentonite seal and will extend up to the ground surface to prevent surface-water infiltration. The well will be completed below grade with a locking cap and a traffic-rated well cover set in concrete to protect the well from surface water and damage.

The newly installed well will be developed after installation by purging the well to remove sediment from around the screened interval and to enhance hydraulic communication with the surrounding formation. The well will be purged using a centrifugal pump or clean Teflon bailer. Observations concerning the pH, temperature, specific conductance, quantity, and clarity of water withdrawn will be recorded during well development. The well will be developed until approximately 4 to 10 well casing volumes are removed or until relatively sediment-free water is produced.

Waste Soil and Ground-Water Disposal

Waste soils and water from drilling and sampling activities will be temporarily stored on Catellus property in 55-gallon metal drums, pending laboratory results. Disposal options will be evaluated after analytical results for soil and ground-water samples have been received.

Task 2: Quarterly Monitoring and ReportingQuarterly Monitoring

A quarterly ground-water monitoring program, including the collection of depth-to-water measurements and ground-water samples, will be initiated at the Site following installation of well LF-33. Depth-to-water measurements will be collected in conjunction with other monitoring activities conducted at the Yerba Buena Project Site.

The initial round of ground-water samples will be collected from the newly installed well immediately following well development using the procedures described below. During future quarterly sampling events, at least three well casing volumes of ground water will be removed from the well using a centrifugal pump or a clean Teflon bailer. Water-quality parameters (pH, temperature, and specific conductance) will be monitored while purging the well. The ground-water sample will be collected after the third well casing volume has been removed, if the parameters have stabilized to within 10 percent of the previous measurements.

Ground-water samples will be collected immediately following well development or following purging using a clean Teflon bailer. Laboratory-supplied 40-milliliter volatile organic analysis (VOA) containers and 1-liter amber bottles will be gently filled to overflowing by pouring ground water into them directly from the Teflon bailer. Ground-water samples will be collected in laboratory-supplied sample containers, labeled with the well identification, the time and date of sample collection, the analysis requested, and the name of the sampler. Additionally, for quality assurance/quality control (QA/QC) measures, a duplicate sample will be collected every other quarter and submitted to the laboratory for analysis. The samples will be stored in a chilled ice chest, and maintained under strict chain-of-custody protocols until submitted to a state-certified analytical laboratory.

The ground-water samples will be submitted for analysis of TPHg and BTEX using modified EPA Methods 8015/8020 and TPHd/mo using EPA Method 3510.

Report Preparation

Reports will be prepared and submitted to the ACHA each quarter for a period of one year. Those quarterly reports will include a description of field activities and a

discussion of water-quality and ground-water elevation data collected during the quarterly period.

The first quarterly report will also include:

- a summary of previous investigations
- the results of Levine·Fricke's soil boring and well installation activities
- the results of lithologic and laboratory data collected during drilling and ground-water sampling
- an evaluation of the data
- an assessment of soil and ground-water quality in shallow sediments at the Site

Following one year of monitoring, water-quality data collected for the Site will be evaluated to assess whether continued monitoring is appropriate.

Ground-Water Disposal

Waste water from sampling activities will be temporarily stored on Catellus property in 55-gallon metal drums, pending laboratory results. Disposal options will be evaluated after analytical results for water samples have been received.

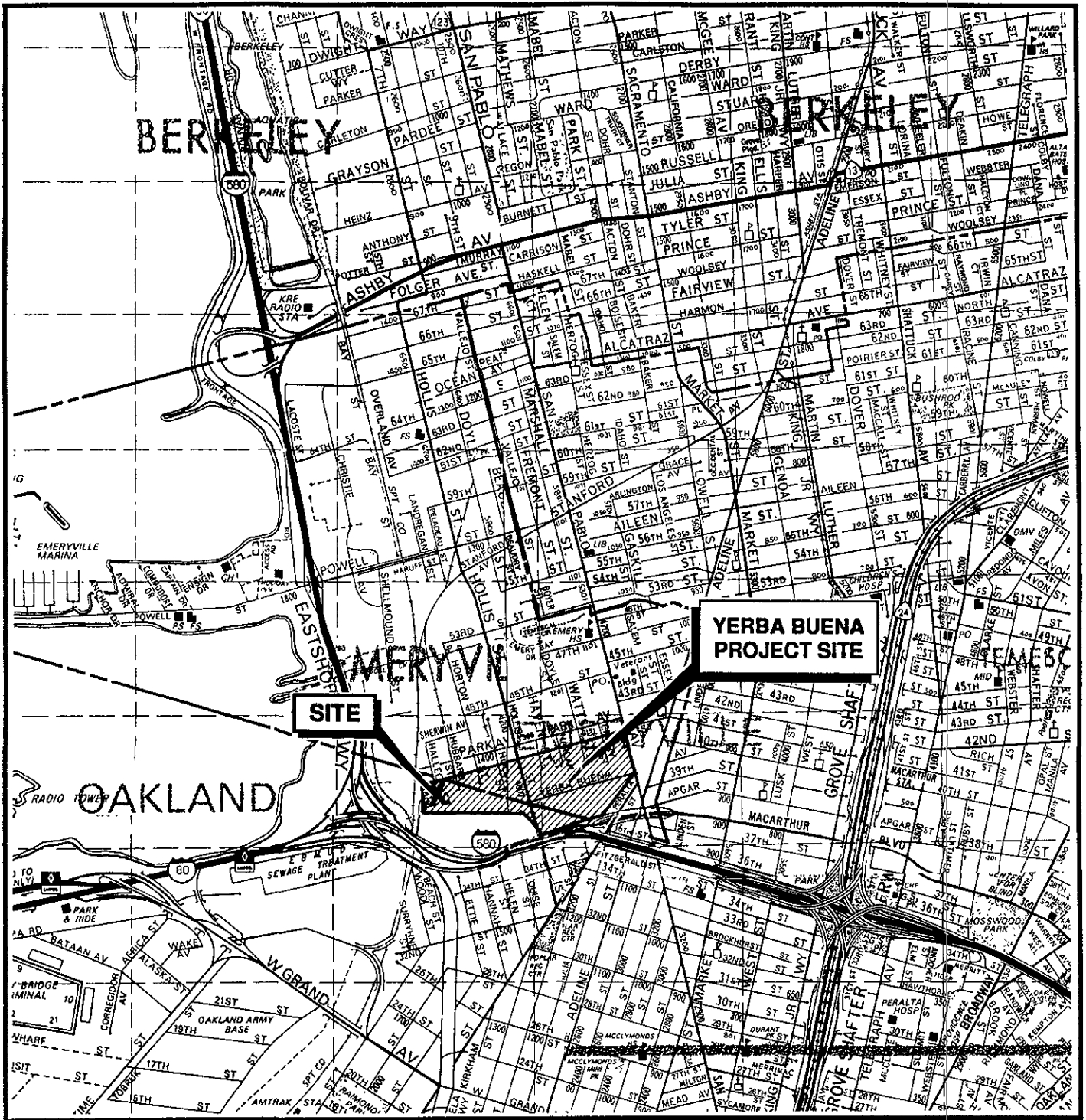
SCHEDULE

We anticipate that well LF-33 and soil borings EB-1 and EB-2 will be installed during the second quarter (April through June) of 1994, and that field work can be completed in two to three days. We anticipate that a written report presenting investigation results can be prepared within four weeks following completion of the field work.

REFERENCES

Levine·Fricke, 1993. Health and Safety Plan for Investigation and Construction Activities Associated with the Proposed Site Development, Yerba Buena Project Site, Emeryville, California. April 12.

———. 1993. Report on the Removal of Two Underground Fuel Storage Tanks and Soil Remediation Activities, Beach Street Area, Yerba Buena/East Baybridge Project Site, October 20.



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

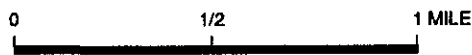
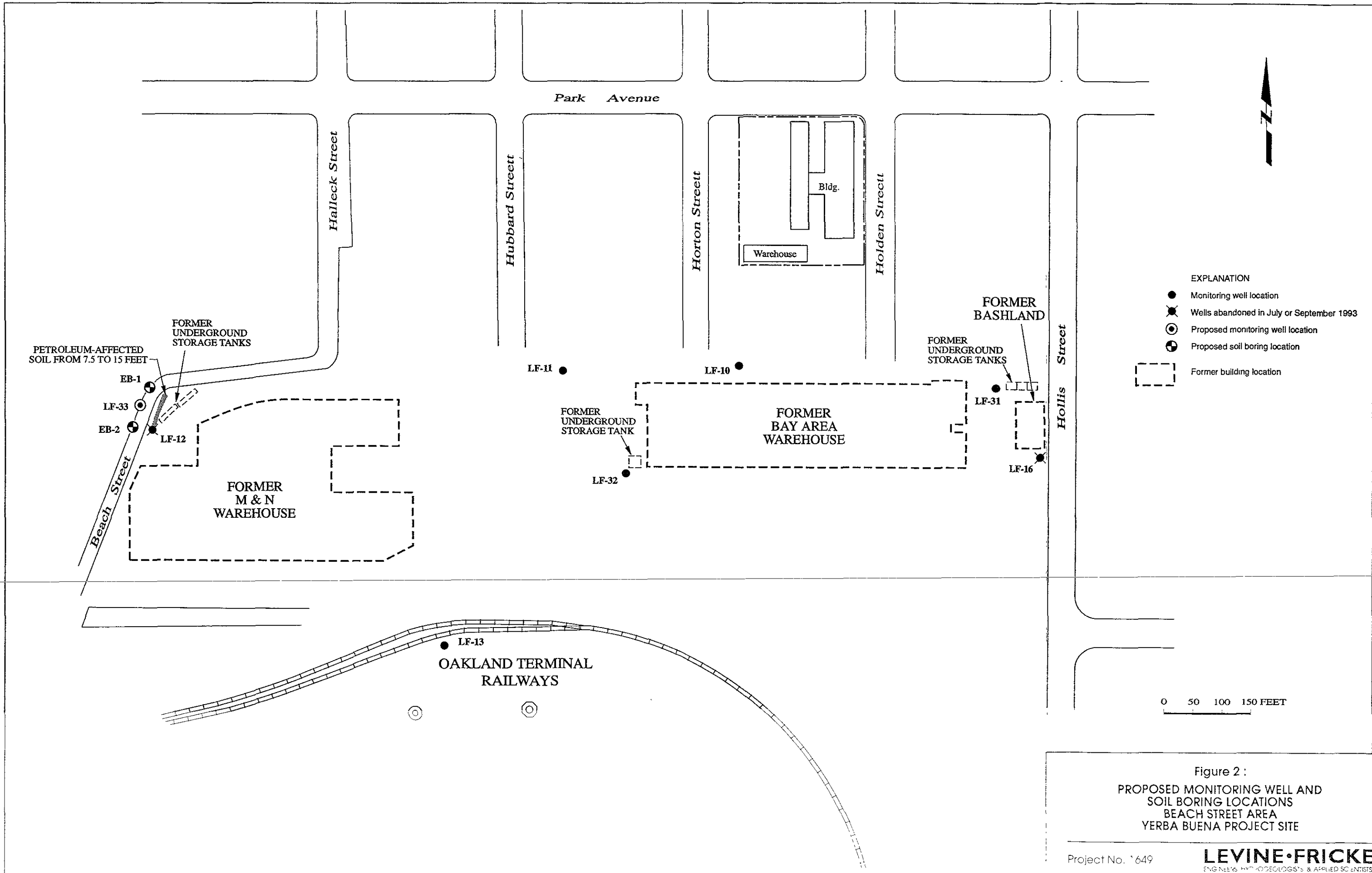


Figure 1: SITE LOCATION MAP



- EXPLANATION
- Monitoring well location
 - ⊗ Wells abandoned in July or September 1993
 - ⊙ Proposed monitoring well location
 - ⊕ Proposed soil boring location
 - ⋯ Former building location

Figure 2 :
 PROPOSED MONITORING WELL AND
 SOIL BORING LOCATIONS
 BEACH STREET AREA
 YERBA BUENA PROJECT SITE

Project No. 1649

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