Preliminary Environmental Assessment Report
Batarse Site
104th Avenue and East 14th Street
Oakland, California

October 3, 2001
7962.01-003

Volume I
Text, Tables, Figures, Appendices

Prepared for
Oakland Unified School District
955 High Street
Oakland, California 94601

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October 3, 2001

7962.01-003

Mr. Michael Stephens
California Environmental Protection Agency
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826

Subject: Preliminary Environmental Assessment Report, Batarse Site, 104th Avenue and East 14th Street, Oakland, California

Dear Mr. Stephens:

LFR Levine·Fricke (LFR) has prepared this Preliminary Environmental Assessment (PEA) report on behalf of the Oakland Unified School District for the Batarse Site in Oakland, California ("the Site"). The Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by commercial businesses fronting on East 14th Street, to the east by residences along Breed Avenue, and to the south by Alameda-Contra Costa Transit's (AC Transit) vehicle maintenance facility.

LFR prepared a PEA work plan for the Site in general accordance with California Environmental Protection Agency Department of Toxic Substances Control (DTSC) guidelines, as presented in the PEA Guidance Manual (January 1994). LFR's work plan for the Site entitled, "Preliminary Environmental Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California," dated May 25, 2001, was approved by the DTSC. This report presents the results of the PEA.

An electronic copy, in Microsoft Word and Excel format, of the PEA report is included with our submittal. LFR is submitting this electronic copy in accordance with the DTSC's request and with the understanding that it will be accessible only to internal DTSC staff via DTSC's computer network for informational purposes only and will not be made available to outside parties. Because LFR has no control over the ability of others to modify or otherwise change the document, the signed, paper copy of the PEA report, dated October 3, 2001, shall be the only official version of the report.

If you have any questions or comments concerning the PEA report, please call either of the undersigned at (510) 652-4500.

Sincerely,

Alan D. Gibbs, R.G., R.E.A. II
Senior Associate Geologist

Michael B. Marsden, R.G., C.HG.
Senior Associate Hydrogeologist

cc: Ms. Ineda P. Adesanya, Oakland Unified School District (Volume I only)
Mr. Jerry Suich, Oxbridge Development (Volume I only)

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EXECUTIVE SUMMARY

LFR Levine·Fricke (LFR) was contracted by the Oakland Unified School District to conduct a Preliminary Environmental Assessment (PEA) for the Batarse Site, located near the southeast corner of the intersection of 104th Avenue and East 14th Street in Oakland, California ("the Site"; Figure 1). This work was performed under the oversight of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC).

The approximately 8-acre Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by commercial businesses fronting on East 14th Street, to the east by residences along Breed Avenue, and to the south by Alameda-Contra Costa (AC) Transit's bus maintenance facility (Figure 2).

This PEA was conducted in general accordance with the DTSC guidance manual for evaluation of hazardous substance release sites entitled, "Preliminary Endangerment Assessment Guidance Manual, State of California, Environmental Protection Agency" (DTSC 1994) and LFR's work plan entitled, "Preliminary Endangerment Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California," dated May 25, 2001 ("the PEA Work Plan"). The PEA Work Plan was approved by DTSC. The overall objectives of the PEA included the following:

- Evaluating historical information regarding the past use, storage, disposal, or release of hazardous wastes/substances at the Site
- Conducting a field sampling and analysis program to characterize the nature, concentration, and presence and/or absence of a release of hazardous materials, and if found, establishing the extent of hazardous wastes/substances present in soil and groundwater at the Site
- Estimating the potential threat to public health and/or the environment posed by known hazardous constituents at the Site using a residential land use scenario

The results of the PEA will be used to assist the DTSC in evaluating whether the Site is appropriate for a school setting. At the time of the PEA sampling program, the Site was occupied by various commercial buildings and residences located along 105th Avenue and residential buildings along 104th Avenue. Construction of a new permanent school campus is planned at the Site (Figure 3).

In accordance with the PEA Work Plan, LFR advanced 62 soil borings on the Site (Figure 4). Nine shallow borings and 53 deep boring were advanced on the Site and one or more soil samples were collected from each boring. In addition, a water sample was collected from a water supply well located on the Site.

For the purpose of our investigation, the Site was divided into nine areas consisting of one or more parcels. Area 1 includes Lloyd A. Wise, Inc.; Area 2 includes Bill & Bill's

Auto Body; Area 3 includes the majority of the Management Storage property; Area 4 includes Ward's Custom Paint and a portion of the Management Storage property; Area 5 includes Chevron Tow; Area 6 includes the Union Pacific Railroad and 105th Avenue; Area 7 includes commercial, industrial, and residential properties on the west side of 105th Avenue; Area 8 includes residential properties on the east side of 104th Avenue; and Area 9 includes a portion of AC Transit.

Soil samples were collected in shallow borings from the first native soil encountered (shallow depth interval). Soil samples were collected from deep borings at approximately 5-foot intervals to the depth at which groundwater was encountered. Grab groundwater samples were collected from 52 of the deep borings.

Selected soil and groundwater samples were analyzed for Title 22 Metals using U.S. Environmental Protection Agency (EPA) Method 6010/7000 Series; semivolatile organic compounds (SVOCs) using EPA Method 8270 or 525; volatile organic compounds (VOCs) using EPA Method 8260; total petroleum hydrocarbons (TPH) as gasoline, diesel, motor oil, paint thinner, mineral spirits, and/or Stoddard solvent using EPA Method 8015 (modified); organochlorine pesticides (OCPs) using EPA Method 8081; polychlorinated biphenyls using EPA Method 8082; ethylenedibromide (EDB) using EPA Method 504; and polycyclic aromatic hydrocarbons (PAHs) using EPA Method 8310. These analyses were selected because they represent the chemicals of potential concern (COPCs) at the Site based on the historical and current site uses for commercial operations, automobile repair operations, and spray painting operations.

The results of soil sampling identified the presence of various metals, OCPs, PAHs, SVOCs, and VOCs as COPCs. The results of groundwater sampling identified the presence of various metals, PAHs, SVOCs, and VOCs as COPCs. In addition, petroleum hydrocarbons were detected in soil and groundwater samples collected across the Site.

The petroleum hydrocarbons and VOCs detected in the groundwater samples from the west end of Area 6 appear to be related to the waste oil and product underground storage tanks (USTs) formerly located immediately to the west of the Site. According to reports prepared by other consultants for the investigation of the USTs, groundwater flow direction is to the west-southwest based on depth-to-water measurements in the three monitoring wells installed on the properties adjacent to the west of the Site. Therefore, the three borings advanced at the west end of Area 6 would be located in an upgradient direction from these former USTs. In LFR's opinion, the former USTs appear to be the likely source of the petroleum hydrocarbons in groundwater because of the proximity of the USTs to the borings.

The petroleum hydrocarbons detected in the soil and groundwater samples from beneath the maintenance building at the west end of Area 1 appear to be related to the hydraulic lifts and chemical storage in this building.

For the purposes of conducting a human health screening evaluation, the potential exposure pathways identified for the Site were inhalation, ingestion, and dermal absorption. The PEA human health screening evaluation indicated that, based on the information developed during the PEA and the conservative human health screening evaluation using the PEA Guidance Manual, potential health risks to human health were found to be below the target level (less than 10^{-6}) for the COPCs identified at the Site.

The information reviewed and observations made for this PEA do not indicate that soil or groundwater quality at the Site has been significantly affected by on-site releases of hazardous substances with the exception of the petroleum hydrocarbons detected in the soil and groundwater beneath the maintenance building on the west end of Area 1.

LFR proposes remedial activities in the area of the maintenance building to address the presence of petroleum hydrocarbon-affected soil and groundwater in Area 1. LFR will prepare a removal action work plan for these proposed activities at the Site. Removal actions and delineation of these compounds will be addressed during construction of the proposed school. Areas of proposed removal actions are presented in Figure 12.

1.0 INTRODUCTION

1.1 Introduction

This Preliminary Environmental Assessment (PEA) report for the Batarse site, located near the southeast corner of the intersection of 104th Avenue and East 14th Street in Oakland, California ("the Site"; Figure 1), is being submitted by LFR Levine·Fricke (LFR) on behalf of the Oakland Unified School District (OUSD). The Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by commercial businesses fronting on East 14th Street, to the east by residences along Breed Avenue, and to the south by Alameda-Contra Costa Transit's ("AC Transit") bus maintenance facility. The Site is being considered as a potential location for a new school.

This PEA was conducted under the oversight of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) to fulfill the Education Code requirements for new school sites. A Voluntary Cleanup Agreement (VCA) was signed by the OUSD and DTSC to provide for DTSC oversight of the PEA.

1.2 Purpose

The purpose of the PEA was to establish whether a release or threatened release of hazardous substances that pose a threat to human health or the environment exists at the Site. Consistent with requirements in the VCA, a technical PEA work plan entitled, "Preliminary Environmental Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California," dated May 25, 2001 ("the PEA Work Plan"), was prepared by LFR and approved by the DTSC.

This PEA was conducted in accordance with the DTSC guidance manual for evaluation of hazardous substance release sites entitled, "Preliminary Endangerment Assessment Guidance Manual, State of California, Environmental Protection Agency" (DTSC 1994; "the PEA Guidance Manual") and the PEA Work Plan. Pursuant to the Health and Safety Code Section 25355.5 (a)(1)(C), the activities conducted under the VCA were performed under the oversight of the DTSC. LFR's representatives discussed the results of the PEA with Mr. Charlie Ridenour, Mr. Michael Stephens, and Ms. Janet Naito of the DTSC during a meeting on August 16, 2001.

1.3 Objectives

The California Department of Education (CDE), in accordance with State of California Senate Bill 162 (effective as a law in January 2000), requires evaluation, if applicable, of ambient air, subsurface soil, and shallow groundwater at new school sites. A "No Further Action" designation or an "Environmental Hardship" determination must be obtained from the DTSC before the CDE can allocate funds to a school district for the acquisition and/or construction of a new school. The PEA is intended to identify whether a release or threatened release of hazardous substances exists at the proposed school site and to evaluate the potential risk to human health or the environment before the DTSC issues a "No Further Action" or "Environmental Hardship" designation.

The overall objectives of the PEA include the following:

- Evaluating historical information regarding the past use, storage, disposal, or release of hazardous wastes/substances at the Site
- Conducting a field sampling and analysis program to further characterize the nature, concentration, and presence and/or absence of a release of hazardous materials, and if found, establishing the extent of hazardous wastes/substances present in soil and groundwater at the Site
- Estimating the potential threat to public health and/or the environment posed by known hazardous constituents at the Site using a residential land use scenario

The DTSC will use the information developed during the PEA and the conservative human and ecological risk evaluation conducted using the PEA Guidance Manual, to make an informed decision regarding potential risks posed by the Site, as follows:

- the requirement for further assessment through the Remedial Action Work Plan process, if the Site is found to be significantly affected by hazardous substances
- the need to perform a Removal Action for areas where localized impacts by hazardous substances release(s) are found
- issuance of a "No Further Action" finding if the Site is found not to be affected or risks to human health and the environment are found to be within acceptable levels based on the conservative screening-level risk assessment
- abandonment of the Site as a potential school site

This report presents the scope and findings of the PEA. The limitations of the PEA are presented in Section 12.

2.0 SITE DESCRIPTION

2.1 Site Description

The Site consists of numerous parcels that together occupy approximately 8 acres. The Site has been divided into nine areas consisting of one or more parcels: Area 1 includes Lloyd A. Wise, Inc.; Area 2 includes Bill & Bill's Auto Body; Area 3 includes the majority of the Management Storage property; Area 4 includes Ward's Custom Paint and a portion of the Management Storage property; Area 5 includes Chevron Tow;

Area 6 includes the Union Pacific Railroad and 105th Avenue; Area 7 includes commercial, industrial, and residential properties on the west side of 105th Avenue; Area 8 includes residential properties on the east side of 104th Avenue; and Area 9 includes a portion of AC Transit. These parcels are located southeast of the intersection of 104th Avenue and East 14th Street (Figure 2). Information on the areas, including the occupant/use, street address, and Assessor's Parcel Number, is presented in Table 1.

2.2 Site Name and Address

The Site has been identified by the OUSD as the Batarse Site, located southeast of the intersection of 104th Avenue and East 14th Street in Oakland, California. Street addresses currently assigned to the Site are presented in Table 1.

2.3 Designated Contact Person

Ms. Ineda Adesanya, Director of Facilities, Oakland Unified School District, is the primary contact person for this project. Ms. Adesanya may be contacted at the following address:

Oakland Unified School District
955 High Street
Oakland, California 94601
Telephone: (510) 879-8385
Fax: (510) 879-1860

2.4 Assessor's Parcel Number(s) and Maps

The Site consists of 29 parcels as identified by the Alameda County Assessor's Office and a portion of 105th Avenue. The street addresses on record for these parcels are presented in Table 1.

2.5 Site Maps

A site location map and site plan are included as Figures 1 and 2, respectively. Figure 3 shows the proposed layout for the new school. PEA sampling locations are shown in Figure 4. Site photographs and Sanborn Fire Insurance Maps (Sanborn Maps) were presented in the "Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California", dated October 2000, prepared by ENSR Consulting and Engineering (ENSR 2000; "the Phase I ESA").

2.6 Township, Range, Section, and Meridian

The United States Geological Survey (USGS) San Leandro, California Quadrangle, 7.5-minute topographic map (1993), shows that the Site is located in Subsection P of

Section 23, Township 2 South, Range 3 West. The approximate geographic coordinates of the Site are Latitude North 37° 44'21" and Longitude West 122° 09'52".

2.7 Site Zoning

The City of Oakland Community and Economic Development Agency has zoned the Site for manufacturing (M-20) and residential (R-30).

2.8 EPA Identification Number

According to a review of the regulatory database search report and contacts with regulatory agencies, the Site has not been issued an EPA Identification Number.

A portion of the Lloyd Wise Honda/Nissan property at 10550 East 14th Street is included as a portion of the Site (Area 1) and was previously included in the Resource Conservation and Recovery Act (RCRA) database as a small quantity hazardous waste generator. However, based on information provided by Mr. Les Rich, Vice President of Lloyd A. Wise, Inc., ("Lloyd Wise"), hazardous wastes have not been generated at this property since the late 1990s.

Milichichi Auto Body Fender, a former tenant at 1550 105th Avenue (current address is 1544 105th Avenue), was previously included on the RCRA database as a small quantity hazardous waste generator. However, the current tenant at this parcel, Ward's Custom Paint, is not listed as a hazardous waste generator.

2.9 Calsites Database Number

According to a review of the regulatory database search report and contacts with regulatory agencies, the Site has not been included on the Calsites database.

2.10 Surrounding Property Land Use

The surrounding property land use includes a combination of commercial businesses, light industrial facilities, a church, and residential buildings. Generally, commercial businesses and light industrial facilities front East 14th Street with residential buildings located behind the commercial/industrial properties.

The Lloyd Wise dealership is located adjacent to the west of the Site. According to information provided by Mr. Rich of Lloyd Wise, vehicles were repaired at this facility until the late 1990s.

AC Transit operates a bus maintenance yard adjacent to the south and southeast of the Site.

The OUSD will consider the types of hazardous chemicals released into the air by businesses within a 1/4-mile radius of the Site and their potential effect on students and faculty at the proposed school site as part of the California Environmental Quality Act (CEQA) document for the Site.

3.0 BACKGROUND

3.1 Site Status and History

The Site consists of multiple parcels that are occupied by commercial businesses, industrial facilities, and residential buildings. Figure 2 shows the buildings currently present on the Site, their associated street address, and their use. A summary of historical site uses, property ownership, facility ownership and operators, business types, years of operation, and business and manufacturing activities is presented in Appendix A. This information was obtained from our review of reports previously prepared for the Site by other consultants.

According to available information, none of the parcels comprising the Site are currently listed as active cases with local, state, or federal regulatory agencies.

3.1.1 Previous Assessments

Pertinent data on previous assessments performed for the Site and adjacent properties are summarized below. This information was obtained from reports prepared by previous consultants, including the Phase I ESA (ENSR 2000). As part of the Phase I ESA, ENSR reviewed Sanborn Maps, aerial photographs, and agency files for historical site use information. Copies of Sanborn Maps and site photographs, as well as data from agency files were presented in the Phase I ESA report.

LFR personnel reviewed the following reports to identify potential environmental concerns associated with the Site:

- "Underground Tank Technical Closure Report," prepared by Gen-Tech Environmental (Gen-Tech), dated March 26, 1993
- "Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California," prepared by Gen-Tech, dated May 6, 1993
- "Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California," prepared by Gen-Tech, dated May 20, 1994
- "Overview of Environmental Conditions at 10550 East 14th Ave., Nissan/Honda Auto Dealership in Oakland, CA," prepared by Gen-Tech, dated October 11, 1994

- "Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California," prepared by Piers Environmental Services (Piers), dated September 27, 1995
- "Phase I Environmental Assessment for 1500–1510 105th Avenue, Oakland, California," prepared by Piers, dated June 5, 1996
- "Phase I Environmental Assessment for 1520 105th Avenue, Oakland, California," prepared by Piers, dated August 27, 1998
- "Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California," prepared by Piers, dated March 13, 1997
- "Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland," prepared by Alameda County Health Care Services Agency (ACHCSA), dated August 14, 1998
- "Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California," prepared by ENSR, dated October 2000

3.1.1.1 On-Site Properties

10550 East 14th Street (Eastern Portion)

The property addressed as 10550 East 14th Street is located on the south side of 105th Avenue. Area 1 of the Site, comprising the eastern portion of the 10550 East 14th Street property, will be acquired by the OUSD after a lot split separates the western portion of the property from the eastern portion.

According to information contained in Gen-Tech's report (1994b), one 550-gallon waste oil underground storage tank (UST) was removed in February 1993 from Area 1. The map provided in the case closure summary prepared by the ACHCSA (ACHCSA 1998) indicated that the waste oil UST was located near the southeast corner of the Lloyd Wise maintenance building. The location of the waste oil UST would be within the site border (Area 1).

According to Mr. Rich of Lloyd Wise, a waste oil UST was not present at this location in the past. Based on the available map and for purposes of investigation, LFR has assumed that the waste oil UST was located adjacent to the maintenance building in Area 1.

Soil samples collected from the waste oil UST excavation were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd); benzene, toluene, ethylbenzene, and xylenes (BTEX); oil and grease; and five Leaking Underground Fuel Tanks (LUFT) Field Manual (RWQCB 1994) metals. Analytical results of soil samples indicated the presence of TPHg, TPHd, total xylenes, chromium, lead, nickel, and zinc.

Analysis of the groundwater sample collected from the excavation indicated the presence of TPHg, toluene, ethylbenzene, and total xylenes.

The ACHCSA issued a case closure letter for the property known as 10500 East 14th Street. This case closure letter applied to the waste oil UST removed from Area 1 and a gasoline UST removed from the west side of the Lloyd Wise auto dealership building as discussed in Section 3.1.1.2. As noted below, several borings were advanced in the area of the former waste oil UST during LFR's PEA field investigation to evaluate the soil and groundwater quality in this area.

1433 105th Avenue

A release was reported at this property in 1991. According to available information, the ACHCSA issued a case closure letter for the property in 1999. Information on the exact location of this release was not available; however, borings were advanced on this parcel during LFR's PEA field investigation to evaluate the soil and groundwater quality in this area.

1561 105th Avenue

A release of 35 gallons of motor oil was reported at this property in 1992. Data on cleanup efforts for this release or information on the exact location of this release were not available to LFR. Borings were advanced on this parcel during LFR's PEA field investigation to evaluate the soil and groundwater quality in this area.

1500 through 1510 105th Avenue

During Piers' Phase I ESA on this parcel, a water supply well was noted on the northern side of the 1510 105th Avenue building. According to the property owner at the time of the Phase I ESA, this well was installed before 1967. Information on the age, depth, diameter, or casing type was not available for the well; however, the well was reportedly deepened to a depth of approximately 100 feet in 1974.

3.1.1.2 Off-Site Properties

Adjacent off-site properties include a church at 10440 East 14th Street, Lloyd Wise at 10550 East 14th Street, and the AC Transit facility at 10626 East 14th Street. These properties are discussed below.

10440 East 14th Street

Two USTs were formerly located at 10440 East 14th Street (on the north side of 105th Avenue), according to information contained in previous reports reviewed by LFR. The USTs, including a 1,000-gallon product oil UST and a 1,000-gallon waste oil UST, were reportedly installed in the mid-1960s, were in use until 1992, and were removed in February 1993.

A map presented in a report prepared by Gen-Tech (1993a) indicated that the two USTs were located beneath the sidewalk on the north side of 105th Avenue. The USTs were situated end to end and each measured 12 feet in length. The west end of the westernmost UST was located at a distance of 147 feet from East 14th Street and the east end of the easternmost UST was approximately 173 feet from East 14th Street. Based on these distances, the end of the easternmost UST was located at a distance of approximately 15 feet from the site border.

At the time of the UST removals, soil and groundwater samples were collected from the tank pits for analyses. These samples were analyzed for TPHg; TPHd; BTEX; volatile organic compounds (VOCs); semivolatile organic compounds (SVOCs); oil and grease; five LUFT metals; and ethylene glycol (antifreeze).

Analysis of the soil samples revealed the presence of TPHg, TPHd, ethylene glycol, toluene, ethylbenzene, total xylenes, oil and grease, cis-1,2-dichloroethene (cis-1,2-DCE), and tetrachloroethene (PCE). Analysis of the groundwater samples collected from the excavation revealed the presence of TPHg, and BTEX; cis-1,2-DCE and PCE were not detected in the groundwater samples at concentrations at or above the laboratory reporting limits.

10550 East 14th Street (Western Portion)

One 2,000-gallon gasoline UST was removed in February 1993; the address given for the work site was listed in Gen-Tech's report as 10550 East 14th Street (1994b). According to the map provided in the case closure summary prepared by ACHCSA, the gasoline UST was located to the west of the Lloyd Wise auto dealership building and approximately 75 feet from the Site's western border.

Soil samples collected at the time of the tank removal were analyzed for TPHg and BTEX. Analysis of the soil samples indicated the presence of TPHg, toluene, and ethylbenzene.

Three groundwater monitoring wells were installed on and near the 10550 East 14th Street property following removal of the gasoline UST (Figure 2). Wells MW-1-N and MW-2-N were installed on the west side of the Lloyd Wise auto dealership building, and well MW-1-0 was installed on the north side of 105th Avenue. Analysis of groundwater samples collected from wells MW-1-N and MW-2-N in 1995 indicated the presence of TPHg (up to 240,000 micrograms per liter [μg/l]), benzene (up to 3,600 μg/l), toluene (up to 1,200 μg/l), ethylbenzene (up to 6,900 μg/l), and total xylenes (up to 35,000 μg/l). Analysis of groundwater samples from MW-1-0 did not indicate the presence of petroleum hydrocarbons at concentrations at or above the laboratory reporting limits.

The ACHCSA issued a case closure letter for the property known as 10500 East 14th Street. The case closure summary applied to both the 550-gallon waste oil UST formerly located in Area 1 (as discussed in Section 3.1.1.1) and a 2,000-gallon gasoline

UST that had been removed from this property. According to information presented in the case closure summary, the following chemicals of concern were present in the groundwater samples collected from the monitoring wells in February 1998: TPHg (up to 18,000 $\mu g/l$), benzene (up to 270 $\mu g/l$), toluene (up to 120 $\mu g/l$), ethylbenzene (up to 1,800 $\mu g/l$), and total xylenes (up to 6,300 $\mu g/l$).

10626 East 14th Street

The AC Transit facility at 10626 East 14th Street is located adjacent to the Site's southern border. Depth-to-water measurements indicate that groundwater flow direction has historically been to the west-southwest, therefore, this facility would be located in an upgradient direction from the Site.

According to information in ENSR's Phase I ESA, this property was reported as having a leaking UST. According to available information in the Phase I ESA, approximately 300 gallons of waste oil and water was released and flowed into a storm drain on this property. The remediation was reportedly completed and the property granted case closure by the local regulatory agency.

3.1.2 Hazardous Substances/Waste Management Information

Hazardous substances formerly and currently used and stored on the Site are summarized in Appendix A and in reports prepared for the Site by other consultants.

4.0 APPARENT PROBLEM

Based on the historical information reviewed and observations made during LFR's site visits, potential sources of impacts at the Site include past releases, a suspect former waste oil UST, hydraulic lifts, product aboveground storage tanks (ASTs), floor drain, sumps, use/storage of hazardous substances (motor oils, paints, thinners, etc.), and small quantities of residential hazardous substances (pesticides, lead-based paint [LBP]).

Chemicals of potential concern (COPCs) identified at the Site include TPH; BTEX; VOCs (including methyl-tertiary butyl ether [MTBE]); SVOCs; Title 22 metals (also referred to as California Assessment Manual 17 metals); and polychlorinated biphenyls (PCBs). These COPCs are associated with historical industrial operations, vehicle maintenance, and painting operations at the Site.

5.0 ENVIRONMENTAL SETTING

Factors related to soil, water, and air pathways at the Site are presented in the following sections.

5.1 Factors Related to Soil Pathways

Soil types encountered at the Site during the PEA field investigation are summarized below.

5.1.1 Topography

The elevation of the Site is approximately 40 to 42 feet above mean sea level according to the USGS San Leandro, California, Quadrangle, 7.5-minute topographic map (1993). The surface topography in the vicinity of the Site is fairly level with a slight slope to the southwest toward San Francisco Bay.

5.1.2 Geologic Setting

The following information about the regional geology and hydrogeology was derived from Helley and LaJoie (1979), Hickenbottom and Muir (1988), and California Division of Mines and Geology (1999).

Near-surface sediments (generally less than 50 feet thick in the vicinity of the Site) consist primarily of interbedded sequences of silts and clays with poorly sorted sands and gravels. These sediments represent Quaternary to Recent alluvial deposits that originated in the mountains of the Coast Ranges to the east.

Tidal-flat and other clayey and silty marine and estuarine sediments, informally referred to as young Bay Mud, underlie the alluvial deposits. This young Bay Mud unit is approximately 25 feet thick at the San Francisco Bay margin and becomes thicker toward the center of the San Francisco Bay. The young Bay Mud is the youngest of a sequence of unconsolidated marine estuarine sediments ranging up to several hundred feet thick that overlies bedrock.

Underlying the young Bay Mud is the Merritt Sand Formation, an eolian (windblown) sand unit deposited in a dune environment during a period of lower sea levels (approximately 40,000 to 10,000 years ago). The Merritt Sand is exposed in the City of Alameda to the west of the Site and in parts of western Oakland. The actual lateral extent of the Merritt Sand is unknown. The maximum reported thickness is 65 feet.

Deposition of the young Bay Mud on the Merritt Sand occurred as a result of the latest sea level rise that began approximately 10,000 years ago. The fine-grained marine and estuarine sediments of the young Bay Mud commonly contain sandy lenses that may represent small buried stream channels.

Unconsolidated sediments underlying the Merritt Sand Formation in the site vicinity are informally referred to as old Bay Mud.

Soil borings completed at the Site for the PEA did not penetrate deeper than the Recent alluvial deposits. Soil encountered during the PEA field investigation consisted primarily of very-fine grained silty clay transitioning into clayey sand to sand at depths of approximately 18 to 25 feet below ground surface (bgs). Thin sand lenses were encountered interfingered with the silty clays in some borings. The sand layers comprise the primary shallow water bearing zone in the site vicinity. This zone has an average thickness of at least 4 feet over most of the Site area. The total thickness of this sand layer at the Site was not established during the PEA because the borings did not penetrate this layer.

A chart showing the types of soil encountered at the Site and total depth for each boring is presented in Appendix B. Copies of the field sampling logs completed for borings advanced during the field investigation for this PEA are also presented in Appendix B.

5.1.3 Affected Soil from Site Releases

Based on information obtained during the PEA, a release of petroleum hydrocarbons to soil appears to have occurred at several locations at the Site, including the maintenance building, service building, and the vehicle storage yard in Area 1; the vehicle storage lot in Area 5; the west end of Area 6; various locations across Area 7; the central portion of Area 8; and the east end of Area 9. These releases are further discussed in Section 6.8.

5.2 Factors Related to Water Pathways

Water pathways information was obtained from published literature, available maps, and subsurface conditions encountered at the Site during the PEA field investigation and is summarized below.

5.2.1 Surface Water Bodies

Based on our site visit and review of the USGS San Leandro, California Quadrangle, 7.5-minute topographic map (1993), surface water bodies are not present on the Site. The nearest body of surface water is San Leandro Creek, located approximately 4,400 feet south of the Site. This creek drains into San Leandro Bay, which is part of San Francisco Bay. The Site is approximately 5.5 miles northeast of San Francisco Bay.

5.2.2 Affected Surface Water from Site Releases

Surface water bodies are not present on the Site. The nearest body of surface water is San Leandro Creek, located approximately 4,400 feet south of the Site. Hazardous levels of COPCs were not detected in surface soil samples collected at the Site during the PEA. Thus, there is no known release or threatened release of hazardous substances to surface water bodies.

5.2.3 Groundwater

Locally and regionally, the groundwater in the Site area is typically poor in quality and rarely used as a groundwater resource (Hickenbottom and Muir 1988). Groundwater is present in the overlying alluvium, but is generally controlled by local precipitation in the nearby hills to the east and fluctuates seasonally.

The shallow water bearing zone underlying the Site consists of sand layers that were encountered between 18 and 25 feet bgs in borings advanced during the PEA field investigation at the Site. The sand layers consist of clayey sand to sand.

Depth-to-water was measured in each boring before collection of the grab-groundwater samples. The measured depth to shallow groundwater at the Site ranged from approximately 16 to 31 feet bgs. In LFR's opinion, these measurements were taken too soon after the borings were completed to represent an accurate potentiometric surface. The depth to the top of the sand layers in the area ranges from 18 to 25 feet bgs, and the depth-to-water measurements indicate that the shallow groundwater is pressurized with 2 to 3 feet of hydraulic head.

Regional shallow and deep (greater than 200 feet bgs) groundwater flows west-southwest toward San Francisco Bay. Groundwater extraction rates from the young Bay Mud are low.

Groundwater monitoring wells were not installed on the Site during the PEA; however, three monitoring wells are located immediately west of the Site. These wells were installed in the mid-1990s during a groundwater quality investigation associated with the removal of off-site USTs. These wells were completed at depths of approximately 21 to 30 feet. Groundwater monitoring logs (from reports by Gen-Tech and PIERS) and UST removal information (from reports by Gen-Tech) are presented in Appendix C.

The well located nearest to the Site was installed in 1993 in the sidewalk on the north side of 105th Avenue, approximately 32 feet from the Site's western border. The identification number for this well is listed as MW-1 on the boring log and MW-1-0 on subsequent maps and data sheets and will be referred to in this report as MW-1-0. The two remaining wells, located on the west side of the former Lloyd Wise showroom building at 10550 East 14th Street, are identified as MW-1-N and MW-2-N.

It should be noted that the boring log for well MW-1-0 indicates that the boring extended to a depth of 21 feet; however, the water quality sampling information sheet completed in 1997 by CGS Sampling Specialist's representative indicates that the total depth of the well was 23.65 feet bgs. During the PEA field investigation, the well cover was removed and the total depth of the well was measured at 23.81 feet bgs.

The boring logs for wells MW-1-0 and MW-2-N indicate that these wells were completed in silty clay and that well MW-1-N was completed in silty clay and silty sand.

Stabilized groundwater levels for the three wells were reported in 1995 to be approximately 17 to 17.5 feet bgs. Groundwater flow direction was estimated to be to the west-southwest based on the depth-to-water measurements collected in 1995.

5.2.4 Affected Aquifers from Site Releases

The information obtained during the PEA indicates that a release of petroleum hydrocarbons from the Site to the groundwater appears to have occurred at several locations, including at the maintenance and service buildings in Area 1; Area 3; the vehicle storage lot in Area 5; and at two locations in Area 7 (one at the west end and one at the east end). In addition, a release of petroleum hydrocarbons and solvents from an off-site source to groundwater appears to have affected groundwater quality at the Site. The petroleum hydrocarbons and solvents detected in groundwater at the west end of Area 6 appear to be the result of a release from off-site USTs formerly located adjacent to the Site's western border. These releases are further discussed in Section 6.8.

5.3 Factors Related to Air Pathways

There is no documentation of an on-site release of hazardous substances to the atmosphere; however, LFR is conducting an air emissions study for inclusion in the CEQA documents being prepared for the Site. Air emissions sources at the Site are currently limited to paint booths used at Bill & Bill's Auto Body, located at 1500 105th Avenue (Area 2) and Ward's Custom Paint, located at 1544 105th Avenue (Area 4). Potential release sources of hazardous substance to the atmosphere are limited to fugitive dust from surface soil and volatilization of chemicals found in the soil during the PEA. Acetone and methylene chloride were the only volatile chemicals detected in soil samples from the Site, and these volatile chemicals were detected in only 8 soil samples at very low levels (less than 0.06 milligram per kilogram [mg/kg]). Therefore, the potential for releases of hazardous substances from the Site to the atmosphere is considered to be negligible.

The site vicinity is located in an area of typical Mediterranean climate, characterized by warm dry summers and mild winters. Based on data obtained from the City of Oakland, the mean temperature in the site vicinity ranges from approximately 50° Fahrenheit in the winter to approximately 80° Fahrenheit in the summer. The average annual precipitation is approximately 18 inches per year.

6.0 SAMPLING ACTIVITIES AND RESULTS

This PEA was prepared to satisfy DTSC requirements for the environmental assessment of a proposed school site before it could approve the Site for school construction. The PEA was conducted in accordance with the PEA Work Plan that was approved by the DTSC.

6.1 Summary of Activities

This section summarizes the scope of work performed by LFR during the field investigation portion of the PEA.

6.1.1 Public Notification

LFR worked with the OUSD to notify the surrounding community of the PEA field activities planned for the Site. A summary of the public notification process and a community profile is presented in Section 9.

6.1.2 Planning/Permitting Activities

Before conducting field investigation activities, LFR prepared a PEA Work Plan that included a field sampling plan, a quality assurance/quality control (QA/QC) plan, and a site-specific health and safety plan. A copy of the PEA Work Plan is presented in Appendix D. LFR also obtained the necessary drilling permits from the Alameda County Public Works Department, and encroachment and obstruction permits from the City of Oakland. Copies of the permits are presented in Appendix E.

LFR's representative identified proposed boring locations by marking the area with white paint on the ground surface or with wooden stakes that had been painted white. LFR's representative then contacted Underground Service Alert (USA) at least 48 hours before start of the subsurface investigation. USA notified utility owners of record in the Site vicinity of our planned activities. Utility owners of record, or their designated representatives, were then responsible for indicating the presence of their utilities within the areas of the proposed investigation by marking the ground surface above the utilities with paint. In addition to contacting USA, LFR contracted with a private underground utility locating service to perform a geophysical survey in the areas of the proposed sampling locations.

6.1.3 PEA Scope of Work

The PEA investigation activities consisted of performing site visits to observe site and area features; the use, storage, handling, discharge, and disposal of potentially hazardous substances; and visible evidence of possible release(s) of hazardous substances to the environment at the Site. LFR implemented the PEA Work Plan, which included collecting soil samples from shallow borings, soil and groundwater samples from deep borings, and a water sample from the water supply well at 1510 105th Avenue. The samples were submitted to a laboratory for analysis. LFR evaluated the data generated during the field investigation activities and prepared the PEA report to present our findings, conclusions, and recommendations.

Potential environmental issues were identified at the Site based on historical and current site uses presented in the Phase I ESA report for the Site (ENSR 2000) and LFR's site visits. The potential environmental issues identified at the Site included affected soil and groundwater beneath the Site as a result of the current or former presence of hydraulic lifts, sumps, an oil/water separator, a suspected former waste oil UST, floor drains, auto body painting operations, chemical use, a railroad spur, LBP, and asbestos. In addition, spills were previously reported in the past on two parcels located within the Site boundaries (1433 and 1561 105th Avenue in Area 7).

The potential COPCs identified at the Site included TPH, BTEX, VOCs (including MTBE), SVOCs, Title 22 metals, and PCBs. These COPCs are associated with historical industrial operations, vehicle maintenance, and painting operations at the Site.

Because of the ages of the structures on the Site, asbestos containing materials (ACMs) and LBPs may be present. LFR's representatives were able to obtain access to many of the site structures to perform a building materials survey for ACMs and LBPs. The results of these surveys will be presented in separate reports. Building materials surveys will be conducted for each of the site structures if OUSD proceeds with the project.

Ambient air sampling was not conducted as part of this PEA. In LFR's opinion and based on available information on surrounding site conditions and activities, ambient air sampling is not warranted. However, LFR is performing an air emissions study as part of the CEQA documents for the Site.

6.2 Sampling Program

The soil and groundwater sampling program implemented at the Site was prepared by LFR with input from Ms. Janet Naito and Dr. David Berry of the DTSC, as documented in the PEA Work Plan. The sampling locations were selected based on historical information, current site use, and information obtained during LFR's site visits.

Table 2 presents the sampling plan from the PEA work plan and Table 3 summarizes the analytical methods, types of sample containers, preservation methods, and holding times for the samples collected from the Site. Table 4 presents sample identification numbers (in numerical order) and sampling dates. Figure 4 presents sampling locations. Gaps between sample identification numbers exist because the sample identification numbers reserved for some areas exceeded the number of borings advanced within the area during the PEA field investigation.

Table 5 presents information on the analysis performed on each of the soil and groundwater samples collected from each area of the Site.

Samples were collected from the Site between March and July 2001; sampling dates are presented in Table 5. The rationale for boring location selection is discussed in Sections 6.3.1 through 6.3.9. At the time of our field investigation, access to site parcels was controlled by fencing with locked gates or by locked doors on the buildings.

Soil and groundwater sampling procedures are described in Section 6.2.1 and 6.2.2. After collection, each soil and groundwater sample was labeled with the sampler's initials, time and date of collection, project number, project name, and a unique sample identification number. Samples were placed in an ice-chilled cooler under strict chain-of-custody (COC) protocol and transported to the analytical laboratory. COC forms were completed for each set of samples and transported to the analytical laboratory with the samples. The COC records identified the contents of each shipment and maintained the custodial integrity of the samples. Generally, a sample is considered to be in the custody of an individual if it is in physical possession, in view, locked up, or kept in a secured area that is restricted to authorized personnel. Until receipt by the laboratory, the custody of the samples is the responsibility of the sample collector.

Sampling equipment was decontaminated and rinsed with distilled water before use at each sampling location and sampling event in accordance with the PEA Work Plan. Disposable equipment intended for one-time use was packaged for appropriate disposal and not reused. Drilling and sampling devices were decontaminated using high-pressure hot water (steam-cleaned) or the following procedures:

- laboratory-grade detergent and tap water wash, in a 5-gallon plastic bucket, using a brush
- initial tap water rinse, in a 5-gallon plastic bucket
- final distilled water rinse in a 5-gallon plastic bucket

Equipment was decontaminated over plastic sheeting in a pre-designated area, and clean bulky equipment was stored on plastic sheeting in uncontaminated areas. Cleaned small equipment was stored in plastic bags. Materials stored for more than a few hours were covered with plastic sheeting.

Boreholes were backfilled with neat cement after sample collection in accordance with permit requirements.

6.2.1 Soil Sampling

Shallow soil borings (total depth of 0.5-feet) were advanced using hand sampling equipment. The hand sampling equipment includes a sampler that is lined with one 2-inch by 6-inch brass or steel tube for sample collection. The sampler is then attached to a slide hammer that is raised and allowed to drop. This action drives the sampler into the ground. The sampler is extracted by pulling upward on the slide hammer.

The remaining soil borings were advanced to depths of up to 34 feet bgs using Geoprobe direct-push technology. Geoprobe rigs use a hydraulic hammer or vibrator to drive a metal sampling probe into the subsurface to the desired sampling depth.

Using the Geoprobe rig, soil samples were collected in disposable 4-foot-long by 1.5-inch-diameter acetate sample tubes that line the metal sampling probes. Upon recovery from the sample probe, the acetate tubes containing the soil samples were cut to a desired length (0.5 to 1 foot) to yield sufficient material for the specified analyses. The soil sample liners/tubes were sealed at each end with a Teflon sheet and fitted with a plastic end cap for submittal to the analytical laboratory. The remaining soil in the sampling tube was used for litholigic description.

During the field investigation, a photoionization detector (PID) with a 10.6 eV lamp was used for health and safety monitoring and field screening. PID monitoring was used as an immediate indicator of the presence of volatile organic vapors in the breathing zone.

The drilling and sampling activities were conducted under the direct supervision of a California-Registered Geologist. Boring logs were completed for each borehole during the field investigation. Each boring log included the boring number, boring location, date and time of sampling, sampling depths, lithology, depths of stained or discolored soils, and PID readings. The Unified Soil Classification System was used to describe lithology at the Site. Copies of the field sampling logs and a chart showing the types of soils encountered at the Site and total depth for each boring are also presented in Appendix B.

6.2.2 Groundwater Sampling

Groundwater samples were collected using a Hydropunch sampler advanced through the Geoprobe direct-push probes into the water bearing zone. The Hydropunch sampler features a cone-shaped drive tip and polyvinyl chloride or steel slotted well screen. The well point is housed inside a steel drive casing during its advancement into the subsurface. The sampler is pulled up approximately 3 feet to expose the inner core screen when the desired groundwater sampling depth is reached. Groundwater enters the screen point sampler and is sampled using a disposable bailer. The groundwater samples are decanted into appropriate clean, laboratory-supplied bottles for submittal to the analytical laboratory. After sampling is complete, the Hydropunch sampler is removed from the subsurface.

6.2.3 Water Sampling

Groundwater samples were collected from the water supply well at 1510 105th Avenue. A peristaltic pump and new tubing was used to collect the water sample. The groundwater samples were decanted from the tubing into appropriate clean, laboratory-supplied bottles for submittal to the analytical laboratory.

6.3 Sampling Locations and Analyses

A total of 62 soil borings were advanced on the Site. The boring designations are noted in Table 4. LFR retained Lee and Sung, a licensed land surveyor, to survey the lateral location of each soil boring to within the nearest foot. The surveyed locations for the soil boring are presented in Figure 4.

Soil samples were collected from each of the 62 soil borings and groundwater samples were collected from 52 of the soil borings. Table 5 presents the depth at which soil samples were collected for analysis and the borings from which groundwater samples were collected for analysis. The water supply well located at 1510 105th Avenue is designated BADW001 in Figure 4.

Selected soil and groundwater samples were submitted to Curtis & Tompkins, Ltd. ("Curtis & Tompkins"), for analysis. Curtis & Tompkins is an analytical laboratory certified by the State of California to perform the requested analyses. The analyses performed on the samples are discussed in the Sections 6.3.1 through 6.3.9. A summary of analysis performed on the soil and groundwater samples collected from the Site is presented in Table 5. The analyses performed on one or more of the soil samples from the indicated boring are presented in Figures 5a and 5b, and results are summarized in Tables 6 through 11. Groundwater sample analyses are presented in Figures 6a and 6b, and results are summarized in Tables 12 through 15.

A summary of the sampling and analysis program for each area is presented below.

6.3.1 Area 1: Lloyd Wise, Inc., Parcel Group (10550 East 14th Street and 1424 105th Avenue)

A total of 21 soil borings were advanced in Area 1, including 7 borings located inside the maintenance building (BASB031, BASB032, BASB033, BASB034, BASB070, BASB071, and BASB072), 5 borings located inside the service building (BASB073, BASB074, BASB075, BASB076, and BASB078), 2 located adjacent to an oil-stained pad (BASB036 and BASB037), 5 located outside the maintenance building (BASB026, BASB027, BASB028, BASB029, and BASB030), and 2 located in the car storage area (BASB077 and BASB082). Soil and groundwater samples were collected from each of these borings.

The borings inside the maintenance building were located adjacent to former hydraulic lifts (BASB031 through BASB034; BASB070 and BASB071 are step out locations from BASB031), and motor oil ASTs (BASB072). Borings in the service building were located in the areas of a sump (BASB078) and a floor drain (BASB073). Borings outside the maintenance building were advanced in the areas of the former UST (BASB026), sump (BASB030), and the oil/water separator (BASB027 and BASB028). Boring locations in the car storage area (BASB077 and BASB082) were randomly selected as no stained areas were noted in this area.

A magnetic survey was conducted in the area of the maintenance building during the field investigation to establish the presence of remaining underground structures. No anomalies indicative of USTs were noted during this survey.

The soil and groundwater samples collected from the 21 soil borings advanced in this area were analyzed for Title 22 metals and petroleum hydrocarbons. Groundwater samples from each boring were also analyzed for VOCs.

In addition, each of the soil samples from borings BASB029, BASB030, BASB036, BASB037, and BASB082; two soil samples from BASB070 (at the 23- and 25-foot depths); and three soil samples from BASB071 (at the 20-, 23-, and 25-foot depths), were analyzed for VOCs. Soil samples from BASB082 were also analyzed for PAHs. Additionally, each of the soil samples from BASB082, located at the east end of the parcel; groundwater samples from BASB071 and BASB072, located in the maintenance building; and groundwater samples from BASB078, located in the service building, were analyzed for SVOCs. The soil samples collected from BASB078 at the 13- and 28-foot depths were also analyzed for total organic carbon (TOC).

These analyses were selected based on the past use of the parcel as an automobile dealership maintenance and service center.

6.3.2 Area 2: Bill & Bill's Auto Body Parcel (1500 105th Avenue)

Three soil borings (BASB006, BASB007, and BASB008) were advanced within the building located in Area 2. Soil and groundwater samples were collected from each of these borings.

Borings BASB006 and BASB007 were advanced adjacent to and downgradient from floor drains. Boring BASB008 was advanced near the front entrance to the building.

Soil and groundwater samples collected from these soil borings were analyzed for Title 22 metals, petroleum hydrocarbons, and VOCs.

These analyses were selected based on the past commercial and industrial use of the parcel.

6.3.3 Area 3: Management Storage Parcel Group (1510, 1520, and 1528 105th Avenue)

Two soil borings (BASB040 and BASB041) were advanced near floor drains within the building in Area 3. Soil and groundwater samples were collected from both of these borings.

A groundwater sample was collected from the water supply well located outside the north wall of the building. The total depth of the well was not established during the field investigation because the well pump, located at a depth of approximately 63 feet below the top of the well casing, could not be removed from the well. The well sampling log is presented in Appendix F.

Soil and groundwater samples collected from the two borings were analyzed for Title 22 metals and petroleum hydrocarbons. In addition, the groundwater samples from both borings were analyzed for VOCs, and the groundwater samples collected from boring BASB040 were analyzed for SVOCs.

The water sample collected from the water supply well (BADW001), located outside the north wall of the building, was analyzed for Title 22 metals, petroleum hydrocarbons, and VOCs.

These analyses were selected based on the past use of the parcel as a candy factory.

6.3.4 Area 4: Ward's Custom Paint Parcel Group (1536, 1538, 1544, and 1548 105th Avenue)

Three soil borings (BASB012, BASB013, and BASB016) were advanced in Area 4. Soil samples were collected from each of the three borings and groundwater samples were collected from borings BASB012 and BASB016.

Borings BASB013 and BASB016 were advanced within the building near chemical and paint storage areas, and boring BASB012 was advanced outside the north wall of the building.

Soil samples collected from the three borings and groundwater samples collected from borings BASB012 and BASB016 were analyzed for Title 22 metals, petroleum hydrocarbons (including paint thinner or mineral spirits), and VOCs, with the exception of the soil samples from depths of 13-, 19-, and 28-feet from boring BASB016. Samples BASB016-13, BASB016-19, and BASB016-28 were analyzed for TOC only.

These analyses were selected based on the current use of the parcel as an automobile spray painting business and on-site storage of paints and thinners.

6.3.5 Area 5: Chevron Tow Parcel Group (1560 and 1570 105th Avenue)

Six borings (BASB022, BASB023, BASB024, BASB025, BASB086, and BASB087) were advanced in Area 5. Soil and groundwater samples were collected from each boring.

The surface of this area was covered with asphaltic concrete pavement with six drains. No stains or chemical storage areas were noted on the pavement. These borings were advanced adjacent to the drains because most of this property has been used for vehicle washing, maintenance, and storage.

Soil and groundwater samples collected from each of the borings were analyzed for Title 22 metals and petroleum hydrocarbons (including paint thinner). In addition, the soil samples from boring BASB022 and the groundwater samples from each of the borings were analyzed for VOCs.

These analyses were selected based on the current use of the parcel as an automobile storage yard.

6.3.6 Area 6: Union Pacific Railroad (105th Avenue)

Eight borings were advanced in Area 6, including four shallow borings and four deep borings. Shallow borings (BASB002, BASB005, BASB011, and BASB017) were advanced to depths of approximately 2.5 feet. Deep borings (BASB001, BASB051, BASB081, and BASB021) were advanced to groundwater. Soil samples were collected from each of the borings, and groundwater samples were collected from the deep borings.

Borings BASB002, BASB005, BASB011, and BASB017 were advanced along the railroad tracks. Borings BASB051 and BASB081 were advanced on the northern side of 105th Street; borings BASB051 and BASB081 were advanced adjacent to and upgradient from the two former 1,000-gallon product and waste oil USTs. Boring BASB001 was advanced in the reported location of the stockpile of soil removed from the UST excavations. Boring BASB021 was advanced at the east end of this area to evaluate groundwater quality in this area.

Soil samples collected from the shallow borings were analyzed for Title 22 metals, petroleum hydrocarbons, SVOCs, and PAHs. Soil and groundwater samples from the four deep borings were analyzed for Title 22 metals and petroleum hydrocarbons. In addition, soil samples from boring BASB081, and groundwater samples from each of the deep borings were analyzed for VOCs. Soil samples from the 10- and 23-foot depths of boring BASB051 and from the 26-foot depth of boring BASB081 as well as groundwater samples from borings BASB051 and BASB081 were analyzed for SVOCs. Each of the soil samples and the groundwater sample collected from boring BASB051 were analyzed for ethylene glycol (antifreeze). The soil sample from the 20-foot depth of boring BASB081 was analyzed for TOC.

These analyses were selected based on the presence of the railroad tracks along 105th Avenue and the former presence of a waste oil UST, a product UST, and a stockpile of soil removed from the UST excavations.

6.3.7 Area 7: West Side of 105th Avenue Commercial, Industrial, and Residential Parcel Group (1429 through 1561 105th Avenue)

Ten borings (BASB018, BASB019, BASB052, BASB053, BASB054, BASB055, BASB056, BASB057, BASB058, and BASB080) were advanced in Area 7. Soil and groundwater samples were collected from these borings.

The sampling locations included the reported location of the buried coal bin (boring BASB058); 1433 105th Avenue where a reported release occurred in 1991 (borings BASB052, BASB053, BASB054, and BASB080); and 1561 105th Avenue where an oil spill reportedly occurred in 1992 (BASB018 and BASB019). In addition, vent pipes were noted on the roof at the west end of the building near boring BASB019. Other borings were randomly placed across the parcel.

Soil and groundwater samples collected from each boring were analyzed for Title 22 metals and petroleum hydrocarbons. The soil samples from boring BASB058 and groundwater samples from each of the borings were analyzed for VOCs. Soil samples from the 5-foot depth of boring BASB019 and the 4- and 25-foot depths of boring BASB052 and groundwater samples from borings BASB018, BASB019, BASB052, BASB053, BASB054, BASB058, and BASB080 were also analyzed for SVOCs. The soil sample from the 5-foot depth of boring BASB019 was analyzed for PAHs.

These analyses were selected based on the current use of the parcels in this area (commercial, light industrial, and residential), and releases reported at 1433 105th Avenue in 1991 and at 1561 105th Avenue in 1992.

6.3.8 Area 8: East Side of 104th Avenue Residential Parcel (10403 Walnut Street and 1440 through 1648 104th Avenue)

Five shallow borings and one deep boring were advanced in Area 8. The five shallow borings (BASB060, BASB061, BASB062, BASB063, and BASB065) were advanced to depths of approximately 0.5 feet. Soil and groundwater samples were collected from the deep boring (BASB050), which was advanced to groundwater in the east end of this area.

The shallow soil borings were located within the drip line adjacent to the exterior walls of the residences exhibiting the most visible signs of weathered paint.

The deep boring was advanced on the east end of the area to assess whether an off-site release had affected the Site.

Additional soil samples for lead analysis may be collected after demolition of the residential facilities. These samples will be collected from the first soil encountered in residential areas (from the surface to approximately 0.5 foot bgs). Asbestos surveys of the structures will be performed if OUSD decides to proceed with the project.

During the PEA field investigation, a possible vent pipe for a heating oil UST was noted near the residence at 1604 104th Avenue. LFR's representatives were unable to establish the purpose of this pipe because the property owner did not grant us access to the property.

The soil samples collected from the five shallow borings in this area were analyzed for Title 22 metals and petroleum hydrocarbons. The soil samples from borings BASB061 and BASB065 were also analyzed for organochlorine pesticides (OCPs) and PCBs. The soil and groundwater samples collected from the deep boring (BASB050) were analyzed for Title 22 metals, petroleum hydrocarbons, and VOCs.

These analyses were selected based on the possible use of metal-based and/or oil-based exterior paints on the houses and pest control chemicals on some parcels that may have affected the Site. In addition, groundwater samples from the deep boring were analyzed to assess whether an off-site release have affected the Site.

6.3.9 Area 9: AC Transit Area (Northeast End of 105th Avenue)

Three deep borings (BASB088, BASB089, and BASB090) were advanced in Area 9. Soil and groundwater samples were collected from these borings to establish a baseline of subsurface conditions. The borings were randomly located along the railroad tracks that cross this area.

Soil and groundwater samples collected from the three borings were analyzed for Title 22 metals, petroleum hydrocarbons, and VOCs.

These analyses were selected to establish a baseline of subsurface conditions and assess if an off-site release has affected the Site, particularly from the AC Transit vehicle wash building located adjacent to the south of this area.

6.4 QA/QC Samples

LFR collected duplicate soil and groundwater samples, equipment rinsate blank samples, and travel blank samples for QA/QC purposes. The QA/QC program is summarized below. Analytical results for the duplicate soil and groundwater samples are presented in Tables 5 through 11. Analytical results for the equipment rinsate blanks, field blanks, and travel/trip blanks are presented in Appendix G.

6.4.1 Field Duplicate Samples

Duplicate soil samples were collected to evaluate the analytical procedures and methods used by the laboratory. Eleven duplicate soil samples (BASB029-5, BASB032-5, BASB036-5.5, BASB077-5, BASB008-5, BASB040-5, BASB041-5, BASB012-4.5, BASB025-5, BASB087-5, BASB058-5.5) were collected in the field and two soil samples (BASB088-3.5 and BASB090-2.5) were split at the laboratory.

Five duplicate groundwater samples were collected from borings BASB026 (duplicate designated BASB126), BASB016 (duplicate designated BASB116), BASB081 (duplicate designated BASB181), BASB019 (duplicate designated BASB119), and BASB088 (duplicate designated BASB088 DUP).

The consistent analytical data for the samples collected at the Site indicate that laboratory analytical procedures were adequate for this sampling program.

6.4.2 Equipment Rinsate Blanks

Equipment rinsate blanks (equipment blanks) were collected from the final water rinsed over equipment after the decontamination procedures was complete. The equipment blank was collected from nondedicated (reusable) sampling equipment (e.g., split spoon sampler, drive sampler). To collect an equipment blank sample, laboratory-supplied, organic-free, deionized water was carefully poured over or through the sampling equipment and collected in the appropriate sample container. Equipment blank samples were labeled, stored, and submitted to the analytical laboratory using the same procedures as for field samples.

Nine equipment rinsate blanks were collected during this sampling program. Analytical results of these samples indicated the presence of low levels of petroleum hydrocarbons and VOCs. These compounds were present in some of the soil and groundwater samples collected from the Site. The presence of low levels of these compounds in the equipment blanks does not indicate a significant concern about the decontamination procedures for this sampling program because of the concentrations of petroleum hydrocarbons and VOCs detected in the samples from these borings.

6.4.3 Field Blanks

Field blank samples consist of a sample of the distilled water that was used as a final rinse for sampling equipment during equipment cleaning activities. The purpose of the field blank sample was to evaluate the distilled water for the presence of chemicals for which environmental samples are being analyzed. A field blank sample was collected by pouring distilled water into the appropriate sample container. Field blank samples were labeled, stored, and submitted to the analytical laboratory using the same procedures as those for field samples.

Two field blanks were collected during this sampling program. Analytical results of the field blank sample collected on July 9, 2001, indicated the presence of low levels of the VOC acetone. Acetone was present in some of the soil samples collected from the Site on this date. The presence of low levels of this compound in the field blank does not indicate a significant concern about decontamination procedures for this sampling program, because of acetone concentrations detected in the samples from these borings.

6.4.4 Travel/Trip Blanks

Travel/trip blanks were used to detect VOC contamination during sample shipping and handling. Travel blanks comprised 40-milliliter VOA vials of American Society for Testing and Materials (ASTM) Type II water that were filled in the laboratory with organic-free, deionized water, transported to the sampling site, and returned to the laboratory with samples collected for VOC analysis. Travel blanks were not opened in the field. The planned frequency for travel blanks was one per cooler containing samples for VOC analysis.

Twelve travel/trip blanks were collected during this sampling program. Analytical results of these samples did not indicate the presence of the analytes tested for in the blanks. The consistent analytical data for the travel/trip blanks collected at the Site indicate that sample shipping and handling procedures were adequate for this sampling program.

6.5 Laboratory QA/QC Procedures

LFR performed level-three data validation on the analytical results for this project. Laboratory data validation issues were noted; however, none led to the rejection of data. Tables presenting QA/QC issues and summary of qualified sample results are presented in Appendix G.

Laboratory QA/QC procedures included the following:

- Laboratory analyses was performed within the required holding time. Groundwater samples submitted for metal analysis were filtered and preserved in the laboratory within 24 hours of sample collection.
- Appropriate minimum reporting limits were used for each analysis. The reporting limits were lower than the corresponding preliminary remediation goals established by the EPA Region IX for residential land use. For water samples, the detection limits for low concentration volatiles in water by gas chromatograph/mass spectrometer system were used.
- The analytical method used for arsenic analysis provided a detection limit sufficient for residential risk evaluation purposes.
- Samples were analyzed by a laboratory certified by the state of California for the requested analysis.
- The laboratory reported the following information for each sample delivery group:
    - a discussion of how the QA/QC criteria were met by the laboratory
    - a discussion of hold times
    - matrix spike/matrix spike duplicate results
    - relative percent difference
    - method blank data
    - surrogate recovery, instrument tuning, and calibration data
    - signed laboratory reports including the sample designation, date of sample collection, date of sample analysis, laboratory analytical method used, sample volume, and the minimum reporting limit

LFR used a state-certified environmental testing laboratory for the sample analyses. LFR confirmed the DTSC's minimum reporting limits with the selected laboratory before submitting samples for analysis.

6.6 Presentation of Data

Selected soil and groundwater samples were submitted to Curtis & Tompkins to perform the requested analyses. Analytical data sheets and chain-of-custody records are presented in Volumes II and III.

The analytical data sheets refer to the petroleum hydrocarbon analyses as total extractable hydrocarbons and total volatile hydrocarbons. In this report, total extractable hydrocarbons are referred to as TPHd, TPHmo, TPHpt, TPHms, and TPHss. Total volatile hydrocarbons are referred to as TPHg.

A total of 279 soil samples and 52 groundwater samples collected from the Site were analyzed for Title 22 metals using EPA Method 6010/7000 Series, and for TPHd, TPHmo, TPHpt, TPHms, TPHss, and/or TPHg using EPA Method 8015 (modified). A total of 96 soil samples and 52 groundwater were analyzed for VOCs using EPA Method 8260. Fifteen soil samples and 13 groundwater samples were analyzed for SVOCs using EPA Method 8270. In addition, two soil samples were analyzed for OCPs using EPA Method 8081, nine soil samples were analyzed for PAHs using EPA Method 8310, and two soil samples were analyzed for PCBs using EPA Method 8082.

Analytical results for soil samples are summarized in Tables 6 through 11; groundwater results are summarized in Tables 12 through 15.

Soil property data were collected to model the fate and transport of chemicals in the subsurface environment. These data include TOC, grain size, bulk density, porosity, and moisture content. TOC was analyzed using the Walkley-Black method; grain size was analyzed using ASTM D422M; and bulk density, porosity, and moisture content were analyzed using the American Petroleum Institute RP40 method. Seven soil samples were analyzed for TOC, grain size, bulk density, porosity, and moisture content. Copies of these test results are presented in Volumes II and III.

6.7 Deviations from PEA Work Plan

Several deviations from the PEA Work Plan occurred during the PEA field investigation for the Site. These deviations are noted below:

Area 1. Soil samples collected near the hydraulic lifts in the maintenance and service building were to be analyzed for PCBs. This analysis was not performed during the PEA; however, remedial activities, including removal of soil, will be performed because of the presence of petroleum hydrocarbons in these areas. Confirmation samples collected during the remedial activities will be analyzed for PCBs.

Area 2. No deviations from the PEA Work Plan occurred during the field investigation.

Area 3. Three borings were planned inside the building located on this parcel, including one at a floor drain and two at sumps. Based on observations made in the field at the time of the sampling program, including the size of the building and proximity of the sumps to each other, LFR advanced two rather than three borings at this location.

Area 4. Five borings were planned in this area, including one or two inside the vehicle storage lot. Based on observations made in the field at the time of the sampling program, including the number of vehicles in this area, LFR advanced three rather than five borings at this location. None of the borings were located in the vehicle storage lot; however, two borings (BASB077 and BASB082) were located adjacent to Area 4 within Area 1.

Area 5. No deviations from the PEA Work Plan occurred during the field investigation.

Area 6. No deviations from the PEA Work Plan occurred during the field investigation.

Area 7. Eleven borings were planned in this area. Based on observations made in the field at the time of the sampling program, including the lack of evidence of past releases, LFR advanced a total of 10 borings at this location. In addition, the PEA Work Plan stated that each of the soil samples to be collected from this area would be analyzed for SVOCs. Only three samples from this area were analyzed for SVOCs because analytical results for other samples collected at the Site did not indicate significant effects to the Site from SVOCs.

Area 8. Six shallow borings were planned in this area. Soil samples from each shallow boring and the deep boring advanced on the east end of the area were analyzed for OCPs. Based on access constraints and observations made in the field at the time of the sampling program, only five shallow soil borings were advanced. In addition, only two samples from this area were analyzed for OCPs because evidence of pesticide releases were not observed on other parcels during the PEA field investigation.

Area 9. No deviations from the PEA Work Plan occurred during the field investigation.

Duplicate Samples. A total of 279 soil samples, including 13 duplicate soil samples, were collected from the Site for analyses. The PEA work plan noted that the duplicate soil sampling program would represent 10 percent of the total number of samples collected for analysis. To satisfy the proposed duplicate soil sampling program, a total of 27 duplicate soil samples should have been collected from the Site during the PEA. In LFR's opinion, the 13 duplicate soil samples were sufficient for this sampling program, based on the number of soil samples collected from the Site and the consistent data obtained from the analytical laboratory.

6.8 Discussion of Results

Table 16 presents analytical results of soil samples with petroleum hydrocarbons detections above 100 mg/kg. Table 17 presents analytical results of soil samples with metals detections at concentrations above those detected during the Oakland Urban Land Development study (City of Oakland 2001). Table 18 presents analytical results of groundwater samples with petroleum hydrocarbons detections at concentrations above the Suggested No Adverse Response Levels (SNARLs) established by the RWQCB. Table 19 presents analytical results of groundwater samples with metals and VOC detections at concentrations above their respective Maximum Contaminant Levels (MCLs), established by the California Department of Health Services and the RWQCB.

Figure 7 presents analytical results of soil samples with TPH concentrations at or above 100 mg/kg. Figure 8 presents analytical results of soil samples with metals detections at concentrations above those detected in the Oakland Urban Land Development study. Figure 9 presents analytical results of groundwater samples with TPH concentrations at or above the RWQCB's SNARLs. Figure 10 presents analytical results of groundwater samples with metals and VOC detections at concentrations at or above their respective MCLs.

The results of the soil sampling identified the presence of metals, OCPs, PAHs, SVOCs, and VOCs as COPCs. Metals were reported across the Site; lead, zinc, arsenic, and chromium were present at concentrations above the 95 percent upper confidence limit (UCL). OCPs were detected in soil samples from borings BASB061 and BASB065 located in Area 8. PAHs were detected in soil samples from boring BASB082 in Area 1; borings BASB002, BASB005, BASB011, and BASB017 in Area 6; and borings BASB019 in Area 7. The VOCs acetone and methylene chloride were detected in soil samples collected from across the Site. SVOCs were detected in soil samples from boring BASB082 in Area 1; borings BASB002, BASB005, BASB011, BASB017, BASB051, and BASB081 in Area 6; and borings BASB019 and BASB052 in Area 7. In addition, petroleum hydrocarbons were identified in shallow soil at various locations on the Site.

The results of the groundwater sampling identified the presence of metals, PAHs, SVOCs, and VOCs as COPCs. Metals were reported across the Site; barium, lead, antimony, and nickel were present at concentrations above the MCLs. PAHs and SVOCs were detected in groundwater samples from borings BASB071, BASB072, and BASB078 in Area 1; boring BASB040 in Area 3; borings BASB051 and BASB081 in Area 6; and borings BASB018, BASB019, BASB052, BASB053, BASB054, BASB058, and BASB080 in Area 7. VOCs were detected in groundwater samples from boring BASB026 in Area 1; boring BASB022 in Area 5; borings BASB001, BASB051, and BASB081 in Area 6; and boring BASB050 in Area 8. In addition, petroleum hydrocarbons were identified at concentrations above the SNARLs in groundwater at various locations on the Site, including borings BASB026, BASB031, BASB037, BASB071, and BASB076 in Area 1; boring BASB008 in Area 2; boring BASB041 in

Area 3; borings BASB022 and BASB023 in Area 5; borings BASB001, BASB051, and BASB081 in Area 6; and borings BASB018 and BASB052 in 7.

The petroleum hydrocarbons and VOCs detected in groundwater samples from Area 6 appear to be related to the waste oil and product USTs formerly located immediately to the west of the Site. According to reports prepared by other consultants for the investigation of the USTs, groundwater flow direction is to the west-southwest based on depth to water measurements in the three monitoring wells installed on the properties adjacent to the west of the Site. Therefore, the three borings advanced at the west end of Area 6 are located in an upgradient direction from these former USTs. In LFR's opinion, the USTs appear to be the likely source of the petroleum hydrocarbons in the groundwater based on the proximity of the USTs to the borings.

The petroleum hydrocarbons detected in the soil and groundwater samples from beneath the maintenance building at the west end of Area 1 appear to be related to the hydraulic lifts and chemical storage in this building.

7.0 HUMAN HEALTH SCREENING EVALUATION

7.1 Data Evaluation and Selection of Chemicals of Potential Concern

In accordance with the PEA Guidance Manual, a screening-level evaluation was conducted to provide an estimate of potential chronic (long-term) health risks from affected soil and groundwater identified at the Site. Analytical data from LFR's sampling program were used for this evaluation. LFR analyzed 279 samples as part of the chemical characterization of soil. During an August 16, 2001 meeting with LFR, DTSC authorized the use of 95 percent UCL of the mean to represent exposure point concentrations. DTSC's representatives stated that, based on the relatively large data set, 95 percent UCLs would be appropriate to use in the risk evaluation (LFR 2001). In addition, DTSC's representatives agreed with LFR that the concentration of chromium at 160 mg/kg in the soil sample collected at the 3 foot depth from boring BASB013 and the concentration of arsenic at 33 mg/kg in the soil sample collected at the 2 foot depth at boring BASB023 could be considered outliers of the data set and excluded from the risk assessment.

The evaluation was conducted using the analytical models provided in the PEA Guidance Manual, which are structured to provide a conservative estimate of the chronic risk from affected media along exposure pathways that are most frequently encountered in a residential setting. The default factors contained in the analytical models are conservative in nature and represent a reasonable maximum exposure to COPCs as defined by EPA. The screening-level evaluation was conducted for each chemical species detected in site soil and groundwater at concentrations above local background levels. In addition, the groundwater vapor transport model presented in the

DTSC-modified Johnson and Ettinger vapor model spreadsheet was used for groundwater to indoor air estimations.

Appendix H presents the details of the screening-level evaluation. The results of the evaluation are summarized below.

7.2 Exposure Assessment

Soil COPCs used in the evaluation of chronic health risk from the ingestion, dermal contact, and inhalation pathways included metals, OCPs, PAHs, SVOCs, and VOCs and are summarized in Table 20.

Groundwater COPCs used in the evaluation of chronic health risk from inhalation of vapors and domestic use include metals, PAHs, SVOCs, and VOCs and are summarized in Table 21.

7.3 Toxicity Assessment and Risk Characterization

The site conceptual model is presented in Figure 11. COPC data are presented in Tables 20 through 24. Exposure pathway evaluations, distribution evaluations, and 95 percent UCLs are presented in Tables 25 and 26, and summarized as follows:

- The PEA soil model for the carcinogenic compounds does not indicate a significant cancer risk (less than 10^{-6}) for the ingestion/dermal contact pathways from shallow soil at the Site.
- The DTSC groundwater spreadsheet for the carcinogenic compounds does not indicate a significant cancer risk (less than 10^{-6}) for the indirect inhalation pathway to indoor air at the Site.
- The PEA Guidance Manual's groundwater model for the carcinogenic compounds bromodichloromethane and vinyl chloride did indicate a significant cancer risk (4.9 x 10^{-6}) for the domestic use pathway at the Site. This pathway includes exposures from ingestion and bathing. Because the Site is located in an urban setting, public supply water will most likely be used as the domestic water source. Therefore, although the estimated risk from this model is above the target for this exposure scenario, direct contact with shallow groundwater is actually considered highly unlikely, and does not represent an actual complete exposure pathway.
- The PEA soil model for the noncarcinogenic compounds does not indicate a significant hazard (greater than 1) for the indirect inhalation and ingestion/dermal contact pathways from shallow soil at the Site.
- The DTSC groundwater spreadsheet for the noncarcinogenic compounds does not indicate a significant hazard (greater than 1) for the indirect inhalation pathway to indoor air at the Site.

- The PEA Guidance Manual's model did reveal a significant hazard (2) for the domestic use pathway for groundwater at the Site. As previously stated, this pathway includes exposures from ingestion and bathing. Because the Site is located in an urban setting, public supply water will most likely be used as the domestic water source. Therefore, although the estimated risk from this model is above the target for this exposure scenario, direct contact with shallow groundwater is actually considered highly unlikely, and does not represent an actual complete exposure pathway.

Because lead is a COPC at the Site, blood-lead level calculations were performed, using the DTSC's LeadSpread Model (Version 7.0) and inputting the 95 percent UCL lead concentration in soil at the Site (10 micrograms per gram). Lead concentrations detected in groundwater at the Site were not incorporated into the model because public supply water will most likely be used as the domestic water source. The default value of 15 μg/l was used for the lead concentration in water in the model calculations. These results are presented in Table 27. The calculations were performed with the "home-grown produce" pathway turned on, to produce a conservative result. LFR assumed that up to 7 percent of vegetables consumed by a family would be raised on the Site. According to LFR's calculations, the 95th percentile blood lead levels for adults and children are below 10 micrograms per deciliter, indicating that concentrations of lead detected at the Site are not a health concern.

8.0 ECOLOGICAL SCREENING EVALUATION

A detailed ecological screening evaluation was not performed during this PEA because the Site is located within a highly developed commercial and residential urban setting. Natural wildlife habitat areas were not noted on the Site during the PEA. Therefore, based on the available information, there does not appear to be a significant pathway of exposure to nonhuman, sensitive ecological species.

9.0 COMMUNITY PROFILE

Before beginning field activities, LFR worked with the OUSD to notify the surrounding community of the PEA field activities planned for the Site.

On March 13, 2001, LFR's representative distributed written flyers to notify residential and commercial establishments within "sight distance" of the Site of the schedule fieldwork. LFR distributed approximately 120 flyers to residents and occupants on 105th Avenue, East 14th Street (also known as International Boulevard), 104th Avenue, Plymouth Street, Walnut Street, and Breed Street. Flyers printed on OUSD letterhead included information on the proposed environmental investigation (soil and groundwater sampling), and dates of field work. Neighbors were instructed to contact Ms. Ineda Adesanya, Director of Facilities for OUSD, with any questions or comments.

No specific concerns have been raised by the community regarding the PEA performed at the Site and no substantial concerns or issues related to this project have been brought to OUSD's attention by the community.

LFR obtained information on the community demographics from the United States Census Bureau (www.census.gov). The population of City of Oakland ranges from low-middle to upper income families. A summary of the information obtained for the City of Oakland is presented below.

Population:

Total	399,484
White	125,013
Black/African-American	142,460
Hispanic/Latino	87,467
American Indian	2,655
Asian	60,851
Native Hawaiian/Pacific Islander	2,002
Other	46,592
Two or More Races	19,911

Age:

Estimated Median Age	33.3
Population Between Ages 5 and 19 Years	81,300
Population Over Age 21	284,538

Households:

Total	150,790
Average Persons Per Household	2.60
Number of Owner-Occupied Households	62,489
Number of Renter-Occupied Households	88,301
Mean Household Income	$53,400

Families:

Total	86,347
With Children Under 18 Years of Age	43,152

10.0 SUMMARY AND CONCLUSIONS

The purpose of the PEA was to establish whether a release or threatened release of hazardous substances, which pose a threat to human health or the environment, exists at the Site. Based on past site use, selected soil and groundwater samples collected from the Site were analyzed for Title 22 metals, petroleum hydrocarbons, VOCs, SVOCs, OCPs, PAHs, and PCBs.

The results of the soil sampling identified the presence of metals, OCPs, PAHs, SVOCs, and VOCs as COPCs. Metals were reported across the Site; lead, zinc, arsenic, and chromium were present at concentrations above the 95 percent UCL. OCPs were detected in soil samples from borings BASB061 and BASB065 located in Area 8. PAHs were detected in soil samples from boring BASB082 in Area 1; borings BASB002, BASB005, BASB011, and BASB017 in Area 6; and borings BASB019 in Area 7. The VOCs acetone and methylene chloride were detected in soil samples collected from across the Site. SVOCs were detected in soil samples from boring BASB082 in Area 1; borings BASB002, BASB005, BASB011, BASB017, BASB051, and BASB081 in Area 6; and borings BASB019 and BASB052 in Area 7. In addition, petroleum hydrocarbons were identified in shallow soil at various locations on the Site.

The results of the groundwater sampling identified the presence of metals, PAHs, SVOCs, and VOCs as COPCs. Metals were reported across the Site; barium, lead, antimony, and nickel were present at concentrations above the MCLs. PAHs and SVOCs were detected in groundwater samples from borings BASB071, BASB072, and BASB078 in Area 1; boring BASB040 in Area 3; borings BASB051 and BASB081 in Area 6; and borings BASB018, BASB019, BASB052, BASB053, BASB054, BASB058, and BASB080 in Area 7. VOCs were detected in groundwater samples from boring BASB026 in Area 1; boring BASB022 in Area 5; borings BASB001, BASB051, and BASB081 in Area 6; and boring BASB050 in Area 8. In addition, petroleum hydrocarbons were identified at concentrations above the SNARLs in groundwater at various locations on the Site, including borings BASB026, BASB031, BASB037, BASB071, and BASB076 in Area 1; boring BASB008 in Area 2; boring BASB041 in Area 3; borings BASB022 and BASB023 in Area 5; borings BASB001, BASB051, and BASB081 in Area 6; and borings BASB018 and BASB052 in 7. In addition, petroleum hydrocarbons were detected in groundwater samples collected from across the Site.

The petroleum hydrocarbons and VOCs detected in the groundwater samples from the west end of Area 6 appear to be related to the waste oil and product USTs formerly located immediately to the west of the Site. According to reports prepared by other consultants for the investigation of the USTs, groundwater flow direction is to the west-southwest based on depth-to-water measurements in the three monitoring wells installed on the properties adjacent to the west of the Site. Therefore, the three borings advanced at the west end of Area 6 are located in an upgradient direction from these former USTs. In LFR's opinion, the USTs appear to be the likely source of the petroleum hydrocarbons in the groundwater based on the proximity of the USTs to the borings.

The petroleum hydrocarbons detected in the soil and groundwater samples from beneath the maintenance building at the west end of Area 1 appear to be related to the hydraulic lifts and chemical storage in this building.

For the purposes of conducting a human health screening evaluation, the potential exposure pathways identified for the Site were inhalation, ingestion, and dermal absorption. The PEA human health screening evaluation indicated that potential risks to human health were below the target risk level (less than 10^{-6}) for the compounds identified as COPCs at the Site.

11.0 RECOMMENDATIONS

The information reviewed and observations made in this PEA report do not indicate that soil or groundwater quality at the Site has been significantly affected by on-site releases of hazardous substances, with the exception of the petroleum hydrocarbons detected in soil and groundwater beneath the maintenance building on the west end of Area 1.

Risks to human health have been found to be within acceptable levels based on the information developed during the PEA and the conservative human health screening evaluation using the PEA Guidance Manual. LFR proposes to perform remedial activities in the area of the maintenance building to address the presence of petroleum hydrocarbon-affected soil and groundwater. LFR will prepare a removal action work plan for these proposed activities at the Site. Removal actions and delineation of these compounds will be addressed during construction of the proposed school. Areas of proposed removal actions are presented in Figure 12.

12.0 LIMITATIONS

This PEA did not include assessment of natural hazards such as naturally occurring asbestos, radon gas, or methane gas; assessment of the potential presence of radionuclides or electromagnetic fields; or assessment of nonchemical hazards, such as the potential for damage from earthquakes or floods, or the presence of endangered species or wildlife habitats.

The observations and conclusions presented in this report are professional opinions based on the scope of activities and information obtained through the PEA described in this report. Opinions presented in the report apply to site conditions at the time of our study, and cannot apply to site conditions or changes of which we are not aware, or which we have not had the opportunity to evaluate. It must be recognized that any conclusions drawn from these data rely on the integrity of the information available to LFR at the time of the investigation, and that a full and complete determination of environmental risks cannot be made.

This report is exclusively for the use of the OUSD, the CDE, and the DTSC. Any reliance on this report by any other party shall be at such party's sole risk.

13.0 REFERENCES

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Table 1
Current Site Information
Batarse Site, Oakland, California

Area	Occupant/Use	Street Address	Assessor's Parcel Number
1	Lloyd A. Wise, Inc.	10550 East 14th Street (eastern portion)	047-5519-005-02 (eastern portion)
		1424 105th Avenue (formerly part of East 14th Street)	047-5509-010-00
2	Bill & Bill's Auto Body	1500 105th Avenue	047-5509-009-01
3/4	Management Storage	1510, 1520, and 1528 105th Avenue	047-5509-007-00 and 047-5509-006-00
4	Ward's Custom Paint	1536, 1538, 1544, and 1548 105th Avenue	047-5509-003-00, 047-5509-004-00, and 047-5509-005-00
5	Chevron Tow	1560 and 1570 105th Avenue	047-5509-001-01
6	Union Pacific Railroad and 105th Avenue	Center of 105th Avenue	047-5519-004-10 and 047-5519-003
7	West Side of 105th Avenue Commercial, Industrial, and Residential	1429/1433/1439 105th Avenue	047-5509-015-03
		1449 105th Avenue	047-5509-015-04
		1501 105th Avenue	047-5509-17
		1525 and 1545 105th Avenue	047-5509-021-01
		1557, 1559, and 1561 105th Avenue	047-5509-023-01
		105th Avenue Right of Way	NA
8	East Side of 104th Avenue Residential	10403 Walnut Street	047-5509-32-01
		1440 104th Avenue	047-5509-36-01
		1446 104th Avenue	047-5509-34-00
		1452 104th Avenue	047-5509-33-00
		1604 104th Avenue	047-5509-31-00
		1608 104th Avenue	047-5509-30-00
		1616 104th Avenue	047-5509-029-00
		1626 104th Avenue	047-5509-28-00

Table 1
Current Site Information
Batarse Site, Oakland, California

Area	Occupant/Use	Street Address	Assessor's Parcel Number
		1632 104th Avenue	047-5509-27-00
		1636 104th Avenue	047-5509-26-00
		1640 104th Avenue	047-5509-25-00
		1648 104th Avenue	047-5509-24-00
9	AC Transit Parcel	No assigned address	047-5519-004-03

Table 3
Sample Collection Information
Batarse Site, Oakland, California

Test Methods	Hold Time	Preservative
Title 22 Metals (EPA Test Method 6010/7000 Series)	Soil and Water: Mercury – 28 days preserved; Remaining metals – 6 months preserved	Ice (4° C) No preservative – samples filtered at laboratory
Polychlorinated Biphenyls and Organochlorine Pesticides (EPA Test Method 8081/8082)	Soil: 14 days extraction and 40 days analyzed Water: 7 days extraction and 40 days analyzed	Ice (4° C)
Semi-Volatile Organic Compounds (EPA Test Method 8270)	Soil: 14 days extraction and 40 days analyzed Water: 7 days extraction and 40 days analyzed	Ice (4° C)
Semi-Volatile Organic Compounds (EPA Test Method 525)	Water: 7 days extraction and 40 days analyzed	Ice (4° C)
EDB (EPA Test Method 504)	Water: 14 days analyzed	Ice (4° C)
Polycyclic Aromatic Hydrocarbons (EPA Test Method 8310)	Soil: 14 days extraction and 40 days analyzed Water: 7 days extraction and 40 days analyzed	Ice (4° C)
Total Petroleum Hydrocarbons quantified as diesel, motor oil, paint thinner, mineral spirits, or Stoddard solvents (EPA 8015 modified)	Soil and Water: 14 days extraction and 40 days analyzed	Ice (4° C)
Total Petroleum Hydrocarbons quantified as gasoline (EPA 8015 modified)	Soil and Water: 14 days analyzed	Ice (4° C)/HCl
Volatile Organic Compounds (EPA 8260A)	Soil and Water: 14 days analyzed if preserved and 7 days analyzed if not preserved	Ice (4° C)/HCl
Total Organic Carbon	Soil: 28 days analyzed	Ice (4° C)/H_2SO_4

Table 4
Sample Matrix Analysis Summary
Batarse Site, Oakland, California

Location ID	Area	Soil	Water
BADW001	3		X
BASB001	6	X	X
BASB002	6	X	
BASB005	6	X	
BASB006	2	X	X
BASB007	2	X	X
BASB008	2	X	X
DUP	2	X	
BASB011	6	X	
BASB012	4	X	X
DUP	4	X	
BASB013	4	X	
BASB016	4	X	X
DUP	4		X
BASB017	6	X	
BASB018	7	X	X
BASB019	7	X	X
DUP	7		X
BASB021	6	X	X
BASB022	5	X	X
BASB023	5	X	X
BASB024	5	X	X
BASB025	5	X	X
DUP	5	X	
BASB026	1	X	X
DUP	1		X
BASB027	1	X	X
BASB028	1	X	X
BASB029	1	X	X
DUP	1	X	
BASB030	1	X	X
BASB031	1	X	X
BASB032	1	X	X
DUP	1	X	
BASB033	1	X	X
BASB034	1	X	X
BASB036	1	X	X
DUP	1	X	
BASB037	1	X	X
BASB040	3	X	X

Table 4
Sample Matrix Analysis Summary
Batarse Site, Oakland, California

Location ID	Area	Soil	Water
DUP	3	X	
BASB041	3	X	X
DUP	3	X	
BASB050	8	X	X
BASB051	6	X	X
RE	6	X	
BASB052	7	X	X
RE	7	X	
BASB053	7	X	X
BASB054	7	X	X
BASB055	7	X	X
BASB056	7	X	X
BASB057	7	X	X
BASB058	7	X	X
DUP	7	X	
BASB060	8	X	
BASB061	8	X	
BASB062	8	X	
BASB063	8	X	
BASB065	8	X	
BASB070	1	X	X
BASB071	1	X	X
BASB072	1	X	X
BASB073	1	X	X
BASB074	1	X	X
BASB075	1	X	X
BASB076	1	X	X
BASB077	1	X	X
DUP	1	X	
BASB078	1	X	X
BASB080	7	X	X
BASB081	6	X	X
RE	6	X	
DUP	6		X
BASB082	1	X	X
BASB086	5	X	X
BASB087	5	X	X
DUP	5	X	
BASB088	9	X	X
DUP	9	X	X

Table 4
Sample Matrix Analysis Summary
Batarse Site, Oakland, California

Location ID	Area	Soil	Water
BASB089	9	X	X
BASB090	9	X	X
DUP	9	X	

Data prepared by: TIH . Data QA/QC by: LDF .
Notes:
Numerical gaps in Location ID indicate sampling locations were not used.
DUP = Duplicate sample
RE = Samples were re-extracted and reanalyzed because QC did not meet laboratory criteria.

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 1											
DUP	SB-77-5'	30-Mar-01	X	X				X			
BASB077	SB-77-10'	30-Mar-01	X	X				X			
BASB077	SB-77-15'	30-Mar-01	X	X				X			
BASB077	SB-77-20'	30-Mar-01	X	X				X			
BASB077	SB-77-25'	30-Mar-01	X	X				X			
BASB078	SB-78-13	04-Apr-01								X	
BASB078	SB-78-28	04-Apr-01								X	
BASB078	SB-78-GGW	05-Apr-01	X	X				X	X		X
BASB078	SB-78-4'	05-Apr-01	X	X				X			
BASB078	SB-78-7'	05-Apr-01	X	X				X			
BASB078	SB-78-10'	05-Apr-01	X	X				X			
BASB078	SB-78-15'	05-Apr-01	X	X				X			
BASB078	SB-78-25'	05-Apr-01	X	X				X			
BASB082	SB-82-GGW	05-Apr-01	X	X				X			X
BASB082	SB-82-2'	05-Apr-01	X	X		X		X	X		X
BASB082	SB-82-5'	05-Apr-01	X	X		X		X	X		X
BASB082	SB-82-12'	05-Apr-01	X	X		X		X	X		X
BASB082	SB-82-15'	05-Apr-01	X	X		X		X	X		X
BASB082	SB-82-20'	05-Apr-01	X	X		X		X	X		X
Area 2											
BASB006	SB-6-GGW	31-Mar-01	X	X				X			X
BASB006	SB-6-2'	31-Mar-01	X	X				X			X
BASB006	SB-6-6'	31-Mar-01	X	X				X			X
BASB006	SB-6-10'	31-Mar-01	X	X				X			X
BASB006	SB-6-15'	31-Mar-01	X	X				X			X
BASB006	SB-6-27'	31-Mar-01	X	X				X			X
BASB007	SB-7-GGW	31-Mar-01	X	X				X			X
BASB007	SB-7-2'	31-Mar-01	X	X				X			X
BASB007	SB-7-5'	31-Mar-01	X	X				X			X
BASB007	SB-7-10'	31-Mar-01	X	X				X			X
BASB007	SB-7-15'	31-Mar-01	X	X				X			X
BASB007	SB-7-26'	31-Mar-01	X	X				X			X
BASB008	SB-8-GGW	21-Mar-01	X	X				X			X
BASB008	SB-8-4	21-Mar-01	X	X				X			X
DUP	SB-8-5	21-Mar-01	X	X				X			X
BASB008	SB-8-10	21-Mar-01	X	X				X			X
BASB008	SB-8-15	21-Mar-01	X	X				X			X
BASB008	SB-8-25	21-Mar-01	X	X				X			X
Area 3											

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 1											
BASB031	SB-31-25'	26-Mar-01	X	X				X			
BASB032	SB-32-GGW	26-Mar-01	X	X				X			X
BASB032	SB-32-4'	26-Mar-01	X	X				X			
DUP	SB-32-5'	26-Mar-01	X	X				X			
BASB032	SB-32-9.5'	26-Mar-01	X	X				X			
BASB032	SB-32-15'	26-Mar-01	X	X				X			
BASB032	SB-32-25'	26-Mar-01	X	X				X			
BASB033	SB-33-GGW	26-Mar-01	X	X				X			X
BASB033	SB-33-4'	26-Mar-01	X	X				X			
BASB033	SB-33-6.5'	26-Mar-01	X	X				X			
BASB033	SB-33-10'	26-Mar-01	X	X				X			
BASB033	SB-33-15'	26-Mar-01	X	X				X			
BASB033	SB-33-25'	26-Mar-01	X	X				X			
BASB034	SB-34-GGW	27-Mar-01	X	X				X			X
BASB034	SB-34-4'	27-Mar-01	X	X				X			
BASB034	SB-34-6.75'	27-Mar-01	X	X				X			
BASB034	SB-34-10'	27-Mar-01	X	X				X			
BASB034	SB-34-15'	27-Mar-01	X	X				X			
BASB034	SB-34-25'	27-Mar-01	X	X				X			
BASB036	SB-36-GGW	22-Mar-01	X	X				X			X
BASB036	SB-36-4	22-Mar-01	X	X				X			X
DUP	SB-36-5.5	22-Mar-01	X	X				X			X
BASB036	SB-36-10	22-Mar-01	X	X				X			X
BASB036	SB-36-15	22-Mar-01	X	X				X			X
BASB036	SB-36-25	22-Mar-01	X	X				X			X
BASB037	SB-37-GGW	22-Mar-01	X	X				X			X
BASB037	SB-37-5	22-Mar-01	X	X				X			X
BASB037	SB-37-10	22-Mar-01	X	X				X			X
BASB037	SB-37-15	22-Mar-01	X	X				X			X
BASB037	SB-37-25	22-Mar-01	X	X				X			X
BASB070	SB-70-GGW	03-Apr-01	X	X				X			X
BASB070	SB-70-3.5'	03-Apr-01	X	X				X			
BASB070	SB-70-6.5'	03-Apr-01	X	X				X			
BASB070	SB-70-10'	03-Apr-01	X	X				X			
BASB070	SB-70-15'	03-Apr-01	X	X				X			
BASB070	SB-70-23'	03-Apr-01	X	X				X			X
BASB070	SB-70-25'	03-Apr-01	X	X				X			X
BASB071	SB-71-GGW	03-Apr-01	X	X				X	X		X
BASB071	SB-71-2'	03-Apr-01	X	X				X			

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 5											
BASB022	SB-22-10'	04-Apr-01	X	X				X			X
BASB022	SB-22-15'	04-Apr-01	X	X				X			X
BASB022	SB-22-21'	04-Apr-01	X	X				X			X
BASB023	SB-23-GGW	04-Apr-01	X	X				X			X
BASB023	SB-23-2'	04-Apr-01	X	X				X			
BASB023	SB-23-5'	04-Apr-01	X	X				X			
BASB023	SB-23-11'	04-Apr-01	X	X				X			
BASB023	SB-23-15'	04-Apr-01	X	X				X			
BASB023	SB-23-21'	04-Apr-01	X	X				X			
BASB024	SB-24-GGW	04-Apr-01	X	X				X			X
BASB024	SB-24-2'	04-Apr-01	X	X				X			
BASB024	SB-24-4'	04-Apr-01	X	X				X			
BASB024	SB-24-10'	04-Apr-01	X	X				X			
BASB024	SB-24-15'	04-Apr-01	X	X				X			
BASB024	SB-24-22'	04-Apr-01	X	X				X			
BASB025	SB-25-GGW	04-Apr-01	X	X				X			X
BASB025	SB-25-4'	04-Apr-01	X	X				X			
DUP	SB-25-5'	04-Apr-01	X	X				X			
BASB025	SB-25-10'	04-Apr-01	X	X				X			
BASB025	SB-25-15'	04-Apr-01	X	X				X			
BASB025	SB-25-25'	04-Apr-01	X	X				X			
BASB086	SB-86-GGW	04-Apr-01	X	X				X			X
BASB086	SB-86-2'	04-Apr-01	X	X				X			
BASB086	SB-86-4'	04-Apr-01	X	X				X			
BASB086	SB-86-10'	04-Apr-01	X	X				X			
BASB086	SB-86-16'	04-Apr-01	X	X				X			
BASB086	SB-86-20'	04-Apr-01	X	X				X			
BASB087	SB-87-GGW	04-Apr-01	X	X				X			X
BASB087	SB-87-4'	04-Apr-01	X	X				X			
DUP	SB-87-5'	04-Apr-01	X	X				X			
BASB087	SB-87-10'	04-Apr-01	X	X				X			
BASB087	SB-87-15'	04-Apr-01	X	X				X			
BASB087	SB-87-25'	04-Apr-01	X	X				X			
Area 6											
BASB001	SB-1-GGW	02-Apr-01	X	X				X			X
BASB001	SB-1-3'	02-Apr-01	X	X				X			
BASB001	SB-1-5'	02-Apr-01	X	X				X			
BASB001	SB-1-10'	02-Apr-01	X	X				X			
BASB001	SB-1-15'	02-Apr-01	X	X				X			

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 6											
BASB001	SB-1-23'	02-Apr-01	X	X				X			
BASB002	SB-2-3'	31-Mar-01	X	X		X		X	X		
BASB005	SB-5-3'	31-Mar-01	X	X		X		X	X		
BASB011	SB-11-3'	05-Apr-01	X	X		X		X	X		
BASB017	SB-17-3'	05-Apr-01	X	X		X		X	X		
BASB021	SB-21-GGW	29-Mar-01	X	X				X			X
BASB021	SB-21-1'	29-Mar-01	X	X				X			
BASB021	SB-21-5'	29-Mar-01	X	X				X			
BASB021	SB-21-10'	29-Mar-01	X	X				X			
BASB021	SB-21-15'	29-Mar-01	X	X				X			
BASB021	SB-21-25'	29-Mar-01	X	X				X			
BASB051	SB-51-GGW	02-Apr-01	X	X				X			X
BASB051	SB-51-3'	02-Apr-01	X	X				X			
BASB051	SB-51-10'	02-Apr-01	X	X				X	X		
RE	SB-51-10'RE	02-Apr-01							X		
BASB051	SB-51-15'	02-Apr-01	X	X				X			
BASB051	SB-51-23'	02-Apr-01	X	X				X	X		
RE	SB-51-23'RE	02-Apr-01							X		
BASB051	SB-51-GGW	03-Apr-01							X		
BASB081	SB-81-20	04-Apr-01								X	
BASB081	SB-81-27	04-Apr-01								X	
BASB081	SB-81-GGW	05-Apr-01	X	X				X	X		X
DUP	SB-181-GGW	05-Apr-01	X	X				X	X		X
BASB081	SB-81-3'	05-Apr-01	X	X				X			X
BASB081	SB-81-5'	05-Apr-01	X	X				X			X
BASB081	SB-81-10'	05-Apr-01	X	X				X			X
BASB081	SB-81-15'	05-Apr-01	X	X				X			X
BASB081	SB-81-26'	05-Apr-01	X	X				X	X		X
RE	SB-81-26'RE	05-Apr-01							X		
Area 7											
BASB018	SB-18-GGW	05-Apr-01	X	X				X	X		X
BASB018	SB-18-3'	05-Apr-01	X	X				X			
BASB018	SB-18-6'	05-Apr-01	X	X				X			
BASB018	SB-18-12'	05-Apr-01	X	X				X			
BASB018	SB-18-15'	05-Apr-01	X	X				X			
BASB018	SB-18-20'	05-Apr-01	X	X				X			
BASB019	SB-19-GGW	05-Apr-01	X	X				X	X		X
DUP	SB-119-GGW	05-Apr-01	X	X				X	X		X
BASB019	SB-19-2.5'	05-Apr-01	X	X				X			

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 7											
BASB019	SB-19-5'	05-Apr-01	X	X		X		X	X		
BASB019	SB-19-10'	05-Apr-01	X	X				X			
BASB019	SB-19-15'	05-Apr-01	X	X				X			
BASB019	SB-19-25'	05-Apr-01	X	X				X			
BASB052	SB-52-GGW	02-Apr-01	X	X				X			X
BASB052	SB-52-2'	02-Apr-01	X	X				X			
BASB052	SB-52-4'	02-Apr-01	X	X				X	X		
RE	SB-52-4'RE	02-Apr-01							X		
BASB052	SB-52-10'	02-Apr-01	X	X				X			
BASB052	SB-52-15'	02-Apr-01	X	X				X			
BASB052	SB-52-23'	02-Apr-01	X	X				X			
BASB052	SB-52-25'	02-Apr-01	X	X				X	X		
RE	SB-52-25'RE	02-Apr-01							X		
BASB053	SB-53-GGW	03-Apr-01	X	X				X	X		X
BASB053	SB-53-2'	03-Apr-01	X	X				X			
BASB053	SB-53-5'	03-Apr-01	X	X				X			
BASB053	SB-53-11'	03-Apr-01	X	X				X			
BASB053	SB-53-15'	03-Apr-01	X	X				X			
BASB053	SB-53-20'	03-Apr-01	X	X				X			
BASB054	SB-54-GGW	03-Apr-01	X	X				X	X		X
BASB054	SB-54-2'	03-Apr-01	X	X				X			
BASB054	SB-54-5'	03-Apr-01	X	X				X			
BASB054	SB-54-10'	03-Apr-01	X	X				X			
BASB054	SB-54-15'	03-Apr-01	X	X				X			
BASB054	SB-54-22'	03-Apr-01	X	X				X			
BASB055	SB-55-GGW	29-Mar-01	X	X				X			X
BASB055	SB-55-8.5'	29-Mar-01	X	X				X			
BASB055	SB-55-10'	29-Mar-01	X	X				X			
BASB055	SB-55-15'	29-Mar-01	X	X				X			
BASB055	SB-55-20.5'	29-Mar-01	X	X				X			
BASB055	SB-55-25'	29-Mar-01	X	X				X			
BASB056	SB-56-GGW	30-Mar-01	X	X				X			X
BASB056	SB-56-4'	30-Mar-01	X	X				X			
BASB056	SB-56-6'	30-Mar-01	X	X				X			
BASB056	SB-56-10'	30-Mar-01	X	X				X			
BASB056	SB-56-15'	30-Mar-01	X	X				X			
BASB056	SB-56-20'	30-Mar-01	X	X				X			
BASB056	SB-56-25'	30-Mar-01	X	X				X			
BASB057	SB-57-GGW	28-Mar-01	X	X				X			X

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 7											
BASB057	SB-57-4'	28-Mar-01	X	X				X			
BASB057	SB-57-6'	28-Mar-01	X	X				X			
BASB057	SB-57-10'	28-Mar-01	X	X				X			
BASB057	SB-57-15'	28-Mar-01	X	X				X			
BASB057	SB-57-25'	28-Mar-01	X	X				X			
BASB058	SB-58-GGW	21-Mar-01	X	X				X	X		X
BASB058	SB-58-4	21-Mar-01	X	X				X			X
DUP	SB-58-5.5	21-Mar-01	X	X				X			X
BASB058	SB-58-10	21-Mar-01	X	X				X			X
BASB058	SB-58-15	21-Mar-01	X	X				X			X
BASB058	SB-58-25	21-Mar-01	X	X				X			X
BASB080	SB-80-GGW	03-Apr-01	X	X				X	X		X
BASB080	SB-80-2'	03-Apr-01	X	X				X			
BASB080	SB-80-5'	03-Apr-01	X	X				X			
BASB080	SB-80-10'	03-Apr-01	X	X				X			
BASB080	SB-80-15'	03-Apr-01	X	X				X			
BASB080	SB-80-24'	03-Apr-01	X	X				X			
Area 8											
BASB050	SB-50-GGW	20-Mar-01	X	X				X			X
BASB050	SB-50-2.5	20-Mar-01	X	X				X			X
BASB050	SB-50-5	20-Mar-01	X	X				X			X
BASB050	SB-50-10	20-Mar-01	X	X				X			X
BASB050	SB-50-15	20-Mar-01	X	X				X			X
BASB050	SB-50-25	20-Mar-01	X	X				X			X
BASB060	SB-60	05-Apr-01	X	X				X			
BASB061	SB-61	05-Apr-01	X	X	X		X	X			
BASB062	SB-62	05-Apr-01	X	X				X			
BASB063	SB-63	05-Apr-01	X	X				X			
BASB065	SB-65	22-Mar-01	X	X	X		X	X			
Area 9											
BASB088	SB-88-GGW	09-Jul-01	X	X				X			X
DUP	SB-88-GGW DUP	09-Jul-01		X				X			X
BASB088	SB-88-3.5'	09-Jul-01	X	X				X			X
DUP	SB-88-3.5' DUP	09-Jul-01	X	X				X			X
BASB088	SB-88-5'	09-Jul-01	X	X				X			X
BASB088	SB-88-10'	09-Jul-01	X	X				X			X
BASB088	SB-88-15'	09-Jul-01	X	X				X			X
BASB088	SB-88-25.5'	09-Jul-01	X	X				X			X
BASB089	SB-89-GGW	09-Jul-01	X	X				X			X

Table 5
Sample Analysis Summary
Batarse Site, Oakland, California

Location ID	Field Sample ID	Date Sampled	extr-TPH	Metals	OCPs	PAHs	PCBs	purg-TPH	SVOCs	TOC	VOCs
Area 9											
BASB089	SB-89-3.5'	09-Jul-01	X	X				X			X
BASB089	SB-89-5'	09-Jul-01	X	X				X			X
BASB089	SB-89-10'	09-Jul-01	X	X				X			X
BASB089	SB-89-15'	09-Jul-01	X	X				X			X
BASB089	SB-89-27.5'	09-Jul-01	X	X				X			X
BASB090	SB-90-GGW	09-Jul-01	X	X				X			X
BASB090	SB-90-2.5'	09-Jul-01	X	X				X			X
DUP	SB-90-2.5' DUP	09-Jul-01	X	X				X			X
BASB090	SB-90-5'	09-Jul-01	X	X				X			X
BASB090	SB-90-10'	09-Jul-01	X	X				X			X
BASB090	SB-90-15'	09-Jul-01	X	X				X			X
BASB090	SB-90-25.5'	09-Jul-01	X	X				X			X

Data prepared by: TIH. Data QA/QC by: LDF.

Notes:

Metals include the Title 22 list of 17 metals.
DUP = Duplicate sample
RE = Samples were re-extracted and reanalyzed because QC did not meet laboratory criteria.

extr-TPH = total extractable hydrocarbons
OCPs = organochlorine pesticides
PAHs = polyaromatic hydrocarbons
PCBs = polychlorinated biphenyls
purg-TPH = total volatile hydrocarbons
SVOCs = semivolatile organic compounds
TOC = total organic carbon
VOCs = volatile organic compounds

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 1								
BASB026	28-Mar-01	(3.5-4.0)	6.3 YZ	<0.91	11 Y	<0.91	NA	NA
BASB026	28-Mar-01	(6.5-7.0)	14 YZ	<1	<5	<1	NA	NA
BASB026	28-Mar-01	(9.5-10.0)	22 YZ	<1	<5	<1	NA	NA
BASB026	28-Mar-01	(14.5-15.0)	26 YZ	<1.1	<5	<1.1	NA	NA
BASB026	28-Mar-01	(24.5-25.0)	5.5 YZ	<1	<5	<1	NA	NA
BASB027	27-Mar-01	(3.5-4.0)	35 YHZ	<0.97	120 YH	<0.97	NA	NA
BASB027	27-Mar-01	(6.0-6.5)	7.4 YZ	<1	<5	<1	NA	NA
BASB027	27-Mar-01	(9.5-10.0)	9.7 YZ	<0.95	<5	<0.95	NA	NA
BASB027	27-Mar-01	(14.5-15.0)	18 YZ	<1	<5	<1	NA	NA
BASB027	27-Mar-01	(24.5-25.0)	26 YZ	<0.91	<5	<0.91	NA	NA
BASB028	27-Mar-01	(0.5-1.0)	24 YZ	<0.99	58 Y	<0.99	NA	NA
BASB028	27-Mar-01	(3.5-4.0)	14 YZ	<1.1	<5	<1.1	NA	NA
BASB028	27-Mar-01	(6.5-7.0)	18 YZ	<1.1	<5	<1.1	NA	NA
BASB028	27-Mar-01	(9.5-10.0)	15 YZ	<0.92	<5	<0.92	NA	NA
BASB028	27-Mar-01	(14.5-15.0)	17 YZ	<1.1	<5	<1.1	NA	NA
BASB028	27-Mar-01	(24.5-25.0)	20 YZ	<0.97	<5	<0.97	NA	NA
BASB029	23-Mar-01	(3.5-4.0)	18 YZ	<1.1	5.5 Y	<1.1	NA	NA
DUP	23-Mar-01	(4.5-5.0)	9.5 YZ	<0.95	<5	<0.95	NA	NA
BASB029	23-Mar-01	(9.5-10.0)	40 YZ	<1	5.3 Y	<1	NA	NA
BASB029	23-Mar-01	(14.5-15.0)	19 YZ	<0.96	<5	<0.96	NA	NA
BASB029	23-Mar-01	(19.5-20.0)	18 YZ	<1	9 Y	<1	NA	NA
BASB029	23-Mar-01	(24.5-25.0)	<1	<0.93	<5	<0.93	NA	NA
BASB030	23-Mar-01	(4.5-5.0)	15 YZ	<1.1	<5	<1.1	NA	NA
BASB030	23-Mar-01	(9.5-10.0)	16 YZ	<0.93	<5	<0.93	NA	NA
BASB030	23-Mar-01	(14.5-15.0)	13 YZ	<0.93	<5	<0.93	NA	NA
BASB030	23-Mar-01	(19.5-20.0)	19 YZ	<0.94	<5	<0.94	NA	NA
BASB030	23-Mar-01	(24.5-25.0)	18 YZ	<0.93	<5	<0.93	NA	NA
BASB031	26-Mar-01	(3.5-4.0)	8.5 YZH	<1.1	12	<1.1	NA	NA
BASB031	26-Mar-01	(6.5-7.0)	21 YZ	440 JYH	5.7 Y	480 JYL	NA	220 J
BASB031	26-Mar-01	(9.5-10.0)	79 YLZ	490 JYH	<5	530 JYL	NA	250 J
BASB031	26-Mar-01	(14.5-15.0)	20 YLZ	180 JYH	<5	190 JYL	NA	89 J
BASB031	26-Mar-01	(22.5-23.0)	49 YLH	80 JYH	36	87 JYL	NA	40 J

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 1								
BASB031	26-Mar-01	(24.5-25.0)	83 YLZ	<0.99	51	<0.99	NA	<0.99
BASB032	26-Mar-01	(3.5-4.0)	33 YZH	<1.1	69	<1.1	NA	<1.1
DUP	26-Mar-01	(4.5-5.0)	85 YH	<0.93	360	<0.93	NA	NA
BASB032	26-Mar-01	(9.0-9.5)	20 YZ	<0.95	<5	<0.95	NA	NA
BASB032	26-Mar-01	(14.5-15.0)	8.6 YZ	<1.1	<5	<1.1	NA	NA
BASB032	26-Mar-01	(24.5-25.0)	23 YZ	<1	<5	<1	NA	NA
BASB033	26-Mar-01	(3.5-4.0)	83 YHZ	<0.97	240	<0.97	NA	NA
BASB033	26-Mar-01	(6.0-6.5)	11 YZ	<1.1	<5	<1.1	NA	NA
BASB033	26-Mar-01	(9.5-10.0)	27 YZ	<1	<5	<1	NA	NA
BASB033	26-Mar-01	(14.5-15.0)	16 YZ	<1	<5	<1	NA	NA
BASB033	26-Mar-01	(24.5-25.0)	5.8 YZ	<0.93	<5	<0.93	NA	NA
BASB034	27-Mar-01	(3.5-4.0)	5 YHZ	<0.92	18 Y	<0.92	NA	NA
BASB034	27-Mar-01	(6.25-6.75)	8.1 YZ	<1.1	<5	<1.1	NA	NA
BASB034	27-Mar-01	(9.5-10.0)	18 YZ	<1.1	5.2 Y	<1.1	NA	NA
BASB034	27-Mar-01	(14.5-15.0)	12 YZ	<0.94	<5	<0.94	NA	NA
BASB034	27-Mar-01	(24.5-25.0)	16 YZ	<0.96	<5	<0.96	NA	NA
BASB036	22-Mar-01	(3.5-4.0)	160 YH	<0.94	630	<0.94	NA	NA
DUP	22-Mar-01	(5.0-5.5)	23 YZ	<1	<5	<1	NA	NA
BASB036	22-Mar-01	(9.5-10.0)	20 YZ	<0.99	<5	<0.99	NA	NA
BASB036	22-Mar-01	(14.5-15.0)	17 YZ	<0.99	<5	<0.99	NA	NA
BASB036	22-Mar-01	(24.5-25.0)	21 YZ	<1	<5	<1	NA	NA
BASB037	22-Mar-01	(4.5-5.0)	17 YZ	<1.1	72 YH	<1.1	NA	NA
BASB037	22-Mar-01	(9.5-10.0)	9.1 YZ	<1	<5	<1	NA	NA
BASB037	22-Mar-01	(14.5-15.0)	16 YZ	<0.94	<5	<0.94	NA	NA
BASB037	22-Mar-01	(24.5-25.0)	11 YZ	<1	<5	<1	NA	NA
BASB070	03-Apr-01	(3.0-3.5)	5.6 YH	<1	51	NA	<1	NA
BASB070	03-Apr-01	(6.0-6.5)	1.1 YZ	<1	<5	NA	<1	NA
BASB070	03-Apr-01	(9.5-10.0)	1.1 YZ	<0.91	<5	NA	<0.91	NA
BASB070	03-Apr-01	(14.5-15.0)	1.3 YZ	<0.98	<5	NA	<0.98	NA
BASB070	03-Apr-01	(22.5-23.0)	23 YL	<1.1	<5	NA	<1.1	NA
BASB070	03-Apr-01	(24.5-25.0)	<1	<1	<5	NA	<1	NA
BASB071	03-Apr-01	(1.5-2.0)	33 YH	<1.1	85	NA	<1.1	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 1								
BASB071	03-Apr-01	(6.5-7.0)	3.1 YZ	<1.1	5.7 Y	NA	<1.1	NA
BASB071	03-Apr-01	(9.5-10.0)	1 YZ	<0.96	<5	NA	<0.96	NA
BASB071	03-Apr-01	(14.5-15.0)	1.3 YZ	<0.99	<5	NA	<0.99	NA
BASB071	03-Apr-01	(18.5-19.0)	<1	<0.97	<5	NA	<0.97	NA
BASB071	03-Apr-01	(19.5-20.0)	8.9 YLZ	5 Y	<5	NA	4.1	NA
BASB071	03-Apr-01	(22.5-23.0)	59 YL	7.5 Y	6	NA	6.2	NA
BASB071	03-Apr-01	(24.5-25.0)	68 YL	60 Y	9.3	NA	38	NA
BASB072	05-Apr-01	(2.0-2.5)	30 YH	<1.1	76 Y	NA	<1.1	NA
BASB072	05-Apr-01	(5.5-6.0)	<1	<0.95	<5	NA	<0.95	NA
BASB072	05-Apr-01	(9.5-10.0)	<1	<0.93	<5	NA	<0.93	NA
BASB072	05-Apr-01	(14.5-15.0)	<1	<0.91	<5	NA	<0.91	NA
BASB072	05-Apr-01	(24.5-25.0)	<0.99	<0.99	<5	NA	<0.99	NA
BASB073	02-Apr-01	(2.5-3.0)	12 YH	<1.1	120 Y	NA	<1.1	NA
BASB073	02-Apr-01	(4.5-5.0)	2 YH	<0.97	12 Y	NA	<0.97	NA
BASB073	02-Apr-01	(9.5-10.0)	<1	<0.94	<5	NA	<0.94	NA
BASB073	02-Apr-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB073	02-Apr-01	(19.5-20.0)	1 Y	<1	<5	NA	<1	NA
BASB073	02-Apr-01	(24.5-25.0)	<1	<0.95	<5	NA	<0.95	NA
BASB074	02-Apr-01	(2.5-3.0)	2.2 YH	<0.93	13 Y	NA	<0.93	NA
BASB074	02-Apr-01	(9.5-10.0)	<1	<0.94	<5	NA	<0.94	NA
BASB074	02-Apr-01	(14.5-15.0)	<1	<0.96	<5	NA	<0.96	NA
BASB074	02-Apr-01	(24.5-25.0)	<0.99	<0.97	<5	NA	<0.97	NA
BASB075	02-Apr-01	(6.5-7.0)	<0.99	<0.96	<5	NA	<0.96	NA
BASB075	02-Apr-01	(9.5-10.0)	<1	<0.91	<5	NA	<0.91	NA
BASB075	02-Apr-01	(14.5-15.0)	<1	<0.94	<5	NA	<0.94	NA
BASB075	02-Apr-01	(24.5-25.0)	<1	<1.1	<5	NA	<1.1	NA
BASB076	30-Mar-01	(3.5-4.0)	9.8 YH	<1	25 Y	NA	<1	NA
BASB076	30-Mar-01	(6.5-7.0)	2.9 YZ	<0.99	<5	NA	<0.99	NA
BASB076	30-Mar-01	(9.5-10.0)	6.8 YZ	<0.94	<5	NA	<0.94	NA
BASB076	30-Mar-01	(14.5-15.0)	7.8 YZ	<0.94	<5	NA	<0.94	NA
BASB076	30-Mar-01	(19.5-20.0)	3.8 YZ	<1.1	<5	NA	<1.1	NA
BASB076	30-Mar-01	(24.5-25.0)	5.6 YZ	<1	<5	NA	<1	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 1								
BASB077	30-Mar-01	(3.5-4.0)	270 YH	<1	2200 Y	NA	<1	NA
DUP	30-Mar-01	(4.5-5.0)	13 YZ	<0.99	6 Y	NA	<0.99	NA
BASB077	30-Mar-01	(9.5-10.0)	22 YZ	<0.93	<5	NA	<0.93	NA
BASB077	30-Mar-01	(14.5-15.0)	1.9 YZ	<0.92	<5	NA	<0.92	NA
BASB077	30-Mar-01	(19.5-20.0)	11 YZ	<0.91	<5	NA	<0.91	NA
BASB077	30-Mar-01	(24.5-25.0)	1.9 YZ	<0.96	<5	NA	<0.96	NA
BASB078	05-Apr-01	(3.5-4.0)	4.3 YH	<1	30 Y	NA	<1	NA
BASB078	05-Apr-01	(6.5-7.0)	<0.99	<0.93	<5	NA	<0.93	NA
BASB078	05-Apr-01	(9.5-10.0)	<1	<1.1	<5	NA	<1.1	NA
BASB078	05-Apr-01	(14.5-15.0)	<0.99	<0.94	<5	NA	<0.94	NA
BASB078	05-Apr-01	(24.5-25.0)	<0.99	<1	<5	NA	<1	NA
BASB082	05-Apr-01	(1.5-2.0)	1.1 YH	<0.91	7.5 Y	NA	<0.91	NA
BASB082	05-Apr-01	(4.5-5.0)	<0.99	<1	<5	NA	<1	NA
BASB082	05-Apr-01	(11.5-12.0)	<1	<0.96	13 YH	NA	<0.96	NA
BASB082	05-Apr-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB082	05-Apr-01	(19.5-20.0)	<0.99	<1.1	10 YH	NA	<1.1	NA
Area 2								
BASB006	31-Mar-01	(1.5-2.0)	4.4 YZ	<0.96	9.1 Y	NA	<0.96	NA
BASB006	31-Mar-01	(5.5-6.0)	<1	<1.1	<5	NA	<1.1	NA
BASB006	31-Mar-01	(9.5-10.0)	<0.99	<0.99	<5	NA	<0.99	NA
BASB006	31-Mar-01	(14.5-15.0)	<1	<0.92	<5	NA	<0.92	NA
BASB006	31-Mar-01	(26.5-27.0)	<1	<0.94	<5	NA	<0.94	NA
BASB007	31-Mar-01	(1.5-2.0)	2.3 YZ	<1.1	5.6 Y	NA	<1.1	NA
BASB007	31-Mar-01	(4.5-5.0)	1.3 YZ	<1.1	<5	NA	<1.1	NA
BASB007	31-Mar-01	(9.5-10.0)	<1	<1	<5	NA	<1	NA
BASB007	31-Mar-01	(14.5-15.0)	<0.99	<0.97	<5	NA	<0.97	NA
BASB007	31-Mar-01	(25.5-26.0)	<1	<1	<5	NA	<1	NA
BASB008	21-Mar-01	(3.5-4.0)	12 YH	<0.97	22 Y	<0.97	NA	NA
DUP	21-Mar-01	(4.5-5.0)	21 YZ	<0.92	<25	<0.92	NA	NA
BASB008	21-Mar-01	(9.5-10.0)	23 YZ	<0.92	<25	<0.92	NA	NA
BASB008	21-Mar-01	(14.5-15.0)	14 YZ	<0.95	<25	<0.95	NA	NA
BASB008	21-Mar-01	(24.5-25.0)	18 YZ	<0.92	<25	<0.92	NA	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 3								
BASB040	03-Apr-01	(3.5-4.0)	3.7 YZ	<0.93	5.1 Y	NA	<0.93	NA
DUP	03-Apr-01	(4.5-5.0)	2.8 YZ	<0.94	<5	NA	<0.94	NA
BASB040	03-Apr-01	(9.5-10.0)	<0.99	<1.1	<5	NA	<1.1	NA
BASB040	03-Apr-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB040	03-Apr-01	(19.5-20.0)	1.2 YZ	<0.92	<5	NA	<0.92	NA
BASB040	03-Apr-01	(24.5-25.0)	1.1 YZ	<1.1	<5	NA	<1.1	NA
BASB041	28-Mar-01	(3.5-4.0)	9.5 YZ	<0.99	59 Y	<0.99	NA	NA
DUP	28-Mar-01	(4.5-5.0)	27 YZ	<1	6.5 Y	<1	NA	NA
BASB041	28-Mar-01	(9.5-10.0)	3.1 YZ	<0.95	7.9 Y	<0.95	NA	NA
BASB041	28-Mar-01	(14.5-15.0)	37 YZ	<0.95	8.5 Y	<0.95	NA	NA
BASB041	28-Mar-01	(24.5-25.0)	23 YZ	3.6 YH	29 Y	4.3 b	NA	NA
Area 4								
BASB012	19-Mar-01	(3.5-4.0)	6.6 YH	NA	22	NA	NA	NA
DUP	19-Mar-01	(4.0-4.5)	NA	<1.1	NA	<1.1	NA	NA
BASB012	19-Mar-01	(9.5-10.0)	5.5 YZ	<1.1	<5	<1.1	NA	NA
BASB012	19-Mar-01	(14.5-15.0)	26 YZ	<0.94	<25	<0.94	NA	NA
BASB012	19-Mar-01	(24.0-24.5)	<1	<1.1	<5	<1.1	NA	NA
BASB013	20-Mar-01	(2.5-3.0)	27 YZ	<1.1	5.6 Y	<1.1	NA	NA
BASB013	20-Mar-01	(4.5-5.0)	7.9 YZ	<0.99	<5	<0.99	NA	NA
BASB013	20-Mar-01	(9.5-10.0)	<0.99	<1	<5	<1	NA	NA
BASB013	20-Mar-01	(14.5-15.0)	13 YZ	<1	<9.9	<1	NA	NA
BASB016	04-Apr-01	(2.0-2.5)	12 YHZ	<1	32 Y	NA	<1	NA
BASB016	04-Apr-01	(5.5-6.0)	<1	<0.98	<5	NA	<0.98	NA
BASB016	04-Apr-01	(9.5-10.0)	<1	<1	<5	NA	<1	NA
BASB016	04-Apr-01	(14.5-15.0)	<0.99	<1.1	<5	NA	<1.1	NA
BASB016	04-Apr-01	(24.5-25.0)	<1	<0.93	<5	NA	<0.93	NA
Area 5								
BASB022	04-Apr-01	(1.5-2.0)	220 YLH	<1	1300	NA	<1	NA
BASB022	04-Apr-01	(4.5-5.0)	970 YLH	<1.1	490	NA	<1.1	NA
BASB022	04-Apr-01	(9.5-10.0)	600 YLH	<1	300	NA	<1	NA
BASB022	04-Apr-01	(14.5-15.0)	7 YL	<1.1	<5	NA	<1.1	NA
BASB022	04-Apr-01	(20.5-21.0)	14 YLH	2.5 YH	13	NA	1.6 YH	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 5								
BASB023	04-Apr-01	(1.5-2.0)	11 YH	<0.92	63	NA	<0.92	NA
BASB023	04-Apr-01	(4.5-5.0)	<1	<1.1	5 Y	NA	<1.1	NA
BASB023	04-Apr-01	(10.5-11.0)	<1	<0.91	<5	NA	<0.91	NA
BASB023	04-Apr-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB023	04-Apr-01	(20.5-21.0)	24 YH	<1.1	150	NA	<1.1	NA
BASB024	04-Apr-01	(1.5-2.0)	3.9 YH	<1.1	39	NA	<1.1	NA
BASB024	04-Apr-01	(3.5-4.0)	<1	<1.1	5.2 Y	NA	<1.1	NA
BASB024	04-Apr-01	(9.5-10.0)	<1	<0.93	9.1 Y	NA	<0.93	NA
BASB024	04-Apr-01	(14.5-15.0)	<1	<1.1	<5	NA	<1.1	NA
BASB024	04-Apr-01	(21.5-22.0)	3.8 YH	<1	27 H	NA	<1	NA
BASB025	04-Apr-01	(3.5-4.0)	1.4 YH	<1	10 Y	NA	<1	NA
DUP	04-Apr-01	(4.5-5.0)	<0.99	<0.93	<5	NA	<0.93	NA
BASB025	04-Apr-01	(9.5-10.0)	<1	<1	<5	NA	<1	NA
BASB025	04-Apr-01	(14.5-15.0)	<1	<0.92	<5	NA	<0.92	NA
BASB025	04-Apr-01	(24.5-25.0)	<1	<1	<5	NA	<1	NA
BASB086	04-Apr-01	(1.5-2.0)	2.5 YH	<0.92	33 H	NA	<0.92	NA
BASB086	04-Apr-01	(3.5-4.0)	<1	<0.93	5.2 Y	NA	<0.93	NA
BASB086	04-Apr-01	(9.5-10.0)	<1	<0.97	8.2 H	NA	<0.97	NA
BASB086	04-Apr-01	(15.5-16.0)	1.1 YH	<1	14 H	NA	<1	NA
BASB086	04-Apr-01	(19.5-20.0)	<0.99	<1	<5	NA	<1	NA
BASB087	04-Apr-01	(3.5-4.0)	9.3 YH	<0.94	45	NA	<0.94	NA
DUP	04-Apr-01	(4.5-5.0)	1.4 YH	<0.96	6.7 Y	NA	<0.96	NA
BASB087	04-Apr-01	(9.5-10.0)	<1	<1.1	<5	NA	<1.1	NA
BASB087	04-Apr-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB087	04-Apr-01	(24.5-25.0)	<1	<1	<5	NA	<1	NA
Area 6								
BASB001	02-Apr-01	(2.5-3.0)	16 YH	<1	56 Y	NA	<1	NA
BASB001	02-Apr-01	(4.5-5.0)	4.6 YH	<1.1	27 Y	NA	<1.1	NA
BASB001	02-Apr-01	(9.5-10.0)	<0.99	<1	<5	NA	<1	NA
BASB001	02-Apr-01	(14.5-15.0)	<1	<0.93	<5	NA	<0.93	NA
BASB001	02-Apr-01	(22.5-23.0)	19 YH	<1.1	140 Y	NA	<1.1	NA
BASB002	31-Mar-01	(2.5-3.0)	150 YH	<0.98	1000 Y	NA	<0.98	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
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Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 6								
BASB005	31-Mar-01	(2.5-3.0)	<1	<0.91	5.3 Y	NA	<0.91	NA
BASB011	05-Apr-01	(2.5-3.0)	4.3 YH	<1.1	39 Y	NA	<1.1	NA
BASB017	05-Apr-01	(2.5-3.0)	3.7 YH	<1	11 Y	NA	<1	NA
BASB021	29-Mar-01	(0.5-1.0)	2.8 YH	<1	20 Y	<1	NA	NA
BASB021	29-Mar-01	(4.5-5.0)	20 YZ	<0.92	6.1 Y	<0.92	NA	NA
BASB021	29-Mar-01	(9.5-10.0)	4.9 YZ	<1.1	<5	<1.1	NA	NA
BASB021	29-Mar-01	(14.5-15.0)	48 YZ	<1	6.5 Y	<1	NA	NA
BASB021	29-Mar-01	(24.5-25.0)	2.6 YZ	<0.91	<5	<0.91	NA	NA
BASB051	02-Apr-01	(2.5-3.0)	<1	<1	6.4 Y	NA	<1	NA
BASB051	02-Apr-01	(9.5-10.0)	<0.99	<1.1	<5	NA	<1.1	NA
BASB051	02-Apr-01	(14.5-15.0)	<0.99	<0.98	<5	NA	<0.98	NA
BASB051	02-Apr-01	(22.5-23.0)	<1	<0.95	<5	NA	<0.95	NA
BASB081	05-Apr-01	(2.5-3.0)	<1	<0.95	10 Y	NA	<0.95	NA
BASB081	05-Apr-01	(4.5-5.0)	<1	<0.94	5.4 Y	NA	<0.94	NA
BASB081	05-Apr-01	(9.5-10.0)	<0.99	<1.1	<5	NA	<1.1	NA
BASB081	05-Apr-01	(14.5-15.0)	<0.99	<1	<5	NA	<1	NA
BASB081	05-Apr-01	(25.5-26.0)	<1	<0.92	<5	NA	<0.92	NA
Area 7								
BASB018	05-Apr-01	(2.5-3.0)	<1	<0.98	6.1 Y	NA	<0.98	NA
BASB018	05-Apr-01	(5.5-6.0)	1.2 YH	<1.1	7.2 Y	NA	<1.1	NA
BASB018	05-Apr-01	(11.5-12.0)	27 YH	<0.98	130	NA	<0.98	NA
BASB018	05-Apr-01	(14.5-15.0)	<0.99	<1.1	<5	NA	<1.1	NA
BASB018	05-Apr-01	(19.5-20.0)	<0.99	<1.1	<5	NA	<1.1	NA
BASB019	05-Apr-01	(2.0-2.5)	92 YH	<1.1	330	NA	<1.1	NA
BASB019	05-Apr-01	(4.5-5.0)	1.2 YH	<0.94	<5	NA	<0.94	NA
BASB019	05-Apr-01	(9.5-10.0)	<1	<0.99	<5	NA	<0.99	NA
BASB019	05-Apr-01	(14.5-15.0)	<0.99	<0.98	<5	NA	<0.98	NA
BASB019	05-Apr-01	(24.5-25.0)	<1	<1.1	<5	NA	<1.1	NA
BASB052	02-Apr-01	(1.5-2.0)	1.9 YH	<0.91	16 Y	NA	<0.91	NA
BASB052	02-Apr-01	(3.5-4.0)	39 YH	<0.97	290 Y	NA	<0.97	NA
BASB052	02-Apr-01	(9.5-10.0)	<1	<0.98	<5	NA	<0.98	NA
BASB052	02-Apr-01	(14.5-15.0)	<0.99	<0.93	<5	NA	<0.93	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 7								
BASB052	02-Apr-01	(22.5-23.0)	2.4 YH	<0.92	30 Y	NA	<0.92	NA
BASB052	02-Apr-01	(24.5-25.0)	71 HY	<1	480	NA	<1	NA
BASB053	03-Apr-01	(1.5-2.0)	29 YH	<1.1	460 YH	NA	<1.1	NA
BASB053	03-Apr-01	(4.5-5.0)	1.7 YH	<1	25	NA	<1	NA
BASB053	03-Apr-01	(10.5-11.0)	<0.99	<0.97	<5	NA	<0.97	NA
BASB053	03-Apr-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB053	03-Apr-01	(19.5-20.0)	<0.99	<0.91	<5	NA	<0.91	NA
BASB054	03-Apr-01	(1.5-2.0)	39 YH	<0.96	290	NA	<0.96	NA
BASB054	03-Apr-01	(4.5-5.0)	<0.99	<0.97	7.5 Y	NA	<0.97	NA
BASB054	03-Apr-01	(9.5-10.0)	<0.99	<0.97	<5	NA	<0.97	NA
BASB054	03-Apr-01	(14.5-15.0)	<1	<1.1	<5	NA	<1.1	NA
BASB054	03-Apr-01	(21.5-22.0)	24 YH	<0.93	170	NA	<0.93	NA
BASB055	29-Mar-01	(8.0-8.5)	36 YZ	<0.95	13 Y	<0.95	NA	NA
BASB055	29-Mar-01	(9.5-10.0)	3.4 YHZ	<0.94	20 YH	<0.94	NA	NA
BASB055	29-Mar-01	(14.5-15.0)	32 YZ	<0.93	<5	<0.93	NA	NA
BASB055	29-Mar-01	(20.0-20.5)	37 YZ	<1	6.7 Y	<1	NA	NA
BASB055	29-Mar-01	(24.5-25.0)	3 YZ	<1	<5	<1	NA	NA
BASB056	30-Mar-01	(3.5-4.0)	38 YH	<0.97	120 Y	NA	<0.97	NA
BASB056	30-Mar-01	(5.5-6.0)	6.7 YZH	<1.1	15 Y	NA	<1.1	NA
BASB056	30-Mar-01	(9.5-10.0)	<1	<1	<5	NA	<1	NA
BASB056	30-Mar-01	(14.5-15.0)	<1	<1	<5	NA	<1	NA
BASB056	30-Mar-01	(19.5-20.0)	<1	<0.96	<5	NA	<0.96	NA
BASB056	30-Mar-01	(24.5-25.0)	<1	<0.99	<5	NA	<0.99	NA
BASB057	28-Mar-01	(3.5-4.0)	13 YZ	<0.93	74 Y	<0.93	NA	NA
BASB057	28-Mar-01	(5.5-6.0)	17 YZ	<1.1	<5	<1.1	NA	NA
BASB057	28-Mar-01	(9.5-10.0)	14 YZ	<0.93	<5	<0.93	NA	NA
BASB057	28-Mar-01	(14.5-15.0)	44 YZ	<0.96	<5	<0.96	NA	NA
BASB057	28-Mar-01	(24.5-25.0)	1.5 YZ	<0.95	<5	<0.95	NA	NA
BASB058	21-Mar-01	(3.5-4.0)	45 YH	<0.97	310 Y	<0.97	NA	NA
DUP	21-Mar-01	(5.0-5.5)	23 YZ	<1	<25	<1	NA	NA
BASB058	21-Mar-01	(9.5-10.0)	12 YZ	<0.91	<25	<0.91	NA	NA
BASB058	21-Mar-01	(14.5-15.0)	12 YZ	<0.93	<25	<0.93	NA	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 7								
BASB058	21-Mar-01	(24.5-25.0)	25 YZ	<0.99	<25	<0.99	NA	NA
BASB080	03-Apr-01	(1.5-2.0)	1.4 YH	<0.96	9.8 Y	NA	<0.96	NA
BASB080	03-Apr-01	(4.5-5.0)	2.5 YH	<0.91	17	NA	<0.91	NA
BASB080	03-Apr-01	(9.5-10.0)	<1	<1	<5	NA	<1	NA
BASB080	03-Apr-01	(14.5-15.0)	<0.99	<1	<5	NA	<1	NA
BASB080	03-Apr-01	(23.5-24.0)	<1	<0.99	<5	NA	<0.99	NA
Area 8								
BASB050	20-Mar-01	(2.0-2.5)	6.2 YZ	<0.93	<5	<0.93	NA	NA
BASB050	20-Mar-01	(4.5-5.0)	28 YZ	<1.1	<25	<1.1	NA	NA
BASB050	20-Mar-01	(9.5-10.0)	1.2 YZ	<0.91	<5	<0.91	NA	NA
BASB050	20-Mar-01	(14.5-15.0)	14 YZ	<1.1	<9.9	<1.1	NA	NA
BASB050	20-Mar-01	(24.5-25.0)	28 YZ	<0.95	<25	<0.95	NA	NA
BASB060	05-Apr-01	(0.0-0.5)	3.2 YH	<1.1	21 Y	NA	<1.1	NA
BASB061	05-Apr-01	(0.0-0.5)	14 YH	<0.98	120	NA	<0.98	NA
BASB062	05-Apr-01	(0.0-0.5)	5.4 YH	<1	67	NA	<1	NA
BASB063	05-Apr-01	(0.0-0.5)	6.3 YH	<1	54	NA	<1	NA
BASB065	22-Mar-01	(0.0-0.5)	8.2 YH	<0.93	24 Y	<0.93	NA	NA
Area 9								
BASB088	09-Jul-01	(3.0-3.5)	1.7 Y	<0.96	<5	NA	NA	NA
DUP	09-Jul-01	(3.0-3.5)	<1	<1.1	<5	NA	NA	NA
BASB088	09-Jul-01	(4.5-5.0)	1.9 Y	<0.93	<5	NA	NA	NA
BASB088	09-Jul-01	(9.5-10.0)	<1	<1.1	<5	NA	NA	NA
BASB088	09-Jul-01	(14.5-15.0)	3.2 YH	<1.1	18	NA	NA	NA
BASB088	09-Jul-01	(25.0-25.5)	<1	<1	<5	NA	NA	NA
BASB089	09-Jul-01	(3.0-3.5)	1.7 Y	<1	5 Y	NA	NA	NA
BASB089	09-Jul-01	(4.5-5.0)	<1	<0.95	<5	NA	NA	NA
BASB089	09-Jul-01	(9.5-10.0)	1.8 Y	<0.99	<5	NA	NA	NA
BASB089	09-Jul-01	(14.5-15.0)	2.6 Y	<0.94	<5	NA	NA	NA
BASB089	09-Jul-01	(27.0-27.5)	3.3 Y	<1	<5	NA	NA	NA
BASB090	09-Jul-01	(2.0-2.5)	46 YH	<1	360	NA	NA	NA
DUP	09-Jul-01	(2.0-2.5)	38 YH	<1	310	NA	NA	NA
BASB090	09-Jul-01	(4.5-5.0)	3.4 YH	<0.95	17	NA	NA	NA

Table 6
Total Petroleum Hydrocarbons Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 9								
BASB090	09-Jul-01	(9.5-10.0)	1.2 Y	<1.1	<5	NA	NA	NA
BASB090	09-Jul-01	(14.5-15.0)	2.6 Y	<1	<5	NA	NA	NA
BASB090	09-Jul-01	(25.0-25.5)	2.8 YH	<1	29	NA	NA	NA

Data prepared by: TIH. Data QA/QC by: LDF.

Notes:

bgs = below ground surface
b = Continuing calibration verification percent difference was slightly above acceptance limits in batch.
DUP = Duplicate sample
H = Heavier hydrocarbons contributed to the quantitation.
J = Reported value is estimated.
L = Lighter hydrocarbons contributed to the quantitation.
NA = Not analyzed
Y = Sample exhibits fuel pattern which does not resemble standard.
Z = Sample exhibits unknown single peak or peaks.
TPHd = total petroleum hydrocarbons as diesel
TPHg = total petroleum hydrocarbons as gasoline
TPHmo = total petroleum hydrocarbons as motor oil
TPHms = total petroleum hydrocarbons as mineral spirits
TPHpt = total petroleum hydrocarbons as paint thinner
TPHss = total petroleum hydrocarbons as stoddard solvent
Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for all compounds using EPA test method 8015 modified.

Table 7
Volatile Organic Compounds Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Acetone	Methylene chloride
Area 1				
BASB036	22-Mar-01	(3.5-4.0)	<0.019	<0.019
DUP	22-Mar-01	(5.0-5.5)	<0.019	<0.019
BASB036	22-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB036	22-Mar-01	(14.5-15.0)	<0.02	<0.02
BASB036	22-Mar-01	(24.5-25.0)	<0.019	<0.019
BASB037	22-Mar-01	(4.5-5.0)	0.025	<0.02
BASB037	22-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB037	22-Mar-01	(14.5-15.0)	<0.019	<0.019
BASB037	22-Mar-01	(24.5-25.0)	<0.019	<0.019
BASB029	23-Mar-01	(3.5-4.0)	<0.019	<0.019
DUP	23-Mar-01	(4.5-5.0)	<0.019	<0.019
BASB029	23-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB029	23-Mar-01	(14.5-15.0)	<0.02	<0.02
BASB029	23-Mar-01	(19.5-20.0)	<0.019	<0.019
BASB029	23-Mar-01	(24.5-25.0)	<0.02	<0.02
BASB030	23-Mar-01	(4.5-5.0)	<0.02	<0.02
BASB030	23-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB030	23-Mar-01	(14.5-15.0)	<0.021	<0.021
BASB030	23-Mar-01	(19.5-20.0)	<0.019	<0.019
BASB030	23-Mar-01	(24.5-25.0)	<0.02	<0.02
BASB070	03-Apr-01	(22.5-23.0)	<0.021	<0.021
BASB070	03-Apr-01	(24.5-25.0)	<0.02	<0.02
BASB071	03-Apr-01	(19.5-20.0)	<0.019	<0.019
BASB071	03-Apr-01	(22.5-23.0)	<0.019	<0.019
BASB071	03-Apr-01	(24.5-25.0)	<0.02	<0.02
BASB082	05-Apr-01	(1.5-2.0)	<0.02	<0.02
BASB082	05-Apr-01	(4.5-5.0)	<0.021	<0.021
BASB082	05-Apr-01	(11.5-12.0)	<0.019	0.034
BASB082	05-Apr-01	(14.5-15.0)	<0.02	<0.02
BASB082	05-Apr-01	(19.5-20.0)	<0.019	0.034
Area 2				
BASB008	21-Mar-01	(3.5-4.0)	<0.02	<0.02
DUP	21-Mar-01	(4.5-5.0)	<0.019	<0.019
BASB008	21-Mar-01	(9.5-10.0)	<0.019	<0.019
BASB008	21-Mar-01	(14.5-15.0)	<0.019	<0.019
BASB008	21-Mar-01	(24.5-25.0)	<0.019	<0.019

Table 7
Volatile Organic Compounds Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Acetone	Methylene chloride
Area 2				
BASB006	31-Mar-01	(1.5-2.0)	<0.02	<0.02
BASB006	31-Mar-01	(5.5-6.0)	<0.02	<0.02
BASB006	31-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB006	31-Mar-01	(14.5-15.0)	<0.019	<0.019
BASB006	31-Mar-01	(26.5-27.0)	<0.02	<0.02
BASB007	31-Mar-01	(1.5-2.0)	<0.02	<0.02
BASB007	31-Mar-01	(4.5-5.0)	<0.019	<0.019
BASB007	31-Mar-01	(9.5-10.0)	<0.019	<0.019
BASB007	31-Mar-01	(14.5-15.0)	<0.019	<0.019
BASB007	31-Mar-01	(25.5-26.0)	<0.02	<0.02
Area 4				
DUP	19-Mar-01	(4.0-4.5)	<0.02	<0.02
BASB012	19-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB012	19-Mar-01	(14.5-15.0)	<0.02	<0.02
BASB012	19-Mar-01	(24.0-24.5)	<0.02	<0.02
BASB013	20-Mar-01	(2.5-3.0)	<0.021	<0.021
BASB013	20-Mar-01	(4.5-5.0)	<0.019	<0.019
BASB013	20-Mar-01	(9.5-10.0)	<0.02	<0.02
BASB013	20-Mar-01	(14.5-15.0)	<0.019	<0.019
BASB016	04-Apr-01	(2.0-2.5)	<0.02	<0.02
BASB016	04-Apr-01	(5.5-6.0)	<0.019	<0.019
BASB016	04-Apr-01	(9.5-10.0)	<0.019	<0.019
BASB016	04-Apr-01	(14.5-15.0)	<0.022	<0.022
BASB016	04-Apr-01	(24.5-25.0)	<0.019	<0.019
Area 5				
BASB022	04-Apr-01	(1.5-2.0)	<0.019	<0.019
BASB022	04-Apr-01	(4.5-5.0)	<0.019	<0.019
BASB022	04-Apr-01	(9.5-10.0)	<0.02	<0.02
BASB022	04-Apr-01	(14.5-15.0)	<0.019	<0.019
BASB022	04-Apr-01	(20.5-21.0)	<0.019	<0.019
Area 6				
BASB081	05-Apr-01	(2.5-3.0)	<0.02	<0.02
BASB081	05-Apr-01	(4.5-5.0)	<0.019	<0.019
BASB081	05-Apr-01	(9.5-10.0)	<0.021	<0.021
BASB081	05-Apr-01	(14.5-15.0)	<0.02	<0.02
BASB081	05-Apr-01	(25.5-26.0)	<0.021	<0.021

Table 7
Volatile Organic Compounds Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Acetone	Methylene chloride
Area 7				
BASB058	21-Mar-01	(3.5-4.0)	<0.019	<0.019
DUP	21-Mar-01	(5.0-5.5)	<0.02	<0.02
BASB058	21-Mar-01	(9.5-10.0)	<0.019	<0.019
BASB058	21-Mar-01	(14.5-15.0)	<0.02	<0.02
BASB058	21-Mar-01	(24.5-25.0)	<0.02	<0.02
Area 8				
BASB050	20-Mar-01	(2.0-2.5)	<0.02	<0.02
BASB050	20-Mar-01	(4.5-5.0)	<0.02	<0.02
BASB050	20-Mar-01	(9.5-10.0)	<0.019	<0.019
BASB050	20-Mar-01	(14.5-15.0)	<0.02	<0.02
BASB050	20-Mar-01	(24.5-25.0)	<0.019	<0.019
Area 9				
BASB088	09-Jul-01	(3.0-3.5)	<0.02	0.025
DUP	09-Jul-01	(3.0-3.5)	<0.019	0.028
BASB088	09-Jul-01	(4.5-5.0)	<0.02	<0.02
BASB088	09-Jul-01	(9.5-10.0)	<0.02	<0.02
BASB088	09-Jul-01	(14.5-15.0)	<0.019	<0.019
BASB088	09-Jul-01	(25.0-25.5)	<0.02	<0.02
BASB089	09-Jul-01	(3.0-3.5)	<0.019	0.02
BASB089	09-Jul-01	(4.5-5.0)	<0.019	<0.019
BASB089	09-Jul-01	(9.5-10.0)	<0.02	<0.02
BASB089	09-Jul-01	(14.5-15.0)	<0.021	<0.021
BASB089	09-Jul-01	(27.0-27.5)	<0.019	0.02
BASB090	09-Jul-01	(2.0-2.5)	<0.02	<0.02
DUP	09-Jul-01	(2.0-2.5)	<0.02	0.025
BASB090	09-Jul-01	(4.5-5.0)	<0.02	<0.02
BASB090	09-Jul-01	(9.5-10.0)	<0.019	<0.019
BASB090	09-Jul-01	(14.5-15.0)	<0.019	<0.019
BASB090	09-Jul-01	(25.0-25.5)	<0.021	0.06

Data prepared by: TIH. Data QA/QC by: LDF.

Notes:

bgs = Below ground surface
DUP = Duplicate sample
VOCs = Volatile organic compounds
Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for VOCs using EPA test method 8260B.

Table 8
Semivolatile Organic Compounds Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	B(a)A	B(a)P	B(b)F	B(g,h,i)P	CHR	D(a,h)A	DEHP	I(1,2,3-cd)P	Phenol	PYR
Area 1												
BASB082	05-Apr-01	(1.50-2.00)	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BASB082	05-Apr-01	(4.50-5.00)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.34	<0.05	<0.34	<0.05
BASB082	05-Apr-01	(11.50-12.00)	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.34	<0.051	<0.34	<0.051
BASB082	05-Apr-01	(14.50-15.00)	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BASB082	05-Apr-01	(19.50-20.00)	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.34	<0.051	<0.34	<0.051
Area 6												
BASB002	31-Mar-01	(2.50-3.00)	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	0.87	<0.33	0.82	<0.33
BASB005	31-Mar-01	(2.50-3.00)	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
BASB011	05-Apr-01	(2.50-3.00)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.33	<0.05	<0.33	<0.05
BASB017	05-Apr-01	(2.50-3.00)	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<3.3	<0.49	<3.3	<0.49
BASB051	02-Apr-01	(9.50-10.00)	<0.049 J	<0.049 J	<0.049 J	<0.049 J	<0.049 J	<0.049 J	<0.33 J	<0.049 J	<0.33 J	<0.049 J
RE	02-Apr-01	(9.50-10.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J
BASB051	02-Apr-01	(22.50-23.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J
RE	02-Apr-01	(22.50-23.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.34 J	<0.05 J	<0.34 J	<0.05 J
BASB081	05-Apr-01	(25.50-26.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J
RE	05-Apr-01	(25.50-26.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J
Area 7												
BASB019	05-Apr-01	(4.50-5.00)	<0.051	<0.051	<0.051	<0.051	<0.051	<0.051	<0.34	<0.051	<0.34	<0.051
BASB052	02-Apr-01	(3.50-4.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J
RE	02-Apr-01	(3.50-4.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J
BASB052	02-Apr-01	(24.50-25.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J

Table 8
Semivolatile Organic Compounds Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	B(a)A	B(a)P	B(b)F	B(g,h,i)P	CHR	D(a,h)A	DEHP	I(1,2,3-cd)P	Phenol	PYR
Area 7												
RE	02-Apr-01	(24.50-25.00)	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.05 J	<0.33 J	<0.05 J	<0.33 J	<0.05 J

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

DUP = Duplicate sample

J = Reported value is estimated.

bgs = Below ground surface

RE = Samples were re-extracted and reanalyzed because QC did not meet laboratory criteria.

SVOCs = Semivolatile organic compounds

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for SVOCs using EPA method 8270C.

B(a)A = Benzo(a)anthracene

B(a)P = Benzo(a)pyrene

B(b)F = Benzo(b)fluoranthene

B(g,h,i)P = Benzo(g,h,i)perylene

CHR = Chrysene

D(a,h)A = Dibenzo(a,h)anthracene

DEHP = Bis(2-Ethylhexyl) phthalate

I(1,2,3-cd)P = Indeno(1,2,3-c,d)pyrene

PYR = Pyrene

Table 9
Polynuclear Aromatic Hydrocarbons Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	B(a)A	B(a)P	B(b)F	B(g,h,i)P	CHR	D(a,h)A	I(1,2,3-cd)P	PYR
Area 1										
BASB082	05-Apr-01	(1.5-2.0)	<0.0033	0.0081	<0.0068	<0.0068	0.0047	0.011	<0.0033	0.0091
BASB082	05-Apr-01	(4.5-5.0)	<0.0033	<0.0033	<0.0067	<0.0067	<0.0033	<0.0067	<0.0033	<0.0067
BASB082	05-Apr-01	(11.5-12.0)	<0.0033	<0.0033	<0.0068	<0.0068	<0.0033	<0.0068	<0.0033	<0.0068
BASB082	05-Apr-01	(14.5-15.0)	<0.0033	<0.0033	<0.0068	<0.0068	<0.0033	<0.0068	<0.0033	<0.0068
BASB082	05-Apr-01	(19.5-20.0)	<0.0034	<0.0034	<0.0069	<0.0069	<0.0034	<0.0069	<0.0034	<0.0069
Area 6										
BASB002	31-Mar-01	(2.5-3.0)	<0.013	<0.013	<0.027	<0.027	0.062	<0.027	<0.013	<0.027
BASB005	31-Mar-01	(2.5-3.0)	<0.0033	<0.0033	<0.0067	<0.0067	<0.0033	<0.0067	<0.0033	<0.0067
BASB011	05-Apr-01	(2.5-3.0)	0.0036 J	0.0079 J	0.0067 J	0.0071 J	0.0064 J	0.016 J	0.0059 J	0.0097
BASB017	05-Apr-01	(2.5-3.0)	<0.0033	<0.0033	<0.0068	<0.0068	<0.0033	<0.0068	<0.0033	<0.0068
Area 7										
BASB019	05-Apr-01	(4.5-5.0)	<0.0034	<0.0034	<0.0068	<0.0068	<0.0034	<0.0068	<0.0034	<0.0068

Data prepared by: TIH. Data QA/QC by: LDF.

Notes:

bgs = Below ground surface
DUP = Duplicate sample
J = Reported value is estimated.
PAH = Polyaromatic hydrocarbons
Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for PAHs using EPA test method 8310.

B(a)A = Benzo(a)anthracene
B(a)P = Benzo(a)pyrene
B(b)F = Benzo(b)fluoranthene
B(g,h,i)P = Benzo(g,h,i)perylene
CHR = Chrysene
D(a,h)A = Dibenzo(a,h)anthracene
I(1,2,3-cd)P = Indeno(1,2,3-c,d)pyrene
PYR = Pyrene

Table 10
Organochlorine Pesticides Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	4,4'-DDT	alpha-Chlordane	gamma-Chlordane
Area 8					
BASB061	05-Apr-01	(0.0-0.5)	0.012	0.012	0.0075
BASB065	22-Mar-01	(0.0-0.5)	<0.06	<0.03	<0.03

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

bgs = below ground surface

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for organochlorine pesticides using EPA test method 8081A.

4,4'-DDT = Dichlorodiphenyltrichloroethane

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 1																		
BASB026	28-Mar-01	(3.5-4.0)	<0.24	3	130	0.36	1.7	7.9	28	18	0.097	<0.97	46	22	0.44	<0.24	26	46
BASB026	28-Mar-01	(6.5-7.0)	<0.24	3.5	110	0.45	1.5	7.6	31	19	0.031	<0.95	45	6	<0.24	<0.24	26	37
BASB026	28-Mar-01	(9.5-10.0)	<0.24	2.7	110	0.48	1.5	7.2	33	17	0.05	<0.94	45	6.1	<0.24	<0.24	24	36
BASB026	28-Mar-01	(14.5-15.0)	<0.25	2.5	130	0.51	1.8	8.5	39	21	0.076	<0.99	59	5.9	<0.25	<0.25	25	45
BASB026	28-Mar-01	(24.5-25.0)	<0.24	3.8	130	0.44	1.7	8	38	19	0.046	<0.98	57	6.1	<0.24	0.39	28	37
BASB027	27-Mar-01	(3.5-4.0)	<0.24	5.4	290	0.33	2	6.9	28	29	0.05	<0.96	41	74	0.29	<0.24	26	140
BASB027	27-Mar-01	(6.0-6.5)	<0.24	2	43	0.18	0.85	3.8	16	6.2	0.024	<0.96	24	2.4	<0.24	<0.24	13	17
BASB027	27-Mar-01	(9.5-10.0)	<0.24	3.2	130	0.44	1.5	7.1	29	16	0.059	<0.95	45	6.3	<0.24	<0.24	24	35
BASB027	27-Mar-01	(14.5-15.0)	<0.23	3.4	170	0.54	2.2	9.2	42	24	1.1	<0.93	62	7.1	<0.23	<0.23	29	51
BASB027	27-Mar-01	(24.5-25.0)	<0.24	2.8	110	0.35	1.5	8.7	33	16	0.044	<0.97	58	5.2	0.34	0.39	22	34
BASB028	27-Mar-01	(0.5-1.0)	<0.24	7.8	170	0.35	1.8	7.1	29	25	0.16	<0.96	43	83	0.26	0.27	23	120
BASB028	27-Mar-01	(3.5-4.0)	<0.23	3.2	130	0.38	1.8	9.3	30	16	0.047	<0.94	54	5.4	<0.23	0.43	25	38
BASB028	27-Mar-01	(6.5-7.0)	<0.24	3.6	170	0.48	2	9	35	22	0.1	<0.95	53	6.7	<0.24	<0.24	31	43
BASB028	27-Mar-01	(9.5-10.0)	<0.23	2.9	130	0.43	1.6	6	29	16	0.025	<0.91	44	5.9	<0.23	<0.23	24	35
BASB028	27-Mar-01	(14.5-15.0)	<0.25	3.1	150	0.49	1.9	8.7	35	22	0.19	<1	54	6.3	<0.25	<0.25	25	44
BASB028	27-Mar-01	(24.5-25.0)	<0.23	2.6	110	0.32	1.5	8.1	29	17	0.047	<0.91	53	5.4	<0.23	0.5	21	31
BASB029	23-Mar-01	(3.5-4.0)	<0.23	4.3	120	0.57	2	10	38	20 J	0.046	<0.93	60	6.8	<0.23	0.53	37	49
DUP	23-Mar-01	(4.5-5.0)	<0.23	3.4	100	0.43	1.3	7.9	29	12 J	0.028	<0.91	50	4.6	<0.23	0.75	26	32
BASB029	23-Mar-01	(9.5-10.0)	<0.23	2.6	110	0.54	1.5	5.6	32	16 J	0.043	<0.9	44	5.6	<0.23	<0.23	28	40
BASB029	23-Mar-01	(14.5-15.0)	<0.23	3.1	140	0.66	2	9.7	42	23 J	0.13	<0.94	61	7	<0.23	0.55	35	55
BASB029	23-Mar-01	(19.5-20.0)	<0.24	4.8	150	0.61	2	7.8	42	21 J	0.073	<0.96	58	5.9	<0.24	<0.24	37	54
BASB029	23-Mar-01	(24.5-25.0)	<0.25	3	96	0.43	1.4	5.9	34	15 J	0.29	<0.99	46	4.4	<0.25	<0.25	28	37
BASB030	23-Mar-01	(4.5-5.0)	<0.24	3.6	120	0.35	2	6.8	29	15 J	0.033	<0.97	46	4.5	<0.24	<0.24	29	38

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 1																		
BASB030	23-Mar-01	(9.5-10.0)	<0.24	4.9	110	0.63	1.9	9.3	38	19 J	0.06	<0.96	57	7.1	<0.24	0.3	37	46
BASB030	23-Mar-01	(14.5-15.0)	<0.23	3.1	110	0.65	2.1	10	43	22 J	0.088	<0.93	62	7.3	<0.23	0.42	36	55
BASB030	23-Mar-01	(19.5-20.0)	<0.24	4.6	150	0.67	2.1	7.5	44	25 J	0.063	<0.95	61	8.1	<0.24	<0.24	38	59
BASB030	23-Mar-01	(24.5-25.0)	<0.24	4.6	100	0.47	1.7	11	34	18 J	0.049	<0.95	61	6.7	<0.24	0.69	31	38
BASB031	26-Mar-01	(3.5-4.0)	<0.24	3.2	130	0.48	1.9	8.9	33	19	0.045	<0.97	57	8.5	0.38	0.38	28	45
BASB031	26-Mar-01	(6.5-7.0)	<0.24	2.6	150	0.46	1.5	9	31	17	0.056	<0.95	46	6.7	<0.24	0.36	24	35
BASB031	26-Mar-01	(9.5-10.0)	<0.23	2.3	160	0.51	1.7	7.5	35	18	0.038	<0.93	54	8.1	<0.23	<0.23	27	40
BASB031	26-Mar-01	(14.5-15.0)	<0.23	2.6	170	0.56	2	9.8	39	22	0.084	<0.93	62	7.9	<0.23	<0.23	26	50
BASB031	26-Mar-01	(22.5-23.0)	<0.25	2.3	120	0.37	1.6	6.9	35	18	0.047	<0.98	53	4.7	<0.25	<0.25	24	38
BASB031	26-Mar-01	(24.5-25.0)	<0.24	2.8	110	0.29	1.4	9.4	26	15	0.045	<0.97	54	5.3	<0.24	<0.24	19	30
BASB032	26-Mar-01	(3.5-4.0)	<0.25	2.9	110	0.36	1.5	8.1	28	15	0.021	<0.99	46	7.5	0.54	<0.25	24	38
DUP	26-Mar-01	(4.5-5.0)	<0.25	1.8	71	0.22	1.1	6.6	19	9.3	0.022	<0.98	36	3.3	<0.25	<0.25	16	24
BASB032	26-Mar-01	(9.0-9.5)	<0.24	3	170	0.49	1.7	9	33	18	0.069	<0.97	54	8.2	<0.24	<0.24	26	39
BASB032	26-Mar-01	(14.5-15.0)	<0.25	1.8	140	0.49	1.7	7.8	34	19	0.15	<0.99	53	6.6	<0.25	<0.25	22	46
BASB032	26-Mar-01	(24.5-25.0)	<0.24	2.8	120	0.33	1.6	8.3	28	16	0.069	<0.97	58	5.4	<0.24	1.1	22	33
BASB033	26-Mar-01	(3.5-4.0)	<0.25	6	340	0.33	2.7	7.4	30	41	0.049	<0.98	44	160	0.42	<0.25	25	430
BASB033	26-Mar-01	(6.0-6.5)	<0.24	2	63	0.23	1	5	19	8.6	0.024	<0.97	30	3.4	<0.24	<0.24	17	24
BASB033	26-Mar-01	(9.5-10.0)	<0.24	3.1	120	0.46	1.6	5.7	31	16	0.067	<0.96	41	5.6	<0.24	<0.24	25	36
BASB033	26-Mar-01	(14.5-15.0)	<0.24	3	130	0.44	1.7	7.9	31	18	0.16	<0.96	51	6.1	<0.24	<0.24	24	41
BASB033	26-Mar-01	(24.5-25.0)	<0.24	3	120	0.38	1.8	8.9	38	18	0.055	<0.96	61	5.7	0.26	0.31	26	39
BASB034	27-Mar-01	(3.5-4.0)	<0.25	5.7	130	0.35	2	8.1	29	22	0.04	<0.98	46	24	0.5	<0.25	25	85
BASB034	27-Mar-01	(6.25-6.75)	<0.23	2.1	53	0.2	1	5.2	17	8.7	0.055	<0.92	29	3.1	<0.23	<0.23	15	22
BASB034	27-Mar-01	(9.5-10.0)	<0.24	2.9	110	0.41	1.4	6.6	26	16	0.067	<0.96	38	6.6	<0.24	<0.24	22	32

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 1																		
BASB034	27-Mar-01	(14.5-15.0)	<0.24	2.3	130	0.45	1.7	8.3	31	19	0.22	<0.98	51	7	<0.24	<0.24	22	42
BASB034	27-Mar-01	(24.5-25.0)	<0.24	3	97	0.32	1.5	5	29	16	0.072	<0.94	42	5.9	<0.24	<0.24	23	32
BASB036	22-Mar-01	(3.5-4.0)	<0.21	0.68	48	0.38	3.1	7.9	2.1	14	0.18	<0.83	19 J	4.9	0.45	0.28	27	64 J
DUP	22-Mar-01	(5.0-5.5)	<0.2	4.2	150	0.47	2.1	9.3	38	19	0.041	<0.81	52 J	5.9	<0.2	<0.2	31	44 J
BASB036	22-Mar-01	(9.5-10.0)	<0.24	3.5	100	0.5	1.9	8.4	35	17	0.046	<0.94	53 J	6.2	<0.24	<0.24	25	41 J
BASB036	22-Mar-01	(14.5-15.0)	<0.23	3.5	130	0.49	2.2	8.8	42	20	0.06	<0.93	57 J	6.6	<0.23	<0.23	29	47 J
BASB036	22-Mar-01	(24.5-25.0)	<0.19	3.5	120	0.42	1.7	7.2	38	18	0.055	<0.75	50 J	5.2	<0.19	<0.19	25	39 J
BASB037	22-Mar-01	(4.5-5.0)	<0.25	2.6	130	0.45	1.6	6.2	35	22	0.069	<0.99	47 J	14	<0.25	<0.25	27	52 J
BASB037	22-Mar-01	(9.5-10.0)	<0.22	3.1	170	0.49	1.9	8.6	35	17	0.054	<0.88	60 J	6.1	0.22	<0.22	24	41 J
BASB037	22-Mar-01	(14.5-15.0)	<0.23	4.8	160	0.59	2.6	8.5	50	23	0.067	<0.93	69 J	6.8	<0.23	<0.23	35	56 J
BASB037	22-Mar-01	(24.5-25.0)	<0.23	2.3	100	0.36	1.6	5.4	36	15	0.12	<0.93	49 J	3.6	<0.23	<0.23	22	38 J
BASB070	03-Apr-01	(3.0-3.5)	<0.21	4.1	140	0.44	1.9	8.6	33	20	0.057	<0.84	51	27	<0.21	<0.21	29	70 J
BASB070	03-Apr-01	(6.0-6.5)	<0.2	1.5	72	0.22	0.82	4.2	17	8.1	0.063	<0.81	29	3	<0.2	<0.2	14	21
BASB070	03-Apr-01	(9.5-10.0)	<0.2	2.5	140	0.44	1.3	8.5	25	14	0.043	<0.81	50	5.4	<0.2	0.34	19	32
BASB070	03-Apr-01	(14.5-15.0)	<0.22	2.5	130	0.49	1.6	7.8	30	17	0.058	<0.87	53	5.7	<0.22	0.45	19	41
BASB070	03-Apr-01	(22.5-23.0)	<0.2	3	120	0.44	1.7	9.9	41	19	0.06	<0.81	60	5.4	<0.2	0.21	25	42
BASB070	03-Apr-01	(24.5-25.0)	<0.22	2.4	100	0.34	1.3	7.8	26	14	0.044	<0.87	47	4.8	0.34	0.39	19	31
BASB071	03-Apr-01	(1.5-2.0)	<0.21	4.1	170	0.35	2	6.9	26	35	0.23	<0.82	38	130	0.49	<0.21	21	240
BASB071	03-Apr-01	(6.5-7.0)	<0.23	3.6	140	0.52	1.6	8.1	32	17	0.039	<0.91	42	6.5	<0.23	<0.23	28	38
BASB071	03-Apr-01	(9.5-10.0)	<0.23	3.5	160	0.53	1.6	9.2	33	17	0.058	<0.91	56	6.6	<0.23	0.33	23	37 J
BASB071	03-Apr-01	(14.5-15.0)	<0.22	2.8	150	0.56	1.8	8	37	20	0.064	<0.89	58	6.3	<0.22	<0.22	24	48 J
BASB071	03-Apr-01	(18.5-19.0)	<0.22	5.1	180	0.53	2.2	9.9	40	21	0.069	<0.87	64	6.2	<0.22	<0.22	34	48 J
BASB071	03-Apr-01	(19.5-20.0)	<0.22	2.2	150	0.46	1.7	11	37	20	0.054	<0.9	53	5.9	<0.22	<0.22	24	47

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 1																		
BASB071	03-Apr-01	(22.5-23.0)	<0.2	2.9	140	0.43	1.6	8	37	19	0.049	<0.82	54	5.9	<0.2	<0.2	27	37 J
BASB071	03-Apr-01	(24.5-25.0)	<0.23	3.4	120	0.4	1.5	8.2	34	17	0.048	<0.92	54	5.9	<0.23	<0.23	25	35 J
BASB072	05-Apr-01	(2.0-2.5)	<0.24	4.7	170	0.4	1.9	7.5	30	23	0.13	<0.94	44	44	<0.24	<0.24	28	110
BASB072	05-Apr-01	(5.5-6.0)	<0.2	2.6	77	0.31	1.2	5.1	24	11	0.035	<0.81	35	3.8	<0.2	<0.2	19	25
BASB072	05-Apr-01	(9.5-10.0)	<0.23	2.9	110	0.41	1.3	5.7	26	11	0.046	<0.91	40	4.4	<0.23	<0.23	21	27
BASB072	05-Apr-01	(14.5-15.0)	<0.23	2.5	130	0.48	1.6	7.6	32	17	0.069	<0.93	48	5.3	<0.23	<0.23	22	40
BASB072	05-Apr-01	(24.5-25.0)	<0.25	3.4	110	0.36	1.5	9.7	28	16	0.057	<0.99	58	5.4	<0.25	0.6	22	30
BASB073	02-Apr-01	(2.5-3.0)	<0.23	3.3	140	0.34	1.8	7.5	26	28	0.066	<0.91	42	16	<0.23	<0.23	26	60
BASB073	02-Apr-01	(4.5-5.0)	<0.22	2.9	110	0.34	1.5	5.9	27	14	0.15	<0.87	46	4.4	<0.22	<0.22	22	33
BASB073	02-Apr-01	(9.5-10.0)	<0.22	2	94	0.31	0.93	4.6	17	9.3	0.051	<0.87	34	3.9	<0.22	0.24	11	24
BASB073	02-Apr-01	(14.5-15.0)	<0.21	1.7	86	0.31	0.97	5.1	18	11	0.052	<0.84	33	3.9	<0.21	<0.21	11	26
BASB073	02-Apr-01	(19.5-20.0)	<0.22	1.4	100	0.3	1.1	6.5	21	12	0.05	<0.88	37	4.5	<0.22	<0.22	12	32
BASB073	02-Apr-01	(24.5-25.0)	<0.22	3.3	99	0.31	1.4	8	26	15	0.052	<0.89	50	5.6	<0.22	<0.22	19	31
BASB074	02-Apr-01	(2.5-3.0)	<0.22	4	120	0.39	1.9	7.4	30	17	0.036	<0.9	53	5.8	<0.22	<0.22	27	41
BASB074	02-Apr-01	(9.5-10.0)	<0.23	1.8	98	0.32	0.99	3.9	19	10	0.057	<0.92	29	4	<0.23	<0.23	12	24
BASB074	02-Apr-01	(14.5-15.0)	<0.24	2.2	110	0.37	1.3	5.9	24	13	0.076	<0.95	41	4.6	<0.24	<0.24	14	36
BASB074	02-Apr-01	(24.5-25.0)	<0.22	2.8	96	0.29	1.4	8.1	26	13	0.054	<0.88	48	8.1	<0.22	<0.22	19	28
BASB075	02-Apr-01	(6.5-7.0)	<0.22	3.2	140	0.42	1.5	6.6	26	16	0.023	<0.88	42	5.4	0.3	0.61	20	33
BASB075	02-Apr-01	(9.5-10.0)	<0.23	3.3	160	0.44	1.6	8	28	15	0.061	<0.93	60	7.1	<0.23	0.84	19	33
BASB075	02-Apr-01	(14.5-15.0)	<0.2	2	91	0.33	1.1	5.4	21	12	0.064	<0.82	37	4.1	<0.2	<0.2	12	29
BASB075	02-Apr-01	(24.5-25.0)	<0.23	1.6	88	0.24	1	4.1	22	9.8	0.051	<0.92	31	3.4	<0.23	<0.23	12	25
BASB076	30-Mar-01	(3.5-4.0)	<0.21	6.5	130	0.46	1.9	9.5	31	19	0.047	<0.82	47	12	0.51	0.28	37	49 J
BASB076	30-Mar-01	(6.5-7.0)	<0.22	3.9	150	0.52	1.7	10	34	17	0.025	<0.89	51	5.6	0.53	0.52	31	38 J

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 1																		
BASB076	30-Mar-01	(9.5-10.0)	<0.22	3.6	140	0.53	1.7	8	35	17	0.06	<0.87	51	5.7	<0.22	0.25	27	39 J
BASB076	30-Mar-01	(14.5-15.0)	<0.22	4.6	150	0.63	2.2	10	45	23	0.04	<0.86	67	7.4	0.28	<0.22	33	53 J
BASB076	30-Mar-01	(19.5-20.0)	<0.23	7.6	210	0.61	2.5	12	45	25	0.055	<0.9	65	7.2	0.37	0.77	40	57 J
BASB076	30-Mar-01	(24.5-25.0)	<0.23	4.4	120	0.44	1.8	9.9	38	19	0.054	<0.93	58	6	0.32	0.29	31	38 J
BASB077	30-Mar-01	(3.5-4.0)	<0.22	2.9	130	0.31	1.5	5.7	23	18	0.087	<0.86	32	30	0.22	<0.22	24	55 J
DUP	30-Mar-01	(4.5-5.0)	<0.24	3.7	110	0.47	1.6	5.6	33	15	0.036	<0.94	44	5	0.33	<0.24	30	34 J
BASB077	30-Mar-01	(9.5-10.0)	<0.23	4.8	92	0.56	1.8	8.4	39	19	0.069	<0.91	53	6	<0.23	<0.23	33	41 J
BASB077	30-Mar-01	(14.5-15.0)	<0.2	2.7	140	0.51	1.8	8.8	35	19	0.027	<0.82	50	6	<0.2	<0.2	25	43 J
BASB077	30-Mar-01	(19.5-20.0)	<0.22	5.4	150	0.49	2	13	39	20	0.044	<0.86	60	6.8	<0.22	0.82	32	44 J
BASB077	30-Mar-01	(24.5-25.0)	<0.22	4.5	150	0.43	1.6	11	36	16	0.067	<0.89	55	5.6	0.44	0.51	29	34 J
BASB078	05-Apr-01	(3.5-4.0)	<0.21	3.9	120	0.42	1.8	9.6	29	18	0.073	<0.83	46	20	0.26	0.92	26	50
BASB078	05-Apr-01	(6.5-7.0)	<0.22	5.7	190	0.62	2.6	14	46	24	0.034	<0.87	70	7.2	<0.22	0.46	42	51
BASB078	05-Apr-01	(9.5-10.0)	<0.23	2.2	120	0.42	1.3	4.6	26	13	0.059	<0.93	35	4.6	<0.23	<0.23	17	30
BASB078	05-Apr-01	(14.5-15.0)	<0.23	2.4	91	0.36	1.1	5.6	24	12	0.046	<0.91	37	4.4	0.34	0.46	15	29
BASB078	05-Apr-01	(24.5-25.0)	<0.22	3.6	100	0.36	1.5	9.6	30	16	0.051	<0.89	51	5.9	<0.22	0.53	22	32
BASB082	05-Apr-01	(1.5-2.0)	<0.23	4.1	86	0.31	1.3	5.7	21	12	0.12	<0.93	32	9.6	0.41	<0.23	20	36
BASB082	05-Apr-01	(4.5-5.0)	<0.22	1.9	54	0.22	0.82	3.5	15	7.5	0.024	<0.88	24	2.5	<0.22	<0.22	14	19
BASB082	05-Apr-01	(11.5-12.0)	<0.21	2.6	110	0.39	1.2	7.5	25	13	0.063	<0.85	41	4.6	<0.21	<0.21	18	31
BASB082	05-Apr-01	(14.5-15.0)	<0.24	3.4	130	0.47	1.6	7.5	33	18	0.086	<0.97	49	5.3	<0.24	<0.24	22	40
BASB082	05-Apr-01	(19.5-20.0)	<0.22	3.2	120	0.39	1.4	6	27	16	0.053	<0.87	41	5	<0.22	<0.22	21	35
Area 2																		
BASB006	31-Mar-01	(1.5-2.0)	<0.23	2.6	98	0.34	1.6	6.4	15	14	0.056	<0.9	29	4.2	<0.23	0.49	17	34 J
BASB006	31-Mar-01	(5.5-6.0)	<0.22	3.4	150	0.52	1.7	7.1	34	18	0.029	<0.9	47	5.8	<0.22	<0.22	26	40 J

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 2																		
BASB006	31-Mar-01	(9.5-10.0)	<0.23	4	160	0.5	1.7	7.7	34	17	0.13	<0.93	52	5.6	<0.23	<0.23	26	38 J
BASB006	31-Mar-01	(14.5-15.0)	<0.22	3.3	140	0.51	1.8	8.3	37	20	0.068	<0.87	56	5.9	<0.22	<0.22	25	45 J
BASB006	31-Mar-01	(26.5-27.0)	<0.22	2.6	190	0.34	1.4	7.5	29	14	0.053	<0.88	48	4.3	0.32	0.93	21	32 J
BASB007	31-Mar-01	(1.5-2.0)	<0.2	5.6	130	0.39	1.7	7.5	30	15	0.031	<0.82	45	6.7	<0.2	<0.2	27	35 J
BASB007	31-Mar-01	(4.5-5.0)	<0.23	3.2	160	0.56	1.6	7.5	34	18	0.023	<0.92	47	6.2	<0.23	<0.23	25	41 J
BASB007	31-Mar-01	(9.5-10.0)	<0.24	3.3	170	0.51	1.7	8.4	35	19	0.072	<0.95	54	5.9	<0.24	<0.24	26	41 J
BASB007	31-Mar-01	(14.5-15.0)	<0.23	3	140	0.49	1.7	6.9	36	19	0.076	<0.91	49	5.7	<0.23	<0.23	22	43 J
BASB007	31-Mar-01	(25.5-26.0)	<0.22	3.3	120	0.37	1.6	7.9	34	17	0.066	<0.89	51	5	<0.22	<0.22	23	36 J
BASB008	21-Mar-01	(3.5-4.0)	<0.23	4.5	200	0.41	2.1	9.3	36	23	0.065	<0.93	53 J	26	0.25	<0.23	30	76 J
DUP	21-Mar-01	(4.5-5.0)	<0.24	3.2	90	0.34	1.2	7.6	24	12	<0.02	<0.95	46 J	4.1	0.44	0.49	22	28 J
BASB008	21-Mar-01	(9.5-10.0)	<0.24	3.3	140	0.58	1.7	8.8	39	19	0.067	<0.97	57 J	6.9	<0.24	<0.24	29	40 J
BASB008	21-Mar-01	(14.5-15.0)	<0.23	2.8	150	0.56	1.8	8.3	41	21	0.063	<0.92	60 J	6.5	<0.23	0.42	26	50 J
BASB008	21-Mar-01	(24.5-25.0)	<0.22	2.5	120	0.36	1.5	6.5	35	17	0.049	<0.88	48 J	4.9	<0.22	<0.22	21	35 J
Area 3																		
BASB040	03-Apr-01	(3.5-4.0)	<0.23	2.6	79	0.31	1.1	6.1	18	10	0.037	<0.91	35	3.9	<0.23	<0.23	18	25
DUP	03-Apr-01	(4.5-5.0)	<0.21	2.4	68	0.26	1.1	5.5	20	9.7	0.059	<0.84	37	3.1	<0.21	<0.21	16	23
BASB040	03-Apr-01	(9.5-10.0)	<0.22	2.5	110	0.39	1.3	6.9	24	14	0.072	<0.88	45	5	<0.22	0.47	17	31
BASB040	03-Apr-01	(14.5-15.0)	<0.23	3.3	150	0.48	1.8	7.7	32	18	0.046	<0.92	53	5.6	<0.23	0.49	25	43
BASB040	03-Apr-01	(19.5-20.0)	<0.22	2.6	120	0.39	1.6	5.5	32	17	0.062	<0.89	41	4.8	<0.22	<0.22	20	39
BASB040	03-Apr-01	(24.5-25.0)	<0.23	3.3	120	0.38	1.5	6.7	32	16	0.062	<0.92	46	4.6	<0.23	<0.23	24	34
BASB041	28-Mar-01	(3.5-4.0)	0.8	2.7	120	0.4	1.4	5.4	25	13	0.035	<0.97	32	28	<0.24	<0.24	24	36
DUP	28-Mar-01	(4.5-5.0)	<0.24	2.8	65	0.4	2.1	5.2	31	21	0.056	<0.97	36	49	<0.24	<0.24	26	50
BASB041	28-Mar-01	(9.5-10.0)	<0.24	2.5	110	0.49	1.4	6.9	31	15	0.06	<0.97	46	5.6	<0.24	<0.24	24	36

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 3																		
BASB041	28-Mar-01	(14.5-15.0)	<0.24	4.4	130	0.54	1.7	7.5	37	18	0.061	<0.96	53	6.4	<0.24	<0.24	30	43
BASB041	28-Mar-01	(24.5-25.0)	<0.25	3.6	130	0.44	1.4	8	36	17	0.044	<0.99	52	6.3	<0.25	<0.25	27	34
Area 4																		
BASB012	19-Mar-01	(3.5-4.0)	<0.19	1.1	69	0.26	2.7	5.9	5.1	12	0.054	<0.75	20	17	<0.19	0.55	29	93
BASB012	19-Mar-01	(9.5-10.0)	<0.24	3.4	100	0.46	1.9	8.6	37	20	0.054	<0.98	59	6.2	<0.24	0.34	24	43
BASB012	19-Mar-01	(14.5-15.0)	<0.2	3	94	0.37	1.8	6.9	31	17	0.063	<0.79	47	5.3	<0.2	<0.2	24	39
BASB012	19-Mar-01	(24.0-24.5)	<0.22	3.3	160	0.37	1.9	9.1	37	21	0.056	<0.88	67	6	<0.22	0.73	23	42
BASB013	20-Mar-01	(2.5-3.0)	<0.22	1.3	55	0.15	2.2	20	160	35	0.041	<0.87	94	1.9	<0.22	<0.22	20	21
BASB013	20-Mar-01	(4.5-5.0)	<0.21	4.4	190	0.47	2.4	9.7	35	19	<0.02	<0.85	58	5.7	<0.21	0.29	29	42
BASB013	20-Mar-01	(9.5-10.0)	<0.23	3.2	130	0.45	2.1	8.7	31	18	0.052	<0.93	56	5.9	<0.23	0.35	21	43
BASB013	20-Mar-01	(14.5-15.0)	<0.21	2.7	150	0.4	2.1	6	29	17	0.069	<0.84	46	4.8	<0.21	<0.21	21	41
BASB016	04-Apr-01	(2.0-2.5)	<0.22	2.6	100	0.21	1.4	5.4	19	32	0.14	<0.86	29	60	0.39	<0.22	17	81
BASB016	04-Apr-01	(5.5-6.0)	<0.23	2.7	120	0.38	1.5	6.8	30	15	0.069	<0.91	47	4.8	<0.23	0.31	25	34
BASB016	04-Apr-01	(9.5-10.0)	<0.22	2.7	110	0.35	1.3	5.6	25	12	0.036	<0.86	37	4.4	<0.22	<0.22	21	27
BASB016	04-Apr-01	(14.5-15.0)	<0.21	2.8	120	0.41	1.7	6.9	33	17	0.079	<0.84	47	5.2	<0.21	<0.21	24	38
BASB016	04-Apr-01	(24.5-25.0)	<0.22	2.8	99	0.3	1.5	8	30	16	0.075	<0.87	53	5	<0.22	0.3	21	31
Area 5																		
BASB022	04-Apr-01	(1.5-2.0)	<0.23	5.4	140	0.46	2.2	10	33	25	0.072	<0.93	54	31	<0.23	<0.23	31	64
BASB022	04-Apr-01	(4.5-5.0)	<0.18	7.6	130	0.27	1.6	6	22	21	0.061	2.1	32	63	<0.18	0.47	23	100
BASB022	04-Apr-01	(9.5-10.0)	<0.23	3.9	88	0.26	1.7	5.4	16	24	0.08	1.6	26	23	<0.23	<0.23	21	84
BASB022	04-Apr-01	(14.5-15.0)	<0.23	4.1	150	0.53	2.3	8.9	41	23	0.058	<0.93	62	6.4	<0.23	<0.23	31	50
BASB022	04-Apr-01	(20.5-21.0)	<0.19	4.3	120	0.38	1.6	7.2	28	17	0.076	<0.75	45	6.9	<0.19	<0.19	25	39
BASB023	04-Apr-01	(1.5-2.0)	0.52	33	220	0.21	2.3	6.3	11	25	0.25	1.6	17	130	0.55	1.9	16	400

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 5																		
BASB023	04-Apr-01	(4.5-5.0)	<0.24	2.1	63	0.26	0.91	4.5	16	8	0.033	<0.97	27	3.6	<0.24	<0.24	16	23
BASB023	04-Apr-01	(10.5-11.0)	<0.23	4.5	140	0.56	2	9.5	37	18	0.048	<0.92	55	6.5	<0.23	<0.23	32	40
BASB023	04-Apr-01	(14.5-15.0)	<0.24	3.5	100	0.5	2	9.1	35	20	0.067	<0.97	60	6.2	<0.24	<0.24	26	44
BASB023	04-Apr-01	(20.5-21.0)	<0.24	4.8	190	0.41	2	8	38	24	0.078	4.8	49	33	<0.24	0.25	28	120
BASB024	04-Apr-01	(1.5-2.0)	<0.23	3	130	0.36	1.5	6.7	25	17	0.06	<0.9	40	17	<0.23	<0.23	23	47
BASB024	04-Apr-01	(3.5-4.0)	<0.21	4.1	140	0.48	1.9	8.1	33	18	0.039	<0.83	50	6.4	<0.21	<0.21	30	41
BASB024	04-Apr-01	(9.5-10.0)	<0.21	3.5	120	0.53	2	8.8	35	20	0.062	<0.85	57	6.3	<0.21	<0.21	25	47
BASB024	04-Apr-01	(14.5-15.0)	<0.23	4.1	160	0.5	2	11	31	21	0.05	<0.9	60	6.4	<0.23	0.45	25	42
BASB024	04-Apr-01	(21.5-22.0)	<0.21	2.9	110	0.39	1.4	6.5	31	15	0.06	1.4	38	6.1	<0.21	<0.21	22	92
BASB025	04-Apr-01	(3.5-4.0)	<0.23	3.9	120	0.33	1.7	6.4	25	16	0.041	<0.94	35	18	0.48	<0.23	25	110
DUP	04-Apr-01	(4.5-5.0)	<0.21	3.3	150	0.45	1.7	6.6	32	20	0.023	<0.86	42	6	<0.21	0.32	29	41
BASB025	04-Apr-01	(9.5-10.0)	<0.25	3.5	110	0.44	1.7	8	30	17	0.046	<0.98	48	5.7	<0.25	<0.25	24	40
BASB025	04-Apr-01	(14.5-15.0)	<0.25	2.6	130	0.4	1.5	6.5	28	17	0.045	<0.99	43	5	<0.25	<0.25	21	37
BASB025	04-Apr-01	(24.5-25.0)	<0.22	2.5	250	0.32	1.5	7.6	29	16	0.063	<0.87	49	4.9	0.39	1.3	21	31
BASB086	04-Apr-01	(1.5-2.0)	<0.23	0.87	50	0.41	3	10	3.2	15	0.11	<0.91	18	3.4	<0.23	0.61	61	71
BASB086	04-Apr-01	(3.5-4.0)	<0.21	4.2	85	0.28	1.3	8	20	10	0.033	<0.83	37	4.6	0.39	1.5	20	27
BASB086	04-Apr-01	(9.5-10.0)	<0.23	3.5	100	0.38	1.5	6.8	28	13	0.071	<0.92	41	4.8	<0.23	0.34	25	31
BASB086	04-Apr-01	(15.5-16.0)	<0.23	3.7	120	0.45	1.7	7.8	33	18	0.062	<0.9	52	5.7	<0.23	<0.23	25	42
BASB086	04-Apr-01	(19.5-20.0)	<0.25	3.3	160	0.42	1.9	8.5	34	20	0.06	<0.99	55	5.8	<0.25	0.71	23	43
BASB087	04-Apr-01	(3.5-4.0)	<0.24	3.3	110	0.39	2.8	6.8	5.8	21	0.13	<0.96	18	14	0.62	0.51	26	92
DUP	04-Apr-01	(4.5-5.0)	<0.22	2	130	0.44	1.7	6.2	38	20	0.031	<0.89	46	5.3	<0.22	<0.22	30	43
BASB087	04-Apr-01	(9.5-10.0)	<0.21	2.8	97	0.37	1.5	7.4	27	16	0.063	<0.85	47	4.8	<0.21	<0.21	21	34
BASB087	04-Apr-01	(14.5-15.0)	<0.24	4.2	130	0.4	1.7	8.8	31	17	0.051	<0.94	48	5.8	<0.24	<0.24	25	36

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 5																		
BASB087	04-Apr-01	(24.5-25.0)	<0.22	1.9	130	0.21	1.2	5.6	20	11	0.12	<0.9	31	3.4	<0.22	0.49	23	27
Area 6																		
BASB001	02-Apr-01	(2.5-3.0)	<0.23	3.5	95	0.31	1.3	6.4	23	15	0.062	<0.9	40	8.4	<0.23	<0.23	20	39
BASB001	02-Apr-01	(4.5-5.0)	<0.23	7.7	220	0.51	2.5	18	40	21	0.047	<0.93	70	6.3	<0.23	2.3	36	51
BASB001	02-Apr-01	(9.5-10.0)	<0.23	4	160	0.4	2.2	8	33	20	0.078	<0.93	51	5.6	0.57	<0.23	26	40
BASB001	02-Apr-01	(14.5-15.0)	<0.22	3.7	140	0.48	1.8	8.7	31	19	0.068	<0.9	57	6.5	<0.22	<0.22	25	44
BASB001	02-Apr-01	(22.5-23.0)	<0.23	3.2	120	0.39	1.5	6.5	28	14	0.047	<0.91	44	7.2	<0.23	<0.23	22	35
BASB002	31-Mar-01	(2.5-3.0)	<0.23	4.3	110	0.23	2.3	7.9	24	20	0.047	<0.9	39	24	<0.23	<0.23	25	48 J
BASB005	31-Mar-01	(2.5-3.0)	<0.23	4	170	0.52	1.6	7.8	31	19	0.027	<0.91	48	5.7	<0.23	0.27	25	37 J
BASB011	05-Apr-01	(2.5-3.0)	<0.23	1.7	49	0.14	0.88	3.7	11	7	0.026	<0.92	19	4.3	0.44	<0.23	14	25
BASB017	05-Apr-01	(2.5-3.0)	<0.22	3.4	100	0.37	1.5	6.6	28	15	0.026	<0.88	39	5.7	0.24	0.29	28	37
BASB021	29-Mar-01	(0.5-1.0)	<0.23	18	120	0.41	2.1	7.3	25	31	0.1	<0.93	29	19	<0.23	0.81	43	93
BASB021	29-Mar-01	(4.5-5.0)	<0.2	1.7	88	0.4	1.1	6.1	22	16	0.033	<0.79	37	4.7	<0.2	0.33	20	31
BASB021	29-Mar-01	(9.5-10.0)	<0.24	4.4	130	0.6	1.9	10	38	23	0.07	<0.97	57	7.4	<0.24	0.53	35	49
BASB021	29-Mar-01	(14.5-15.0)	<0.23	3.6	140	0.51	1.6	8.5	33	18	0.056	<0.91	51	6	<0.23	0.54	27	39
BASB021	29-Mar-01	(24.5-25.0)	<0.23	2.8	110	0.4	1.4	6.7	29	15	0.055	<0.91	47	4.8	<0.23	0.5	24	31
BASB051	02-Apr-01	(2.5-3.0)	<0.23	2.3	100	0.36	1.3	6.2	23	14	0.033	<0.9	42	4.7	<0.23	<0.23	16	33
BASB051	02-Apr-01	(9.5-10.0)	<0.21	2.6	95	0.32	1.3	6	22	14	0.061	<0.85	36	4.8	<0.21	<0.21	20	33
BASB051	02-Apr-01	(14.5-15.0)	<0.23	3	120	0.37	1.6	7.1	27	18	0.07	<0.93	46	5.5	<0.23	<0.23	24	40
BASB051	02-Apr-01	(22.5-23.0)	<0.22	2.8	83	0.26	1.1	5.2	17	11	0.092	<0.89	30	4.3	<0.22	<0.22	16	51
BASB081	05-Apr-01	(2.5-3.0)	<0.22	3.6	130	0.36	1.6	8.1	31	19	0.044	<0.87	45	10	0.29	0.39	29	47
BASB081	05-Apr-01	(4.5-5.0)	<0.22	2.9	98	0.29	1.2	5.2	24	13	0.05	<0.9	35	4.1	0.25	<0.22	22	30
BASB081	05-Apr-01	(9.5-10.0)	<0.23	2.7	120	0.38	1.2	6.1	25	13	0.056	<0.92	36	4.7	<0.23	<0.23	18	28

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 6																		
BASB081	05-Apr-01	(14.5-15.0)	<0.22	2.4	140	0.45	1.5	7.5	28	15	0.055	<0.88	52	5.3	<0.22	0.36	21	32
BASB081	05-Apr-01	(25.5-26.0)	<0.21	2	90	0.27	1.1	4.5	26	9.8	0.032	<0.86	33	3.2	<0.21	<0.21	17	25
Area 7																		
BASB018	05-Apr-01	(2.5-3.0)	<0.23	2.8	79	0.28	1.2	5.3	22	11	0.059	<0.92	32	3.9	<0.23	<0.23	20	30
BASB018	05-Apr-01	(5.5-6.0)	<0.21	3.4	120	0.38	1.4	6.8	27	15	0.068	<0.84	37	5.9	<0.21	<0.21	26	32
BASB018	05-Apr-01	(11.5-12.0)	<0.2	3.7	90	0.3	1.5	6.6	23	14	0.038	<0.82	35	14	0.62	<0.2	23	40
BASB018	05-Apr-01	(14.5-15.0)	<0.22	2.7	110	0.38	1.5	6.8	29	16	0.056	<0.89	46	4.8	<0.22	<0.22	20	37
BASB018	05-Apr-01	(19.5-20.0)	<0.21	2.5	94	0.33	1.3	5.1	27	14	0.061	<0.84	38	4.2	<0.21	<0.21	22	33
BASB019	05-Apr-01	(2.0-2.5)	<0.22	2.2	100	0.22	1.9	12	11	67	0.075	<0.88	20	54	0.33	<0.22	19	130
BASB019	05-Apr-01	(4.5-5.0)	<0.23	3.6	160	0.47	1.6	9.2	29	19	0.039	<0.91	57	6	0.29	0.86	27	37
BASB019	05-Apr-01	(9.5-10.0)	<0.24	3.3	120	0.45	1.5	6.7	30	16	0.063	<0.95	49	5.2	<0.24	0.34	23	36
BASB019	05-Apr-01	(14.5-15.0)	<0.2	2.6	100	0.36	1.3	6.3	24	13	0.058	<0.81	37	4.3	<0.2	<0.2	19	30
BASB019	05-Apr-01	(24.5-25.0)	<0.24	2.8	130	0.4	1.7	7.7	34	17	0.068	<0.94	54	5	<0.24	0.57	23	35
BASB052	02-Apr-01	(1.5-2.0)	<0.23	3.9	120	0.38	1.8	7.7	28	16	0.043	<0.93	46	6.2	<0.23	0.42	25	58
BASB052	02-Apr-01	(3.5-4.0)	<0.24	4.7	120	0.39	1.8	8	31	18	0.043	<0.95	48	10	<0.24	<0.24	27	130
BASB052	02-Apr-01	(9.5-10.0)	<0.22	2	85	0.35	1.2	5.5	23	13	0.061	<0.88	34	4.4	<0.22	<0.22	14	31
BASB052	02-Apr-01	(14.5-15.0)	<0.23	2.3	94	0.3	1.2	5.4	21	11	0.1	<0.93	34	3.9	<0.23	<0.23	16	29
BASB052	02-Apr-01	(22.5-23.0)	<0.22	2.1	110	0.33	1.1	4.8	19	10	0.052	<0.87	32	4.2	<0.22	<0.22	14	34
BASB052	02-Apr-01	(24.5-25.0)	<0.24	3.3	140	0.46	1.5	8.3	36	19	0.062	<0.96	54	7.5	<0.24	<0.24	31	150
BASB053	03-Apr-01	(1.5-2.0)	<0.22	5.5	91	0.31	1.2	5.8	22	14	0.051	<0.89	34	6.8	<0.22	0.34	20	33
BASB053	03-Apr-01	(4.5-5.0)	<0.22	4.4	150	0.49	2	9.1	37	20	0.05	<0.89	56	6.4	0.26	<0.22	33	48
BASB053	03-Apr-01	(10.5-11.0)	<0.21	2.2	83	0.35	1.1	5.1	21	13	0.054	<0.83	33	4.5	<0.21	<0.21	15	28
BASB053	03-Apr-01	(14.5-15.0)	<0.23	1.4	83	0.29	1.1	5.7	19	12	0.04	<0.9	34	3.3	<0.23	<0.23	13	28

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 7																		
BASB053	03-Apr-01	(19.5-20.0)	<0.2	7.4	180	0.44	2.2	10	27	18	0.057	<0.81	63	6.1	<0.2	0.5	30	40
BASB054	03-Apr-01	(1.5-2.0)	<0.23	3.4	130	0.42	1.7	8.3	30	17	0.049	<0.91	48	9.3	0.51	0.58	26	45
BASB054	03-Apr-01	(4.5-5.0)	<0.21	3.8	140	0.43	1.8	8.5	32	18	0.05	<0.83	50	5.4	<0.21	<0.21	28	40
BASB054	03-Apr-01	(9.5-10.0)	<0.23	2.1	70	0.33	1	4.6	20	11	0.041	<0.93	33	4	<0.23	<0.23	14	26
BASB054	03-Apr-01	(14.5-15.0)	<0.23	1.1	87	0.31	1.1	4.6	22	13	0.099	<0.91	33	3.8	<0.23	<0.23	13	31
BASB054	03-Apr-01	(21.5-22.0)	<0.22	2.5	84	0.29	1.2	4.5	24	12	0.044	<0.86	32	4.2	<0.22	<0.22	20	29
BASB055	29-Mar-01	(8.0-8.5)	<0.25	3.4	130	0.4	1.9	8.3	25	25	0.059	<0.99	45	20	<0.25	0.53	26	52
BASB055	29-Mar-01	(9.5-10.0)	<0.24	2	99	0.45	1.2	7.2	27	15	0.045	<0.94	41	5.1	<0.24	<0.24	20	31
BASB055	29-Mar-01	(14.5-15.0)	<0.24	2.7	120	0.4	1.4	7.2	26	13	0.047	<0.95	43	4.9	<0.24	<0.24	24	30
BASB055	29-Mar-01	(20.0-20.5)	<0.24	2.4	150	0.56	1.8	7.2	43	22	0.073	<0.98	55	6.6	<0.24	0.32	27	50
BASB055	29-Mar-01	(24.5-25.0)	<0.24	2.6	190	0.48	1.8	8.3	39	20	0.059	<0.95	60	5.5	<0.24	0.94	26	43
BASB056	30-Mar-01	(3.5-4.0)	<0.23	4.5	130	0.46	1.9	8.8	36	19	0.041	<0.9	51	6.9	0.46	0.34	33	44 J
BASB056	30-Mar-01	(5.5-6.0)	<0.23	3.9	110	0.42	1.6	8.4	32	16	0.039	<0.92	48	4.7	0.29	<0.23	30	36 J
BASB056	30-Mar-01	(9.5-10.0)	<0.2	3.8	160	0.5	1.7	8.3	35	19	0.052	<0.82	49	5.7	0.31	0.44	27	40 J
BASB056	30-Mar-01	(14.5-15.0)	<0.21	2.7	120	0.45	1.8	6.5	39	18	0.33	<0.84	46	5.3	0.31	<0.21	30	41 J
BASB056	30-Mar-01	(19.5-20.0)	<0.23	2.8	170	0.6	2.5	9.2	57	26	0.056	<0.9	72	6.6	<0.23	<0.23	31	60 J
BASB056	30-Mar-01	(24.5-25.0)	<0.22	4.6	410	0.48	2.2	13	40	22	0.06	1	69	6.9	0.86	2.8	35	46 J
BASB057	28-Mar-01	(3.5-4.0)	<0.23	4	140	0.36	1.6	7.3	28	33	0.084	<0.92	40	140	<0.23	<0.23	28	140
BASB057	28-Mar-01	(5.5-6.0)	<0.24	3.5	150	0.53	1.7	5.6	37	19	0.039	<0.97	43	6.1	<0.24	<0.24	33	38
BASB057	28-Mar-01	(9.5-10.0)	<0.24	3	200	0.5	1.7	6.9	38	20	0.086	<0.97	50	6.2	<0.24	<0.24	27	43
BASB057	28-Mar-01	(14.5-15.0)	<0.25	2.4	110	0.38	1.3	5.7	26	14	0.06	<0.99	40	4.4	<0.25	<0.25	23	32
BASB057	28-Mar-01	(24.5-25.0)	<0.24	4.2	130	0.45	1.6	7	31	20	0.052	<0.96	49	6.9	<0.24	<0.24	28	39
BASB058	21-Mar-01	(3.5-4.0)	<0.25	5	110	0.48	1.9	8.5	34	20	0.069	<0.99	52 J	8.6	0.32	<0.25	31	46 J

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 7																		
DUP	21-Mar-01	(5.0-5.5)	<0.25	3.6	160	0.52	1.7	9.2	35	18	0.022	<0.99	47 J	6	<0.25	<0.25	30	40 J
BASB058	21-Mar-01	(9.5-10.0)	<0.21	2.7	120	0.47	1.5	4.5	32	15	0.052	<0.85	38 J	4.3	<0.21	<0.21	19	34 J
BASB058	21-Mar-01	(14.5-15.0)	<0.23	2.1	130	0.41	1.5	6.7	28	14	0.043	<0.93	41 J	4.9	<0.23	<0.23	20	34 J
BASB058	21-Mar-01	(24.5-25.0)	<0.21	2.4	120	0.37	1.6	6.7	34	16	0.067	<0.85	51 J	5	<0.21	<0.21	21	38 J
BASB080	03-Apr-01	(1.5-2.0)	<0.25	3.6	140	0.47	1.8	8.5	35	19	0.098	<1	49	8.6	<0.25	<0.25	31	45
BASB080	03-Apr-01	(4.5-5.0)	<0.21	3.5	130	0.43	1.7	7.7	32	16	0.16	<0.86	46	4.9	<0.21	<0.21	29	38
BASB080	03-Apr-01	(9.5-10.0)	<0.21	4.6	160	0.6	2.2	9.9	45	23	0.067	<0.82	61	6.5	<0.21	<0.21	33	50
BASB080	03-Apr-01	(14.5-15.0)	<0.22	3.8	130	0.49	1.8	7.7	36	18	0.091	<0.88	56	5.6	<0.22	0.38	27	42
BASB080	03-Apr-01	(23.5-24.0)	<0.25	0.58	36	0.12	0.38	1.8	9.3	4.3	0.063	<0.99	16	1.3	<0.25	<0.25	4.8	11
Area 8																		
BASB050	20-Mar-01	(2.0-2.5)	<0.22	4.5	160	0.45	1.8	7.3	30	23	0.028	<0.88	45	38	<0.22	0.46	28	77
BASB050	20-Mar-01	(4.5-5.0)	<0.23	4.3	170	0.56	1.8	12	35	19	0.032	<0.92	50	6.6	<0.23	0.7	29	41
BASB050	20-Mar-01	(9.5-10.0)	<0.24	2.6	120	0.46	1.6	7.6	31	18	0.21	<0.96	49	5.6	<0.24	0.46	20	41
BASB050	20-Mar-01	(14.5-15.0)	<0.2	4.5	100	0.33	1.6	7.8	34	14	0.058	<0.82	44	3.6	<0.2	0.78	24	29
BASB050	20-Mar-01	(24.5-25.0)	<0.22	1.5	90	0.32	1.3	4.1	31	13	0.068	<0.86	40	3.7	<0.22	<0.22	17	32
BASB060	05-Apr-01	(0.0-0.5)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	36	NA	NA	NA	NA
BASB061	05-Apr-01	(0.0-0.5)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	130	NA	NA	NA	NA
BASB062	05-Apr-01	(0.0-0.5)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18	NA	NA	NA	NA
BASB063	05-Apr-01	(0.0-0.5)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	110	NA	NA	NA	NA
BASB065	22-Mar-01	(0.0-0.5)	<0.23	7.5	150	0.42	1.9	8.1	32	25	0.1	<0.92	48 J	31	0.37	<0.23	29	82 J
Area 9																		
BASB088	09-Jul-01	(3.0-3.5)	<0.25	3	120	0.37	1.5	7.5	30	17	0.047	<1	46	4.9	<0.25	<0.25	26	35
DUP	09-Jul-01	(3.0-3.5)	<0.25	3.4	92	0.32	1.6	6.5	26	13	0.36	<1	41	4.8	0.45	<0.25	25	33

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn
Area 9																		
BASB088	09-Jul-01	(4.5-5.0)	<0.25	3.4	170	0.48	1.7	10	34	20	0.042	<0.98	53	6.3	<0.25	<0.25	28	39
BASB088	09-Jul-01	(9.5-10.0)	<0.25	2.7	150	0.47	1.7	7.8	38	21	0.067	<1	53	6	<0.25	<0.25	25	42
BASB088	09-Jul-01	(14.5-15.0)	<0.24	2.6	140	0.39	1.7	7.9	36	21	0.071	<0.95	49	7.1	<0.24	<0.24	24	44
BASB088	09-Jul-01	(25.0-25.5)	<0.24	2.9	110	0.33	1.5	9.3	28	18	0.074	<0.95	51	6.5	<0.24	<0.24	21	34
BASB089	09-Jul-01	(3.0-3.5)	<0.25	2.3	110	0.35	1.2	6	26	15	0.051	<0.99	37	4.9	<0.25	<0.25	20	33
BASB089	09-Jul-01	(4.5-5.0)	<0.24	3	160	0.51	1.5	7.4	34	18	0.044	<0.95	46	6.3	<0.24	<0.24	25	40
BASB089	09-Jul-01	(9.5-10.0)	<0.24	3.5	160	0.49	1.9	9	39	22	0.058	<0.95	60	6.1	<0.24	<0.24	28	46
BASB089	09-Jul-01	(14.5-15.0)	<0.25	2	130	0.4	1.6	7	32	18	0.079	<1	49	4.7	<0.25	<0.25	22	38
BASB089	09-Jul-01	(27.0-27.5)	<0.24	4.5	130	0.44	1.9	8	41	25	0.06	<0.95	56	7.3	<0.24	<0.24	28	47
BASB090	09-Jul-01	(2.0-2.5)	<0.25	7.6	94	0.18	2.5	6.7	24	52	0.05	<0.98	44	66	0.39	<0.25	25	83
DUP	09-Jul-01	(2.0-2.5)	<0.25	5.9	100	0.23	2.5	7.8	29	34	0.049	<1	49	43	0.82	<0.25	26	71
BASB090	09-Jul-01	(4.5-5.0)	<0.24	2.9	170	0.49	1.7	7.4	35	21	0.13	<0.96	48	6.4	<0.24	<0.24	27	44
BASB090	09-Jul-01	(9.5-10.0)	<0.24	3	150	0.49	1.9	9.1	38	23	0.096	<0.98	64	6.3	<0.24	<0.24	28	46
BASB090	09-Jul-01	(14.5-15.0)	<0.25	2.1	120	0.33	1.4	6.1	27	15	0.14	<1	40	4.1	<0.25	<0.25	23	34
BASB090	09-Jul-01	(25.0-25.5)	<0.25	3.3	150	0.42	1.8	6.9	45	21	0.065	<1	54	5.9	<0.25	<0.25	28	44

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

J = Reported value is estimated.

bgs = below ground surface

DUP = Duplicate sample

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for mercury using EPA test method 7470 and EPA test method 7470A and all other metals were analyzed by EPA test method 6010B.

Ag = Silver As = Arsenic Ba = Barium Be = Berrylium Cd = Cadmium Co = Cobalt Cr = Chromium Cu = Copper

Table 11
Title 22 Metals Detected in Soil
Batarse Site, Oakland, California
Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Ag	As	Ba	Be	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Tl	V	Zn

Hg = Mercury   Mo = Molybdenum   Ni = Nickel   Pb = Lead   Se = Selenium   Tl = Thallium   V = Vanadium   Zn = Zinc

Table 12
Total Petroleum Hydrocarbons Detected in Groundwater
Batarse Site, Oakland, California

Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 1							
BASB026	28-Mar-01	130 Y	<50	<300	<50	NA	NA
DUP	28-Mar-01	140 Y	<50	<300	<50	NA	NA
BASB027	27-Mar-01	<50	<50	<300	<50	NA	NA
BASB028	27-Mar-01	<50	<50	<300	<50	NA	NA
BASB029	23-Mar-01	<50	<50	<300	<50	NA	NA
BASB030	23-Mar-01	<50	<50	<300	<50	NA	NA
BASB031	26-Mar-01	800 YL	610 YH	<300	920 YLb	NA	320
BASB032	26-Mar-01	61 Y	<50	<300	<50	NA	NA
BASB033	26-Mar-01	<50	<50	<300	<50	NA	NA
BASB034	27-Mar-01	<50	<50	<300	<50	NA	NA
BASB036	22-Mar-01	73 Y	<50	<300	<50	NA	NA
BASB037	22-Mar-01	100 Y	<50	<300	<50	NA	NA
BASB070	03-Apr-01	<50	<50	<300	NA	<50	NA
BASB071	03-Apr-01	150 YL	320 Y	<300	NA	240	NA
BASB072	05-Apr-01	80 Y	<50	<300	NA	<50	NA
BASB073	02-Apr-01	73 Y	<50	<300	NA	<50	NA
BASB074	02-Apr-01	<50	<50	<300	NA	<50	NA
BASB075	02-Apr-01	<50	<50	<300	NA	<50	NA
BASB076	30-Mar-01	530 Y	<50	530	<50	NA	NA
BASB077	30-Mar-01	52 Y	<50	<300	<50	NA	NA
BASB078	05-Apr-01	<50	<50	<300	NA	<50	NA
BASB082	05-Apr-01	<50	<50	<300	NA	<50	NA
Area 2							
BASB006	31-Mar-01	<50	<50	<300	<50	NA	NA
BASB007	31-Mar-01	70 Y	<50	<300	<50	NA	NA
BASB008	21-Mar-01	150 YZ	<50	<300	<50	NA	NA
Area 3							
BADW001	23-Mar-01	<50	<50	<300	<50	NA	NA
BASB040	03-Apr-01	<50	<50	<300	NA	<50	NA
BASB041	28-Mar-01	120 Y	<50	<300	<50	NA	NA
Area 4							
BASB012	19-Mar-01	61 Y	<50	<300	<50	NA	NA
BASB016	04-Apr-01	71 Y	<50	<300	NA	<50	NA
DUP	04-Apr-01	61 Y	<50	<300	NA	<50	NA

Table 12
Total Petroleum Hydrocarbons Detected in Groundwater
Batarse Site, Oakland, California

Concentrations in micrograms per liter (μg/l)

Location ID	Date Sampled	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss
Area 5							
BASB022	04-Apr-01	110 Y	<50	<300	NA	<50	NA
BASB023	04-Apr-01	310 YH	<50	1100	NA	<50	NA
BASB024	04-Apr-01	<50	<50	<300	NA	<50	NA
BASB025	04-Apr-01	<50	<50	<300	NA	<50	NA
BASB086	04-Apr-01	<50	<50	<300	NA	<50	NA
BASB087	04-Apr-01	<50	<50	<300	NA	<50	NA
Area 6							
BASB001	02-Apr-01	360 YH	<50	1200 Y	NA	<50	NA
BASB021	29-Mar-01	66 Y	<50	<300	<50	NA	NA
BASB051	02-Apr-01	20000 Y	19000	<3000	NA	14000 Y	NA
BASB081	05-Apr-01	210000 Y	7700	<15000	NA	5800 Y	NA
DUP	05-Apr-01	90000 Y	7200	<7500	NA	5400 Y	NA
Area 7							
BASB018	05-Apr-01	160 YH	<50	<300	NA	<50	NA
BASB019	05-Apr-01	<50	<50	<300	NA	<50	NA
DUP	05-Apr-01	<50	<50	<300	NA	<50	NA
BASB052	02-Apr-01	100 YH	<50	360 YH	NA	<50	NA
BASB053	03-Apr-01	<50	<50	<300	NA	<50	NA
BASB054	03-Apr-01	<50	<50	<300	NA	<50	NA
BASB055	29-Mar-01	51 Y	<50	<300	<50	NA	NA
BASB056	30-Mar-01	<50	<50	<300	<50	NA	NA
BASB057	28-Mar-01	<50	<50	<300	<50	NA	NA
BASB058	21-Mar-01	57 Y	<50	<300	<50	NA	NA
BASB080	03-Apr-01	<50	<50	<300	NA	<50	NA
Area 8							
BASB050	20-Mar-01	65 Y	<50	<300	<50	NA	NA
Area 9							
BASB088	09-Jul-01	<50	<50	<300	NA	NA	NA
DUP	09-Jul-01	NA	<50	NA	NA	NA	NA
BASB089	09-Jul-01	<50	<50	<300	NA	NA	NA
BASB090	09-Jul-01	<50	<50	<300	NA	NA	NA

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

b = Continuing calibration verification percent difference was slightly above acceptance limits in batch.

DUP = Duplicate sample

Table 12
Total Petroleum Hydrocarbons Detected in Groundwater
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	TPHd	TPHg	TPHmo	TPHms	TPHpt	TPHss

H = Heavier hydrocarbons contributed to the quantitation.
J = Reported value is estimated.
L = Lighter hydrocarbons contributed to the quantitation.
Y = Sample exhibits fuel pattern which does not resemble standard.
Z = Sample exhibits unknown single peak or peaks.
TPHd = total petroleum hydrocarbons as diesel
TPHg = total petroleum hydrocarbons as gasoline
TPHmo = total petroleum hydrocarbons as motor oil
TPHms = total petroleum hydrocarbons as mineral spirits
TPHpt = total petroleum hydrocarbons as paint thinner
TPHss = total petroleum hydrocarbons as stoddard solvent
Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for all compounds using EPA test method 8015 modified.

Table 13
Volatile Organic Compounds Detected in Groundwater
Batarse Site, Oakland, California

Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	1,2,4-TMB	1,2,5-TMB	CF	cis-1,2-DCE	CS2	EBENZ	ISPB	m,p-XYL	MTBE	NAPH	n-BBENZ	PBENZ	PCE	p-ISPT	s-BBENZ	TCE	TOL	VC
Area 1																			
BASB026	28-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DUP	28-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB027	27-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB028	27-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB029	23-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB030	23-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB031	26-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB032	26-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB033	26-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB034	27-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB036	22-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB037	22-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB070	03-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB071	03-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB072	05-Apr-01	<0.5	<0.5	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB073	02-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB074	02-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB075	02-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB076	30-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB077	30-Mar-01	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB078	05-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB082	05-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Area 2																			
BASB006	31-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	<0.5
BASB007	31-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5
BASB008	21-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5

Table 13
Volatile Organic Compounds Detected in Groundwater
Batarse Site, Oakland, California

Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	1,2,4-TMB	1,2,5-TMB	CF	cis-1,2-DCE	CS2	EBENZ	ISPB	m,p-XYL	MTBE	NAPH	n-BBENZ	PBENZ	PCE	p-ISPT	s-BBENZ	TCE	TOL	VC
Area 3																			
BADW001	23-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB040	03-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB041	28-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Area 4																			
BASB012	19-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB016	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5
DUP	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	<0.5
Area 5																			
BASB022	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	16	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB023	04-Apr-01	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	1.1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB024	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB025	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB086	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB087	04-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Area 6																			
BASB001	02-Apr-01	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	5.2	<0.5	<0.5
BASB021	29-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB051	02-Apr-01	2600	820	<8.3	9.7	<8.3	210	190	390	<8.3	180	550	700	<8.3	65	140	15	<8.3	<8.3
BASB081	05-Apr-01	610	110	<2.5	7.5	<2.5	32	89	56	<2.5	78	110	250	<2.5	14	32	5.4	<2.5	4.4
DUP	05-Apr-01	580	110	<2.5	10	<2.5	31	93	54	<2.5	68	93	240	<2.5	14	31	11	<2.5	5.7
Area 7																			
BASB018	05-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB019	05-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DUP	05-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB052	02-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB053	03-Apr-01	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 13
Volatile Organic Compounds Detected in Groundwater
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	1,2,4-TMB	1,2,5-TMB	CF	cis-1,2-DCE	CS2	EBENZ	ISPB	m,p-XYL	MTBE	NAPH	n-BBENZ	PBENZ	PCE	p-ISPT	s-BBENZ	TCE	TOL	VC
Area 7																			
BASB054	03-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5
BASB055	29-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB056	30-Mar-01	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB057	28-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB058	21-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB080	03-Apr-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Area 8																			
BASB050	20-Mar-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Area 9																			
BASB088	09-Jul-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DUP	09-Jul-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB089	09-Jul-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BASB090	09-Jul-01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

DUP = Duplicate sample

J = Reported value is estimated.

VOCs = volatile organic compounds

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for VOCs using EPA test method 8260B.

1,2,4-TMB = 1,2,4-Trimethylbenzene

1,2,5-TMB = 1,3,5-Trimethylbenzene

CF = Chloroform

c-1,2-DCE = cis-1,2-Dichloroethene

CS2 = Carbon Disulfide

EBENZ = Ethylbenzene

ISPB = Isopropylbenzene

m,p-XYL = m,p-Xylenes

Table 13
Volatile Organic Compounds Detected in Groundwater
Batarse Site, Oakland, California

Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	1,2,4-TMB	1,2,5-TMB	CF	cis-1,2-DCE	CS2	EBENZ	ISPB	m,p-XYL	MTBE	NAPH	n-BBENZ	PBENZ	PCE	p-ISPT	s-BBENZ	TCE	TOL	VC

MTBE = Methyl-tertiary-butyl ether
n-BBENZ = n-Butylbenzene
NAPH = Naphthalene
p-ISPT = para-Isopropyl Toluene
PBENZ = Propylbenzene
PCE = Tetrachloroethene
s-BBENZ = sec-Butylbenzene
TCE = Trichloroethene
TOL = Toluene
VC = Vinyl chloride

Other Detected Compounds:

1.2 µg/l of Bromodichloromethane was detected at BASB072 on 04/05/2001
7.3 µg/l of Bromoform was detected at BASB075 on 04/02/2001
0.6 µg/l of Dibromochloromethane was detected at BASB075-DUP on 04/02/2001
0.5 µg/l of Trichlorofluoromethane was detected at BADW001 on 03/23/2001
1.4 µg/l of Styrene was detected at BASB016 on 04/04/2001
0.6 µg/l of Styrene was detected at BASB016-DUP on 04/04/2001

Table 14
Semivolatile Organic Compounds
Detected in Groundwater
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	2-MNAPH	DEHP	NAPH
Area 1				
BASB071	03-Apr-01	<9.4	<9.4	<9.4
BASB071	03-Apr-01	NA	<3	NA
BASB072	05-Apr-01	<9.4	<9.4	<9.4
BASB072	05-Apr-01	NA	3.1	NA
BASB078	05-Apr-01	<9.6	<9.6	<9.6
BASB078	05-Apr-01	NA	<3	NA
Area 3				
BASB040	03-Apr-01	<9.4	<9.4	<9.4
BASB040	03-Apr-01	NA	<3	NA
Area 6				
BASB051	03-Apr-01	<9.9	<9.9	<9.9
BASB051	03-Apr-01	NA	<3	NA
BASB081	05-Apr-01	15000	<4800	7000
BASB081	05-Apr-01	NA	<3	NA
DUP	05-Apr-01	570	<470	<470
DUP	05-Apr-01	NA	<60	NA
Area 7				
BASB018	05-Apr-01	<9.4	<9.4	<9.4
BASB018	05-Apr-01	NA	<3	NA
BASB019	05-Apr-01	<9.4	<9.4	<9.4
BASB019	05-Apr-01	NA	<3	NA
DUP	05-Apr-01	<9.6	<9.6	<9.6
DUP	05-Apr-01	NA	<3	NA
BASB053	03-Apr-01	<9.6	<9.6	<9.6
BASB053	03-Apr-01	NA	<3	NA
BASB054	03-Apr-01	<9.7	<9.7	<9.7
BASB054	03-Apr-01	NA	<3	NA
BASB058	21-Mar-01	<10	<10	<10
BASB058	21-Mar-01	NA	<3	NA
BASB080	03-Apr-01	<10	<10	<10
BASB080	03-Apr-01	NA	<3	NA

Table 14
Semivolatile Organic Compounds
Detected in Groundwater
Batarse Site, Oakland, California

Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	2-MNAPH	DEHP	NAPH

Data prepared by: TIH. Data QA/QC by: LDF.

Notes:

J = Reported value is estimated.
DUP = Duplicate sample
NA = Not analyzed
SVOCs = Semivolatile organic compounds
Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for SVOCs using EPA method 8270C. The second record for any sample was analyzed by BC Laboratories using EPA method 525.2.

2-MNAPH = 2-Methylnaphthalene
DEHP = Bis(2-Ethylhexyl) phthalate
NAPH = Naphthalene

Table 15
Title 22 Metals Detected in Groundwater
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	As	Ba	Co	Cu	Mo	Ni	Pb	Sb	Zn
Area 1										
BASB036	22-Mar-01	<5	98	<20	<10	<20	<20	<3	<1	<20
BASB037	22-Mar-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB029	23-Mar-01	<5	77	<20	<10	<20	<20	<3	<1	<20
BASB030	23-Mar-01	<5	64	<20	<10	<20	<20	<3	<1	<20
BASB031	26-Mar-01	<5	73	<20	<10	<20	<20	<3	<1	<20
BASB032	26-Mar-01	<5	99	<20	<10	<20	<20	<3	<1	<20
BASB033	26-Mar-01	<5	110	50	<10	<20	<20	<3	<1	<20
BASB027	27-Mar-01	<5	100	<20	<10	<20	<20	<3	<1	<20
BASB028	27-Mar-01	<5	120	<20	<10	<20	<20	<3	<1	<20
BASB034	27-Mar-01	<5	120	<20	<10	<20	<20	<3	<1	<20
BASB026	28-Mar-01	<5	97	37	15	<20	130	<3	<1	<20
DUP	28-Mar-01	<5	95	37	16	<20	130	<3	<1	<20
BASB076	30-Mar-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB077	30-Mar-01	<5	140	<20	<10	<20	<20	<3	<1	<20
BASB073	02-Apr-01	<5	99	<20	<10	<20	<20	<3	<1	<20
BASB074	02-Apr-01	<5	87	<20	<10	<20	<20	<3	<1	<20
BASB075	02-Apr-01	<5	100	<20	<10	<20	<20	<3	<1	<20
BASB070	03-Apr-01	<5	77	<20	<10	<20	<20	<3	<1	<20
BASB071	03-Apr-01	<5	92	<20	<10	<20	<20	<3	<1	<20
BASB072	05-Apr-01	<5	100	<20	<10	<20	<20	<3	<1	<20
BASB078	05-Apr-01	<5	28	<20	<10	<20	<20	<3	<1	<20
BASB082	05-Apr-01	<5	79	<20	<10	<20	<20	<3	<1	<20
Area 2										
BASB008	21-Mar-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB006	31-Mar-01	<5	120	<20	<10	<20	<20	<3	<1	<20
BASB007	31-Mar-01	<5	120	<20	<10	<20	<20	<3	<1	<20
Area 3										
BADW001	23-Mar-01		130						1.3	
BASB041	28-Mar-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB040	03-Apr-01	<5	99	<20	<10	<20	<20	<3	<1	<20
Area 4										
BASB012	19-Mar-01	<5	110	<20 J	<10 J	<20	<20 J	<3	<1	<20 J
BASB016	04-Apr-01	<5	99	<20	<10	<20	33	<3	<1	<20
DUP	04-Apr-01	<5	95	<20	<10	<20	33	<3	<1	<20

Table 15
Title 22 Metals Detected in Groundwater
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	As	Ba	Co	Cu	Mo	Ni	Pb	Sb	Zn
Area 5										
BASB022	04-Apr-01	<5	66	<20	<10	<20	38	<3	<1	<20
BASB023	04-Apr-01	<5	90	<20	<10	25	69	<3	<1	<20
BASB024	04-Apr-01	<5	91	<20	<10	<20	<20	<3	<1	<20
BASB025	04-Apr-01	<5	90	<20	<10	<20	64	<3	<1	<20
BASB086	04-Apr-01	<5	68	<20	<10	<20	<20	<3	<1	<20
BASB087	04-Apr-01	<5	68	<20	<10	<20	39	<3	<1	<20
Area 6										
BASB021	29-Mar-01	<5	130	<20	<10	<20	<20	<3	<1	<20
BASB001	02-Apr-01	<5	94	<20	<10	<20	<20	<3	<1	<20
BASB051	02-Apr-01	<5	88	<20	<10	36	23	<3	<1	<20
BASB081	05-Apr-01	9.4	230	<20	<10	<20	26	12	<1	26
DUP	05-Apr-01	9.1	230	<20	<10	<20	23	16	<1	<20
Area 7										
BASB058	21-Mar-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB057	28-Mar-01	<5	120	<20	<10	<20	<20	<3	<1	27
BASB055	29-Mar-01	<5	95	<20	<10	<20	<20	<3	<1	<20
BASB056	30-Mar-01	<5	99	<20	<10	<20	<20	<3	<1	<20
BASB052	02-Apr-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB053	03-Apr-01	<5	87	<20	<10	<20	<20	<3	<1	<20
BASB054	03-Apr-01	<5	69	<20	<10	<20	<20	<3	<1	<20
BASB080	03-Apr-01	<5	79	<20	<10	<20	<20	<3	<1	<20
BASB018	05-Apr-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB019	05-Apr-01	<5	90	<20	<10	<20	<20	<3	<1	44
DUP	05-Apr-01	<5	87	<20	<10	<20	<20	<3	<1	<20
Area 8										
BASB050	20-Mar-01	<5	2000	<20	<10	<410	<20	100	490	<20
Area 9										
BASB088	09-Jul-01	<5	72	<20	<10	<20	<20	<3	<1	<20
DUP	09-Jul-01	<5	74	<20	<10	20	<20	<3	<1	<20
BASB089	09-Jul-01	<5	110	<20	<10	<20	<20	<3	<1	<20
BASB090	09-Jul-01	<5	70	<20	<10	<20	<20	<3	<1	<20

Table 15
Title 22 Metals Detected in Groundwater
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	As	Ba	Co	Cu	Mo	Ni	Pb	Sb	Zn

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

DUP = Duplicate sample

J = Reported value is estimated.

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for metals using EPA test method 6020A.

As = Silver Ba = Barium Co = Cobalt Cu = Copper Mo = Molybdenum
Ni = Nickel Pb = Lead Sb = Antimony Zn = Zinc

Table 16
Total Petroleum Hydrocarbons in Soil - Concentrations Above 100 mg/kg
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Chemical	Result	Comparison Value
Area 1					
BASB027	27-Mar-01	(3.50-4.00)	TPHmo	120 YH	100
BASB031	26-Mar-01	(6.50-7.00)	TPHg	440 JYH	100
BASB031	26-Mar-01	(6.50-7.00)	TPHms	480 JYL	100
BASB031	26-Mar-01	(6.50-7.00)	TPHss	220 J	100
BASB031	26-Mar-01	(9.50-10.00)	TPHg	490 JYH	100
BASB031	26-Mar-01	(9.50-10.00)	TPHms	530 JYL	100
BASB031	26-Mar-01	(9.50-10.00)	TPHss	250 J	100
BASB031	26-Mar-01	(14.50-15.00)	TPHg	180 JYH	100
BASB031	26-Mar-01	(14.50-15.00)	TPHms	190 JYL	100
BASB032-DUP	26-Mar-01	(4.50-5.00)	TPHmo	360	100
BASB033	26-Mar-01	(3.50-4.00)	TPHmo	240	100
BASB036	22-Mar-01	(3.50-4.00)	TPHd	160 YH	100
BASB036	22-Mar-01	(3.50-4.00)	TPHmo	630	100
BASB073	02-Apr-01	(2.50-3.00)	TPHmo	120 Y	100
BASB077	30-Mar-01	(3.50-4.00)	TPHd	270 YH	100
BASB077	30-Mar-01	(3.50-4.00)	TPHmo	2200 Y	100
Area 5					
BASB022	04-Apr-01	(1.50-2.00)	TPHd	220 YL	100
BASB022	04-Apr-01	(1.50-2.00)	TPHmo	1300	100
BASB022	04-Apr-01	(4.50-5.00)	TPHd	970 YL	100
BASB022	04-Apr-01	(4.50-5.00)	TPHmo	490	100
BASB022	04-Apr-01	(9.50-10.00)	TPHd	600 YL	100
BASB022	04-Apr-01	(9.50-10.00)	TPHmo	300	100
BASB023	04-Apr-01	(20.50-21.00)	TPHmo	150	100
Area 6					
BASB001	02-Apr-01	(22.50-23.00)	TPHmo	140 Y	100
BASB002	31-Mar-01	(2.50-3.00)	TPHd	150 YH	100
BASB002	31-Mar-01	(2.50-3.00)	TPHmo	1000 Y	100
Area 7					
BASB018	05-Apr-01	(11.50-12.00)	TPHmo	130	100
BASB019	05-Apr-01	(2.00-2.50)	TPHmo	330	100
BASB052	02-Apr-01	(3.50-4.00)	TPHmo	290 Y	100
BASB052	02-Apr-01	(24.50-25.00)	TPHmo	480	100
BASB053	03-Apr-01	(1.50-2.00)	TPHmo	460 YH	100

Table 16
Total Petroleum Hydrocarbons in Soil - Concentrations Above 100 mg/kg
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Chemical	Result	Comparison Value
Area 7					
BASB054	03-Apr-01	(1.50-2.00)	TPHmo	290	100
BASB054	03-Apr-01	(21.50-22.00)	TPHmo	170	100
BASB056	30-Mar-01	(3.50-4.00)	TPHmo	120 Y	100
BASB058	21-Mar-01	(3.50-4.00)	TPHmo	310 Y	100
Area 8					
BASB061	05-Apr-01	(0.00-0.50)	TPHmo	120	100
Area 9					
BASB090	09-Jul-01	(2.00-2.50)	TPHmo	360	100
BASB090-DUP	09-Jul-01	(2.00-2.50)	TPHmo	310	100

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

bgs = below ground surface
DUP = Duplicate sample
H = Heavier hydrocarbons contributed to the quantitation.
J = Reported value is estimated.
L = Lighter hydrocarbons contributed to the quantitation.
Y = Sample exhibits fuel pattern which does not resemble standard.
TPHd = total petroleum hydrocarbons as diesel
TPHg = total petroleum hydrocarbons as gasoline
TPHmo = total petroleum hydrocarbons as motor oil
TPHms = total petroleum hydrocarbons as mineral spirits
TPHpt = total petroleum hydrocarbons as paint thinner
TPHss = total petroleum hydrocarbons as stoddard solvent
Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for all compounds using EPA test method 8015 modified.

Table 17
Title 22 Metals in Soil - Concentrations Above Background Levels
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Chemical	Result	Background Level
Area 1					
BASB026	28-Mar-01	(4.00-4.50)	Pb	22.0	16.1
BASB027	27-Mar-01	(4.00-4.50)	Pb	74.0	16.1
BASB027	27-Mar-01	(4.00-4.50)	Zn	140.0	106.1
BASB027	27-Mar-01	(15.00-15.50)	Hg	1.1	0.4
BASB028	27-Mar-01	(1.00-1.50)	Pb	83.0	16.1
BASB028	27-Mar-01	(1.00-1.50)	Zn	120.0	106.1
BASB033	26-Mar-01	(4.00-4.50)	Ba	340.0	323.6
BASB033	26-Mar-01	(4.00-4.50)	Pb	160.0	16.1
BASB033	26-Mar-01	(4.00-4.50)	Zn	430.0	106.1
BASB034	27-Mar-01	(4.00-4.50)	Pb	24.0	16.1
BASB036	22-Mar-01	(4.00-4.50)	Cd	3.1	2.7
BASB070	03-Apr-01	(3.50-4.00)	Pb	27.0	16.1
BASB071	03-Apr-01	(2.00-2.50)	Pb	130.0	16.1
BASB071	03-Apr-01	(2.00-2.50)	Zn	240.0	106.1
BASB072	05-Apr-01	(2.50-3.00)	Pb	44.0	16.1
BASB072	05-Apr-01	(2.50-3.00)	Zn	110.0	106.1
BASB077	30-Mar-01	(4.00-4.50)	Pb	30.0	16.1
BASB078	05-Apr-01	(4.00-4.50)	Pb	20.0	16.1
Area 2					
BASB008	21-Mar-01	(4.00-4.50)	Pb	26.0	16.1
Area 3					
BASB041	28-Mar-01	(4.00-4.50)	Pb	28.0	16.1
BASB041	28-Mar-01	(5.00-5.50)	Pb	49.0	16.1
Area 4					
BASB012	19-Mar-01	(4.00-4.50)	Pb	17.0	16.1
BASB013	20-Mar-01	(3.00-3.50)	Cr	160.0	99.6
BASB016	04-Apr-01	(2.50-3.00)	Pb	60.0	16.1
Area 5					
BASB022	04-Apr-01	(2.00-2.50)	Pb	31.0	16.1
BASB022	04-Apr-01	(5.00-5.50)	Pb	63.0	16.1
BASB022	04-Apr-01	(10.00-10.50)	Pb	23.0	16.1
BASB023	04-Apr-01	(2.00-2.50)	As	33.0	19.1
BASB023	04-Apr-01	(2.00-2.50)	Pb	130.0	16.1
BASB023	04-Apr-01	(2.00-2.50)	Zn	400.0	106.1
BASB023	04-Apr-01	(21.00-21.50)	Pb	33.0	16.1

Table 17
Title 22 Metals in Soil - Concentrations Above Background Levels
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Chemical	Result	Background Level
Area 5					
BASB023	04-Apr-01	(21.00-21.50)	Zn	120.0	106.1
BASB024	04-Apr-01	(2.00-2.50)	Pb	17.0	16.1
BASB025	04-Apr-01	(4.00-4.50)	Pb	18.0	16.1
BASB025	04-Apr-01	(4.00-4.50)	Zn	110.0	106.1
BASB086	04-Apr-01	(2.00-2.50)	Cd	3.0	2.7
BASB087	04-Apr-01	(4.00-4.50)	Cd	2.8	2.7
Area 6					
BASB002	31-Mar-01	(3.00-3.50)	Pb	24.0	16.1
BASB021	29-Mar-01	(1.00-1.50)	Pb	19.0	16.1
Area 7					
BASB019	05-Apr-01	(2.50-3.00)	Pb	54.0	16.1
BASB019	05-Apr-01	(2.50-3.00)	Zn	130.0	106.1
BASB052	02-Apr-01	(4.00-4.50)	Zn	130.0	106.1
BASB052	02-Apr-01	(25.00-25.50)	Zn	150.0	106.1
BASB055	29-Mar-01	(8.50-9.00)	Pb	20.0	16.1
BASB056	30-Mar-01	(25.00-25.50)	Ba	410.0	323.6
BASB057	28-Mar-01	(4.00-4.50)	Pb	140.0	16.1
BASB057	28-Mar-01	(4.00-4.50)	Zn	140.0	106.1
Area 8					
BASB050	20-Mar-01	(2.50-3.00)	Pb	38.0	16.1
BASB060	05-Apr-01	(0.00-0.50)	Pb	36.0	16.1
BASB061	05-Apr-01	(0.00-0.50)	Pb	130.0	16.1
BASB062	05-Apr-01	(0.00-0.50)	Pb	18.0	16.1
BASB063	05-Apr-01	(0.00-0.50)	Pb	110.0	16.1
BASB065	22-Mar-01	(0.00-0.50)	Pb	31.0	16.1
Area 9					
BASB090	09-Jul-01	(2.50-3.00)	Pb	66.0	16.1
DUP	09-Jul-01	(2.50-3.00)	Pb	43.0	16.1

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

Metals background concentrations from Oakland Urban Land Development.

bgs = below ground surface

DUP = Duplicate sample

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for mercury using EPA test method 7470 and EPA test method 7470A and all other metals were analyzed by EPA test method 6010B.

As = Arsenic Ba = Barium Cd = Cadmium Cr = Chromium

Table 17
Title 22 Metals in Soil - Concentrations Above Background Levels
Batarse Site, Oakland, California

Concentrations in milligrams per kilogram (mg/kg)

Location ID	Date Sampled	Depth (feet bgs)	Chemical	Result	Background Level

Hg = Mercury   Pb = Lead   Zn = Zinc

Table 18
Total Petroleum Hydrocarbons in Water - Concentrations Above SNARLs
Batarse Site, Oakland, California

Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	Chemical	Result	SNARL value
Area 1				
BASB026	28-Mar-01	TPHd	130 Y	100
DUP	28-Mar-01	TPHd	140 Y	100
BASB031	26-Mar-01	TPHd	800 YL	100
BASB031	26-Mar-01	TPHg	610 YH	5
BASB031	26-Mar-01	TPHms	920 YLb	5
BASB031	26-Mar-01	TPHss	320	5
BASB032	26-Mar-01	TPHd	61 Y	100
BASB036	22-Mar-01	TPHd	73 Y	100
BASB037	22-Mar-01	TPHd	100 Y	100
BASB071	03-Apr-01	TPHd	150 YL	100
BASB071	03-Apr-01	TPHg	320 Y	5
BASB071	03-Apr-01	TPHpt	240	5
BASB072	05-Apr-01	TPHd	80 Y	100
BASB073	02-Apr-01	TPHd	73 Y	100
BASB076	30-Mar-01	TPHd	530 Y	100
BASB076	30-Mar-01	TPHmo	530	100
BASB077	30-Mar-01	TPHd	52 Y	100
Area 2				
BASB007	31-Mar-01	TPHd	70 Y	100
BASB008	21-Mar-01	TPHd	150 YZ	100
Area 3				
BASB041	28-Mar-01	TPHd	120 Y	100
Area 4				
BASB012	19-Mar-01	TPHd	61 Y	100
BASB016	04-Apr-01	TPHd	71 Y	100
DUP	04-Apr-01	TPHd	61 Y	100
Area 5				
BASB022	04-Apr-01	TPHd	110 Y	100
BASB023	04-Apr-01	TPHd	310 YH	100
BASB023	04-Apr-01	TPHmo	1100	100
Area 6				
BASB001	02-Apr-01	TPHd	360 YH	100
BASB001	02-Apr-01	TPHmo	1200 Y	100
BASB021	29-Mar-01	TPHd	66 Y	100

Table 18
Total Petroleum Hydrocarbons in Water -
Concentrations Above SNARLs
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	Chemical	Result	SNARL value
Area 6				
BASB051	02-Apr-01	TPHd	20000 Y	100
BASB051	02-Apr-01	TPHg	19000	5
BASB051	02-Apr-01	TPHpt	14000 Y	5
BASB081	05-Apr-01	TPHd	210000 Y	100
BASB081	05-Apr-01	TPHg	7700	5
BASB081	05-Apr-01	TPHpt	5800 Y	5
DUP	05-Apr-01	TPHd	90000 Y	100
DUP	05-Apr-01	TPHg	7200	5
DUP	05-Apr-01	TPHpt	5400 Y	5
Area 7				
BASB018	05-Apr-01	TPHd	160 YH	100
BASB052	02-Apr-01	TPHd	100 YH	100
BASB052	02-Apr-01	TPHmo	360 YH	100
BASB055	29-Mar-01	TPHd	51 Y	100
BASB058	21-Mar-01	TPHd	57 Y	100
Area 8				
BASB050	20-Mar-01	TPHd	65 Y	100

Data prepared by: TIH . Data QA/QC by: LDF .

Notes:

SNARLs = Suggested No-Adverse-Response Levels, Regional Water Quality Control Board, Central Valley Region, A Compilation of Water Quality Goals, August 2000
SNARLs only exist for TPHg and TPHd but were applied to similiar TPH fractions.
bgs = below ground surface
b = Continuing calibration verification percent difference was slightly above acceptance limits in batch.
DUP = Duplicate sample
H = Heavier hydrocarbons contributed to the quantitation.
L = Lighter hydrocarbons contributed to the quantitation.
Y = Sample exhibits fuel pattern which does not resemble standard.
Z = Sample exhibits unknown single peak or peaks.
TPHd = total petroleum hydrocarbons as diesel
TPHg = total petroleum hydrocarbons as gasoline
TPHmo = total petroleum hydrocarbons as motor oil
TPHms = total petroleum hydrocarbons as mineral spirits
TPHpt = total petroleum hydrocarbons as paint thinner
TPHss = total petroleum hydrocarbons as stoddard solvent
Samples were analyzed by Curtis and Tompkins Analytical

Table 18
Total Petroleum Hydrocarbons in Water -
Concentrations Above SNARLs
Batarse Site, Oakland, California
Concentrations in micrograms per liter (µg/l)

Location ID	Date Sampled	Chemical	Result	SNARL value

Laboratories Ltd. for all compounds using EPA test method 8015 modified.

Table 19
Title 22 Metals and Volatile Organic Compounds in Groundwater - Concentrations Above MCLs
Batarse Site, Oakland, California

Concentrations in micrograms per liter (μg/l)

Location ID	Date Sampled	Chemical	Result	MCL value
Area 1				
BASB026	28-Mar-01	Ni	130	100
DUP	28-Mar-01	Ni	130	100
Area 5				
BASB022	04-Apr-01	MTBE	16	13
Area 6				
BASB001	02-Apr-01	TCE	5.2	5
BASB051	02-Apr-01	c-1,2-DCE	9.7	6
BASB051	02-Apr-01	TCE	15	5
BASB081	05-Apr-01	c-1,2-DCE	7.5	6
BASB081	05-Apr-01	TCE	5.4	5
BASB081	05-Apr-01	VC	4.4	0.5
DUP	05-Apr-01	Pb	16	15
DUP	05-Apr-01	c-1,2-DCE	10	6
DUP	05-Apr-01	TCE	11	5
DUP	05-Apr-01	VC	5.7	0.5
Area 8				
BASB050	20-Mar-01	Ba	2000	1000
BASB050	20-Mar-01	Pb	100	15
BASB050	20-Mar-01	Sb	490	6

Data prepared by: TIH. Data QA/QC by: LDF.

Notes:

DUP = Duplicate sample

MCL = Maximum concentration limit

MCL values were derived from the California Department of Health Services Primary MCL list, Regional Water Quality Control Board, Central Valley Region, A Compilation of Water Quality Goals, August 2000

Samples were analyzed by Curtis and Tompkins Analytical Laboratories Ltd. for metals using EPA test method 6010B and for volatile organic compounds using EPA test method 8260B.

Ba = Barium
MTBE=Methyl-tertiary-butyl ether
Pb = Lead
TCE = Trichloroethene
c-1,2-DCE = cis-1,2-Dichloroethene
Ni = Nickel
Sb = Antimony
VC = Vinyl Chloride

Table 20
Selection of Chemicals of Potential Concern in Soil
Batarse Site, Oakland, California

Chemical	Detection Frequency	Minimum Reporting Limit [1] (mg/kg)	Maximum Reporting Limit [1] (mg/kg)	Minimum Detected Value [1] (mg/kg)	Maximum Detected Value [1] (mg/kg)	Background Values [2] (mg/kg)	Selected as COPC	Rationale for Selection or Exclusion
Metals								
Arsenic	279 / 279	0.18	0.25	0.58	33	19.1	No	Within Background Levels [3]
Barium	279 / 279	0.36	9.8	36	410	323.6	Yes	Above Background Levels
Beryllium	279 / 279	0.072	0.10	0.12	0.67	1.0	No	Within Background Levels
Cadmium	279 / 279	0.18	0.25	0.38	3.1	2.7	Yes	Above Background Levels
Chromium	279 / 279	0.36	0.50	2.1	160	99.6	Yes	Above Background Levels
Cobalt	279 / 279	0.72	1.0	1.8	20	22.2	No	Within Background Levels
Copper	279 / 279	0.36	0.50	4.3	67	69.4	No	Within Background Levels
Lead	283 / 283	0.11	0.15	1.3	160	16.1	Yes	Above Background Levels
Mercury	277 / 279	0.017	0.091	0.021	1.1	0.40	Yes	Above Background Levels
Molybdenum	6 / 279	0.72	1.0	1.0	4.8	7.4	No	Within Background Levels
Nickel	279 / 279	0.72	1.0	16	94	119.8	No	Within Background Levels
Selenium	54 / 279	0.18	0.25	0.22	0.86	5.6	No	Within Background Levels
Silver	2 / 279	0.18	0.25	0.52	0.8	1.8	No	Within Background Levels
Thallium	89 / 279	0.18	0.25	0.21	2.8	27.1	No	Within Background Levels
Vanadium	279 / 279	0.36	0.50	4.8	61	74.3	No	Within Background Levels
Zinc	279 / 279	0.72	20	11.0	430	106	Yes	Above Background Levels
OCPs								
4,4'-DDT	1 / 2	0.0059	0.060	0.012	0.012	NA	Yes	Detected
alpha-Chlordane	1 / 2	0.003	0.030	0.012	0.012	NA	Yes	Detected
gamma-Chlordane	1 / 2	0.003	0.030	0.0075	0.0075	NA	Yes	Detected
PAHs								
Benzo(a)anthracene	1 / 15	0.0033	0.050	0.0036	0.0036	NA	Yes	Detected
Benzo(a)pyrene	2 / 15	0.0033	0.050	0.0079	0.0081	NA	Yes	Detected
Benzo(b)fluoranthene	1 / 15	0.0067	0.050	0.0067	0.0067	NA	Yes	Detected
Benzo(g,h,i)perylene	1 / 15	0.0067	0.050	0.007	0.0071	NA	Yes	Detected
Chrysene	3 / 15	0.0033	0.050	0.0047	0.062	NA	Yes	Detected
Dibenz(a,h)anthracene	2 / 15	0.0067	0.050	0.011	0.016	NA	Yes	Detected

Table 20
Selection of Chemicals of Potential Concern in Soil
Batarse Site, Oakland, California

Chemical	Detection Frequency	Minimum Reporting Limit [1] (mg/kg)	Maximum Reporting Limit [1] (mg/kg)	Minimum Detected Value [1] (mg/kg)	Maximum Detected Value [1] (mg/kg)	Background Values [2] (mg/kg)	Selected as COPC	Rationale for Selection or Exclusion
Indeno(1,2,3-cd)pyrene	1 / 15	0.0033	0.050	0.0059	0.0059	NA	Yes	Detected
Pyrene	2 / 15	0.0067	0.050	0.0091	0.0097	NA	Yes	Detected
<u>SVOCS</u>								
bis(2-Ethylhexyl)phthalate	1 / 15	0.33	3.3	0.87	0.87	NA	Yes	Detected
Phenol	1 / 15	0.33	3.3	0.82	0.82	NA	Yes	Detected
<u>VOCS</u>								
Acetone	1 / 95	0.019	0.022	0.025	0.025	NA	Yes	Detected
Methylene Chloride	8 / 95	0.019	0.022	0.020	0.060	NA	Yes	Detected

Notes:

1 Minimum and maximum reporting limits and detecteds value from LFR sampling program.

2 Metal background concentrations from Oakland Urban Land Development.

3 Arsenic maximum detected value of 33 mg/kg is anomalous and considered an outlier; the other 278 arsenic results are below the background level of 19.1 mg/kg.

mg/kg = Milligrams per kilogram
NA = Not applicable
OCPs = Organochlorine Pesticides
PAH = Polynuclear Aromatic Hydrocarbons
SVOCs = Semivolatile organic compound
VOCs = Volatile organic compound

Table 21
Selection of Chemicals of Potential Concern in Groundwater
Batarse Site, Oakland, California

Chemical	Detection Frequency	Minimum Reporting Limit [1] (µg/l)	Maximum Reporting Limit [1] (µg/l)	Minimum Detected Value [1] (µg/l)	Maximum Detected Value [1] (µg/l)	Selected as COPC	Rationale for Selection or Exclusion
Metals							
Antimony	2 / 58	1.0	20	1.3	490	Yes	Detected
Arsenic	2 / 58	5.0	5.0	9.1	9.4	Yes	Detected
Barium	58 / 58	10	200	28	2000	Yes	Detected
Cobalt	3 / 58	20	20	37	50	Yes	Detected
Copper	2 / 58	10	10	15	16	Yes	Detected
Lead	3 / 58	3.0	3.0	12	100	Yes	Detected
Molybdenum	3 / 58	20	410	20	36	Yes	Detected
Nickel	11 / 58	20	20	23	130	Yes	Detected
Zinc	3 / 58	20	20	26	44	Yes	Detected
SVOCs							
2-Methylnaphthalene	2 / 14	9.4	4800	570	15000	Yes	Detected
Naphthalene	1 / 14	9.4	4800	7000	7000	Yes	Detected
bis(2-Ethylhexyl)phthalate	1 / 28	3.0	4800	3.1	3.1	Yes	Detected
VOCs							
1,2,4-Trimethylbenzene	3 / 58	0.50	8.3	580	2600	Yes	Detected
1,3,5-Trimethylbenzene	3 / 58	0.50	8.3	110	820	Yes	Detected
Bromodichloromethane	1 / 58	0.50	8.3	1.2	1.2	Yes	Detected
Bromoform	1 / 58	1.0	17	7.3	7.3	Yes	Detected
Carbon Disulfide	3 / 58	0.50	8.3	0.60	0.80	Yes	Detected
Chloroform	2 / 58	0.50	8.3	1.3	11	Yes	Detected
cis-1,2-Dichloroethene	4 / 58	0.50	8.3	2.3	10	Yes	Detected
Dibromochloromethane	1 / 58	0.50	8.3	0.60	0.60	Yes	Detected
Ethylbenzene	3 / 58	0.50	8.3	31	210	Yes	Detected
Isopropylbenzene	3 / 58	0.50	8.3	89	190	Yes	Detected
m,p-Xylenes	4 / 58	0.50	8.3	0.50	390	Yes	Detected
MTBE	4 / 58	0.50	8.3	0.50	16	Yes	Detected
n-Butylbenzene	3 / 58	0.50	8.3	93	550	Yes	Detected

Table 21
Selection of Chemicals of Potential Concern in Groundwater
Batarse Site, Oakland, California

Chemical	Detection Frequency	Minimum Reporting Limit [1] (µg/l)	Maximum Reporting Limit [1] (µg/l)	Minimum Detected Value [1] (µg/l)	Maximum Detected Value [1] (µg/l)	Selected as COPC	Rationale for Selection or Exclusion
Naphthalene	3 / 58	1.0	17	68	180	Yes	Detected
para-Isopropyl Toluene	3 / 58	0.50	8.3	14	65	Yes	Detected
Propylbenzene	3 / 58	0.50	8.3	240	700	Yes	Detected
sec-Butylbenzene	3 / 58	0.50	8.3	31	140	Yes	Detected
Styrene	2 / 58	0.50	8.3	0.60	1.4	Yes	Detected
Tetrachloroethene	1 / 58	0.50	8.3	1.3	1.3	Yes	Detected
Toluene	5 / 58	0.50	8.3	0.50	2.3	Yes	Detected
Trichloroethene	4 / 58	0.50	8.3	5.2	15	Yes	Detected
Trichlorofluoromethane	1 / 58	0.50	8.3	0.50	0.50	Yes	Detected
Vinyl Chloride	2 / 58	0.50	8.3	4.4	5.7	Yes	Detected

Notes:

[1] Minimum and maximum reporting limits and detecteds value from LFR sampling program.

µg/l =Micrograms per liter

NA = Not applicable

SVOCs = Semivolatile organic compound

VOCs = Volatile organic compounds

Table 22
Chemical Properties for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	CAS Number	Vapor Pressure[1] (mmHg @ 20-30C)	Solubility[1] (mg/l @ 20-30C)	Henry's Law[1] (atm-m^3/mol)
Metals				
Antimony	7440-36-0	1.00E+00	---	NA
Arsenic	7440-38-2	0.00E+00	---	NA
Barium	7440-39-3	---	---	NA
Cadmium	7440-43-9	0.00E+00	---	NA
Chromium	7440-47-3	0.00E+00	---	NA
Cobalt	7440-48-4	---	---	NA
Copper	7440-50-8	0.00E+00	---	NA
Lead	7439-92-1	0.00E+00	---	NA
Mercury	7439-97-6	2.00E-03	---	NA
Molybdenum	7439-98-7	0.00E+00	---	NA
Nickel	7440-02-0	0.00E+00	---	NA
Zinc	7440-66-6	0.00E+00	---	NA
OCPs				
4,4'-DDT	50-29-3	5.50E-06	5.00E-03	5.13E-04
alpha-Chlordane	5103-71-9	1.00E-05	5.60E-01	9.63E-06
gamma-Chlordane	5103-74-2	1.00E-05	5.60E-01	9.63E-06
PAHs				
2-Methylnaphthalene	91-57-6	---	---	---
Benzo(a)anthracene	56-55-3	2.20E-08	5.70E-03	1.16E-06
Benzo(a)pyrene	50-32-8	5.60E-09	1.20E-03	1.55E-06
Benzo(b)fluoranthene	205-99-2	5.00E-07	1.40E-02	1.19E-05
Benzo(g,h,i)perylene	191-24-2	1.03E-10	7.00E-04	5.34E-08
Chrysene	218-01-9	6.3E-09	1.80E-03	1.05E-06
Dibenz(a,h)anthracene	53-70-3	1.00E-10	5.00E-04	7.33E-08
Indeno(1,2,3-cd)pyrene	193-39-5	1.00E-10	5.30E-04	6.86E-08
Naphthalene[2]	91-20-3	8.50E-02	3.10E+01	4.40E-04
Pyrene	129-00-0	2.50E-06	1.32E-01	5.04E-06
SVOCs				
bis(2-Ethylhexyl)phthalate[2]	117-81-7	1.42E-07	2.70E-01	2.70E-07
Phenol	108-95-2	3.41E-01	9.30E+04	4.54E-07
VOCs				
1,2,4-Trimethylbenzene[2]	95-63-6	2.10E+00	5.70E+01	6.16E-03
1,3,5-Trimethylbenzene[2]	108-67-8	2.48E+00	4.82E+01	8.77E-03
Acetone	67-64-1	2.70E+02	1.00E+06	2.06E-05

Table 22
Chemical Properties for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	CAS Number	Vapor Pressure[1] (mmHg @ 20-30C)	Solubility[1] (mg/l @ 20-30C)	Henry's Law [1] (atm-m^3/mol)
Bromodichloromethane [2]	75-27-4	5.00E+01	3.03E+03	2.12E-03
Bromoform	75-25-2	5.00E+00	3.01E+03	5.52E-04
Carbon Disulfide	75-15-0	3.60E+02	2.94E+03	1.23E-02
Chloroform	67-66-3	1.51E+02	8.20E+03	2.87E-03
cis-1,2-Dichloroethene	156-59-2	2.08E+02	3.50E+03	7.58E-03
Dibromochloromethane [2]	124-48-1	5.54E+00	2.70E+03	7.83E-04
Ethylbenzene	100-41-4	7.00E+00	1.52E+02	6.43E-03
Isopropylbenzene [2]	98-82-8	4.50E+00	6.13E+01	1.15E-02
m,p-Xylenes	1330-20-7	1.00E+01	1.98E+02	7.04E-03
Methylene Chloride	75-09-2	4.31E+03	6.50E+03	4.40E-02
MTBE [2]	1634-04-4	2.50E+02	5.10E+04	5.87E-04
n-Butylbenzene [2]	104-51-8	1.06E+00	1.18E+01	1.59E-02
para-Isopropyl Toluene [2]	99-87-6	1.46E+00	2.34E+01	1.10E-02
Propylbenzene [2]	103-65-1	3.42E+00	5.22E+01	1.05E-02
sec-Butylbenzene [2]	135-98-8	1.75E+00	1.76E+01	1.76E-02
Styrene [2]	100-42-5	6.40E+00	3.10E+02	2.75E-03
Tetrachloroethene	127-18-4	1.78E+01	1.50E+02	2.59E-02
Toluene	108-88-3	2.81E+01	5.35E+02	6.37E-03
Trichloroethene	79-01-6	5.79E+01	1.10E+03	9.10E-03
Trichlorofluoromethane [2]	75-69-4	8.03E+02	1.10E+03	9.70E-02
Vinyl Chloride	75-01-4	2.66E+03	2.67E+03	8.19E-02

Notes:

[1] Values from Exhibit A-1, U.S.EPA Superfund Public Health Evaluation Manual, October 1986.

[2] Values from Environmental Science Center Database; http://esc.syrres.com/interknow/physdemo.htm

mg/l = Milligrams per liter

atm-m^3/mol = atmosphere-cubic meter per mole

NA = Not applicable

--- = Not available

OCPs = Organochlorine Pesticides

PAH = Polynuclear Aromatic Hydrocarbons

SVOCs = Semivolatile organic compound

VOCs = Volatile organic compound

Table 23
Carcinogenic Toxicity Information for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Cancer Slope Factor (Sfo) $(mg/kg\text{-}day)^{-1}$	Inhalation Cancer Slope Factor (Sfi) $(mg/kg\text{-}day)^{-1}$	Weight-of Evidence Classification	Toxicity Information Reference Source[1]
Metals				
Antimony	NA	NA	---	IRIS 2001
Arsenic	1.5E+00	1.2E+01	A	CAL/EPA 2001, IRIS 2001
Barium	NA	NA	D	IRIS 2001
Cadmium	3.8E-01	1.5E+01	B1	CAL/EPA 2001, IRIS 2001
Chromium	NA	NA	D	IRIS 2001
Cobalt	NA	NA	---	IRIS 2001
Copper	NA	NA	D	IRIS 2001
Lead	NA	NA	B2	IRIS 2001
Mercury	NA	NA	D	IRIS 2001
Molybdenum	NA	NA	---	IRIS 2001
Nickel	NA	9.1E-01	A	CAL/EPA 2001, IRIS 2001
Zinc	NA	NA	D	IRIS 2001
OCPs				
4,4'-DDT	3.4E-01	3.4E-01	B2	CAL/EPA 2001, IRIS 2001
alpha-Chlordane	1.3E+00	1.2E+00	B2	CAL/EPA 2001, IRIS 2001
gamma-Chlordane	1.3E+00	1.2E+00	B2	CAL/EPA 2001, IRIS 2001
PAHs				
2-Methylnaphthalene	NA	NA	---	IRIS 2001
Benzo(a)anthracene	1.2E+00	3.9E-01	B2	CAL/EPA 2001, IRIS 2001
Benzo(a)pyrene	1.2E+01	3.9E+00	B2	CAL/EPA 2001, IRIS 2001
Benzo(b)fluoranthene	1.2E+00	3.9E-01	B2	CAL/EPA 2001, IRIS 2001
Benzo(g,h,i)perylene	NA	NA	---	IRIS 2001
Chrysene	1.2E-01	3.9E-02	B2	CAL/EPA 2001, IRIS 2001
Dibenz(a,h)anthracene	4.1E+00	4.1E+00	B2	CAL/EPA 2001, IRIS 2001
Indeno(1,2,3-cd)pyrene	1.2E+00	3.9E-01	B2	CAL/EPA 2001, IRIS 2001
Naphthalene	NA	NA	C	IRIS 2001
Pyrene	NA	NA	D	IRIS 2001
SVOCs				
bis(2-Ethylhexyl)phthalate	3.0E-03	8.4E-03	B2	CAL/EPA 2001, IRIS 2001
Phenol	NA	NA	D	IRIS 2001
VOCs				
1,2,4-Trimethylbenzene	NA	NA	---	IRIS 2001
1,3,5-Trimethylbenzene	NA	NA	---	IRIS 2001
Acetone	NA	NA	D	IRIS 2001
Bromodichloromethane	1.3E-01	1.3E-01	B2	CAL/EPA 2001, IRIS 2001
Bromoform	7.9E-03	3.9E-03	B2	IRIS 2001
Carbon Disulfide	NA	NA	---	IRIS 2001
Chloroform	3.1E-02	1.9E-02	B2	CAL/EPA 2001, IRIS 2001
cis-1,2-Dichloroethene	NA	NA	D	IRIS 2001
Dibromochloromethane	9.4E-02	9.4E-02	C	CAL/EPA 2001, IRIS 2001
Ethylbenzene	NA	NA	D	IRIS 2001

Table 23
Carcinogenic Toxicity Information for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Cancer Slope Factor (Sfo) (mg/kg-day)$^{-1}$	Inhalation Cancer Slope Factor (Sfi) (mg/kg-day)$^{-1}$	Weight-of Evidence Classification	Toxicity Information Reference Source[1]
Isopropylbenzene	NA	NA	D	IRIS 2001
m,p-Xylenes	NA	NA	D	IRIS 2001
Methylene Chloride	1.4E-02	3.5E-03	B2	CAL/EPA 2001, IRIS 2001
MTBE	1.8E-03	1.8E-03	---	CAL/EPA 2001, IRIS 2001
n-Butylbenzene	NA	NA	---	IRIS 2001
para-Isopropyl Toluene	NA	NA	---	IRIS 2001
Propylbenzene	NA	NA	---	IRIS 2001
sec-Butylbenzene	NA	NA	---	IRIS 2001
Styrene	NA	NA	---	IRIS 2001
Tetrachloroethene	5.1E-02	2.1E-02	---	CAL/EPA 2001, IRIS 2001
Toluene	NA	NA	D	IRIS 2001
Trichloroethene	1.5E-02	1.0E-02	---	CAL/EPA 2001, IRIS 2001
Trichlorofluoromethane	NA	NA	D	IRIS 2001
Vinyl Chloride	2.7E-01	2.7E-01	A	CAL/EPA 2001, IRIS 2001

Notes:
[1] California EPA OEHHA Cancer Potency Values, March 2001;
U.S. EPA Integrated Risk Information System (IRIS) database, May 2001.
mg/kg-day = Milligrams per kilogram per day
OCPs = Organochlorine Pesticides
PAH = Polynuclear Aromatic Hydrocarbons
SVOCs = Semivolatile organic compound
VOCs = Volatile organic compound
NA = Not applicable
--- = Not available
Weight-of Evidence Classification:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as to human carcinogenicity

Table 24
Noncarcinogenic Toxicity Information for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Inhalation Reference Dose (RfDi) (mg/kg-day)	Primary Target Organs	Toxicity Information Reference Source[1]
Metals				
Antimony	4.0E-04	---	Blood	NCEA
Arsenic	3.0E-04	---	Skin	NCEA
Barium	7.0E-02	1.4E-04	Blood Pressure	NCEA
Cadmium	5.0E-04	---	Kidney	NCEA
Chromium	3.0E-03	---	Liver	NCEA
Cobalt	6.0E-02	---	---	
Copper	3.7E-02	---	GI	NCEA
Lead	---	---	Neurotoxicity	NCEA
Mercury	---	2.6E-05	Neurotoxicity	CAL/EPA OEHHA 2001
Molybdenum	5.0E-03	---	---	NCEA
Nickel	2.0E-02	---	Weight Loss	NCEA
Zinc	3.0E-01	---	Blood	NCEA
OCPs				
4,4'-DDT	5.0E-04	5.0E-04	Liver	IRIS 2001
alpha-Chlordane	5.0E-04	2.0E-04	Liver	IRIS 2001
gamma-Chlordane	5.0E-04	2.0E-04	Liver	IRIS 2001
PAHs				
2-Methylnaphthalene	---	---	---	---
Benzo(a)anthracene	---	---	---	---
Benzo(a)pyrene	---	---	---	---
Benzo(b)fluoranthene	---	---	---	---
Benzo(g,h,i)perylene	---	---	---	---
Chrysene	---	---	---	---
Dibenz(a,h)anthracene	---	---	---	---
Indeno(1,2,3-cd)pyrene	---	---	---	---
Naphthalene	2.0E-02	2.6E-03	Body Weight, Respiratory System	IRIS 2001, CAL/EPA OEHHA 2001
Pyrene	3.0E-02	3.0E-02	Kidney	IRIS 2001
SVOCs				
bis(2-Ethylhexyl)phthalate	2.0E-02	2.0E-02	Liver	IRIS 2001
Phenol	6.0E-01	6.0E-01	Fetal Body Weight	IRIS 2001
VOCs				
1,2,4-Trimethylbenzene	5.0E-02	1.7E-03	---	NCEA
1,3,5-Trimethylbenzene	5.0E-02	1.7E-03	---	NCEA
Acetone	1.0E-01	1.0E-01	Liver, Kidney	IRIS 2001
Bromodichloromethane	2.0E-02	2.0E-02	Kidney	IRIS 2001
Bromoform	2.0E-02	2.0E-02	Liver	IRIS 2001
Carbon Disulfide	1.0E-01	2.0E-01	Fetal Toxicity, PNS	IRIS 2001

Table 24
Noncarcinogenic Toxicity Information for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Inhalation Reference Dose (RfDi) (mg/kg-day)	Primary Target Organs	Toxicity Information Reference Source[1]
Chloroform	1.0E-02	1.0E-02	Liver	IRIS 2001
cis-1,2-Dichloroethene	1.0E-02	1.0E-02	Blood	HEAST 1997
Dibromochloromethane	2.0E-02	2.0E-02	Liver	IRIS 2001
Ethylbenzene	1.0E-01	5.7E-01	Liver, Kidney, Fetus	IRIS 2001, CAL/EPA OEHHA 2001
Isopropylbenzene	1.0E-01	1.1E-01	Kidney	IRIS 2001
m,p-Xylenes	2.0E+00	2.0E-01	Body weight, CNS, Whole Body	IRIS 2001, CAL/EPA OEHHA 2001
Methylene Chloride	6.0E-02	1.1E-01	Liver	IRIS 2001, CAL/EPA OEHHA 2001
MTBE	8.6E-01	2.2E+00	Liver, Kidney	IRIS 2001, CAL/EPA OEHHA 2001
n-Butylbenzene	1.0E-02	1.0E-02	---	NCEA
para-Isopropyl Toluene	---	---	---	---
Propylbenzene	1.0E-02	1.0E-02	---	NCEA
sec-Butylbenzene	1.0E-02	1.0E-02	---	NCEA
Styrene	2.0E-01	3.0E-01	Blood, Liver, CNS	IRIS 2001
Tetrachloroethene	1.0E-02	1.1E-01	Liver	IRIS 2001, NCEA
Toluene	2.0E-01	8.6E-02	Liver, Kidney, CNS, PNS	IRIS 2001, CAL/EPA OEHHA 2001
Trichloroethene	1.0E-02	1.0E-02	---	IRIS, withdrawn value
Trichlorofluoromethane	3.0E-01	3.0E-01	---	IRIS 2001
Vinyl Chloride	3.0E-03	2.9E-02	CNS/PNS, GI System	IRIS 2001

Notes:

[1] National Center for Environmental Assessment (NCEA) as cited in U.S. EPA Region 9 Preliminary Remedial Goals, November 2000.
U.S. EPA Integrated Risk Information System (IRIS) database, May 2001.
U.S. EPA Heath Effects Assessment Summary Tables (HEAST), Annual Update, FY 1997.
CAL/EPA Office of Environmental Heath Hazard Assessment (OEHHA) database, August 2001.

mg/kg-day = Milligrams per kilogram per day
NA = Not applicable
--- = Not available
OCPs = Organochlorine Pesticides
PAH = Polynuclear Aromatic Hydrocarbons
SVOCs = Semivolatile organic compound
VOCs = Volatile organic compound
PNS = Peripheral Nervous System
CNS = Central Nervous System

Table 25
Carcinogenic Risk Estimate for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Cancer Slope Factor (Sfo) (mg/kg-day)$^{-1}$	Inhalation Cancer Slope Factor (Sfi) (mg/kg-day)$^{-1}$	Dermal Permeability Coefficient (Kp) (cm/hr)		Dermal Absorption Fraction (ABS) (dimensionless)	Concentration in Water[1] (Cw) (mg/l)			Concentration in Soil[1] (Cs) (mg/kg)			Concentration in Air (Ca) (mg/m^3)	RISK for Water Pathway	RISK for Soil Pathway	RISK for Air Pathway
<u>Metals</u>															
Antimony	NA	NA	0.00016	a	0.01	0.0011	U	L	NA			NA	NA	NA	NA
Arsenic	1.5E+00	1.2E+01	0.00016	a	0.03	0.0028	U	L	NA	U	L	NA	NA	NA	NA
Barium	NA	NA	0.00016	a	0.001	0.13	U	L	131	U	L	6.6E-06	NA	NA	NA
Cadmium	3.8E-01	1.5E+01	NA		0.001	NA			1.7	U	L	8.5E-08	NA	1.0E-06	1.9E-07
Chromium	NA	NA	NA		0.01	NA			32	U	L	1.6E-06	NA	NA	NA
Cobalt	NA	NA	0.00016	a	0.01	0.012	U	L	NA			NA	NA	NA	NA
Copper	NA	NA	0.00016	a	0.01	0.0056	U	L	NA			NA	NA	NA	NA
Lead	NA	NA	0.00016	a	0.01	0.0026	U	L	10	U	L	5.0E-07	NA	NA	NA
Mercury	NA	NA	NA		0.01	NA			0.071	U	L	3.6E-09	NA	NA	NA
Molybdenum	NA	NA	0.00016	a	0.01	0.014	U	L	NA			NA	NA	NA	NA
Nickel	NA	9.1E-01	0.00016	a	0.01	0.020	U	L	NA			NA	NA	NA	NA
Zinc	NA	NA	0.00016	a	0.01	0.012	U	L	47	U	L	2.4E-06	NA	NA	NA
<u>OCPs</u>															
4,4'-DDT	3.4E-01	3.4E-01	NA		0.05	NA			0.012	M	N	6.0E-10	NA	1.0E-08	3.0E-11
alpha-Chlordane	1.3E+00	1.2E+00	NA		0.05	NA			0.012	M	N	6.0E-10	NA	3.9E-08	1.1E-10
gamma-Chlordane	1.3E+00	1.2E+00	NA		0.05	NA			0.0075	M	N	3.8E-10	NA	2.4E-08	6.7E-11
<u>SVOCs</u>															
2-Methylnaphthalene	NA	NA	0.069	b	NA	9.1	U	L	NA			6.7E-05	NA	NA	NA
Benzo(a)anthracene	1.2E+00	3.9E-01	NA		0.1	NA			0.0036	M	L	1.8E-10	NA	1.5E-08	1.0E-11
Benzo(a)pyrene	1.2E+01	3.9E+00	NA		0.1	NA			0.0081	M	L	4.1E-10	NA	3.3E-07	2.4E-10
Benzo(b)fluoranthene	1.2E+00	3.9E-01	NA		0.1	NA			0.0067	M	L	3.4E-10	NA	2.8E-08	1.9E-11
Benzo(g,h,i)perylene	NA	NA	NA		0.1	NA			0.0071	M	L	3.6E-10	NA	NA	NA
Chrysene	1.2E-01	3.9E-02	NA		0.1	NA			0.057	U	L	2.9E-09	NA	2.4E-08	1.7E-11
Dibenz(a,h)anthracene	4.1E+00	4.1E+00	NA		0.1	NA			0.016	M	L	8.0E-10	NA	2.3E-07	4.9E-10
Indeno(1,2,3-cd)pyrene	1.2E+00	3.9E-01	NA		0.1	NA			0.0059	M	L	3.0E-10	NA	2.4E-08	1.7E-11
Naphthalene	NA	NA	0.069		0.1	0.0046	U	L	NA			3.4E-08	NA	NA	NA
Pyrene	NA	NA	NA		0.1	NA			0.0097	M	L	1.3E-11	NA	NA	NA
<u>VOCs</u>															
bis(2-Ethylhexyl)phthalate	3.0E-03	8.4E-03	0.033		0.1	0.0031	M	L	0.43	U	L	2.2E-08	1.5E-07	4.4E-09	2.7E-11
Phenol	NA	NA	NA		0.1	NA			0.42	U	L	2.1E-08	NA	NA	NA

Table 25
Carcinogenic Risk Estimate for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Cancer Slope Factor (Sfo) (mg/kg-day)$^{-1}$	Inhalation Cancer Slope Factor (Sfi) (mg/kg-day)$^{-1}$	Dermal Permeability Coefficient (Kp) (cm/hr)		Dermal Absorption Fraction (ABS) (dimensionless)	Concentration in Water[1] (Cw) (mg/l)			Concentration in Soil[1] (Cs) (mg/kg)			Concentration in Air (Ca) (mg/m^3)	RISK for Water Pathway	RISK for Soil Pathway	RISK for Air Pathway
VOCs															
1,2,4-Trimethylbenzene	NA	NA	0.0074	c	NA	0.0048	U	L	NA			1.7E-05	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	0.0074	c	NA	0.0020	U	L	NA			9.7E-06	NA	NA	NA
Acetone	NA	NA	NA		0.10	NA			0.010	U	L	7.8E-08	NA	NA	NA
Bromodichloromethane	1.3E-01	1.3E-01	0.0058		NA	0.00037	U	L	NA			1.1E-08	1.4E-06	NA	2.2E-10
Bromoform	7.9E-03	3.9E-03	0.0026		NA	0.0008	U	L	NA			6.5E-09	1.4E-07	NA	3.8E-12
Carbon Disulfide	NA	NA	0.024		NA	0.00038	U	L	NA			2.8E-07	NA	NA	NA
Chloroform	3.1E-02	1.9E-02	0.0089		NA	0.00047	U	L	NA			3.9E-08	3.5E-07	NA	1.1E-10
cis-1,2-Dichloroethene	NA	NA	0.010		NA	0.00057	U	L	NA			4.9E-08	NA	NA	NA
Dibromochloromethane	9.4E-02	9.4E-02	0.0039		NA	0.00036	U	L	NA			4.8E-09	1.0E-06	NA	6.7E-11
Ethylbenzene	NA	NA	0.0074		NA	0.0011	U	L	NA			1.6E-07	NA	NA	NA
Isopropylbenzene	NA	NA	0.0074	c	NA	0.0014	U	L	NA			1.1E-03	NA	NA	NA
m,p-Xylenes	NA	NA	0.080		NA	0.0014	U	L	NA			1.9E-07	NA	NA	NA
Methylene Chloride	1.4E-02	3.5E-03	NA		0.10	NA			0.012	U	L	3.4E-06	NA	5.8E-10	1.8E-09
MTBE	1.8E-03	1.8E-03	0.0029	d	NA	0.00052	U	L	NA			7.7E-09	2.8E-08	NA	2.1E-12
n-Butylbenzene	NA	NA	0.0074	c	NA	0.0018	U	L	NA			1.4E-05	NA	NA	NA
para-Isopropyl Toluene	NA	NA	0.0074	c	NA	0.00073	U	L	NA			5.3E-04	NA	NA	NA
Propylbenzene	NA	NA	0.0074	c	NA	0.0026	U	L	NA			2.2E-05	NA	NA	NA
sec-Butylbenzene	NA	NA	0.0074	c	NA	0.001	U	L	NA			1.1E-05	NA	NA	NA
Styrene	NA	NA	0.055		NA	0.00038	U	L	NA			1.9E-08	NA	NA	NA
Tetrachloroethene	5.1E-02	2.1E-02	0.048		NA	0.00037	U	L	NA			1.3E-07	4.3E-07	NA	4.0E-10
Toluene	NA	NA	0.045		NA	0.00046	U	L	NA			6.1E-08	NA	NA	NA
Trichloroethene	1.5E-02	1.0E-02	0.016		NA	0.00062	U	L	NA			1.3E-07	2.4E-07	NA	1.9E-10
Trichlorofluoromethane	NA	NA	0.017		NA	0.00035	U	L	NA			3.2E-05	NA	NA	NA
Vinyl Chloride	2.7E-01	2.7E-01	0.0073		NA	0.00043	U	L	NA			3.1E-07	3.5E-06	NA	1.2E-08
TOTAL RISK (across all chemicals and exposure routes):					**9.2E-06**										

Notes:

[1] The higher value of the 95% Upper confidence limit of the arithmetic mean concentration (U) or maximum detected concentration (M) in soil and maximum detected concentration in grounwater

a = Dermal permeability coefficient for water used as surrogate value.

b = Dermal permeability coefficient for naphthalene used as surrogate value.

Table 25
Carcinogenic Risk Estimate for Chemicals of Potential Concern
Batarse Site, Oakland, California

:hemical	Oral Cancer Slope Factor (Sfo) $(mg/kg\text{-}day)^{-1}$	Inhalation Cancer Slope Factor (Sfi) $(mg/kg\text{-}day)^{-1}$	Dermal Permeability Coefficient (Kp) (cm/hr)	Dermal Absorption Fraction (ABS) (dimensionless)	Concentration in Water[1] (Cw) (mg/l)	Concentration in Soil[1] (Cs) (mg/kg)	Concentration in Air (Ca) (mg/m^3)	RISK for Water Pathway	RISK for Soil Pathway	RISK for Air Pathway

: = Dermal permeability coefficient for ethylbenzene used as surrogate value.
I = Dermal permeability coefficient for ethyl ether used as surrogate value.
. = Data is assumed lognormally distributed based on results of the Shapiro-Wilk W-Test (Gilbert 1987) for sample size less than 50
and on results of the D'Agostino Y-Test (Gilbert 1987) for sample size greater than 50.
\ = Data is assumed normally distributed based on results of the Shapiro-Wilk W-Test (Gilbert 1987) for sample size less than 50
and on results of the D'Agostino Y-Test (Gilbert 1987) for sample size greater than 50.
ng/kg = Milligrams per kilogram
ng/kg-day = Milligrams per kilogram per day
:m/hr = Centimeters per hour
ng/m^3 = Milligrams per cubic meter
\A = Not applicable
-- = Not available
)CPs = Organochlorine Pesticides
'AH = Polynuclear Aromatic Hydrocarbons
;VOCs = Semivolatile organic compound
/OCs = Volatile organic compound

:or Water Pathway (equation shown on Figure 2.2; CAL/EPA 1999):
'or Non-VOCs: RISK = ((Cw x SFo) x (0.0149)) + ((Cw x SFo) x (0.0325) x Kp)
'or VOCs: RISK = ((Cw x SFo) x (0.0149)) +((Cw x SFi) x (0.0149)) + ((Cw x SFo) x (0.0325) x Kp)
:or Soil Pathway (equation shown on Figure 2.3; CAL/EPA 1999):
:ISK = ((Cs x SFo) x (1.57 x 10^{-6})) + ((Cs x SFo) x (1.87 x 10^{-5}) x ABS)
:or Air Pathway (equation shown on Figure 2.4; CAL/EPA 1999):
:ISK = (Ca x SFi) x 0.149
where for non-VOCs (equation shown on Figure 2.8, CAL/EPA 1999):
Ca = Cs x (5.0 x 10^{-8} kg/m^3)
where for VOCs Ca calculated using DTSC Johnsonand Ettinger's vapor model spreadsheet (See Appendix X, Attachment 1)

Table 26
Noncarcinogenic Hazard Estimate for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Inhalation Reference Dose (RfDi) (mg/kg-day)	Dermal Permeability Coefficient for Water (Kp) (cm/hr)		Dermal Absorption Fraction (ABS) (dimensionless)	Concentration in Water[1] (Cw) (mg/l)			Concentration in Soil[1] (Cs) (mg/kg)			Concentration in Air (Ca) (mg/m^3)	HAZARD for Water Pathway	HAZARD for Soil Pathway	HAZARD for Air Pathway
Metals															
Antimony	4.0E-04	---	0.00016	a	0.01	0.0011	U	L	NA			NA	1.8E-01	NA	NA
Arsenic	3.0E-04	---	0.00016	a	0.03	0.0028	U	L	NA	U	L	NA	6.0E-01	NA	NA
Barium	7.0E-02	7.0E-02	0.00016	a	0.001	0.13	U	L	131	U	L	6.6E-06	1.2E-01	2.4E-02	6.0E-05
Cadmium	5.0E-04	2.0E-04	NA		0.001	NA			1.7	U	L	8.5E-08	NA	4.4E-02	2.7E-04
Chromium	3.0E-03	---	NA		0.01	NA			32	U	L	1.6E-06	NA	1.5E-01	NA
Cobalt	6.0E-02	---	0.00016	a	0.01	0.012	U	L	NA			NA	1.3E-02	NA	NA
Copper	3.7E-02	---	0.00016	a	0.01	0.0056	U	L	NA			NA	9.7E-03	NA	NA
Lead	---	---	0.00016	a	0.01	0.0026	U	L	10	U	L	5.0E-07	NA	NA	NA
Mercury	---	2.6E-05	NA		0.01	NA			0.071	U	L	3.6E-09	NA	NA	8.7E-05
Molybdenum	5.0E-03	---	0.00016	a	0.01	0.014	U	L	NA			NA	1.8E-01	NA	NA
Nickel	2.0E-02	---	0.00016	a	0.01	0.020	U	L	NA			NA	6.4E-02	NA	NA
Zinc	3.0E-01	---	0.00016	a	0.01	0.012	U	L	47	U	L	2.4E-06	2.6E-03	2.2E-03	NA
OCPs															
4,4'-DDT	5.0E-04	5.0E-04	NA		0.05	NA			0.012	M	N	6.0E-10	NA	4.6E-04	7.7E-07
alpha-Chlordane	5.0E-04	2.0E-04	NA		0.05	NA			0.012	M	N	6.0E-10	NA	4.6E-04	1.9E-06
gamma-Chlordane	5.0E-04	2.0E-04	NA		0.05	NA			0.0075	M	N	3.8E-10	NA	2.9E-04	1.2E-06
PAHs															
2-Methylnaphthalene	---	---	0.069	b	NA	9.1	U	L	NA			6.7E-05	NA	NA	NA
Benzo(a)anthracene	---	---	NA		0.1	NA			0.0036	M	L	1.8E-10	NA	NA	NA
Benzo(a)pyrene	---	---	NA		0.1	NA			0.0081	M	L	4.1E-10	NA	NA	NA
Benzo(b)fluoranthene	---	---	NA		0.1	NA			0.0067	M	L	3.4E-10	NA	NA	NA
Benzo(g,h,i)perylene	---	---	NA		0.1	NA			0.0071	M	L	3.6E-10	NA	NA	NA
Chrysene	---	---	NA		0.1	NA			0.057	U	L	2.9E-09	NA	NA	NA
Dibenz(a,h)anthracene	---	---	NA		0.1	NA			0.016	M	L	8.0E-10	NA	NA	NA
Indeno(1,2,3-cd)pyrene	---	---	NA		0.1	NA			0.0059	M	L	3.0E-10	NA	NA	NA
Naphthalene	2.0E-02	2.6E-03	0.069		0.1	0.0046	U	L	NA			3.4E-08	1.3E-01	NA	8.4E-06
Pyrene	3.0E-02	3.0E-02	NA		0.1	NA			0.0097	M	L	1.3E-11	NA	8.3E-06	2.9E-10
SVOCs															
bis(2-Ethylhexyl)phthalate	2.0E-02	2.0E-02	0.033		0.1	0.0031	M	L	0.43	U	L	2.2E-08	2.0E-02	5.5E-04	6.9E-07
Phenol	6.0E-01	6.0E-01	NA		0.1	NA			0.42	U	L	2.1E-08	NA	1.8E-05	2.2E-08

Table 26
Noncarcinogenic Hazard Estimate for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Inhalation Reference Dose (RfDi) (mg/kg-day)	Dermal Permeability Coefficient for Water (Kp) (cm/hr)		Dermal Absorption Fraction (ABS) (dimensionless)	Concentration in Water[1] (Cw) (mg/l)			Concentration in Soil[1] (Cs) (mg/kg)			Concentration in Air (Ca) (mg/m^3)	HAZARD for Water Pathway	HAZARD for Soil Pathway	HAZARD for Air Pathway
VOCs															
1,2,4-Trimethylbenzene	5.0E-02	1.7E-03	0.0074	c	NA	0.0048	U	L	NA			1.7E-05	1.9E-01	NA	6.4E-03
1,3,5-Trimethylbenzene	5.0E-02	1.7E-03	0.0074	c	NA	0.0020	U	L	NA			9.7E-06	7.8E-02	NA	3.7E-03
Acetone	1.0E-01	1.0E-01	NA		0.10	NA			0.010	U	L	7.8E-08	NA	2.6E-06	5.0E-07
Bromodichloromethane	2.0E-02	2.0E-02	0.0058		NA	0.00037	U	L	NA			1.1E-08	2.4E-03	NA	3.6E-07
Bromoform	2.0E-02	2.0E-02	0.0026		NA	0.0008	U	L	NA			6.5E-09	5.1E-03	NA	2.1E-07
Carbon Disulfide	1.0E-01	2.0E-01	0.024		NA	0.00038	U	L	NA			2.8E-07	3.7E-04	NA	8.8E-07
Chloroform	1.0E-02	1.0E-02	0.0089		NA	0.00047	U	L	NA			3.9E-08	6.0E-03	NA	2.5E-06
cis-1,2-Dichloroethene	1.0E-02	1.0E-02	0.010		NA	0.00057	U	L	NA			4.9E-08	7.3E-03	NA	3.1E-06
Dibromochloromethane	2.0E-02	2.0E-02	0.0039		NA	0.00036	U	L	NA			4.8E-09	2.3E-03	NA	1.5E-07
Ethylbenzene	1.0E-01	5.7E-01	0.0074		NA	0.0011	U	L	NA			1.6E-07	8.3E-04	NA	1.8E-07
Isopropylbenzene	1.0E-01	1.1E-01	0.0074	c	NA	0.0014	U	L	NA			1.1E-03	1.7E-03	NA	6.3E-03
m,p-Xylenes	2.0E+00	2.0E-01	0.080		NA	0.0014	U	L	NA			1.9E-07	5.0E-04	NA	5.9E-07
Methylene Chloride	6.0E-02	1.1E-01	NA		0.10	NA			0.012	U	L	3.4E-06	NA	5.1E-06	2.0E-05
MTBE	8.6E-01	2.2E+00	0.0029	d	NA	0.00052	U	L	NA			7.7E-09	5.4E-05	NA	2.2E-09
n-Butylbenzene	1.0E-02	1.0E-02	0.0074	c	NA	0.0018	U	L	NA			1.4E-05	2.3E-02	NA	9.0E-04
para-Isopropyl Toluene	---	---	0.0074	c	NA	0.00073	U	L	NA			5.3E-04	NA	NA	NA
Propylbenzene	1.0E-02	1.0E-02	0.0074	c	NA	0.0026	U	L	NA			2.2E-05	3.3E-02	NA	1.4E-03
sec-Butylbenzene	1.0E-02	1.0E-02	0.0074	c	NA	0.001	U	L	NA			1.1E-05	1.3E-02	NA	7.3E-04
Styrene	2.0E-01	3.0E-01	0.055		NA	0.00038	U	L	NA			1.9E-08	2.1E-04	NA	4.0E-08
Tetrachloroethene	1.0E-02	1.1E-01	0.048		NA	0.00037	U	L	NA			1.3E-07	2.7E-03	NA	7.5E-07
Toluene	2.0E-01	8.6E-02	0.045		NA	0.00046	U	L	NA			6.1E-08	5.0E-04	NA	4.5E-07
Trichloroethene	1.0E-02	1.0E-02	0.016		NA	0.00062	U	L	NA			1.3E-07	8.0E-03	NA	8.3E-06
Trichlorofluoromethane	3.0E-01	3.0E-01	0.017		NA	0.00035	U	L	NA			3.2E-05	1.5E-04	NA	6.9E-05
Vinyl Chloride	3.0E-03	2.9E-02	0.0073		NA	0.00043	U	L	NA			3.1E-07	1.0E-02	NA	6.8E-06
TOTAL HAZARD (across all chemicals and exposure routes):					2										

Notes:
1 The higher value of the 95% Upper confidence limit of the arithmetic mean concentration (U) or maximum detected concentration (M) in soil and maximum detected concentration in grounwater
a = Dermal permeability coefficient for water used as surrogate value.
b = Dermal permeability coefficient for naphthalene used as surrogate value.
c = Dermal permeability coefficient for ethylbenzene used as surrogate value.
d = Dermal permeability coefficient for ethyl ether used as surrogate value.

Table 26
Noncarcinogenic Hazard Estimate for Chemicals of Potential Concern
Batarse Site, Oakland, California

Chemical	Oral Reference Dose (RfDo) (mg/kg-day)	Inhalation Reference Dose (RfDi) (mg/kg-day)	Dermal Permeability Coefficient for Water (Kp) (cm/hr)	Dermal Absorption Fraction (ABS) (dimensionless)	Concentration in Water[1] (Cw) (mg/l)	Concentration in Soil[1] (Cs) (mg/kg)	Concentration in Air (Ca) (mg/m^3)	HAZARD for Water Pathway	HAZARD for Soil Pathway	HAZARD for Air Pathway

L = Data is assumed lognormally distributed based on results of the Shapiro-Wilk W-Test (Gilbert 1987) for sample size less than 50 and on results of the D'Agostino Y-Test (Gilbert 1987) for sample size greater than 50.

N = Data is assumed normally distributed based on results of the Shapiro-Wilk W-Test (Gilbert 1987) for sample size less than 50 and on results of the D'Agostino Y-Test (Gilbert 1987) for sample size greater than 50.

mg/kg = Milligrams per kilogram

mg/kg-day = Milligrams per kilogram per day

cm/hr = Centimeters per hour

mg/m^3 = Milligrams per cubic meter

NA = Not applicable

--- = Not available

OCPs = Organochlorine Pesticides

PAH = Polynuclear Aromatic Hydrocarbons

SVOCs = Semivolatile organic compound

VOCs = Volatile organic compound

For Water Pathway (equation shown on Figure 2.2; CAL/EPA 1999):

For non-VOCs: HAZARD = ((Cw/RFDo) x (0.0639)) + ((Cw/RFDo) x (0.0644) x Kp)

For VOCs: HAZARD = ((Cw/RFDo) x (0.0639)) + ((Cw/RFDi) x (0.0639)) + ((Cw/RFDo) x (0.0644) x Kp)

For Soil Pathway (equation shown on Figure 2.3; CAL/EPA 1999):

HAZARD = ((Cs/RFDo) x (1.28 x 10^{-5})) + ((Cs/RFDo) x (1.28 x 10^{-4}) x ABS)

For Air Pathway (equation shown on Figure 2.4; CAL/EPA 1999):

HAZARD = (Ca/RFDi) x 0.639

where for non-VOCs (equation shown on Figure 2.8, CAL/EPA 1999):
Ca = Cs x (5.0 x 10^{-8} kg/m^3)

where for VOCs Ca calculated using DTSC Johnsonand Ettinger's vapor model spreadsheet (See Appendix X, Attachment 1)

Table 27
Lead Risk Assessment Spreadsheet
California Department of Toxic Substances Control
Batarse Site, Oakland, California

USER'S GUIDE to version 7

INPUT	
MEDIUM	LEVEL
Lead in Air (ug/m^3)	0.028
Lead in Soil/Dust (ug/g)	10.0
Lead in Water (ug/l)	26
% Home-grown Produce	7%
Respirable Dust (ug/m^3)	1.5

OUTPUT	Percentile Estimate of Blood Pb (ug/dl)					PRG-99	PRG-95
	50th	90th	95th	98th	99th	(ug/g)	(ug/g)
BLOOD Pb, ADULT	1.8	3.2	3.8	4.6	5.2	491	877
BLOOD Pb, CHILD	2.3	4.3	5.0	6.1	7.0	90	192
BLOOD Pb, PICA CHILD	2.4	4.4	5.2	6.3	7.2	58	123
BLOOD Pb, OCCUPATIONAL	1.7	3.2	3.7	4.5	5.2	2519	4508

EXPOSURE PARAMETERS	units	adults	children
Days per week	days/wk	7	
Days per week, occupational		5	
Geometric Standard Deviation		1.6	
Blood lead level of concern (ug/dl)		10	
Skin area, residential	cm^2	5700	2900
Skin area occupational	cm^2	2900	
Soil adherence	ug/cm^2	70	200
Dermal uptake constant	(ug/dl)/(ug/day)	0.0001	
Soil ingestion	mg/day	50	100
Soil ingestion, pica	mg/day		200
Ingestion constant	(ug/dl)/(ug/day)	0.04	0.16
Bioavailability	unitless	0.44	
Breathing rate	m^3/day	20	6.8
Inhalation constant	(ug/dl)/(ug/day)	0.08	0.192
Water ingestion	l/day	1.4	0.4
Food ingestion	kg/day	1.9	1.1
Lead in market basket	ug/kg	3.1	
Lead in home-grown produce	ug/kg	4.5	

PATHWAYS

ADULTS	Residential			Occupational		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	3.8E-5	0.00	0%	1.4E-5	0.00	0%
Soil Ingestion	8.8E-4	0.01	1%	6.3E-4	0.01	0%
Inhalation, bkgrnd		0.05	3%		0.03	2%
Inhalation	2.5E-6	0.00	0%	1.8E-6	0.00	0%
Water Ingestion		1.46	83%		1.46	84%
Food Ingestion, bkgrnd		0.22	12%		0.23	13%
Food Ingestion	2.4E-3	0.02	1%			0%

CHILDREN	typical			with pica		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	5.6E-5	0.00	0%		0.00	0%
Soil Ingestion	7.0E-3	0.07	3%	1.4E-2	0.14	6%
Inhalation	2.0E-6	0.00	0%		0.00	0%
Inhalation, bkgrnd		0.04	2%		0.04	2%
Water Ingestion		1.66	71%		1.66	69%
Food Ingestion, bkgrnd		0.50	22%		0.50	21%
Food Ingestion	5.5E-3	0.06	2%		0.06	2%

SOURCE: Delorme Street Atlas USA Version 6.0

7962SV01.CDR 1215000

Site Location Map

Batarse Site, Oakland, CA

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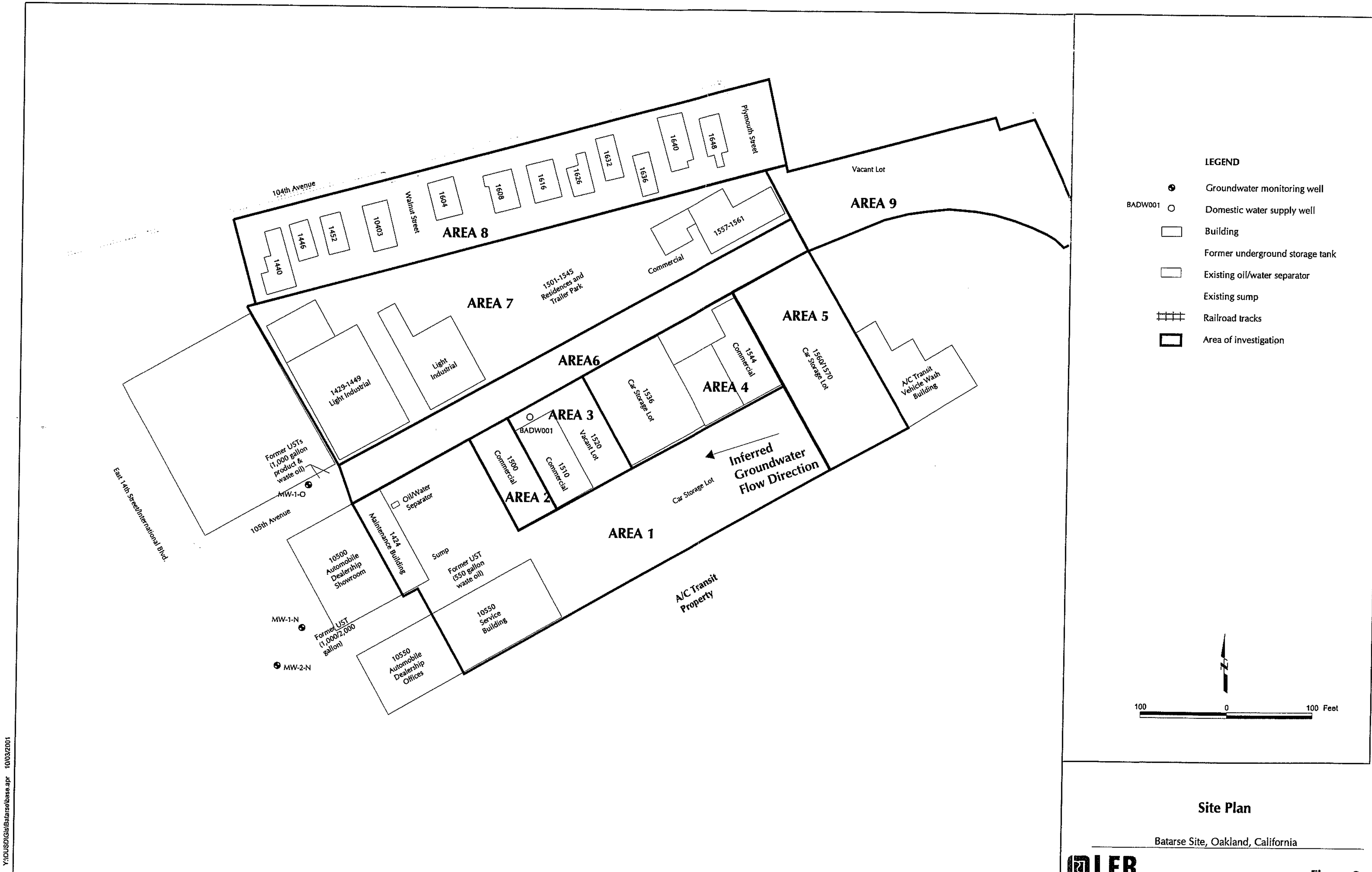
Figure 1



Site Plan

Batarse Site, Oakland, California

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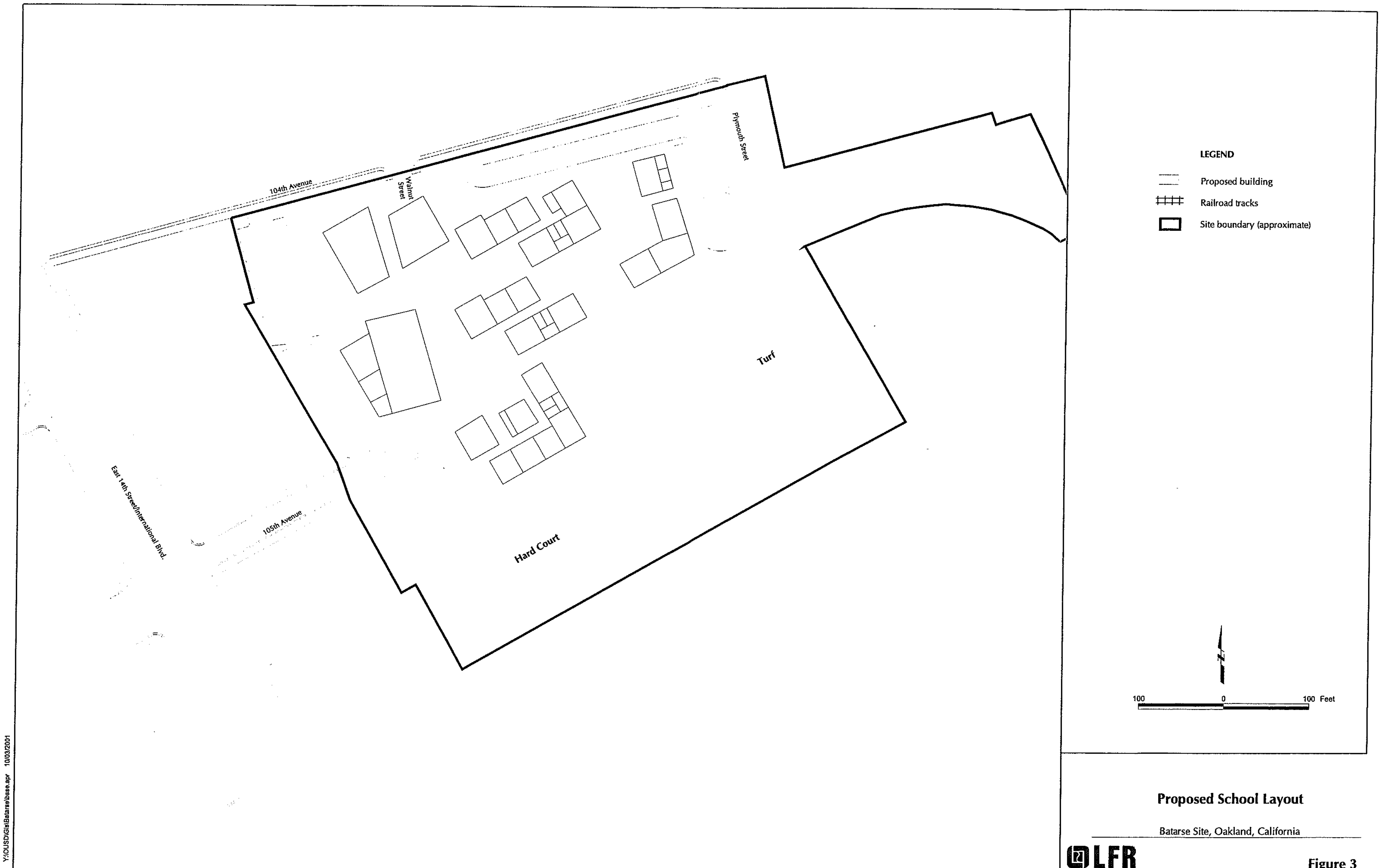
Figure 2



Proposed School Layout

Batarse Site, Oakland, California

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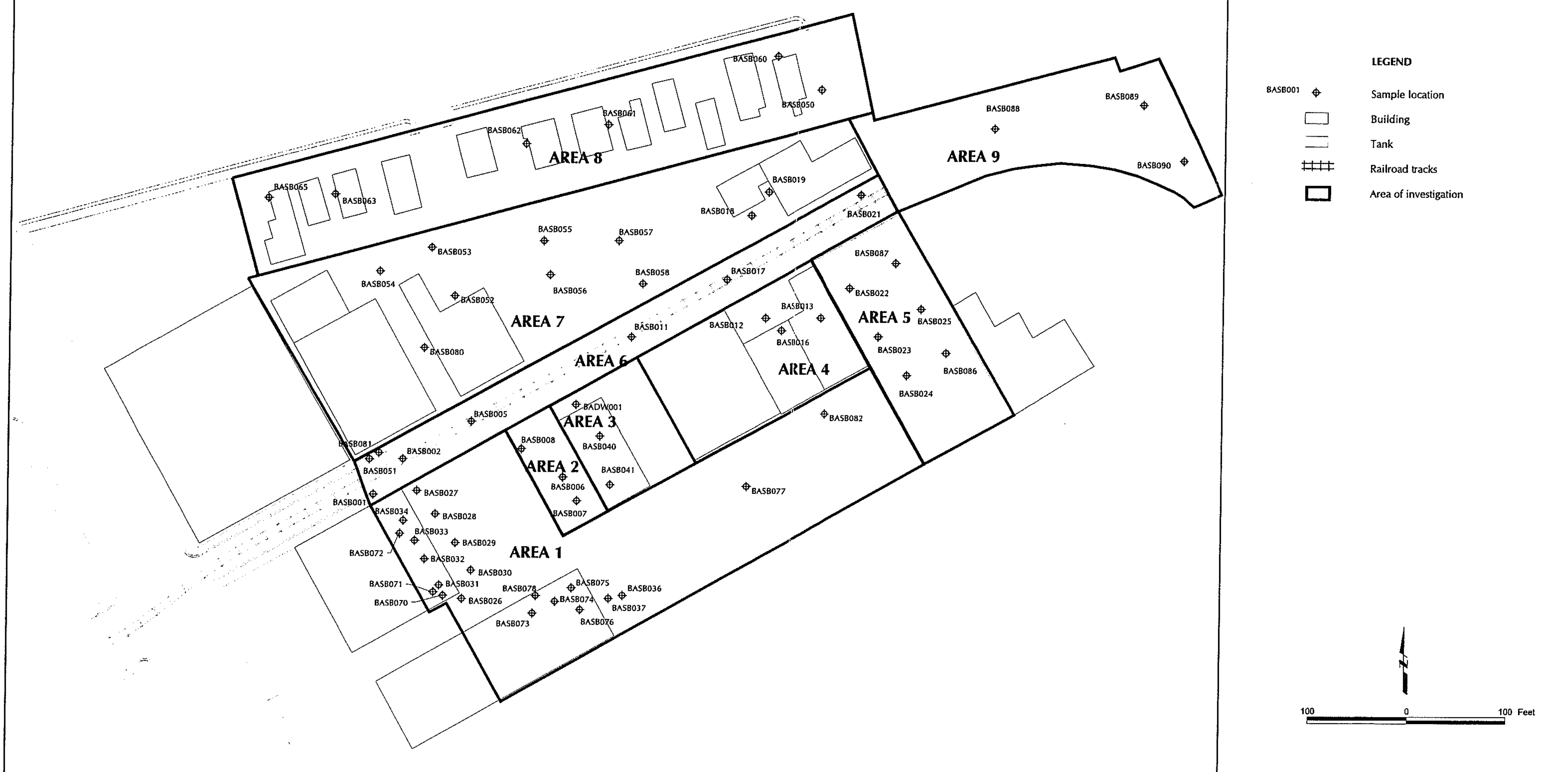
Figure 3



Sampling Locations

Batarse Site, Oakland, California

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Figure 4

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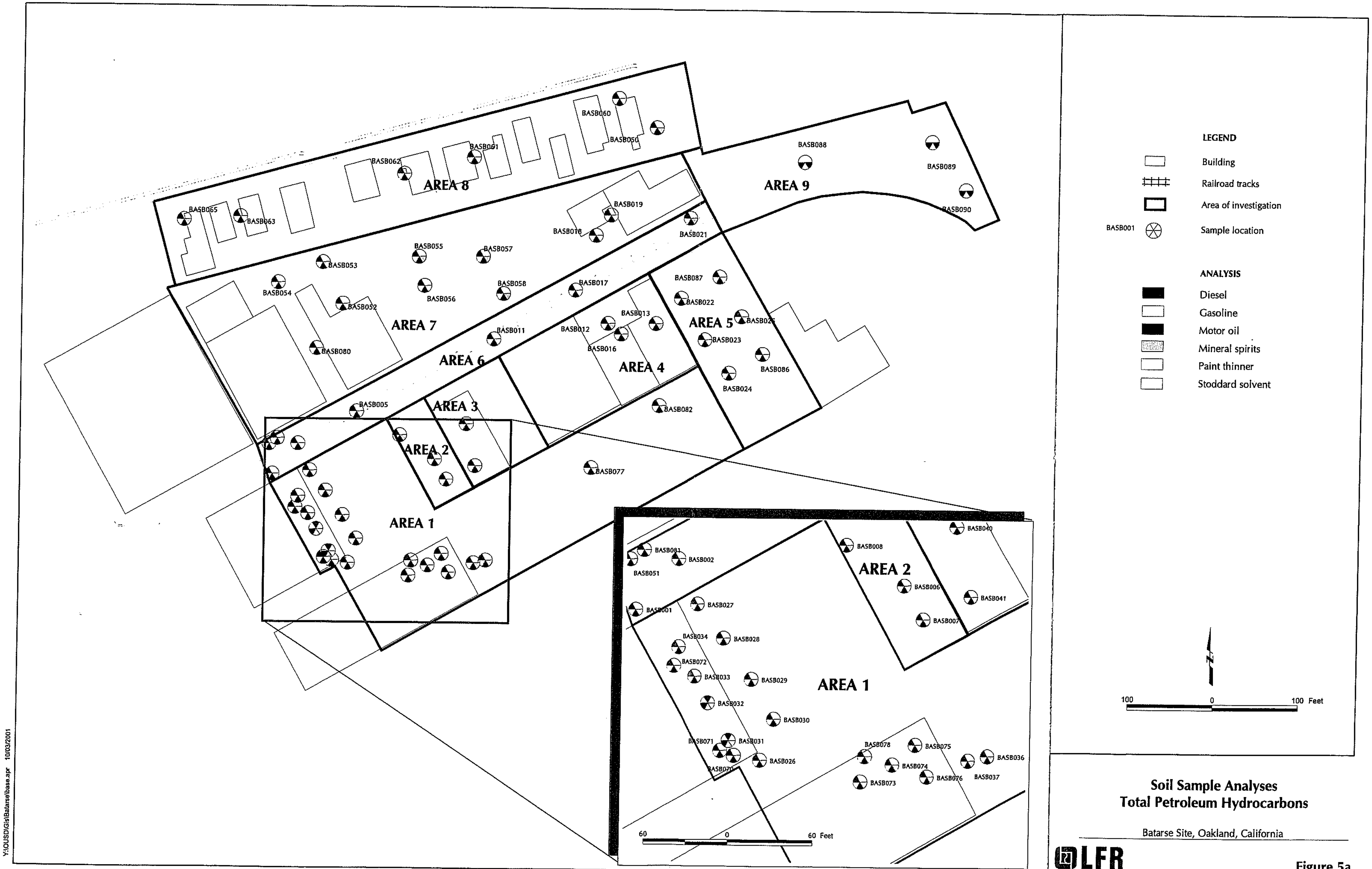

Soil Sample Analyses
Total Petroleum Hydrocarbons

Batarse Site, Oakland, California

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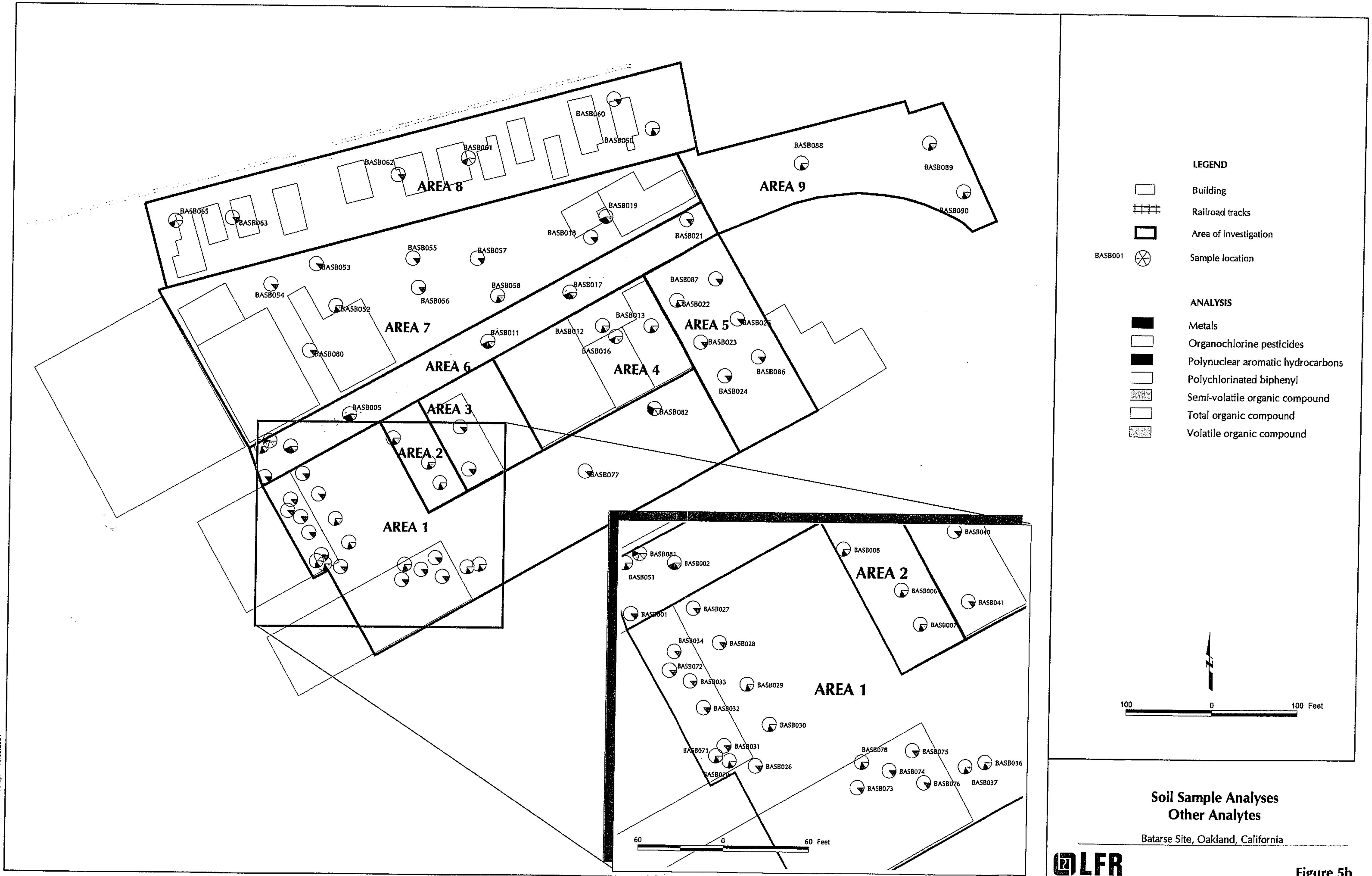
Figure 5a



Soil Sample Analyses
Other Analytes

Batarse Site, Oakland, California

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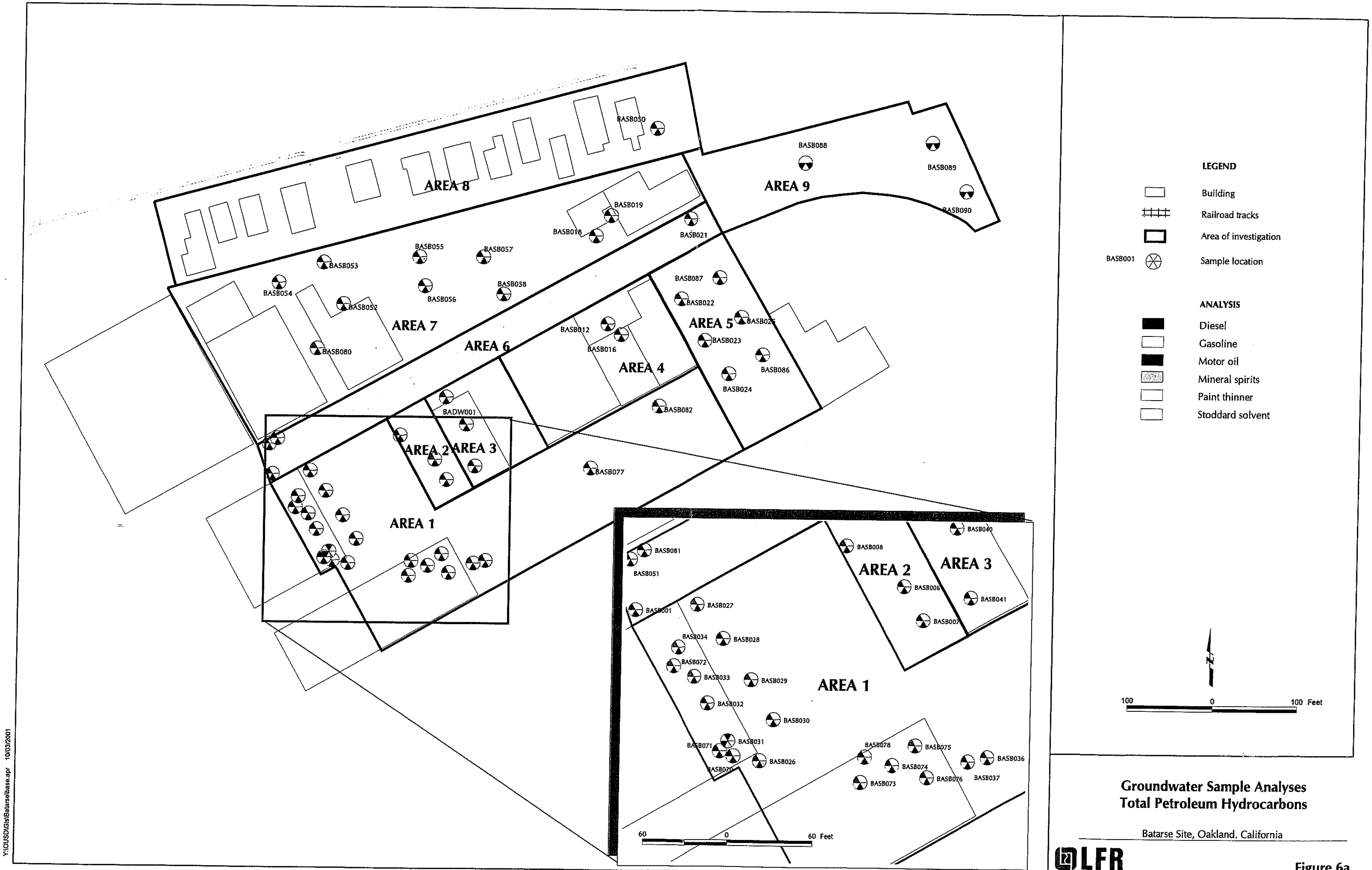
Figure 5b



Groundwater Sample Analyses
Total Petroleum Hydrocarbons

Batarse Site, Oakland, California

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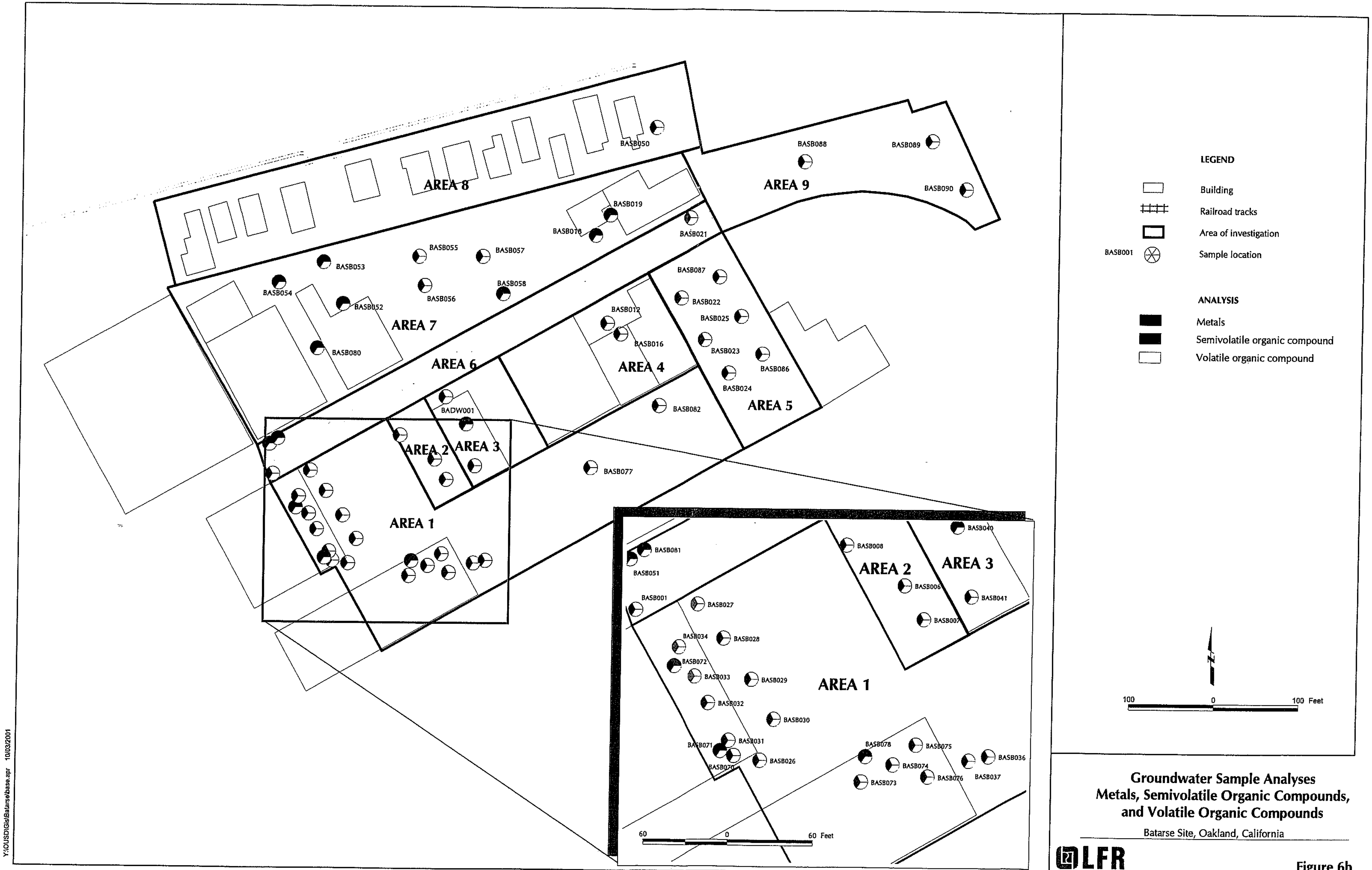
Figure 6a



Groundwater Sample Analyses
Metals, Semivolatile Organic Compounds, and Volatile Organic Compounds

Batarse Site, Oakland, California

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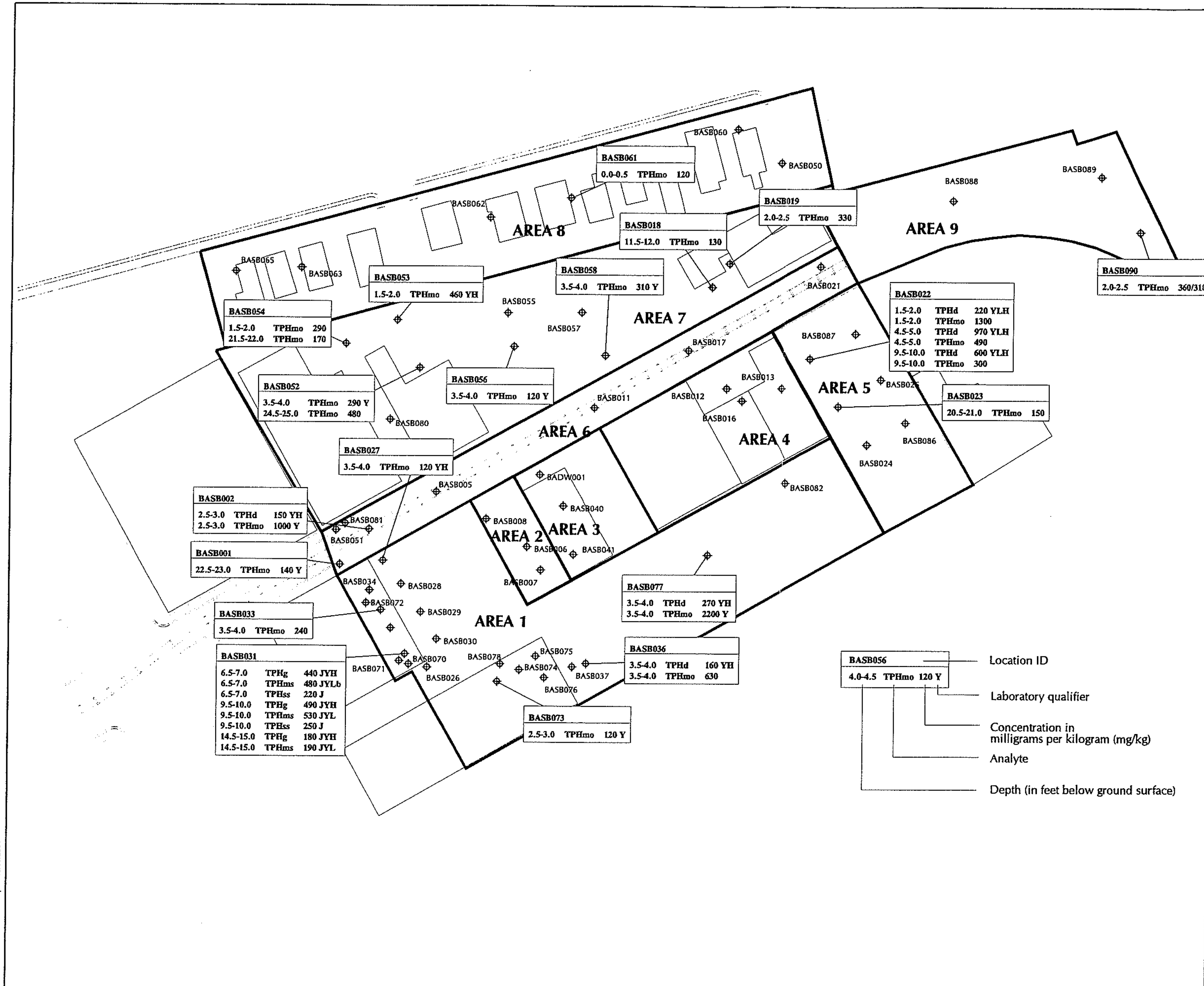
Figure 6b



LEGEND

BASB001 ⌖	Sample location
▭	Building
++++	Railroad tracks
▭	Area of investigation

ABBREVIATIONS

TPH	Total Petroleum Hydrocarbons
TPHd	TPH as diesel
TPHg	TPH as gasoline
TPHms	TPH as mineral spirits
TPHss	TPH as stoddard solvents

LABORATORY QUALIFIERS

b	Continuing calibration verification percent difference was slightly above acceptance limits in batch.
H	Heavier hydrocarbons contributed to the quantitation.
J	Reported value is estimated.
L	Lighter hydrocarbons contributed to the quantitation.
Y	Sample exhibits fuel pattern which does not resemble standard.
Z	Sample exhibits unknown single peak or peaks.

Areas of Concern Concentrations of Total Petroleum Hydrocarbons in Soil

Batarse Site, Oakland, California

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Figure 7

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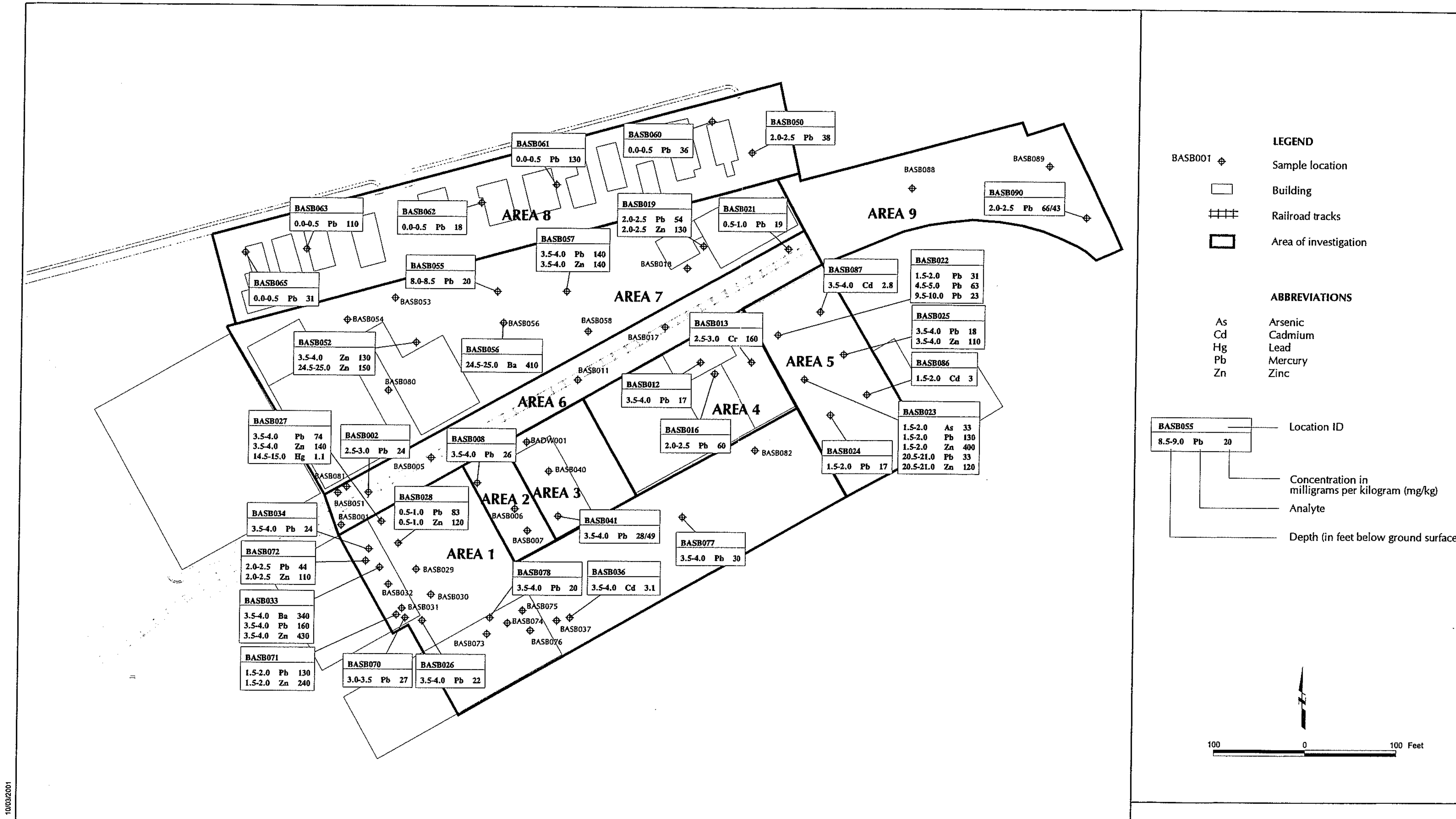

Areas of Concern
Concentrations of Metals in Soil

Batarse Site, Oakland, California

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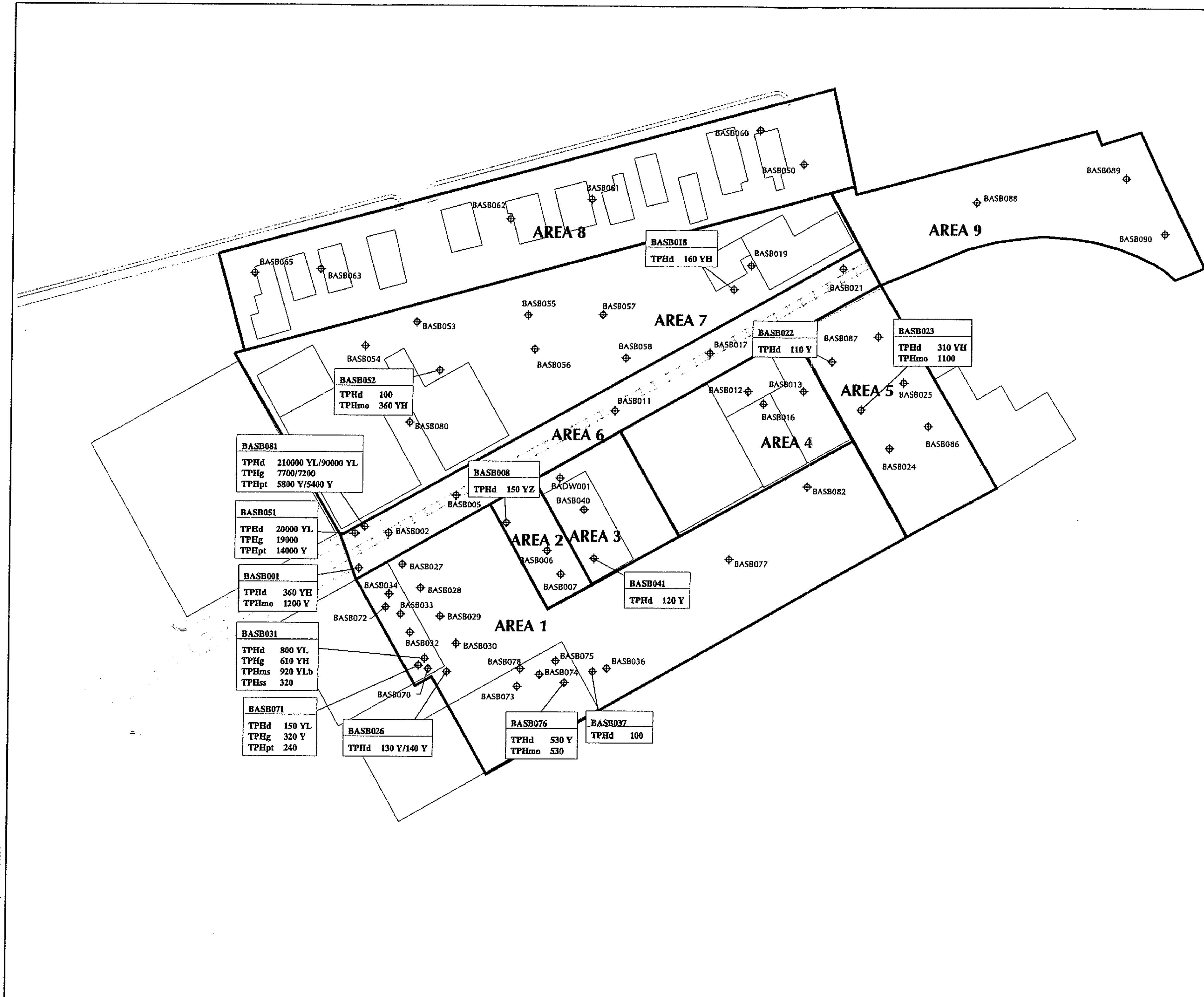
Figure 8



LEGEND

BASB001 ⊕ Sample location

Building

Tank

Railroad tracks

Area of investigation

ABBREVIATIONS

TPH	Total Petroleum Hydrocarbons
TPHd	TPH as diesel
TPHg	TPH as gasoline
TPHms	TPH as mineral spirits
TPHpt	TPH as paint thinner
TPHss	TPH as stoddard solvents

LABORATORY QUALIFIERS

b	Continuing calibration verification percent difference was slightly above acceptance limits in batch.
H	Heavier hydrocarbons contributed to the quantitation.
L	Lighter hydrocarbons contributed to the quantitation.
Y	Sample exhibits fuel pattern which does not resemble standard.
Z	Sample exhibits unknown single peak or peaks.

BASB018 — Location ID

TPHd 160 YH

Laboratory qualifier

Concentration in micrograms per liter ($\mu g/l$)

Analyte

N

100 0 100 Feet

Areas of Concern
Concentrations of Total Petroleum Hydrocarbons in Groundwater

Batarse Site, Oakland, California

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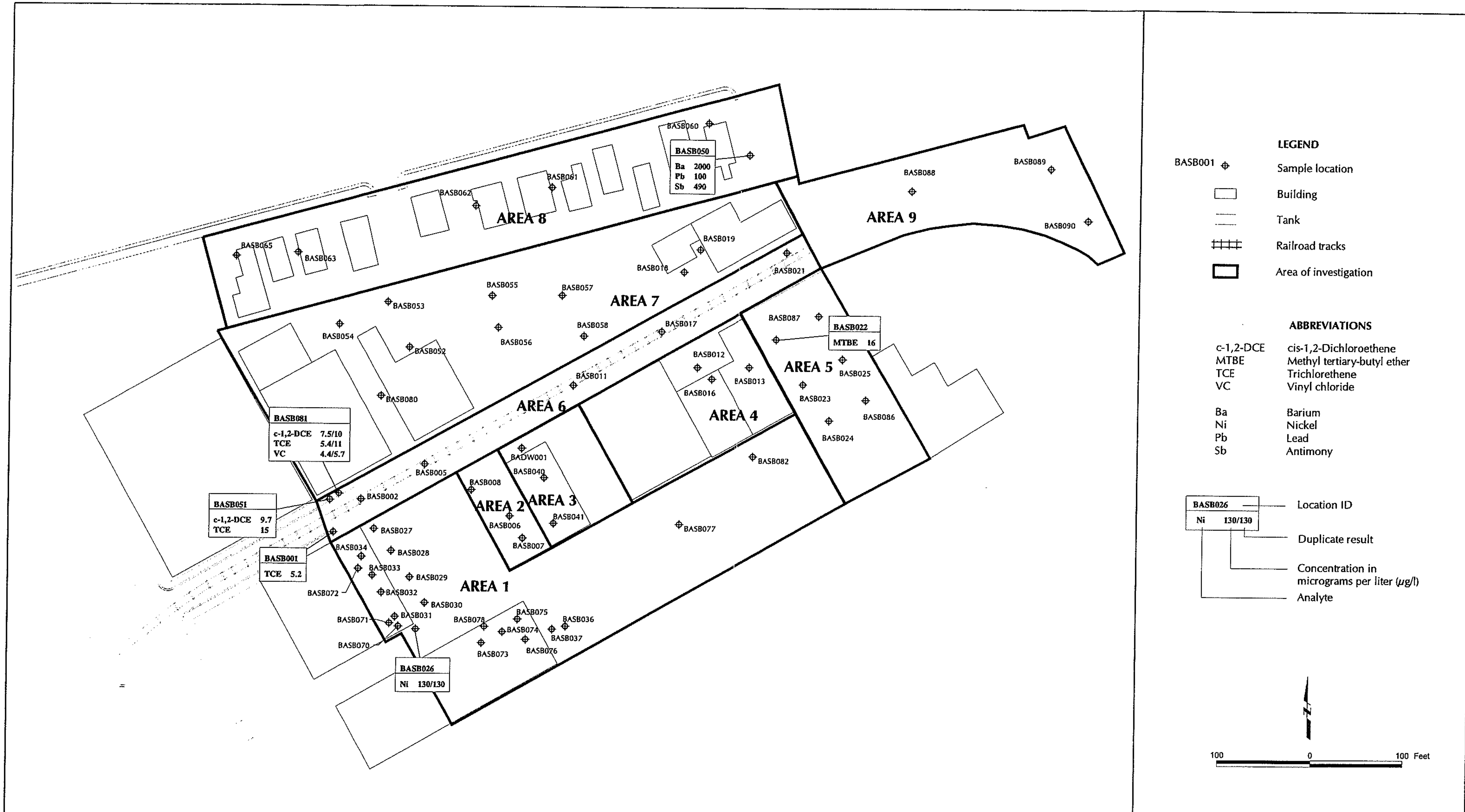
Figure 9



Areas of Concern
Concentrations of Volatile Organic Compounds and Metals in Groundwater

Batarse Site, Oakland, California

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Figure 10

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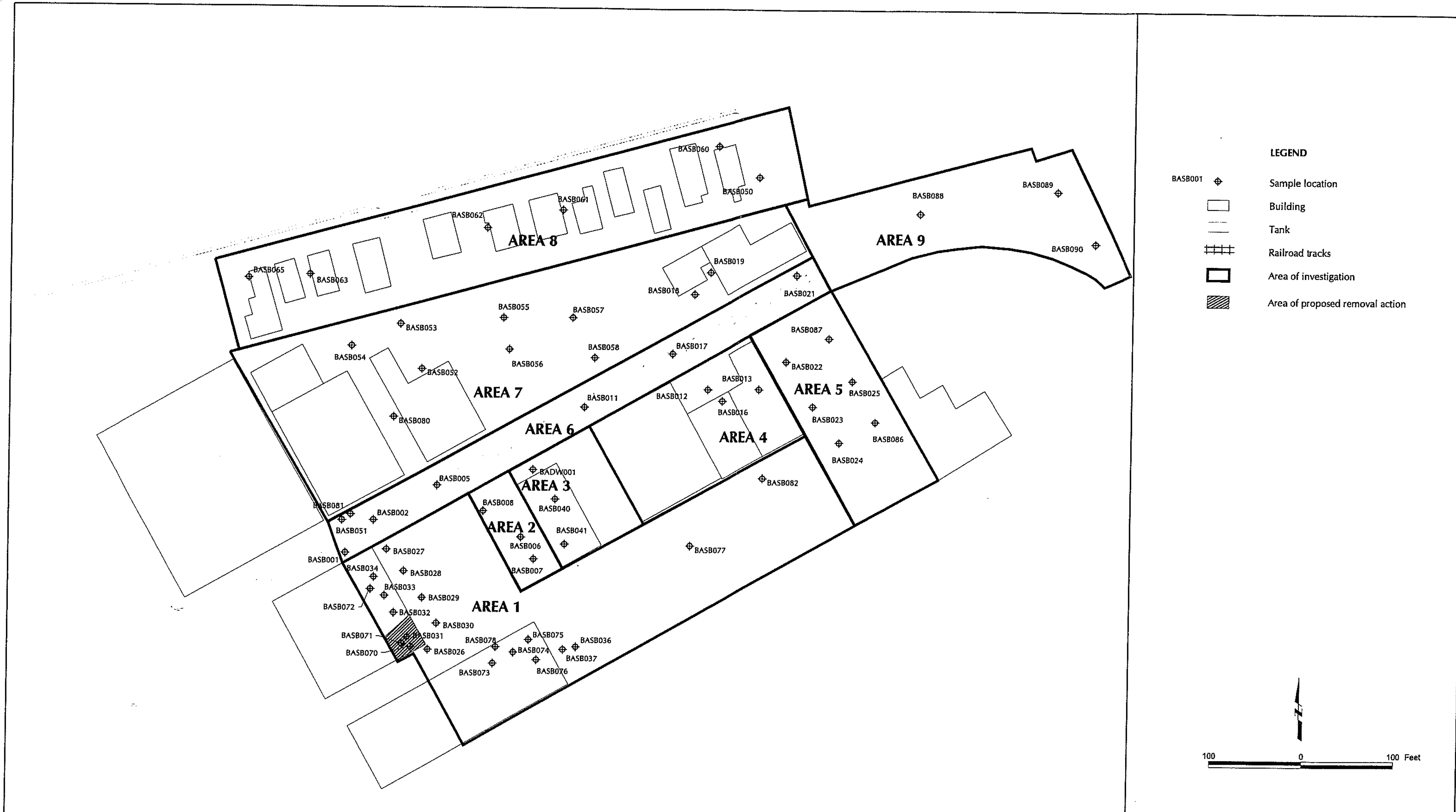

Approximate Extent of Proposed Removal Action

Batarse Site, Oakland, California

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Figure 12

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APPENDIX A

Historical Use Summary

INTRODUCTION

During the preparation of the Preliminary Environmental Assessment (PEA) for the Oakland Unified School District Batarse Project Site ("the Site"), LFR Levine·Fricke (LFR) reviewed reports prepared for the Site by previous consultants. These reports included the following:

- "Underground Tank Technical Closure Report," prepared by Gen-Tech Environmental, dated March 26, 1993
- "Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 6, 1993
- "Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 20, 1994
- "Overview of Environmental Conditions at 10550 East 14th Avenue Nissan/Honda Auto Dealership in Oakland, California," prepared by Gen-Tech Environmental, dated October 11, 1994
- "Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated September 27, 1995
- "Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated March 13, 1997
- "Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland," prepared by Alameda County Health Care Services Agency (ACHCSA), dated August 14, 1998
- "Phase I Environmental Assessment for 1500–1510 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated June 5, 1996
- "Phase I Environmental Assessment for 1520 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated August 27, 1998
- "Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000 (ENSR 2000)

Information obtained from these reports is summarized below. The reports for the properties known as 10440 through 10550 East 14th Street detail work performed off site; however, information contained in these reports is summarized in this PEA to evaluate possible impacts to the Site.

ON-SITE PROPERTIES

10550 East 14th Street (Eastern Portion)

The property addressed as 10550 East 14th Street is located on the south side of 105th Avenue. Area 1 of the Site, comprising the eastern portion of the 10550 East 14th Street property, will be acquired by the OUSD after a lot split separates the western portion of the property from the eastern portion.

According to information contained in Gen-Tech's report, one 550-gallon waste oil underground storage tank (UST) was removed in February 1993 from Area 1. The map provided in the case closure summary prepared by the ACHCSA (ACHCSA 1998) indicated that the waste oil UST was located near the southeast corner of the Lloyd Wise maintenance building. The location of the waste oil UST would be within the site border (Area 1). According to Mr. Rich of Lloyd Wise, a waste oil UST was not present at this location in the past. Based on the available map and for purposes of investigation, LFR has assumed that the waste oil UST was located adjacent to the maintenance building in Area 1.

Soil samples collected from the waste oil UST excavation were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and diesel (TPHd); benzene, toluene, ethylbenzene, and xylenes (BTEX); oil and grease; and five Leaking Underground Fuel Tanks Field Manual (LUFT, 1994) metals. Analysis of the soil samples indicated the presence of the following maximum concentrations:

- TPHg up to 1 milligrams per kilograms (mg/kg)
- TPHd up to 39 mg/kg
- total xylenes up to 0.007 mg/kg
- chromium up to 43 mg/kg
- lead up to 16 mg/kg
- nickel up to 50 mg/kg
- zinc up to 45 mg/kg

Analysis of the groundwater sample collected from the excavation indicated the presence of TPHg at a concentration of 120 micrograms per liter (μg/l), toluene at 1.2 μg/l, ethylbenzene at 7.2 μg/l, and total xylenes at 26 μg/l.

The ACHCSA issued a case closure letter for the property known as 10500 East 14th Street. This case closure letter applied to the waste oil UST removed from Area 1 and a gasoline UST removed from the west side of the Lloyd Wise auto dealership building (as discussed below in Off-Site Properties - 10550 East 14th Street, Western Portion). As noted below, several borings were advanced in the area of the former waste oil UST during LFR's PEA field investigation to evaluate the soil and groundwater quality in this area.

1433 105th Avenue

A release was reported at this property in 1991. According to available information, the ACHCSA issued a case closure letter for the property in 1999. Information on the exact location of this release was not available; however, borings were placed on this parcel during LFR's PEA field investigation to help establish the soil and groundwater quality in this area.

1561 105th Avenue

A release of 35 gallons of motor oil was reported at this property in 1992. No data on cleanup efforts for this release or information on the exact location of this release were available to LFR. Borings were placed on this parcel during LFR's PEA field investigation to help establish the soil and groundwater quality in this area.

1500 through 1510 105th Avenue

During Piers Environmental's Phase I Environmental Site Assessment (ESA) on this parcel, a water supply well was noted on the northern side of the 1510 105th Avenue building. According to the property owner at the time of the Phase I ESA, this well was installed before 1967. No information on the age, depth, diameter, or casing type was available for the well; however, the well was reportedly extended to a depth of approximately 100 feet in 1974.

OFF-SITE PROPERTIES

Adjacent off-site properties include a church at 10440 East 14th Street, Lloyd Wise at 10550 East 14th Street, and the AC Transit facility at 10626 East 14th Street. These properties are discussed below.

10440 East 14th Street

Two USTs were formerly located at 10440 East 14th Street (on the north side of 105th Avenue), according to information contained in previous reports reviewed by LFR. The USTs, including a 1,000-gallon product oil UST and a 1,000-gallon waste oil UST, were reportedly installed in the mid-1960s, were in use until 1992, and were removed in February 1993.

A map presented in a report prepared by Gen-Tech indicated that the two USTs were located beneath the sidewalk on the north side of 105th Avenue. The USTs were situated end to end and each measured 12 feet in length. The west end of the westernmost UST was located at a distance of 147 feet from East 14th Street and the east end of the easternmost UST was approximately 173 feet from East 14th Street. Based on these distances, the end of the easternmost UST was located at a distance of approximately 15 feet from the Site border.

At the time of the tank removals, 10 soil samples and two groundwater samples were collected from the tank pits for analysis, as follows:

- TPHg and TPHd using U.S. Environmental Protection Agency (EPA) Method 8015 (modified)
- BTEX using EPA Method 8020
- volatile organic compounds (VOCs) using EPA Method 8240
- semivolatile organic compounds (SVOCs) using EPA Method 8270
- oil and grease using Standard Method 5520 E&F
- five Leaking Underground Fuel Tank (LUFT) Field Manual metals
- ethylene glycol (antifreeze)

Analysis of the soil samples revealed the following maximum concentrations of selected compounds:

- TPHg up to 20 mg/kg
- TPHd up to 660 mg/kg
- ethylene glycol up to 220 mg/kg
- toluene up to 0.14 mg/kg
- ethylbenzene up to 0.093 mg/kg
- total xylenes up to 3 mg/kg
- oil and grease up to 1.4 mg/kg
- cis-1,2-dichloroethene (cis-1,2-DCE) up to 0.34 mg/kg
- tetrachoroethene (PCE) up to 0.042 mg/kg

Analysis of the groundwater samples collected from the excavation revealed the following maximum concentrations of selected compounds:

- TPHg at 27 milligrams per liter (mg/l)
- benzene at 780 μg/l
- toluene at 8,700 μg/l

- ethylbenzene at 1,300 μg/l
- total xylenes at 6,300 μg/l

PCE and cis-1,2-DCE were not detected in the groundwater samples at concentrations at or above the laboratory reporting limits.

10550 East 14th Street (Western Portion)

One 2,000-gallon gasoline UST was removed in February 1993; the address given for the work site was listed in Gen-Tech's report as 10550 East 14th Street. According to the map provided in the case closure summary prepared by ACHCSA, the gasoline UST was located to the west of the Lloyd Wise auto dealership building and approximately 75 feet from the western border of the Site.

Soil samples collected at the time of the gasoline UST removal were analyzed for the following compounds:

- TPHg using EPA Method 8015 (modified)
- BTEX using EPA Method 8020

Analysis of the soil samples indicated the following:

- TPHg (up to 160 mg/kg)
- toluene (up to 0.21 mg/kg)
- ethylbenzene (up to 0.057 mg/kg)

Three groundwater monitoring wells were installed on and near the 10550 East 14th Street property following removal of the gasoline UST (Figure 2). Wells MW-1-N and MW-2-N were installed on the west side of the Lloyd Wise auto dealership building and well MW-1-0 was installed on the north side of 105th Avenue. Analysis of groundwater samples collected from wells MW-1-N and MW-2-N in 1995 indicated the presence of TPHg (up to 240,000 μg/l), benzene (up to 3,600 μg/l), toluene (up to 1,200 μg/l), ethylbenzene (up to 6,900 μg/l), and total xylenes (up to 35,000 μg/l). Analysis of groundwater samples from MW-1-0 did not indicate the presence of petroleum hydrocarbons at concentrations at or above the laboratory reporting limits.

The ACHCSA issued a case closure letter for the property known as 10500 East 14th Street. The case closure summary applied to both the 550-gallon waste oil UST formerly located in Area 1 (as discussed above under On-Site Properties - 10550 East 14th Avenue, Eastern Portion) and a 2,000-gallon gasoline UST removed from this property. According to information presented in the case closure summary, the following chemicals of concern were present in groundwater samples collected from monitoring wells in February 1998: TPHg (up to 18,000 μg/l), benzene (up to 270 μg/l), toluene (up to 120 μg/l), ethylbenzene (up to 1,800 μg/l), and total xylenes (up to 6,300 μg/l). In the closure letter, the ACHCSA noted that a human health risk evaluation would be required if future plans included construction of a building over the area of the former gasoline UST.

10626 East 14th Street

The AC Transit facility at 10626 East 14th Street is located adjacent to the southern border of the Site. Depth-to-water measurements indicate that groundwater flow direction has historically been to the west-southwest, therefore, this facility would be located in an upgradient-to-crossgradient direction from the Site.

According to information in ENSR's Phase I ESA, this property was reported as having a leaking UST. According to available information in the Phase I ESA, approximately 300 gallons of waste oil and water was released and flowed into a storm drain on this property. The remediation was reportedly completed and the property granted case closure by the local regulatory agency.

HISTORICAL USES

A summary of historical uses for each parcel group is presented below; this information was obtained from the Phase I ESA report prepared by ENSR (ENSR 2000). During its Phase I ESA, ENSR reviewed Sanborn fire insurance maps, aerial photographs, and agency files for historical site usage information.

Lloyd Wise, Inc., Parcel Group – 10550 East 14th Street and 1424 105th Avenue

Sanborn maps indicate that the eastern portion of the parcel, known as 10550 East 14th Street, was vacant land from 1926 until the construction of a commercial building in 1981. This building appeared to be the service building that is currently present on the parcel. During a reconnaissance visit on May 30, 2000, ENSR reported that two buildings existed on the eastern portion of the parcel: the service building noted above and the maintenance shop that is currently known as 1424 105th Avenue (Figure 2). Both of these buildings were occupied by Lloyd Wise, Inc., during the site reconnaissance.

The western portions of 10500 and 10550 East 14th Street were occupied by the Lloyd Wise showroom and office buildings. These areas were not included in the study area.

According to information obtained by ENSR, a residence existed on the eastern portion of the parcel known as 1424 105th Avenue from 1926 to 1969. By the early 1980s, the residence had been replaced by a commercial building. This building is likely the maintenance shop that is currently present on this parcel.

The histories of the buildings on this parcel group are described briefly below.

- The service building (eastern portion of 10550 East 14th Street) was used for vehicle repairs until those operations were relocated in 1999. The first floor of the building is divided into eight maintenance bays, offices, a tool room, and an oil storage room. The second floor was used for offices and storage. The former aboveground hydraulic lifts were removed (date unknown). According to information contained in ENSR's report, no underground hydraulic lifts were present in this building. ENSR noted that the floor drains in this building had been backfilled with concrete at the time of its visit.

  Four double-walled aboveground storage tanks (ASTs), ranging in capacity from 55 to 200 gallons and used for storage of motor oil, were formerly located in this building, according to ENSR's report. ENSR noted in its report that two oil stained areas, each measuring approximately 2 feet in diameter, were observed on the concrete floor of this room. No nearby floor drains or significant cracks were observed in the area of the former ASTs.

  ENSR representatives observed an approximately 300-gallon AST and an air compressor within a fenced enclosure outside the eastern end of the service building. Heavy oil staining was noted on the concrete pad of this enclosure.

- The maintenance shop (1424 105th Avenue) is divided into 10 vehicle maintenance bays. According to ENSR's report, one underground hydraulic lift was present at the southeastern end of the building at the time of its visit. ENSR reported that the remaining underground hydraulic lifts were removed in the early 1990s. At the time of ENSR's visit, one of the maintenance bays was being used for hand washing of automobiles; no maintenance work was being performed in the building.

  Six floor drains and a trench drain were formerly connected to a 600-gallon oil/water separator that remains in place near the northeastern corner of the maintenance building. Five of these floor drains have been backfilled with concrete. At the time of ENSR's site visit, the remaining floor drain and the trench drain were still connected to the oil/water separator. ENSR representatives observed three ASTs ranging in capacity from 100 to 200 gallons along the northwestern wall of the shop. The ASTs were reportedly formerly used to store motor oil.

  A former underground sump and 550-gallon waste oil UST were reportedly located outside the southeastern corner of the maintenance building at 1424 105th Avenue (formerly part of East 14th Street). The sump and waste oil UST were reportedly removed in 1993, according to previous consultants' reports cited by ENSR (ENSR 2000). Analytical results of soil samples collected in the vicinity of the former waste oil UST did not reveal significant levels of petroleum hydrocarbons, and the ACHCSA did not require further action in this area. The site owner and some of the reports and maps reviewed by LFR indicate that the location of this UST may have been misreported. The former UST may have been located across 105th Street, where two 1,000-gallon USTs containing product and waste oil were reportedly removed in 1993. Soil from the excavations of the two 1,000-gallon USTs was stockpiled across 105th Street (Gen-Tech Environmental 1993a).

Bill & Bill's Auto Body Parcel – 1500 105th Avenue

Sanborn maps and aerial photographs reviewed by ENSR showed this parcel to be a vacant lot from at least 1926 until 1951. A candy factory, constructed at 1500 105th Avenue between 1951 and 1952, was the first commercial building along 105th Avenue. The building was used as a roller rink in the early 1960s before being converted into a photographic laboratory in 1965. The building was subsequently used for automobile repairs and painting.

Bill & Bill's Auto Body (1500 105th Avenue) has occupied the building on this property since the mid-1990s. The body repair business is reportedly limited to spray painting and detailing. A paint spray booth is located in the building. This booth is operated under an air emissions permit issued by the Bay Area Air Quality Management District (BAAQMD). Approximately 250 1-pint and 1-quart containers of paint were stored at the business during ENSR's site visit on May 30, 2000. The body shop reportedly uses approximately 85 gallons of paint thinner per year. Waste paints and thinners are placed in 55-gallon drums while on the premises and removed approximately every 1.5 to 2 years.

According to information contained in ENSR's report, the only floor drain inside the building has been backfilled with concrete.

Management Storage Parcel Group – 1510, 1520, and 1528 105th Avenue

According to information from the Oakland Building Department, a warehouse used as a roller derby training facility was constructed at 1510 105th Avenue in 1951.

Mr. Bill Thompson, a former property owner, was interviewed during a previous Phase I ESA for this parcel. According to Mr. Thompson, a candy factory occupied the building at 1510 105th Avenue during the 1950s. Two approximately 1.5-foot-deep sumps located at the rear of this building were observed during the previous Phase I ESA. Mr. Thompson noted that these sumps were used by the candy factory for containment of wastewater from floor washing activities. Mr. Thompson stated that the sumps had not been used during his occupancy of the building.

Management Storage (1510 105th Avenue), a real estate owner and management business, currently occupies the building at this address, as well as the vacant lot located adjacent to the east of the building. The building is divided into offices and warehouse space used for storing furniture and files. According to ENSR's report, the only chemicals reportedly used in this building are janitorial supplies. One floor drain that discharges into the sanitary sewer was present in the building at the time of ENSR's visit. A former water supply well is located in a metal-covered vault near one of the front entrances to the building.

An office trailer, fencing, and a gasoline dispenser (not connected to a tank) were located in the vacant lot at the time of ENSR's site visit on May 30, 2000. ENSR noted that this lot was enclosed by a chain-link fence.

According to Sanborn maps and aerial photographs reviewed by ENSR, residences were located at 1520 and 1528 105th Avenue from at least 1926 until the late 1970s or early 1980s. The residence located at 1520 105th Avenue was demolished in 1979, according to information obtained by ENSR from the Oakland Building Department. The residence at 1528 105th Avenue was apparently demolished between 1975 and 1981.

Ward's Custom Paint Parcel Group – 1536, 1538, 1544, and 1548 105th Avenue

Sanborn maps and aerial photographs reviewed by ENSR showed that a residence was located along the northwestern portion of the 1536 105th Avenue parcel from at least 1926. This residence appeared in the aerial photographs through 1975 but had been demolished by the time of the 1981 photograph. Photographs from 1981 and later indicate that this parcel was used for vehicle storage.

According to ENSR's report, the parcel known as 1544 105th Avenue was a vacant lot in the 1926 through 1961 Sanborn maps and the 1947 through 1959 aerial photographs. By 1966, one commercial building had been constructed on this parcel. This building appeared unchanged in the later photographs.

According to ENSR's report, the parcel was previously occupied by Milichichi Auto Body Fender. This business was included on the United States Environmental Protection Agency (U.S. EPA) database as a Resource Conservation and Recovery Act small quantity hazardous waste generator. This facility generated paint-related wastes. No release has been reported at this location.

Ward's Custom Paint shop currently occupies the properties that comprise this parcel group. A paved parking lot used by Ward's Custom Paint shop is located at 1536 and 1538 105th Avenue. Two buildings located at 1544 105th Avenue are used for spray painting and detailing of automobiles with a paint booth located in the southernmost building. Numerous spray cans and 1-quart and 5-gallon paint containers were stored in a locked room in the southernmost building at the time of ENSR's visit. Other chemical storage noted by ENSR consisted of car cleaners and waxes and 5-gallon containers of paint thinner. BAAQMD identified the facility as generating paint-related waste and maintaining permits for paint booth air emissions. The facility was also identified as maintaining a permit with East Bay Municipal Utility District for water discharges.

According to ENSR's report, a 1926 Sanborn map and 1947 aerial photograph indicated that 1548 105th Avenue was a vacant lot. Sanborn maps and aerial photographs from the 1950s and 1960s indicated that a single-family residence was present at this location. By the time of the 1971 aerial photographs, two commercial buildings were present on the parcel. These buildings appeared unchanged in later photographs. A furniture warehouse was reportedly constructed at 1548 105th Avenue.

According to ENSR's report, the parcel's previous address included 1550 105th Avenue. A building department application dated 1959 for 1550 105th Avenue indicated that the building at this address was used as a print shop with offices and a factory.

Chevron Tow Parcel – 1560 and 1570 105th Avenue

Residential dwellings occupied the parcels at Chevron Tow from at least 1926 until the early 1980s, according to information contained in ENSR's report. According to an aerial photograph, by 1981, the residences had been demolished and the parcels were being used for vehicle storage. At the time of ENSR's visit, most of the property was being used for vehicle washing, maintenance, and storage. A small office building was noted at the northwestern corner of the parcel.

Union Pacific Railroad – 105th Avenue

Railroad tracks were noted along 105th Avenue and across the eastern end of the study area (remainder of Union Pacific Railroad [UPRR] parcel group and AC Transit parcel group) in all of the Sanborn maps and aerial photographs reviewed by ENSR. These tracks, which are owned by UPRR, are currently present along the center of 105th Avenue and across the eastern end of the study area.

AC Transit Area – Northeastern End of 105th Avenue

AC Transit (no assigned address) occupies two properties to the east of 105th Avenue. The northeastern portion of the AC Transit property at the eastern end of 105th Avenue is included in the study area for this PEA. This area appeared as vacant land in the 1947 through 1981 aerial photographs, according to ENSR's report. Aerial photographs indicate that by 1985 a commercial building that extended onto the AC Transit property adjacent to the south of the study area had been constructed on the parcel. This building was present in all of the remaining photographs reviewed by ENSR.

Western Side of 105th Avenue Commercial, Industrial, and Residential Parcel Group – 1429 through 1561 105th Avenue

The parcel group lying west of 105th Avenue consists of commercial, light industrial, and residential properties, and a trailer park. Descriptions of the properties within this parcel are provided below.

- The property known as 1429, 1433, and 1439 105th Avenue was occupied by a door manufacturer from 1926 to 1969, according to ENSR's report. Other companies that historically occupied the property included a construction company, Winca Chemical Company (a manufacturer of dry cleaning, laundry detergent, and pool chemicals), and Akana Designs (a carpentry company). At the time of ENSR's visit, the property was occupied by United Acoustics (1429 and 1433 105th Avenue) and Winca Chemicals Company (1439 105th Avenue).

According to ENSR's report, a release was reported at 1433 105^{th} Avenue in 1991. The responsible party was listed as United Acoustics. ENSR noted that the case was granted closure by the local regulatory agency. Further information on this release was not available as files had reportedly been misplaced during transfer from the ACHCSA to the City of Oakland Fire Department.

- The property known as 1449 105th Avenue was occupied by a single-family residence on Sanborn maps dated 1926, 1951, and 1952, according to ENSR's Phase I ESA (ENSR 2000). On 1959 and subsequent Sanborn maps, this property was being used by the door manufacturer for wood storage and a cabinet shop. In aerial photographs dating back to 1947, the building on this property appeared to be associated with the commercial building complex known as 1429, 1433, and 1439 105th Avenue, according to ENSR's report.
- The property known as 1501 105th Avenue has been residential since at least 1926.
- A trailer park has existed at 1525 and 1545 105th Avenue since at least 1941. Before the trailer park, the parcels were occupied by residences and a lumber storage yard. The manager of the trailer park reported that coal was unloaded from railroad cars on this property in the late 1800s. Anecdotal information indicates that an underground or buried coal bin might have existed on this property.
- The property known as 1557, 1559, and 1561 105th Avenue has been occupied by a multi-tenant commercial building since 1951, according to Sanborn maps reviewed by ENSR (ENSR 2000). One occupant was an antique Volkswagen business during ENSR's May 30, 2000 site visit. Former uses of the building included a plumbing and carpentry business, venetian blind manufacturer, drapery facility, plastic bag facility, machine shop, and vending machine storage company. According to telephone listings dated 2000, Gomez Foods occupies 1559 105th Avenue.

  According to ENSR's report, 35 gallons of oil were spilled at 1561 105^{th} Avenue in 1992. No information was available on the responsible party, location of the spill, or the response action.

Eastern Side of 104th Avenue Residential Parcel – 10403 Walnut Street and 1440 through 1648 104th Avenue

The parcels lying along the eastern side of 104^{th} Avenue have consisted of residential properties since at least 1926 (ENSR 2000). According to building department files reviewed by ENSR, permits to apply pest control chemicals were issued to occupants of 1604 and 1616 104^{th} Avenue.

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0'		Concrete	concrete			
		SP	gravelly silt-clay, (SP) [10YR 3/4] Drk Yellow Brown, Damp, med dense, ang-sub ang, iron oxide staining.	SB-1-3'		
5'			Silty clay (CL) [10YR 3/4] Drk yellow Brown, Damp, stiff, 80% fines, 20% fine sand, med plas - color change [10YR3/2] Drk grayish Brown,	SB-1-[illegible]		
10'		CL		SB-1-[illegible]		
15'				SB-1-1[illegible]		
20'			clayey sand (SC) [10YR 4/2] Brown, moist, med stiff, 70% fine sand, poorly graded. 30% clay	SB-1-2[illegible]		
∇		SC		SB-1-2[illegible]		
25'				SB-1-25		
			Bottom 28'			
30'						

Well Permit No.:
Date well drilled: 4/2/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Mike
Sampling Method: D P
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TGR

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-1

Project No. 7962.01

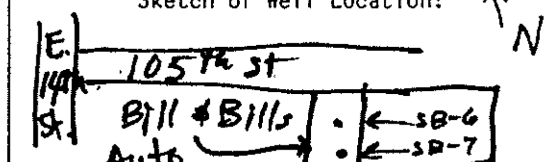
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY		SAMPLE DATA
PID	Type of Security:	Graphic Log	Description	Number / Interval / Penetration Rate (Blows/ft.)
0'			concrete	
0.0		SM	gravelly silt (SM) [7.5YR 4/4] Brown, Dry, 80% coarse-med sand 15% fine gravel, 5% silt Ang-sub ang, modgrading, Bits of floor tile	SB-7-2'
0.0	5'		silty clay, (CL) [10YR 4/1] Dark gray, Med Stiff, 80% clay & silt, 20% fine sand, mottled	SB-7-5
0.0	10'		same as above color change [10YR 4/3] Brown	SB-7-10
		CL		
0.0	15'			SB-7-15
0.0	20'			SB-7-20
			silty sand (SM) [10YR 4/3] Brown, Damp, loose, 80% fine sand, 20% silt, poorly graded, iron oxide staining, mottled.	
0.0				SB-7-25
0.0	25'			SB-7-26
	▽	SM	same as above moist	
			Bottom of boring 28'	
	30'			
			Equip 033101	
			1405	

Well Permit No.:
Date well drilled: 3/31/01
Date water level measured:
Well elevation:

Drilling Company: Precision
Driller: Jose/Jose
Sampling Method: DP
Hammer Weight:

Sketch of Well Location: N



LF Geologist/Engineer: TBK

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-7

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

LITHOLOGY			SAMPLE DATA		LABORATORY TESTS		
Depth, feet	Graphic Log	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	Moisture Content (%)	Dry Density (pcf)	Unconfined Compressive Strength (PSI)
0		Concrete					
		Clayey-silt (ML) dark yellowish brown (10YR 3/4) with very dark brown splotches (10YR 2/2), dry, none to low strength, low to none (plasticity), fine sand present <10%	SB-13-3	NR			
5		Silty-clay (CL), dark brown (10YR 3/3) dry, medium stiffness, medium plasticity, fine sands present <10%, trace subangular gravel	SB-13-5				
		Color change to dark yellowish brown (10YR 3/4 damp, mottling					
10		Becomes stiff	SB-13-10				
15			SB-13-15				
20		increase in silt	SB-13-20	20			
				22			
25							
30		TD=22' REFUSAL					
35							

EXPLANATION

Clay

Silt

Sand

Gravel

Date boring drilled: 3/20/01
Drilling method:
Hammer weight and drop:
LF Engineer:

ATD Water level at time of drilling

Standard Penetration Split Spoon Sampler, 1.38-inch I.D.

Modified California Sampler:
2.0-inch I.D.
2.5-inch I.D. (noted with a *)

Sample retained for geotechnical analysis

u c = unconfined compression test

Figure : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB-13

Project No. 7962.01

LFR **LEVINE • FRICKE**
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

SOIL LOG 7/31/90BD

Depth, feet	WELL CONSTRUCTION	LITHOLOGY		SAMPLE DATA		
	Type of Security: CURRENT SECTION / PID (ppm)	Graphic Log	Description	NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0	HAND AUGER		ASPHALT, RR GRAVEL	2" BRASS TUBE SAMPLE		SB-21-… 0845
1–4	<1	ML	SILTY CLAY/CLAYEY SILT [ML], DARK GRAY (2.5 YR 4/0), DAMP, <5% VFS, ~40% CLAY, ~45% SILT, LOW-ZERO PLASTICITY FUEL SMELL, STRONG ON FRESHLY BROKEN SOIL			
4–6	PUSH TO 6'	ML	GRAVELLY SILTY CLAY [ML], DARK GRAY (2.5 YR 4/0), DAMP, <5% VFS, <40% SILT, <5% GRAVEL, LOW PLASTICITY; GRAVEL CLASTS ANGULAR SUB ANGULAR, VERY STIFF, MINOR Fe-OXIDE MOTTLING/STAINING			SB-21-… 0925
8			CLAYEY SILT/SILTY CLAY [CL], DARK GRAYISH BRN (2.5 YR 3/2), DAMP, < 5% VFS, <40% SILT, LOW PLASTICITY, Fe-OXIDE STAINING			
10	<1		[CL] SILTY, (10 YR 4/2), LOW PLASTICITY, VERY STIFF			SB-21-1… 0932
13		CL	[CL], SILTY, Fe-OXIDE STAINING, LOW PLASTICITY, VERY STIFF			
14			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, <40% SILT, <5% VFS, LOW PLASTICITY, STIFF, Fe-OXIDE STAINING			SB-21-1… 0950
16			SILTY CLAY [CL], DARK BRN (10 YR 3/3)			
18			CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, <10% VFS, <30% CLAY, LOW PLASTICITY, Fe-OXIDE STAINING/MOTTLING, SOFT			SB-21-2… 1019 (HOLD)
20		ML	[ML], LOW-ZERO PLASTICITY, <10% VFS, <30% CLAY (2.5 YR 4/3)			
23		SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, SILT < 20%, CLAY < 20%, SAND POORLY GRADED, Fe-OXIDE STAINING			
25		ML	CLAYEY SILT + VFS [ML], OLIVE BRN (2.5 YR 4/3), DAMP CLAY <30%, VFS <20%, LOW-ZERO PLASTICITY, Fe-OXIDE + GRAY (2.5 YR 5/0) MOTTLING			SB-21-2… 1024
27			CLAYEY SILT + VFS [SC] (2.5 YR 4/3), STIFF, Fe-OXIDE MOTTLING			
28–30		SC	CLAYEY VFS + SILT [SC], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <30%, SILT <20%, ZERO-LOW PLASTICITY			SB-21-3… 1105 (HOLD)
32			TD=31'			
35			GGW @ 1120			

Well Permit No.:
Date well drilled: 3·29·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE MIKE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:
GATE
CAL TRANS
SB-21
105th
PROPERTY
SB-21

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-21

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0		Fill	Fill gravelly			
			Sandy clay (CL) [10YR2/1] Black, Damp, Soft, 60% clay, 40% fine sand, low-med plac.			
5		CL				
10			-color change [10YR3/4] Drk yellowish Brown,			
		SP	sand lense (SP) poorly graded sands, Dry, coarse-fine sand.			
			sandy clay (CL) [10YR3/4] Drk Yellow Brown, Damp, med stiff 60% clay, 40% fine sand, med plac			
15		CL	same as above; iron oxide staining, mottled.			
		SP	sand lense (SP) poorly graded sands, Dry, coarse-fine sand			
		CL	Sandy clay (CL) [10YR3/4] Drk yellow Brown,			
20			clayey sands (SC) [10YR4/4] D yellow Brown, moist, ~~Soft~~ loose 70% fine sand 30% clay, low plac, poorly graded.			
25		SC				
		SP	poorly graded sands (SP) [10YR3/4] Drk yellow Brown, Wet, loose, 90% coarse-fine sand, 10% clay, rounded, iron oxide staining			
			Bottom of Boring 28'			
30						

Well Permit No.:
Date well drilled: 4/4/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Scott
Sampling Method: DP
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TBR

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-23

Project No. 7962.01

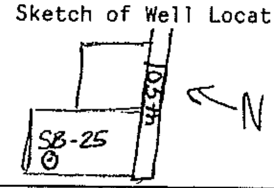
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION	PID (ppm)	LITHOLOGY — Graphic Log	Description	SAMPLE DATA — Number	Interval	Penetration Rate (Blows/ft.)	SAMPLE N
0			NR	CONCRETE, Fe-OXIDE GRAVEL				
						NR		
3				SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, SILT <30%, MED PLASTICITY				SB-25- 1516
5								SB-25- 1520
				SILTY CLAY [CL], VERY DARK BROWN (10 YR 2/2), DAMP, SILT < 30%, DARK OLIVE MOTTLING, MED-HIGH PLASTICITY, STIFF				
				CLAYEY SILT / SILTY CLAY [ML], DARK BRN (10 YR 3/3), DAMP, LOW - ZERO PLASTICITY, MINOR BLACK MOTTLING, CLAY <45%				
10				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, MED - HIGH PLASTICITY, BLACK MOTTLING, MINOR Fe-OXIDE STAINING, VERY STIFF				SB-25- 1525
			CL	(10 YR 3/3) [CL], VERY STIFF				
15				SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, SILT <30%, MED-HIGH PLASTICITY, Fe-OXIDE STAINING, STIFF				SB-25- 1535
				CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP CLAY <50%, MED PLASTICITY, Fe-OXIDE STAINING, MED STIFF				
				6" CLAY < 30-40', MED-LOW PLASTICITY [CL], OLIVE BRN (2.5 YR 4/3)				
				SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, SILT <25%, HIGH PLASTICITY, Fe-OXIDE STAINING/MOTTLING, MED STIFF				
20				SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), WET! 19-21' BGS, SILT <25%, Fe-OXIDE STAINING				SB-25-2 1547
				SLIGHTLY SANDY CLAY [CL], VFS <15%, (2.5 YR 4/3), DAMP				
			SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY < 20%, SILT < 10%, FINE SAND WELL SORTED, ZERO PLASTICITY, Fe-OXIDE + BLACK MOTTLING PRONOUNCED, STIFF				
25				TD = 25				SB-25-2 1600
30								
35				GGW @ 1620				

Well Permit No.:
Date well drilled: 4-4-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: JOSE + KIAN
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



SB-25

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-25

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security: CURRENT SECTION	PID (PPM)	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
				Fe-OXIDIZED ASPHALT, GRAVEL, CONCRETE, SAND PACK			SAMPLE
			NR				
				CLAYEY SILT [ML], VERY DARK GRAYISH BROWN (10YR 3/2), DAMP, <40% CLAY, <5% VFS, MED-LOW PLASTICITY, SOFT			SB-26 0850
5			NR	GRAVELLY SAND [SP], BROWN (10 YR 4/3), WET, POORLY GRADED, MED SAND, GRAVEL <15%, GRAVEL CLASTS SUB-ROUNDED TO SUB-ANGULAR			
				SILTY-CLAY [CL], OLIVE BRN (2.5YR 4/3), DAMP, SILT <30%, MED PLASTICITY BLACK MOTTLING, VERY STIFF			SB-26 0852
10				SILTY CLAY/CLAYEY SILT [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, ~40% SILT, <10% VFS, LOW PLASTICITY, MED STIFFNESS, Fe-OXIDE STAINING			SB-26 0856
15							SB-26 0910
				SILTY CLAY [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, <30% SILT, MED PLASTICITY, VERY STIFF, Fe-OXIDE STAINING/MOTTLING INCREASING SILT%			
				CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/4), DAMP, <40% CLAY, <10% VFS, LOW PLASTICITY, Fe-OXIDE STAINING, SOFT-MED STIFF			
20							SB-26-2[illegible] 094[illegible]
				CLAYEY VFS [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <30% CLAY, <20% SILT, POORLY GRADED, Fe-OXIDE STAINING, NO FREE H_2O			
		<1					
25				SLIGHTLY CLAYEY FINE SAND [SP], BROWN (10 YR 4/3), DRIPPING WET, FINE SAND, SUB ANGULAR, POORLY GRADED, SILT <10%			SB-26-25 0955
				GRAVELLY SAND [SP], VERY DARK BRN (10 YR 2/2), WET, MED-FINE SAND, GRAVEL SUB-ANGULAR, CLASTS <20%, SAND POORLY GRADED			
				26.6 CLAYEY VFS [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <25% CLAY, <30% SILT, POORLY GRADED, Fe-OXIDE STAINING			
				TD=28'			
30							
35				GGW@1159			

Well Permit No.:
Date well drilled: 3/28/01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE MIKE
Sampling Method:
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:

LLOYD WISE SERVICE BLDG

10 E. 14TH

LLOYD WISE MAINTAINENCE BLDG.

SB-26

SB-26

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-26

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

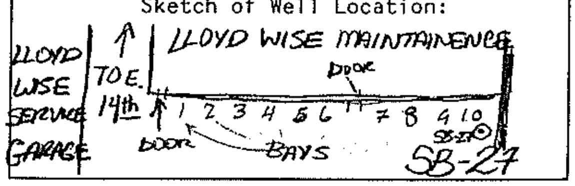
Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION	Graphic Log	LITHOLOGY — Description	SAMPLE DATA — NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
			-SAND PACK, CONCRETE, ASPHALT			
		NR		NR		
		SP	GRAVELLY SAND [SP], DARK YELLOWISH BRN (10 YR 3/6), WET, MED SAND, GRAVEL <10%, GRAVEL CLASTS SUB ANGULAR TO SUB ROUNDED, POORLY GRADED, MINOR Fe-OXIDE STAINING	SB-27 122		
5		NR	[SP]-[CL] TRANSITION AT 6'	NR		
			SILTY-CLAY [CL], BLACK (10 YR 2/1), DAMP, <20% SILT, MED-HIGH PLASTICITY, LOW STIFFNESS	SB-27 122		
			SILTY CLAY [CL], VERY DARK BROWN (10 YR 2/2), DAMP, <30% SILT, VERY STIFF, LOW-MED PLASTICITY, OLIVE BRN MOTTLING			
10			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, <20% SILT, STIFF, LOW-MED PLASTICITY, Fe-OXIDE STAINING/MOTTLING	SB-27- 1225		
		CL				
15			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, <20% SILT, <1% VFS, STIFF, MED-LOW PLASTICITY, Fe-OXIDE STAINING	SB-27-1 1310		
			SILTY CLAY/CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP, <40% SILT, <5% VFS, MED PLASTICITY, PRONOUNCED Fe-OXIDE STAINING/MOTTLING, MED STIFFNESS			
20			[CL] INCREASING CLAY, OLIVE BRN (2.5 YR 4/3), MED PLASTICITY	SB-27-2 1340		
		SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), WET, POORLY GRADED FINE SAND, Fe-OXIDE MOTTLING, <15% CLAY			
25		SM	SILTY SAND [SM], OLIVE BRN (2.5 YR 4/3), WET, POORLY GRADED	SB-27-2 1400		
			TD = 25'			
30						
35			GGW @ 1425			

Well Permit No.:
Date well drilled: 3-27-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-27

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION	PID (PPM)	Graphic Log	LITHOLOGY — Description	SAMPLE DATA — Number / Interval / Penetration Rate (Blows/ft.)
				SAND PACK, ASPHALT, CONCRETE GRAVEL	
			ML	CLAYEY SILT [ML], BLACK (10 YR 2/1), DRY, <30% CLAY, <15% FINE SAND, LOW PLASTICITY, LOW STIFFNESS, Fe-OXIDE STAINING	SB-28-1044
			NR		NR
			ML	[ML], BLACK (10 YR 2/1)	
			SP	GRAVELLY SAND [SP], DARK YELLOW BROWN (10 YR 4/3), DRY, POORLY GRADED, GRAVEL <10% SUB-ANGULAR CLASTS	SB-28-1045
5		<1	NR		NR
				SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, <30% SILT, LOW PLASTICITY VERY STIFF, Fe-OXIDE + OLIVE BRN MOTTLING,	SB-28-1047
				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, LOW PLASTICITY VERY STIFF, Fe-OXIDE MOTTLING	SB-28-1050
10		<1			
			CL	SILTY CLAY [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, <40% SILT, <5% VFS, LOW-MED PLASTICITY, VERY STIFF, MINOR BLACK MOTTLING	
15					SB-28-1105
				VERY STIFF [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, <30% SILT, MED-LOW PLASTICITY, MINOR MOTTLING	NR
			NR		
				INCREASING SILT%	
		<1		SILTY CLAY/CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP ~40% SILT ~40% CLAY, ~10% VFS; MED-LOW PLASTICITY, LOW STIFFNESS; Fe-OXIDE MOTTLING/STAINING	SB-28-1120
20			CL		
				DECREASING SILT %, (2.5 YR 4/3), MED STIFFNESS, MED-LOW PLASTICITY Fe-OXIDE STAINING	
			SC	CLAYEY SILT + SAND [SC], OLIVE BRN (2.5 Y 4/3), WET, LOW PLASTICITY, Fe-OXIDE STAINING, POORLY GRADED FINE-VF SAND	SB-28-1140
25				TD=25	
30					
35				GGW @ 1150	

Well Permit No.:
Date well drilled: 3-27-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIRN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:
SB-28

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-28

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	Well Construction (Type of Security:)	Graphic Log	Lithology Description	Sample Number	Penetration Rate (Blows/ft.)
0–1		NR			
1		CL	SLIGHTLY-SILTY CLAY (CL), VERY DARK BRN (10 YR 2/2), MED PLASTICITY, SLT <10%, Fe-OXIDE MOTTLING, VERY STIFF		
4				SB-29-4'	0
6.5			COLOR CHANGE TO OLIVE BRN (2.5 YR 3/3)	SB-29-6.5'	0
9			BLACK MOTTLING, DARK OLIVE BRN (2.5 YR 3/3)		
10				SB-29-10'	0.
13			VERY STIFF, OLIVE BRN (2.5 YR 3/3), MED TO LOW PLASTICITY		
15			(CL) siltyclay, [2.5Y 4/4] oliveBrN, Damp, stiff, 45% clay, 30% silt, 25% fine sand, med-hi plac, mottled, iron oxide staining	SB-29-15'	0-
20				SB-29-20'	0.
21			CL, 2.5Y 4/4, MED PLASTICITY, STIFF, Fe-OXIDE STAINING. FREE WATER FROM ~21.5'-21.6'		
23		ML	(ML), 70% fines, 30% fine sand, low plac, silty fine sands		
26		SM	(SM) silty sands, [2.5Y 4/4], oliveBrN, Damp, med stiff, 70% fine sand, 30% silt, low plac, iron oxide staining.		
28			TD=28		

Well Permit No.:

Date well drilled: 2/23/01

Date water level measured:

Well elevation:

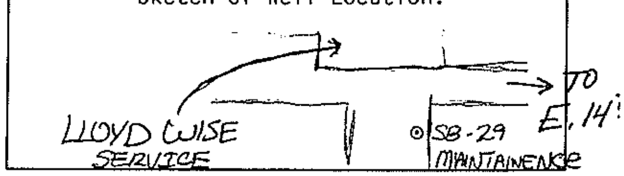
Drilling Company: PRECISION

Driller: Jose/ Kian

Sampling Method: Direct Push

Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: TBK KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-29

Project No. 7962.01

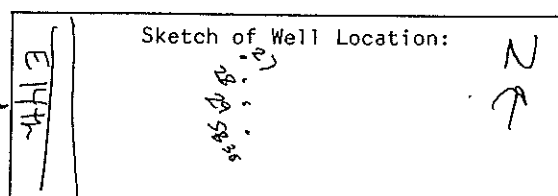
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
			DIRECTLY UNDER ASPHALT- Fe-OXIDE STAINED CLAYEY MED - COARSE SAND W/GRAVEL			
			SLIGHTY-SILTY CLAY (CL), VERY DARK GRAY (10 YR 3/2), MED PLASTICITY, ZERO DILITANCY, SILT <10%, Fe-OXIDE + BLACK MOTTLING			
5		CL		SB-30-5'		
10			COLOR CHANGE TO OLIVE BRN (2.5 YR 4/3), VERY STIFF, MED TO LOW PLASTICITY	SB-30-10'		
		ML 10.5 11	10.5-11' CLAYEY SILT (ML) OLIVE BRN (2.5 YR 4/3), LOW PLASTICITY			
			11' SLIGHTLY SILTY CLAY (CL) DARK BRN (10 YR 3/3), MED PLASTICITY SILT <10%, VERY STIFF			
15				SB-30-15'		
▽		CL	VERY STIFF, <5% SILT, COLOR CHANGE TO OLIVE BRN (2.5 YR 4/3)			
			INCREASING SILT, MED PLASTICITY, OLIVE BRN (2.5 YR 4/3)			
20				SB-30-20'		
			(CL) silty clay, [2.5 Y 4/4] olive Brown, moist, med stiff			
			CLAYEY SAND (SC), OLIVE BRN (2.5 YR 4/4), MED TO LOW PLASTICITY, <20% CLAY, Fe-OXIDE STAINING			
25		SC		SB-30-25'		
30						
			Bottom of Boring 28'			
35						

Well Permit No.:
Date well drilled: 3/23/01
Date water level measured:
Well elevation:

Drilling Company: Precision
Driller: Jose / Kian
Sampling Method: Direct Push
Hammer Weight:

LF Geologist/Engineer: TGR KPB

Sketch of Well Location: N


FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-30

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	Graphic Log	LITHOLOGY Description	SAMPLE DATA Number / Interval / Penetration Rate (Blows/ft.)
		PID (ppm)	FLOOR SAND PACK INCLUDING PIECES OF BRICK, CONCRETE	NR
			SLIGHTLY-SILTY CLAY, [CL], VERY DARK BRN (10YR 2/2), DAMP, <5% SILT, VERY LOW-ZERO PLASTIC, LOW STIFFNESS	SB-31-4 0847
5		CL		NR
			SILTY-CLAY [CL], VERY DARK BRN (10 YR 2/2), DAMP, <15% SILT, MED PLASTICITY, MED STIFFNESS	SB-31-7' 0850
		58.3	INCREASING STIFFNESS, *STRONG GASOLINE ODOR, COLOR CHANGE TO (10YR 3/1)	
10		SC ~300	STRONG GASOLINE ODOR + STAINING — CLAYEY FINE SAND [SC], VERY DARK BRN (10 YR 3/1), DAMP, LOW PLASTICITY, <15% CLAY, STRONG GASOLINE ODOR + STAINING	SB-31-10 0855
		200.7	SLIGHTLY SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, <5% SILT, MED PLASTICITY, GASOLINE ODOR DECREASING, VERY STIFF slight visible sheen.	
15			COLOR CHANGE TO DARK GRAY (10 YR 4/1) DUE TO STAINING	SB-31-15 0925
		CL	STRONG GASOLINE ODOR + STAINING	
		42	3" CLAYEY SAND/SANDY CLAY [CL], FINE SAND <10%	
		(250 IN BAG)	SLIGHTLY SILTY CLAY [CL], DARK GRAY (10 YR 4/1), GASOLINE ODOR, DAMP, LOW PLASTICITY, <5% SILT, MED STIFFNESS, STAINING	
20		~1 BY DRILL	STRONG GASOLINE ODOR, DARK GRAY (10 YR 4/1), STAINING LOW PLASTICITY, MED STIFFNESS	SB-31-20 1005 (HOLD)
		56		SB-31-23 1019 (HOLD)
		48	CLAYEY VFS-FINE SAND [SC], DARK GREENISH GRAY (5GY 4/1), DAMP + SHEEN, <20% CLAY, 10% SILT, ZERO-LOW PLASTICITY, GASOLINE ODOR; STAINING + SHEEN	
25		SC		SB-31-25' 1020
		21	[SC] COARSENS TO FINE-MED SAND, NO GASOLINE ODOR, DARK YELLOWISH BRN (10YR 4/4), <1% CLAY, NO PLASTICITY, WET, NO STAINING WELL SORTED / POORLY GRADED	
			TD = 28'	
30				
			GGW SAMPLE @ 1110	

Well Permit No.:

Date well drilled: 3/26/01

Date water level measured:

Well elevation:

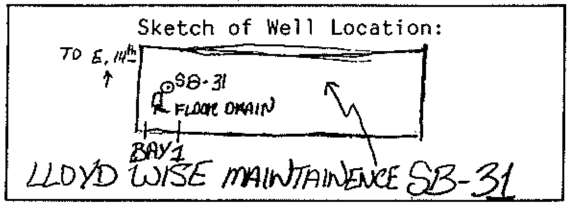
Drilling Company: Precision

Driller: Kiah, Jose

Sampling Method: Direct Push

Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB, TER

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-31

Project No. 7962.01

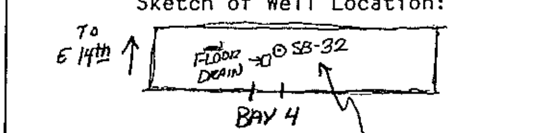
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security: CURRENT SECTION	PID (ppm)	Graphic Log	LITHOLOGY Description	SAMPLE DATA NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
0				SAND PACK, GRADE, CONCRETE	SAMPLE
		0.0	NR	(SM) silty sand [10YR 2/2] very Drk Brown, Damp, med dense, 80% fine sand, 20% silt, poorly graded,	NR
				INCREASING CLAY ↓	SB-32 1118
5					SB-32-1121
		0.0		clayey silt (CL) [10YR 2/2] very Drk Brown, Damp, firm; stiff, 70% silt, 20% clay, 10% fine sand, med-low plac, shell fragments	
10				clayey silt (CL) [2.5Y 4/3] olive Brown, 50% silt, 45% clay, 5% fine sand, DAMP, LOW PLASTICITY, VERY STIFF	SB-32 1124
15		<1			SB-32 1155
				SLIGHTLY SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/4), <10% SILT, DAMP, MED-LOW PLASTICITY, STIFF	
				INCREASING PLASTICITY, INCREASING SILT, <30% SILT, (2.5 YR 4/3)	
20					SB-32 131 (HOLD)
				SILTY-CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, HIGH DRY STRENGTH ~20% SILT, <1% FINE SAND, MED-LOW PLASTICITY, MED STIFFNESS	
		<1		23.5' CLAYEY SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <30% CLAY, <20% FINE SAND, ZERO PLASTICITY, LOW STIFFNESS, Fe-OXIDE MOTTLING &	
25				TD 25' - REFUSAL — 25' [SC] COARSENS TO MED-FINE SAND, POORLY GRADED, <10% CLAY, <20% SILT	SB-32-134
30					
				GGW SAMPLE @ 1400	

Well Permit No.:
Date well drilled: 3/26/01
Date water level measured: ~
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-32

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

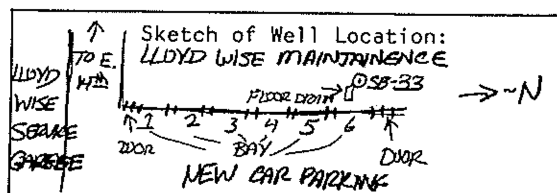
Depth, feet	WELL CONSTRUCTION Type of Security: CURRENT SECTION	PID (ppm)	Graphic Log	LITHOLOGY Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
				GRADE, SAND, GRAVEL, ASPHALT, BRICK PIECES	NR		SAMPLE
		<1		CLAYEY SILT [ML], VERY DARK BRN (10 YR 2/2), SLIGHTLY DAMP, <10% SAND, <40% CLAY, ZERO PLASTICITY, LOW STIFFNESS			SB-33-1420
5			5	GRAVELLY SILT [SC], VERY DARK BRN (10 YR 2/2), DAMP, <10% SAND, <30% GRAVEL, < 40% SILT, ZERO PLASTICITY, MOTTLING, LOW STIFFNESS	NR		
			NR	SILTY-CLAY [CL], BLACK - VERY DARK BROWN (10 YR 2/1), SLIGHTLY DAMP, <10% SILT, MINOR MOTTLING, MED-LOW PLASTICITY, VERY STIFF			SB-33-1423
10			10	SILTY CLAY/CLAYEY-SILT [ML], VERY DARK GRAYISH BRN (10 YR 3/2) DAMP, < 40% CLAY, < 10% SAND, <50% SILT; MOTTLING (OLIVE GRN + BLK), MED-LOW PLASTICITY, VERY STIFF			SB-33-1426
		<1		COLOR CHANGE TO 2.5 YR 3/3			
				SILTY-CLAY [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, < 20% SILT, LOW PLASTICITY, MINOR Fe-OXIDE MOTTLING, VERY STIFF			
15			15	SLIGHTLY SILTY CLAY [CL], VERY DARK GRAYISH BRN (10 YR 3/2), <10% SILT, DAMP, BLACK MOTTLING, VERY STIFF, LOW PLASTICITY			SB-33-15 1455
		<1		SILTY CLAY/CLAYEY SILT [CL], OLIVE BRN (2.5 Y 4/4), DAMP, <40% SILT <5% VFS, MED-HIGH PLASTICITY, Fe-OXIDE MOTTLING, LOW STIFFNESS			
20			20				SB-33-20 1555
				[CL] (2.5 YR 4/3), Fe-OXIDE MOTTLING, MED PLASTICITY			
25			25	CLAYEY SILT + VFS [SC], OLIVE BRN (2.5 Y 4/3), DAMP-MOIST, <20% CLAY, <40% SILT, ZERO PLASTICITY, Fe-OXIDE MOTTLING			SB-33-25 1622
				TD=25' (REFUSAL)			
30			30				
35			35	GGW @ 1625			

Well Permit No.:
Date well drilled: 3·26·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN + JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location: LLOYD WISE MAINTAINENCE



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-33

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION	PID (PPM)	Graphic Log	LITHOLOGY — Description	SAMPLE DATA — NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
				SAND PACK, ASPHALT, CONCRETE	
			NR		NR
		<1	ML	CLAYEY SILT + VFS [ML], VERY DARK BRN TO BLACK (10 YR 2/1) SLIGHTLY DAMP TO DRY, <30% CLAY, MINOR Fe-OXIDE STAINING, ZERO PLASTICITY	SB-34-0835
5			5 NR		NR
			SP	GRAVELLY FINE SAND [SP], DARK BRN (10 YR 3/3), WET <10% CLAY, SUB-ROUNDED GRAVEL, ZERO PLASTICITY, WELL SORTED SAND	SB-34-0845
				SILTY-CLAY [CL], BLACK (10 YR 2/1), DAMP, <20% SILT, MED PLASTICITY, MED STIFFNESS	
		1.3		INCREASE IN SILT TO <40%, MED-LOW PLASTICITY, OLIVE-GRN MOTTLING	
10			10	SILTY-CLAY [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, <40% SILT, VERY STIFF, LOW PLASTICITY, MINOR Fe-OXIDE MOTTLING.	SB-34-0850
			CL		
15			15		SB-34-0910
		<1		SILTY-CLAY [CL], DARK OLIVE BRN (2.5 YR 3/3), DAMP, <30% SILT, <5% VFS, VERY STIFF, MED-LOW PLASTICITY, MINOR Fe-OXIDE MOTTLING.	
				SILTY CLAY/CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP, <40% CLAY, ~40% SILT, ~10% VFS, STIFF, MED PLASTICITY, Fe-OXIDE STAINING + MOTTLING	
20			20		SB-34-094
				INCREASING SILT/SAND %, MED PLASTICITY, Fe-OXIDE STAINING + MOTTLING	
		<1	SP	SLIGHTLY CLAYEY SAND [SP], OLIVE BRN (2.5Y 4/3), WET, <10% CLAY, <10% SILT, POORLY GRADED, Fe-OXIDE MOTTLING, FINE-MED SAND	
25			25	TD=25	SB-34-25' 1001
30			30		
			35	GGW @ 1025	

Well Permit No.:
Date well drilled: 3.27.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KRB

Sketch of Well Location:
LLOYD WISE SERVICE — TOE. 143 — LLOYD WISE MAINTAINENCE BLDG — FLOOR DRN — SB-34 — 1 DOOR 2 3 4 5 6 7 DOOR 8 — NEW CAR PARKING SB-34

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-34

Project No. 7962.01

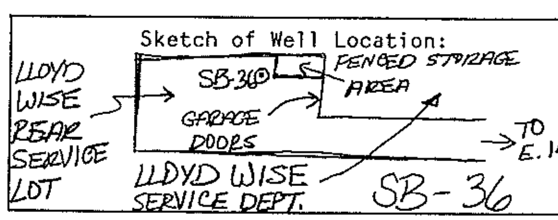
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
		NR				
			COARSE IRON-OXIDIZED FINE SAND W/ASPHALT GRAVEL	SB-36-4'		
5			SILTY-CLAY (CL), VERY DARK GRAYISH BRN (10 YR 3/2). HIGHLY PLASTIC, SILT <10%, 0 DILITANCY	SB-36-5.5'		
			INCREASING STIFFNESS, Fe-OXIDE MOTTLING (MINOR), COLOR CHANGE TO 10 YR 3/1			
10			INCREASING STIFFNESS, NOW HIGH PLASTICITY, COLOR CHANGE TO 10 YR 3/6.	SB-36-10'		
			MED STIFFNESS, 10 YR 3/3 SLIGHTLY-SILTY CLAY (CL)			
			VERY STIFF			
15		CL		SB-36-15'		
			MED-HIGH PLASTICITY, SLIGHTLY-SILTY CLAY (CL), 10 YR 3/3			
			MED PLASTICITY			
			HIGH PLASTICITY, MED STIFFNESS			
20			INCREASING SILT, LOW STIFFNESS	SB-36-20'		
			COLOR CHANGE TO 2.5YR 4/4 SILTY CLAY (CL), VERY STIFF, HIGH PLASTICITY, 0 DILITANCY			
			INCREASING SILT			
25		SC	CLAYEY SAND (SC), OLIVE BRN (2.5 Y 4/3) W/ Fe-OXIDE MOTTLING, LOW PLASTICITY, LOW DILITANCY	SB-36-25'		
			DECREASING CLAY, ZERO PLASTICITY, VERY-FINE SAND INCREASING			
		ML	VERY FINE SAND (ML), OLIVE BRN (2.5Y 4/3), NO PLASTICITY, LOW DILITANCY			
			TD = 28'			
30						
35						

Well Permit No.:
Date well drilled: 3·22·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: TERRY & KIAN
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB CNS

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-36

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	Well Construction (Type of Security:)	Graphic Log	Lithology Description	Sample Data
0–4		NR		
4			Fe-OXIDE STAINED GRAVEL + FINE SAND	SB-37-5'
5		CL	SLIGHTLY-SILTY CLAY (CL), VERY DARK BROWN (10 YR 2/2), VERY STIFF, MED PLASTICITY, 0 DILITANCY, SILT<5%	
8			COLOR CHANGE TO 10 YR 3/3 VERY STIFF, MED PLASTICITY	
10				SB-37-10'
15				SB-37-15'
16			INCREASING SILT	SB-37-17'
18		CL	SLIGHTLY-SILTY	
20				
22				SB-37-22'
23.5		SC	CLAYEY SAND (SC), OLIVE BROWN (2.5Y 4/3), ZERO TO LOW PLASTICITY, SLOW DILITANCY, CLAY < 30%	
25			DECREASE IN CLAY %, INCREASE IN VFS, ZERO PLASTICITY	SB-37-25'
27			TD 27'	
30				
35				

Well Permit No.:

Date well drilled: 3·22·01

Date water level measured:

Well elevation:

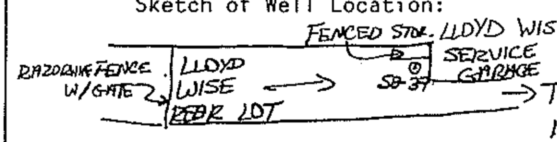
Drilling Company: PRECISION

Driller: TERRY + KIAN

Sampling Method: DIRECT PUSH

Hammer Weight:

Sketch of Well Location:



SB-37

LF Geologist/Engineer: KPB CNS

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-37

Project No. 7962.01

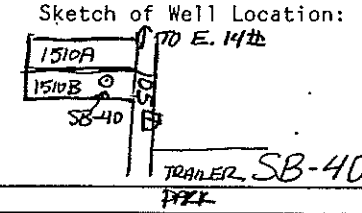
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY		SAMPLE DATA
	Type of Security: CURRENT SECTION PID (ppm)	Graphic Log	Description	NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
			CONCRETE, SAND PACK	SAMPLE
		NR		NR
5		ML	CLAYEY SILT [ML], VERY DARK BRN (10 YR 2/2), DAMP, CLAY <30%, LOW-ZERO PLASTICITY	SB-40- 0910; SB-40- 0912
			SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, SILT <20%, HIGH PLASTICITY, MINOR Fe-OXIDE STAINING	
			SILTY CLAY / CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <45%, LOW-ZERO PLASTICITY, MINOR BLACK MOTTLING, STIFF	
10			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <40%, MED-HIGH PLASTICITY, MINOR BLACK MOTTLING, VERY STIFF	SB-40-1 0922
		CL		
			DARK BRN (10 YR 3/3), MED PLASTICITY, DAMP [CL]	
15				SB-40-15 0939
		15.8	SANDY, SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, VFS <25%, SILT <40%, MED PLASTICITY, VFS WELL SORTED, Fe-OXIDE STAINING, SOFT	
			SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED PLASTICITY, SILT <30%, STIFF, Fe-OXIDE STAINING	
			SANDY, SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED PLASTICITY, FINE SAND + VFS <40%, SILT <20%, Fe-OXIDE STAINING PRONOUNCED, SAND WELL SORTED	
20			SILTY CLAY / CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED-LOW PLASTICITY, SILT <40%, PRONOUNCED Fe-OXIDE STAINING, STIFF	SB-40-20 1002
		SC	CLAYEY, SILTY FINE SAND + VFS [SC], OLIVE BRN (2.5 YR 4/3), DAMP, LOW-ZERO PLASTICITY, SAND WELL SORTED, PRONOUNCED Fe-OXIDE STAINING, STIFF → SOFT, <20% SILT, <20% CLAY	
25				SB-40-25 1010
		SP	SLIGHTLY CLAYEY FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), DAMP, ZERO PLASTICITY, FINE SAND WELL SORTED, SILT <15%, CLAY <20%, Fe-OXIDE STAINING + LIGHT GRAY MOTTLING, STIFF → SOFT	
			TD = 28'	
30				
35			GGW @ 1045	

Well Permit No.:
Date well drilled: 4-3-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-40

Project No. 7962.01

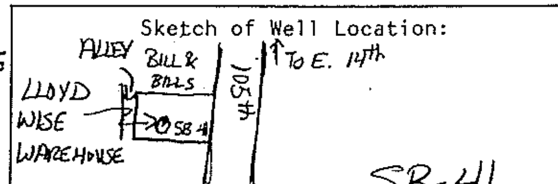
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY: Graphic Log	LITHOLOGY: Description	SAMPLE DATA
	Type of Security: CURRENT SECTION PID (PPB)			NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
0			SAND PACK, GRAVEL, ASPHALT, CONCRETE	NR
		NR		
			CLAYEY-SILT [ML], BLACK (10 YR 2/1), DAMP, <30% CLAY, ZERO-LOW PLASTICITY, Fe-OXIDE MOTTLING/STAINING	SB-41-1 155[...]
			SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), <15% SILT, DAMP, MED PLASTICITY, MINOR Fe-OXIDE STAINING	SB-41.5 155[...]
5				
	<1	<1	[CL] COLOR CHANGE TO VERY DARK GRAYISH BRN (10 YR 3/2), MED-LOW PLASTICITY, DAMP, SILT <30%	
10				SB-41[...] 1557
			SILTY CLAY/CLAYEY SILT [CL], DARK GRAYISH BRN (10 YR 3/2), LOW PLASTICITY, DAMP, SILT <40%, VERY STIFF	
15	<1	<1		SB-41-1[...] 1610
			SILTY-CLAY [CL], DARK GRAYISH BRN (2.5 YR 4/2), LOW-MED PLASTICITY, DAMP, SILT <40%, STIFF, Fe-OXIDE MOTTLING	
			CLAYEY SILT [ML], DARK GRAYISH BRN (2.5 YR 4/2), DAMP, <30% CLAY, <10% VFS, LOW PLASTICITY, STIFF->SOFT, Fe-OXIDE STAINING/MOTTLING	
20				SB-41-[...] 165[...]
	<1		SILTY CLAY/CLAYEY SILT [ML], DARK GRAYISH BRN (2.5 YR 4/2), DAMP, <10% VFS, <30% CLAY, LOW PLASTICITY, STIFF, Fe-OXIDE STAINING	
			CLAYEY VFS [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <30% CLAY, <20% SILT, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	SB-41-25 170[...]
25		NR		NR
			MED SAND [SP], BRN (10 YR 4/3), WET, SILT <10% NO CLAY, SAND WELL SORTED/POORLY GRADED, Fe-OXIDE STAINING	
			TD = 28'	
30				
35			GGW @	

Well Permit No.:
Date well drilled: 3.28.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE MIKE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-41

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

LITHOLOGY			SAMPLE DATA		LABORATORY TESTS		
Depth, feet	Graphic Log	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	Moisture Content (%)	Dry Density (pcf)	Unconfined Compressive Strength (psf)
0–5		Silty-clay (CL), black (5Y 2.5/1), damp, soft, medium plasticity, fine sands present <10-15%, trace gravels <5%, (rounded), mottled	SB-50-2.5	no recovery			
5		color change to dark brown (10YR 3/3)	SB-50-5				
		color change to dark yellowish brown (10YR 4/4)					
10			SB-50-10				
		Increase in gravel, <15% subrounded, increase in fine sand <15-20%					
▽?		decrease in gravels <5%					
15		clayey sand (SC), dark yellowish brown (10YR 4/4), wet, poorly graded, sub-angular gravels present <10%	SB-50-15				
		Silty-clay (CL), dark yellowish brown (10YR 4/4), medium stiffness, damp, medium plasticity, fine sands present <20%, trace gravels, black mottled					
20			SB-50-20				
		increase in silt, low plasticity					
25		Clayey-silt (ML), yellowish brown (10YR 5/3), damp low to no plasticity	SB-50-25	Above water Sample			
▽?		becomes very damp @ 27'					
		Silty-clay (CL), dark yellowish brown (10YR 4/3), soft, damp, low to medium plasticity, splotchy w/ gray color					
30							
35		water @ 20.05					

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

Date boring drilled: 3/20/01
Drilling method: Geoprobe, Direct Push
Hammer weight and drop:
LF Engineer: CNS, KJB

▽ ATD Water level at time of drilling

Standard Penetration Split Spoon Sampler, 1.38-inch I.D.

Modified California Sampler:
2.0-inch I.D.
2.5-inch I.D. (noted with a *)

Sample retained for geotechnical analysis

uc = unconfined compression test

Precision : Jose / Keean

Figure : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB-50

Project No. 7962

LFR LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA
0			Concrete	
		SP	gravellysilt,clay(SP) [10YR3/4] Dyellowish Brown, ~~moist,~~ Damp, loose, ~~angular-sub angular,~~ iron oxide staining	SB-5
5			[10YR2/1] Black (CL) siltyclay, Damp, 85% clay-silt, 15% fine sand, med plac, iron oxide staining, mottled, stiff	
10			Color change [10YR4/2] Dgrayish BrowN	SB-51
15		CL		SB-51
20				SB-51
		SC	clayeysands (SC) [10YR4/3] BrowN, moist ~~wet~~ med stiff, 80% fine sand, 20% clay, low plac, iron oxide staining	SB-51
25		SP	sand (SP) [10YR4/3] Brown, wet, loose, poorly graded increase grainsize from clayeysands, 95% med-fine sand, 5% clayey silt.	SB-51
			Bottom 28'	
30				

Well Permit No.:
Date well drilled: 4/2/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Mike
Sampling Method:
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TCR

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-51

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
0			gravelly silt-clay (CL) [10YR 3/4] Drk yellow Brown, Damp, med stiff, 5% fine gravel, 25% fine-med sand, 70% clay, med plac, mottled	SB-52		
5		CL	sandy clays increase in sand 40% fine-med sand, 60% clay, mottled, Iron oxide staining.	SB-52		
10			color change [10YR 2/1] Black	SB-5		
15				SB-52-		
20			sand (SC) [10YR 3/4] Dark yellow Brown, Wet, soft, 85% fine-med sand, 15% clay, poorly graded,	SB-52-2		
				SB-52-2		
25		SC		SB-52-2		
			Bottom of Boring 28'			
30						

Well Permit No.:
Date well drilled: 4/2/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Mike
Sampling Method: DP
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TEK

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-52

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
0		GC	gravelly [10YR 4/3] Brown, Dry, Fill, loose, Angular-subangular, Poorly graded, highly iron oxide staining.			SB-53-
		CL	gravelly clay (CL) [10YR 2/2] V. Drk Brown, Damp, stiff, 5% fine gravel, 95% clay, med plac, mottled.			
5						SB-53-
		SC	clayey sand (SC) [10YR 3/4] Dark yellow Brown, Damp, loose, 60% fine sand, 40% clay			
10		CL	sandy clay, (CL) [10YR 3/4], Damp, stiff, 70% clay, 25% fine sand, 5% fine gravel, med plac, mottled.			SB-53
			clayey sand (SC) [10YR 3/4] Dark yellow Brown, Damp, loose, 60% fine sand, 40% clay, Poorly graded, iron oxide staining.			
15		SC				SB-53
20			~~clay~~			SB-53-
		CL	sandy clay (CL) [10YR 3/6] D. yellow Brown, Damp, soft, 70% clay, 30% fine sand, med plac			
25						SB-53-2
		SC	clayey sands (SC) [10YR 3/4] D. yellow Brown, wet, loose, sub rounded-rounded, poorly graded,			
			Bottom of Boring 28'			
30						

Well Permit No.:
Date well drilled: 4/3/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Mike
Sampling Method: DP
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TOM

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-53

Project No. 1962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0'		SC	clayey sands (SC) [10YR3/3] Drk Brown, Damp, med dense, rounded, 70% med-fine sand, 30% clay, poorly graded			SB-54-2
5'						SB-54-5
			sandy clays (CL) [10YR2/2] V. Dark Brown, Damp, Med stiff, 60% clay, 30% fine sand, 10% med sand. med plac.			
10'						SB-54-1
			-color change [10YR3/4] D. yellowish Brown.			
		~~CL~~	increase in clay 80% clay, 20% fine sand, med-hi plac.			
15'						SB-54-
~~TOR~~						~~TOR~~ ~~SB-54-2~~
20		SC	clayey sand (SC) [10YR3/4] Drk yellow Brown, moist loose, 80% med-fine sand, 20% clay, poorly graded iron oxide staining.			
			sandy clay (CL) [10YR2/2] V. Drk Brown, Damp, med stiff, 80% clay, 20% fine sand, med plac iron oxide staining.			SB-54-2
25'		CL				SB-54-2
			-increase gravel 3% fine gravel, 17% Coarse-med sand, 10% fine sand, 70% clay -2" thick			
			-Bottom 28' Boring			
30'						

Well Permit No.:
Date well drilled: 4/3/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Mike
Sampling Method: DP
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TGM

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-54

Project No. 7962.01

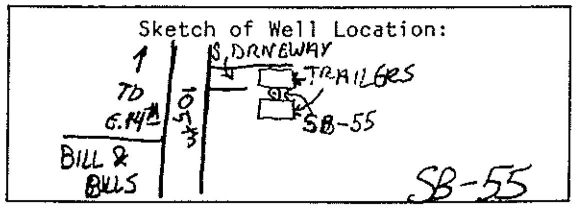
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security: CURRENT SECTION PID (ppm)	Graphic Log	LITHOLOGY Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
			ASPHALT, GRAVEL			
		NR		NR		
5			SILTY-CLAY [CL], DARK GRAYISH BRN (2.5 YR 4/2), DAMP, <30% SILT, LOW PLASTICITY, Fe-OXIDE STAINING			
		ML	GRAVELLY SILTY CLAY/CLAYEY SILT [ML], VERY DARK GRAYISH BRN, (10 YR 3/2), DAMP, GRAVEL <2%, SILT < 50%, LOW-ZERO PLASTICITY, GRAVEL CLASTS SUB-ROUNDED (~2mm AVG DIAMETER)	SB-55 1300		
10		CL	10' - CLAYEY SILT/SILTY CLAY [CL], VERY DARK GRAYISH BRN (10 YR 3/2), DAMP, < 40% SILT, < 5% VFS, LOW PLASTICITY, MINOR Fe-OXIDE STAINED MOTTLING	SB-55 1308		
15		ML	GRAVELLY CLAYEY SILT [ML], VERY DARK GRAYISH BRN (10 YR 3/2), DAMP, < 30% CLAY, < 10% GRAVEL (AVG. CLAST ~3-5mm IN DIAMETER), ZERO-LOW PLASTICITY, MINOR Fe-OXIDE STAINING	SB-55 1330		
			SILTY-CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT < 30%, LOW PLASTICITY, Fe-OXIDE STAINING			
			SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, <40% SILT, LOW PLASTICITY, Fe-OXIDE MOTTLING, SOFT-MED STIFF			
20		CL	SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, < 40% SILT, MED PLASTICITY, Fe-OXIDE STAINED MOTTLING, MED STIFF	SB-55 1353		
			CLAYEY SILT/SILTY CLAY [ML], OLIVE BRN (2.5 YR 4/3), < 40% CLAY LOW PLASTICITY, Fe-OXIDE + BLACK MOTTLING, STIFF			
25		SC	SLIGHTLY CLAYEY FINE SAND [SC], DARK GRAYISH BRN (2.5 YR 4/2), DAMP, < 20% CLAY, < 10% SILT, WELL SORTED/POORLY GRADED FINE SAND, Fe-OXIDE + BLACK MOTTLING	SB-55 141[illegible]		
		NR				
		SC	CLAYEY FINE SAND/SILT [SC], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY < 30%, SILT < 30%, PRONOUNCED Fe-OXIDE STAINING			
			TD = 28'			
30						
35			GGW @ 1505			

Well Permit No.:
Date well drilled: 3.29.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN MIKE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-55

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

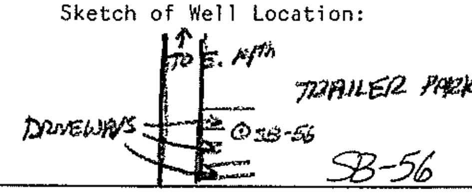
Depth, feet	WELL CONSTRUCTION — Type of Security: PID (PPM)	LITHOLOGY — Graphic Log	Description	SAMPLE DATA (Number / Interval / Penetration Rate (Blows/ft.))
	CURRENT SECTION		ASPHALT, GRAVEL	SAMPLE
		NR		
		ML	CLAYEY SILT [ML], BLACK (10 YR 2/1), DAMP, LOW PLASTICITY, <40% CLAY, SOFT	SB-56-1445
5		NR		NR
		CL	SLIGHTY SILTY, SLIGHTLY GRAVELLY CLAY [CL], BLACK (10 YR 2/1), HIGH PLASTICITY, STIFF, GRAVEL SUBROUNDED, SILT <10%, GRAVEL <5%, UNIT DIFFICULT TO BREAK CLEANLY - VERY STICKY, DAMP	SB-56-1500
			CLAYEY SILT/SILTY CLAY [ML], DARK GRAYISH BRN (10 YR 4/2), DAMP, LOW-ZERO PLASTICITY, VERY STIFF, SILT <40%, BLACK MOTTLING	
10			CLAYEY SILT/SILTY CLAY [ML], DARK BROWN (10 YR 3/3), DAMP, LOW PLASTICITY, <40% CLAY, <5% VFS, VERY STIFF, MINOR Fe-OXIDE STAINING	SB-56-1513
		ML		
15			GRAVELLY, SILTY CLAY [ML], VERY DARK GRAYISH BRN (10 YR 3/2), DAMP, LOW PLASTICITY, <40% SILT, <15% GRAVEL, GRAVEL CLASTS SUB-ROUNDED (AVG 3-5mm DIA), STIFF	SB-56-1524
			CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <40%, GRAVEL <1%, LOW PLASTICITY, Fe-OXIDE STAINING/MOTTLING	
			CLAYEY SILT [ML], DARK BRN (10 YR 3/3), DAMP, LOW-ZERO PLASTICITY, CLAY <40%, VFS <5%, PRONOUNCED Fe-OXIDE STAINING	
20		CL	SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, LOW-MED PLASTICITY, SILT <30%, PRONOUNCED Fe-OXIDE STAINING	SB-56-20 1543
			CLAYEY SILT/SILT CLAY [ML], OLIVE BRN (2.5 YR 4/3), DAMP, LOW PLASTICITY, CLAY <40%, Fe-OXIDE STAINING	
		ML		
25			CLAYEY SILTY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, LOW-ZERO PLASTICITY, CLAY <30%, SILT <30%, FINE SAND WELL SORTED, Fe-OXIDE STAINED/MOTTLING	SB-56-25 1549
		SC	CLAYEY MED SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP-WET, LOW-ZERO PLASTICITY, CLAY <20%, SILT <10%, MED SAND POORLY GRADED, Fe-OXIDE + GRAY STAINED/MOTTLED	
30			TD=28'	
35			GGW@1615	

Well Permit No.:
Date well drilled: 3-30-11
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-56

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: PID (ppm)	LITHOLOGY — Graphic Log	Description	SAMPLE DATA — NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
		NR		NR
	<1	ML	CLAYEY SILT [ML], BLACK (10 YR 2/1), DAMP, <40% CLAY, MED-LOW PLASTICITY, Fe-OXIDE MOTTLING	SB-57 1327
5			SILTY CLAY [CL]; BLACK (10 YR 2/1), DAMP, <40% SILT, MED PLASTICITY, STIFF	SB-57 1330
			SLIGHTLY-SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, <10% SILT, MED-HIGH PLASTICITY, STIFF	
10	<1	CL	SILTY-CLAY [CL], VERY DARK GRAYISH BROWN (10 YR 3/2), <40% SILT LOW PLASTICITY, DAMP, VERY STIFF, <2% VFS	SB-57 1335
			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, <30% SILT, <5% VFS, LOW PLASTICITY, MINOR Fe-OXIDE STAINING	
15	<1	ML	CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, <40% CLAY, <5% VFS, LOW PLASTICITY, Fe-OXIDE STAINING/MOTTLING	SB-57 1345
		NR		NR
			CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, <20% CLAY, <5% VFS, LOW PLASTICITY, Fe-OXIDE STAINING/MOTTLING	
20		ML		SB-57-2 1407
			CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), WET!	
			CLAYEY SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <30% CLAY, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING; POORLY GRADED FINE SAND.	
25		SC		SB-57-2 1417
		SM	SILTY MED SAND [SM], DARK OLIVE BRN (2.5 YR 3/3), WET, POORLY GRADED, Fe-OXIDE STAINING	
		SC	CLAYEY SAND [SC], OLIVE BRN (2.5 YR 4/3), <20% CLAY, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	
		TD=28'		
30				
35			GGW@	

Well Permit No.:
Date well drilled: 3-28-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE MIKE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:
SB-57

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-57

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

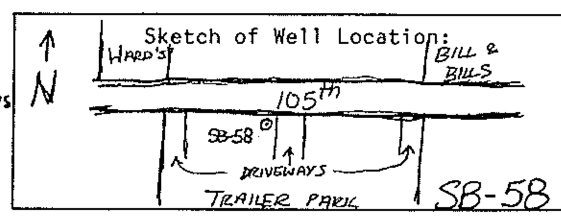
Page ____ of ____

Depth, feet	Well Construction (Type of Security:)	Lithology: Graphic Log	Lithology: Description	Sample Data: Number	Interval	Penetration Rate (Blows/ft.)
0			Asphault			
			Silty-clay (CL), very dark brown (10YR 3/2), medium stiffness, dry, low plasticity, fine sands present <15% trace gravels	SB-58-4		NR
			high plasticity, decrease in sand <5-10%			
5		CL		SB-58-5.5		NR
			(CL) SLIGHTLY SILTY CLAY DARK GRAY			
10				SB-58-10'		
			(CL) SLIGHTLY SILTY CLAY, VERY STIFF-MED STIFF, DARK BRN (10 YR 3/2)			
			INCREASING SILT			
15				SB-58-15'		
			DECREASING SILT			
			17.5-18.5 HIGHLY PLASTIC, SLIGHTLY SILTY CLAY (CL) DARK BRN (10 YR 3/3)			
20		CL		SB-58-20'		
25			CLAYEY SAND (SC), HIGH PLASTICITY, DARK BROWN (10 YR 3/2)	SB-58-25'		
			LESS CLAY			
		SC				
			TD=28'			
30						
35						

Well Permit No.:
Date well drilled: 3·21·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KEN/KIAN
Sampling Method: Direct Push/Continuous
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: CNS KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-58

Project No. 7962.01

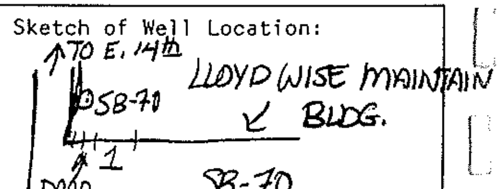
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION; PID (ppm)	Graphic Log	LITHOLOGY — Description	SAMPLE DATA (Number / Interval / Penetration Rate (Blows/ft.))
		NR	CONCRETE, SAND PACK Fe-OXIDIZED SAND + GRAVEL	NR
		ML	SILTY CLAY/CLAYEY SILT [ML], VERY DARK BRN (10 YR 2/2), DAMP, LOW-ZERO PLASTICITY, SOFT, BLACK MOTTLING	SB-70-150
5		NR	SLIGHTLY CLAYEY-SILTY WELL GRADED FS-COARSE SAND [SW], BROWN (10 YR 4/3), DAMP, WELL GRADED	SB-70 1510
		CL	SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, HIGH PLASTICITY, STIFF, SILT < 15%	
10		ML	SILTY CLAY/CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, LOW PLASTICITY, SILT < 50%, MINOR BLACK MOTTLING	SB-70 1522
			SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, LOW-MED PLASTICITY, SILT < 40%, BLACK MOTTLING, MINOR Fe-OXIDE STAINING	
15		CL	(10 YR 3/3) [CL], MED PLASTICITY	SB-70-153
			CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY < 30%, MED-LOW PLASTICITY, MINOR Fe-OXIDE STAINING, DARK GRAY STAINING BEGINS, BECOMES MORE PRONOUNCED BELOW 18.1'	
20		CL	DARK GRAY STAINED SILTY CLAY [CL], SLIGHT HC ODOR STAINING DISAPPEARS AT 24.5'	SB-70-20'; SB-70-21; SB-70-22'; SB-70-23; SB-70-2
25		SC	CLAYEY SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, LOW-ZERO PLASTICITY, FINE SAND WELL SORTED, MINOR Fe-OXIDE STAINING, CLAY < 30%	SB-70-25'
		NR		
		SP	SLIGHTLY CLAYEY FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), WET, ZERO PLASTICITY, FINE SAND WELL SORTED, CLAY < 10%, Fe-OXIDE MOTTLING/STAINING	
30			TD = 28	
35			GGW @ 1630	

Well Permit No.:
Date well drilled: 4.3.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-70

Project No. 7962.01

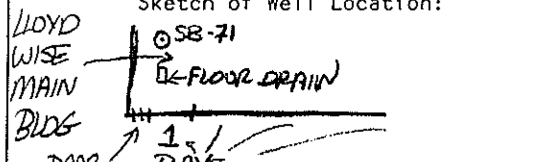
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security: PID (ppm)	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
0			CONCRETE, SANDPACK	
	<1	ML	SLIGHTLY GRAVELLY CLAY SILT [ML], BLACK (10 YR 2/1), DAMP, CLAY <40%, GRAVEL <5%, LOW-ZERO PLASTICITY, GRAVEL CLAST SUB-ROUNDED (3-5mm AVG DIAMETER)	SB-71- 1157
5		NR / SW / NR / SW	GRAVELLY FINE-COARSE SAND [SW], BROWN (10 YR 4/3), WET, CLAY <1%, SILT <5%, WELL-MODERATELY GRADED VFS→COARSE SAND, GRAVEL <15%, CLASTS SUB-ANGULAR, Fe-OXIDE STAINING	
		NR / SW	GRAVEL ~40%, SUBROUNDED, SAND MODERATELY GRADED	SB-71- 1200
		CL	SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, HIGH PLASTICITY, SILT <10%, STIFF	
10	<1		CLAYEY SILT/SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, MED PLASTICITY, SILT <40%, VERY STIFF, BLACK MOTTLING	SB-71-1 1215
			SILTY CLAY/CLAYEY SILT [ML], BROWN (10 YR 4/3), DAMP, LOW PLASTICITY, SILT <50%, VERY STIFF, MINOR Fe-OXIDE STAINING	
15			SILTY CLAY [CL], BROWN (10 YR 4/3), DAMP, MED PLASTICITY, SILT <30%, VERY STIFF, MINOR Fe-OXIDE STAINING	SB-71-15 1227
			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, MED-LOW PLASTICITY, SILT <40%, Fe-OXIDE STAINING/MOTTLING + BLACK MOTTLING.	
			SILTY CLAY [CL], (10 YR 4/3), HIGH PLASTICITY, GRAY-GREEN MOTTLING	SB-71-19 1258
20	<1		PRONOUNCED SILVER-GRAY-GREEN MOTTLING/DISCOLORATION, NO SMELL [CL] (10 YR 4/3)	SB-71-21' 1312; SB-71- 131
			DARK GRAY SILTY CLAY [CL], (10 YR 4/1), DAMP, FAINT HC SMELL, MED-HIGH PLASTICITY, Fe-OXIDE STAINING, SILT <30%	SB-71-22 1314; SB-71-23'; SB-71-24' 13
25	<1	SC	CLAYEY FINE SAND [SC], BROWN (10 YR 4/3), DAMP→WET, SILT <10%, CLAY <20%, WELL SORTED FINE SAND, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	SB-71-25' 1
		SP	CLEAN WELL-SORTED MED SAND [SP], BROWN (10 YR 4/3), WET, SAND WELL GRADED	
		SC	SLIGHTLY CLAYEY FINE SAND [SC], WET, BROWN (10 YR 4/3), SILT <15% CLAY <20%, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	
			TD = 28'	
30				
35			GGW @ 1400	

Well Permit No.:
Date well drilled: 4.3.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

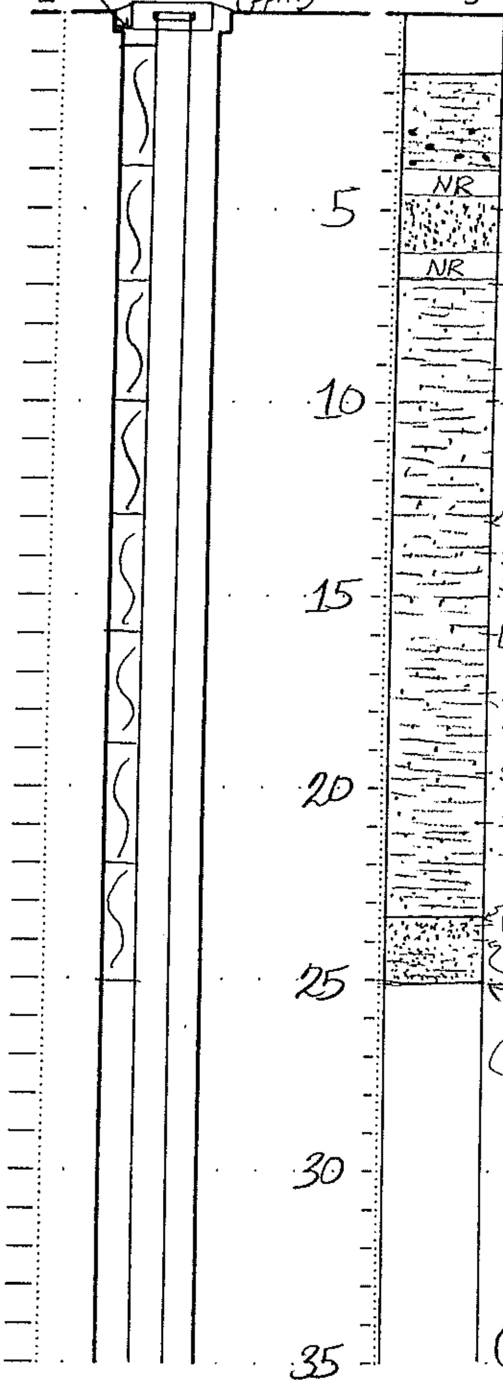
FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-71

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

WELL CONSTRUCTION	LITHOLOGY	SAMPLE DATA

Depth, feet | Type of Security: CURRENT SECTION | PID (ppm) | Graphic Log | Description | NUMBER | INTERVAL | PENETRATION RATE (Blows/ft.)

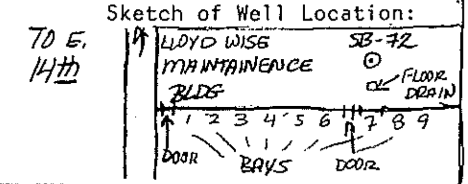


Depth	Description	Sample
	CONCRETE, SAND PACK, GRAVEL	SAMPLE
	CLAYEY SILT [ML], VERY DARK BRN (10 YR 2/1), SLIGHTLY DAMP, ZERO PLASTICITY, CLAY < 20%, MINOR Fe-OXIDE STAINING	
	GRAVELLY SILTY CLAY [CL], BLACK-DARK BRN (10 YR 2/1-2), DAMP, MED PLASTICITY, SILT < 30%, GRAVEL < 30%, Fe-OXIDE STAINING	SB-72- 1305
5	CLEAN MED SAND W/ INFREQUENT GRAVEL [SW], DARK BRN (10 YR 3/3), WELL SORTED MED SAND, NO STAINING	SB-72-6' 1307
	SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), HIGH PLASTICITY, DAMP, SILT < 15%, Fe-OXIDE STAINING/MOTTLING	
	OLIVE BRN MOTTLING - SAME AS ABOVE	SB-72- 1320
10	CLAYEY SILT/SILTY CLAY [ML], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY ~50%, VERY STIFF, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING, MINOR BLACK MOTTLING, VERY STIFF	
	SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, MINOR Fe-OXIDE STAINING, SILT < 30%, MED PLASTICITY, MINOR BLACK/DARK GRAY MOTTLING VERY STIFF	SB-72- 1334
15	[CL] (10 YR 3/3) MED PLASTICITY	
	SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED PLASTICITY, SILT < 25%, SOFT, PRONOUNCED Fe-OXIDE STAINING	
	STIFF - SAME AS ABOVE	SB-72-20 1401
20	SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED-HIGH PLASTICITY, SILT < 40%, SOFT, Fe-OXIDE STAINING	
	[SC] (2.5 YR 4/3), LOW-ZERO PLASTICITY	
	WELL SORTED FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), WET!, Fe-OXIDE STAINING, BLACK MOTTLING, WELL SORTED	SB-72-25 1413
25	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), WET-DAMP, LOW-ZERO PLASTICITY, CLAY < 30%, Fe-OXIDE + BLACK MOTTLING, VFS-FS WELL SORTED	
	TD = 25'	
30		
35	GGW @ 1440	

Well Permit No.:
Date well drilled: 4-5-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KRB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-72

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY	SAMPLE DATA

Type of Security: CURRENT SECTION — PID (ppm)

Graphic Log | **Description** | NUMBER | INTERVAL | PENETRATION RATE (Blows/ft.)

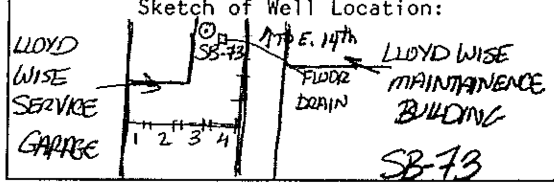
Depth	Graphic Log	Description	Sample
		CONCRETE, SAND PACK	SAMPLE
		Fe-OXIDIZED SAND PACK + GRAVEL (ANGULAR), GRADE + FILL	
	SM	CLAYEY SILT/SAND [SM], VERY DARK BRN (10 YR 2/2), DAMP, ZERO PLASTICITY, FINE SAND <25%, CLAY <25%, SAND POORLY GRADED, SOFT	SB-73- 1351
5	SP	GRAVELLY MED-COARSE SAND [SP], OLIVE BRN (2.5 YR 4/4), WET, CLAY <10%, SILT <10%, MED-COARSE SAND MODERATELY SORTED, GRAVEL CLASTS <5%, AVERAGE SIZE ≈8mm, ANGULAR BANDED BROWN + MAROON CHERTS, Fe OXIDE STAINING	SB-73- 135[illegible]
	NR		NR
	SP		
		SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, SILT <10%, HIGH PLASTICITY, MINOR Fe-OXIDE STAINING/MOTTLING	
	CL	BLACK-DARK BRN (10 YR 2/2) [CL], MED-HIGH PLASTICITY, <20% SILT Fe-OXIDE STAINING, OLIVE BRN. MOTTLING (MINOR)	
10		CLAYEY SILT/SILTY CLAY [ML], DARK BRN (10 YR 3/3), DAMP, ZERO-LOW PLASTICITY, <50% SILT, Fe-OXIDE STAINING (MINOR), VERY STIFF	SB-73-1[illegible] 1408
		DARK BRN (10 YR 3/3), SILTY CLAY [CL], DAMP, LOW PLASTICITY, <50% SILT, VERY STIFF	
15			SB-73-1[illegible] 1422
		LOW-MED PLASTICITY, SILT <40%, DARK BRN (10 YR 3/3), [CL]	
		DARK BRN (10 YR 3/3) [CL], MED-LOW PLASTICITY, DAMP, SILT <40%, Fe-OXIDE STAINING, VERY STIFF	
	18.5	CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <30%, LOW PLASTICITY, SOFT, PRONOUNCED Fe-OXIDE STAINING	
20			SB-73-2[illegible] 1500
		SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <30%, MED PLASTICITY, STIFF, Fe-OXIDE STAINING	
	SC	CLAYEY VFS+SILT [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <30% CLAY, LOW-ZERO PLASTICITY, VFS WELL SORTED, PRONOUNCED Fe-OXIDE STAINING, SOFT	
25			SB-73-2[illegible] 1510
	NR		
	SP	SLIGHTLY CLAYEY FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), WET, <10% SILT, <10% CLAY, ZERO PLASTICITY, FINE SAND WELL GRADED, PRONOUNCED Fe-OXIDE STAINING	
		TD=28'	
30			
35		GGW@1600	

Well Permit No.:
Date well drilled: 4·2·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-73

Project No. 7962.01

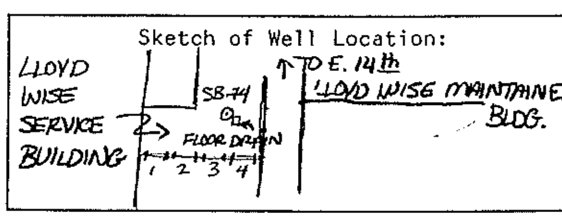
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY		SAMPLE DATA		
	Type of Security: PID (DPM) CURRENT SECTION	Graphic Log	Description	NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
		NR	ASPHALT, Fe-OXIDE GRAVEL + SAND, CLEAN SAND PACK, CONCRETE	NR		
	<1	CL	SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, MED PLASTICITY, MINOR Fe-OXIDE STAINING, SILT <20%			SB-74- 1111
5		NR		NR		
		CL	SILTY CLAY [CL], VERY DARK BROWN - BLACK (10 YR 2/2), DAMP, MED PLASTICITY, OLIVE BRN + BLACK W/MINOR Fe-OXIDE MOTTLING, SILT <25%, STIFF			SB-74-B 1117
10		ML	CLAYEY-SILT [ML], DARK OLIVE BRN (2.5 YR 3/3), DAMP, CLAY <30%, LOW-ZERO PLASTICITY, MINOR Fe-OXIDE STAINING, VERY STIFF			SB-74- 1120
			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <15%, MED PLASTICITY, BLACK + Fe-OXIDE MOTTLING, VERY STIFF			
15	<1	CL	SILTY CLAY [CL], DARK GRAYISH BRN (10 YR 4/2), DAMP, SILT <25%, MED-LOW PLASTICITY, MINOR Fe-OXIDE STAINING/MOTTLING, VERY STIFF			SB-74 1135
			CLAYEY SILT/SILTY CLAY [CL], DARK GRAYISH BRN (10 YR 4/2), DAMP SILT <40%, VFS <15%, LOW PLASTICITY, Fe-OXIDE STAINING, SOFT MINOR BLACK MOTTLING			SB-74- 120
20			SILTY CLAY [CL], DARK GRAYISH BRN (10 YR 4/3), DAMP, SILT <20%, HIGH PLASTICITY, STIFF, Fe-OXIDE STAINING/MOTTLING			
			SILTY/CLAYEY SILT [			
25	<1	SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, SILT <15%, CLAY <20%, LOW-ZERO PLASTICITY, FINE SAND WELL SORTED, PRONOUNCED Fe-OXIDE STAINING			SB-74-2 121
		SM	SLIGHTLY CLAYEY FINE SAND [SM], OLIVE BRN (2.5 YR 4/3), WET, SILT <10%, CLAY <10%, FINE SAND WELL SORTED, ZERO PLASTICITY, PRONOUNCED Fe-OXIDE STAINING, BLACK MOTTLING, SOFT			
			TD = 28'			
30						
35			GGW@1240			

Well Permit No.:
Date well drilled: 4·2·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-74

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION	PID (ppm)	LITHOLOGY — Graphic Log	Description	SAMPLE DATA — NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0			NR	SAND PACK, GRAVEL (Fe-OXIDE STAINED), ASPHALT, CONCRETE	NR		SAMPLE I
5		<1		SILTY-CLAY [CL], BLACK (10 YR 2/1), DAMP, <25% SILT, MED PLASTICITY, INFREQUENT Fe-OXIDE STAINING			
			CL	SILTY CLAY [CL], DARK BRN (10 YR 2/2), DAMP <30% SILT, MED PLASTICITY, VERY STIFF, INFREQUENT SALT XYLS (<1%)	SB-75- 0920		
10		<1		CLAYEY SILT [ML], BROWN (10 YR 4/3), DAMP, CLAY <40%, LOW PLASTICITY, VERY STIFF, MINOR BLACK MOTTLING	SB-75-1 0927		
			ML	BROWN [ML]			
				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, MED PLASTICITY, VERY STIFF, BLACK MOTTLING			
15				DARK BRN [CL]	SB-75-15 0946		
			CL				
20				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, HIGH PLASTICITY, Fe-OXIDE STAINING/MOTTLING, MED STIFF	SB-75-20 1004		
				CLAYEY SAND + SILT [SC], DARK GRAYISH BRN (2.5 YR 4/2), DAMP CLAY <40%, SILT ~30%, VFS ~30%, LOW-MED PLASTICITY, SOFT Fe-OXIDE STAINING PRONOUNCED			
25			SC	SLIGHTLY CLAYEY FINE SAND [SC], DARK GRAYISH BRN (10 YR 4/2), DAMP, CLAY <20%, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	SB-75-25 1019		
			NR				
			SC	SLIGHTLY-CLAYEY FINE SAND [SC], DARK GRAYISH BRN (10 YR 4/2), DAMP-WET, CLAY <10%, ZERO-LOW PLASTICITY, LIGHT GRAY + Fe-OXIDE MOTTLING			
				TD=28'			
30							
35				GGW @ 1045			

Well Permit No.:
Date well drilled: 4.2.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: JOSE KIAN
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:
SB-75

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-75

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

WELL CONSTRUCTION	LITHOLOGY	SAMPLE DATA

Depth, feet | Type of Security: PID (ppm) CURRECT SECTION | Graphic Log | Description | NUMBER | INTERVAL | PENETRATION RATE (Blows/ft.)

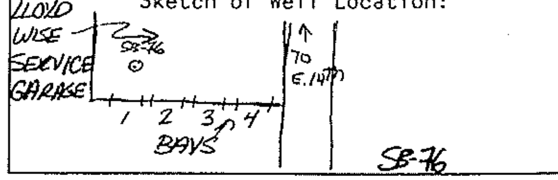
Depth, feet	Graphic Log	Description	Sample Data
0		SAND PACK, GRAVEL, Fe-OXIDIZED GRAVEL/SAND MIXTURE	SAMPLE
	NR		NR
	CL	← SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, MED-HIGH PLASTICITY, <10% SILT, SOFT	SB-76-1102
5	NR		NR
	SW	GRAVELLY SAND/SANDY GRAVEL [SW], BRN (10 YR 4/3), DAMP, WELL GRADED GRAVEL - COARSE-MED SAND, CLASTS SUBANGULAR TO SUB-ROUNDED, Fe-OXIDE STAINING	SB-76-1108
	CL	SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, MED PLASTICITY, SILT < 20%, STIFF	
10		CLAYEY SILT/SILTY-CLAY [ML], DARK BRN (10 YR 3/3), DAMP, CLAY <50%, LOW-ZERO PLASTICITY, VERY STIFF, Fe-OXIDE MOTTLING	SB-76-1111
	ML	STIFF DARK BRN (10 YR 3/3) [ML]	
15		SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, MED PLASTICITY, VERY STIFF	SB-76-1128
	CL	SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, SILT <25%, MED-HIGH PLASTICITY, Fe-OXIDE MOTTLING, STIFF	
20	ML	CLAYEY SILT/SILTY CLAY [ML], OLIVE BRN (2.5 YR 4/3), DAMP, LOW PLASTICITY, Fe-OXIDE STAINED MOTTLING, SOFT-MED STIFFNESS	SB-76-1146
	CL	CLAYEY SILT [CL], DARK GRAYISH BRN (2.5 YR 4/2), DAMP, LOW-MED PLASTICITY, Fe-OXIDE STAINED MOTTLING	
25	SC	CLAYEY FINE SAND/SILT [SC], OLIVE BRN (2.5 YR 4/3), DAMP, LOW-ZERO PLASTICITY, CLAY <20%, SILT <20%, Fe-OXIDE MOTTLING/STAINING, SOFT	SB-76-1151
		SLIGHTLY-CLAYEY FINE SAND, OLIVE BRN (2.5 YR 4/3), DAMP, GRAY + Fe-OXIDE MOTTLING, ZERO PLASTICITY, CLAY <10%, MED STIFF	
30		TD = 28'	
35		GGW @ 1220	

Well Permit No.:
Date well drilled: 3.30.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KHAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-76

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION: Type of Security: CURRENT SECTION	PID (ppm)	Graphic Log	LITHOLOGY: Description	SAMPLE DATA: Number	Interval	Penetration Rate (Blows/ft.) / SAMPLE
			NR	ASPHALT, GRAVEL, SAND PACK	NR		
				SILTY-CLAY [CL], BLACK (10 YR 2/1), SLIGHTLY DAMP, <20% SILT, MED PLASTICITY			SB-77-4' 0900
5		<1	CL	SILTY-CLAY [CL], BLK (10 YR 2/1), DAMP, <15% SILT, MED-LOW PLASTICITY, VERY STIFF, MINOR Fe-OXIDE STAINING			SB-77-5 0905
			ML	CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, LOW PLASTICITY, <30% CLAY, <5% VFS, MINOR Fe-OXIDE STAINING, VERY STIFF, BLACK MOTTLING			
10		<1		SILTY CLAY [CL], VERY DARK GRAYISH BRN (10 YR 3/2), DAMP, MED PLASTICITY, VERY STIFF, MINOR Fe-OXIDE STAINING			SB-77-10' 0913
				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, LOW PLASTICITY, STIFF, MINOR Fe-OXIDE STAINING, SILT <40%			
15			CL				SB-77-15' 0927
				MED PLASTICITY [CL], DARK BRN (10 YR 3/3), DAMP <30% SILT			
				SILTY CLAY [CL], VERY DARK GRAYISH BRN (10 YR 3/2), DAMP, <25% SILT, STIFF, PRONOUNCED Fe-OXIDE STAINING/MOTTLING, MED-LOW PLASTICITY			
20		<1					SB-77-20' 0946
				SILTY-CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, <30% SILT, STIFF, MED-LOW PLASTICITY, Fe-OXIDE STAINING/MOTTLING			
			SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), <20% CLAY, <15% SILT, LOW-ZERO PLASTICITY, SAND POORLY GRADED, DAMP, Fe-OXIDE STAINING/MOTTLING, COARSENS DOWNWARD			SB-77-25 0958
25			SP	SLIGHTLY CLAYEY FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), <15% CLAY, DAMP, SAND POORLY GRADED, Fe-OXIDE STAINING			
				TD=25'			
30							
35				GGW @ 1030			

Well Permit No.:
Date well drilled: 3-30-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:
LLOYD WISE BACK LOT SB-77
LLOYD WISE SERVICE
N SB-77

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-77

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: CURRENT SECTION	PID (ppm)	LITHOLOGY — Graphic Log	LITHOLOGY — Description	SAMPLE DATA — NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
				SAND PACK, CONCRETE, Fe-OXIDIZED GRAVEL	SAMPLE
		<1		CLAYEY SILT [ML], VERY DARK BROWN (10 YR 2/2), DAMP, ZERO PLASTICITY, CLAY < 20%,	SB-78 1434
5			NR	WELL GRADED VFS-CS W/GRAVEL [SW], OLIVE BRN → BRN (2.5 YR 4/3), WET, GRAVEL < 15% (WELL ROUNDED), MINOR Fe-OXIDE STAINING	
				SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, SILT < 20%, HIGH PLASTICITY, MINOR DARK GRAY MOTTLING	SB-78 1444
				SLIGHTLY SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT < 25%, MED-HIGH PLASTICITY, BLACK MOTTLING, MINOR Fe-OXIDE STAINING	
10				SILTY CLAY / CLAYEY SILT [ML], DARK OLIVE BRN (2.5 YR 3/3), DAMP, LOW PLASTICITY, SILT < 50%, VERY STIFF, MINOR Fe-OXIDE STAINING	SB-78 1452
					MOD SAMP — (ENG) SB-78 1503
				SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, SILT < 30%, HIGH-MED PLASTICITY, MINOR Fe-OXIDE STAINING, MINOR BLACK MOTTLING, VERY STIFF	SB-78 1506
15				[CL] (10 YR 3/3), HIGH-MED PLASTICITY	
				SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, SILT < 40%, HIGH-MED PLASTICITY, SOFT, PRONOUNCED Fe-OXIDE STAINING	
20					SB-78-20 1536
			CLAY WET	SILTY CLAY [CL], DARK OLIVE BRN - DARK BRN (2.5 YR 3/3 - 10 YR 3/3), DAMP-WET, HIGH PLASTICITY, Fe-OXIDE STAINING, STIFF	
				CLAYEY VFS [SC], OLIVE BRN (2.5 YR 4/3), DAMP, LOW PLASTICITY, CLAY < 40%, SILT < 20%, INFREQUENT GRAVEL, Fe-OXIDE STAINING, BLACK MOTTLING, VFS-FS WELL SORTED, GRAVEL SUBANGULAR (AVG DIA 3-5mm)	
25				CLAY < 25%, SILT < 10%, [SC], VFS-FS WELL SORTED, Fe-OXIDE + BLACK STAINING/MOTTLING	SB-78-25 1543
				CLEAN WELL SORTED FS [SP], OLIVE BRN (2.5 YR 4/3), WET, Fe-OXIDE STAINING, CLAY < 10%	MOD SAMP — (ENG) SB-78-28
30				TD = 28'	
35				GGW@1640	

Well Permit No.:

Date well drilled: 4.5.01

Date water level measured:

Well elevation:

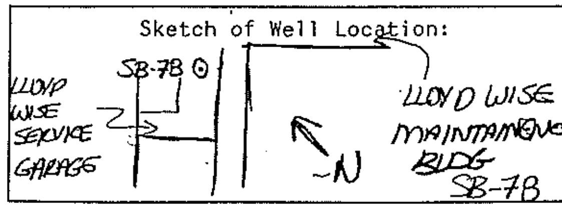
Drilling Company: PRECISION

Driller: KIAN JOSE

Sampling Method: DIRECT PUSH

Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-78

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0		GC	clay gravelly, (GC) [10YR4/3] Brown, Dry, loose, Angular, poorly graded, 80% coarse sand, 5% fine gravel, 15% clay, high iron oxide staining.			SB-80
			Sandy clay (CL) [10YR 2/2] V. Drk Brown, Damp, Stiff, 80% clay, 20% fine sand, med plac, slightly mottled,			SB-80-
5		CL	-increase in sand 60% clay, 40% fine sand,			
10		SC	Clayey Sand (SC) [10YR4/3] Brown, Damp, med Stiff, iron oxide Staining.			SB-80-
			Sandy Clay (CL) [10YR2/2] V Drk Brown Damp, Stiff 60% clay 30% fine sand, 10% med sand, med plac			
15		CL				SB-80-1
20		SC	clayey sand (SC) [10YR3/4] Drk yellow Brown, moist-wet, loose, 70% med-fine sand, 30% clay, poorly graded, iron oxide Staining.			SB-80-
			~~Sand~~			SB-80-2
25			no recovery			
		CL	Sandy clay (CL) [10YR 2/2] V. Drk Brown, Damp, Stiff, 80% clay 20% fine sand, med plac.			
30						
			Bottom of Boring 32'			SB-80- 32'

Well Permit No.:
Date well drilled: 4/3/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Mike
Sampling Method: DD
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TGK

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-80

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security: PID	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0	0.0	Fill SC	Clayey sands (SC) [10YR 2/1] Black, Damp, med dense, sub rounded, poorly graded,			
5		CL	silty clays (CL) [10YR 2/2] V Drk Brown, Damp, med stiff 90% silty clay. 10% fine sand, med-hi plas.			
10	0.0	SP SP	-sand lens @ 3" thick, 80% coarse-med fine sand, 20% clay [10YR 3/4] Drk yellow Brown, moist, V. loose, poorly graded			
15			Silty clay (CL) [10YR 2/2] V. Drk Brown, Damp, med stiff 90% ~~silt~~ clay, 10% fine sand, hi-med plas. mottled			
	0.0	CL				
20			same as above, moist, soft.			
	28.9 ppm		clayey sands (SC) [10YR 4/3] Brown, moist, loose, 80% med-fine sand 20% clay, low plas, odor.			
25	▽	SC	strong odor, color change [Gley 4/10Y] Drk greenish gray.			
	147.8 ppm PID		Bottom of Boring 28'			
30			note: when taking water sample you could see free product.			

Well Permit No.:

Date well drilled: 9/5/01

Date water level measured:

Well elevation:

Drilling Company: Vironex

Driller: Scott

Sampling Method: DP

Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TBR

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-81

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	Graphic Log	LITHOLOGY Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
0		SP	gravelly sands, [7.5YR 4/6] strong brown, Dry, loose, 60% coarse-fine sand, 25% fine gravel, 15% silt, mod grading, iron oxide staining.			
5		CL	Sandy clay (CL) [10YR 3/3] Drk Brown, med stiff, Damp, 70% clay, 30% fine sand, med plac.			
		GC	fine gravel lens 35% fine gravel, 45% coarse-med sand, 10% fine sand, 10% clay (GC)			
		CL	Sandy clay (CL) [10YR 3/3] Drk Brown, med stiff, Damp 70% clay 30% fine sand, med plac			
10		GC	fine gravel lens same as above.			
			Sandy clay (CL) [10YR 3/6] Drk yellowish brown, med stiff, Damp, 70% clay, 30% fine sand, med plac. mottled			
15		CL	same as above color change [10YR 3/3] Drk Brown			
			color change [10YR 4/4] Drk. yellow Brown. Same as above. soft, med-hi plac.			
20 ▽					no recove	
			clayey sands (SC) [10YR 4/4] Drk yellow Brown, wet, loose, 75% med sand-fine sand, 25% clay, rounded			
25		SC				
			Bottom of Boring 28'			
30						

Well Permit No.:
Date well drilled: 4/5/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Scott
Sampling Method: DP
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TGR

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-82

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
0		GC	Clayey gravel (GC) [10YR4/6] D yellowish Brown, Dry, loose, Angular - Subangular, poorly graded, Hi iron oxide staining 58% coarse gravel, 42% coarse-med sand			
			sandy silty clay (CL) [10YR 2/1] Black, Damp, Stiff, 60% silt & clay, 40% fine sand, med-low plas, Mottled.			
5		CL	gravel lens 2" thick 20% fine gravel, 60% clay, 10% coarse-med s 10% fine sand.			
			color change [10YR 4/2] Dark grayish Brown. Iron oxide staining			
10						
			same as above, V stiff, iron oxide staining, mottled.			
			fine gravel lens 2" thick 5% fine gravel, 50% coarse - med sand 25% clay, 20% fine sand			
15		CL				
			clayey sand (SC) [10YR 4/4] Dr.K yellowish Brown, Damp, med dense, 85% fine sand, 15% clay, poorly graded.			
20						
		SC				
25						
			wet, soft,			
			Bottom of Boring 28'			
30						

Well Permit No.:
Date well drilled: 4/4/01
Date water level measured:
Well elevation:

Drilling Company: Vironex
Driller: Scott
Sampling Method:
Hammer Weight:

Sketch of Well Location:

LF Geologist/Engineer: TGK

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-86

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

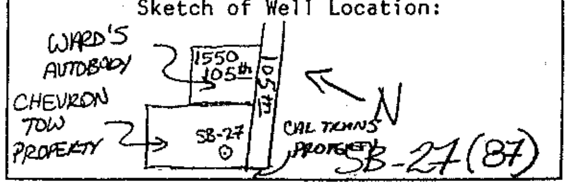
Page ____ of ____

Depth, feet	WELL CONSTRUCTION	LITHOLOGY		SAMPLE DATA		
	Type of Security: CURRENT SECTION PID (ppm)	Graphic Log	Description	NUMBER	INTERVAL	PENETRATION RATE (Blows/ft.)
		NR	CONCRETE, Fe-OXIDIZED GRAVEL, SAND PACK	NR		SAMPLE N
	<1		SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, SILT <15%, HIGH PLASTICITY, STIFF			SB-27-4', SB-27-5'
5			SILTY CLAY [CL], VERY DARK BROWN (10 YR 2/2), DAMP, MED-HIGH PLASTICITY, STIFF, SILT <20%			
			SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, MED-LOW PLASTICITY, SILT <30%, VERY STIFF, Fe-OXIDE STAINING, BLACK MOTTLING PRONOUNCED			SB-27- 1350
10						
		CL	SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, MED-LOW PLASTICITY, SILT <40%, VERY STIFF, PRONOUNCED Fe-OXIDE + BLACK MOTTLING			
15			MED-HIGH PLASTICITY, [CL], (10 YR 3/3), DAMP, PRONOUNCED BLACK MOTTLING, SILT <30%, STIFF			SB-27-1 1406
			SILT <50%, OLIVE BRN (2.5 YR 4/3), [CL], DAMP, MED-HIGH PLASTICITY, MED STIFFNESS, PRONOUNCED Fe-OXIDE + BLACK MOTTLING			
			SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, SILT <40%, MED-HIGH PLASTICITY, STIFF, PRONOUNCED Fe-OXIDE + BLACK MOTTLING			SB-27-20 1416
20						
			SILTY CLAYEY/CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED-LOW PLASTICITY, SILT ~ 50%, Fe-OXIDE + DARK GRAY MOTTLING, STIFF			
		SC	CLAYEY SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, ZERO PLASTICITY, CLAY <25%, FINE SAND WELL SORTED, Fe-OXIDE + BLACK MOTTLING			
25		SP	GRAVELLY FINE-MED SAND [SP], OLIVE BRN (2.5 YR 4/3), WET, FINE-MED SAND, WELL SORTED, SILT <20%, GRAVEL <20%, GRAVEL CLASTS ROUNDED-WELL ROUNDED (AVG DIA 5mm-15mm), Fe-OXIDE + BLACK MOTTLING			SB-27-2 1430
		SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), WET, CLAY <30%, LOW-ZERO PLASTICITY, FINE SAND WELL SORTED, Fe-OXIDE + MINOR BLACK MOTTLING			
			TD = 28'			
30						
35			GGW @ 1500			

Well Permit No.:
Date well drilled: 4.4.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN + JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-(27)87

Project No. 7962.01

LEVINE·FRICKE

Depth, feet	WELL CONSTRUCTION Type of Security:	LITHOLOGY Graphic Log	Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
			GRAVEL, ASPHALT RR GRADE			
			SILTY CLAY [CL], BLK (10 YR 2/1), DRY, MED-HIGH PLASTICITY,		SB-88-3 1110	
5					SB-88-5' 1115	
	0.0 (1110)		[CL], (10 YR 3/3), DAMP, MED-HIGH PLASTICITY, Fe-OXIDE STAINING			
10		CL			SB-88-10 1125	
15					SB-88-1 1135	
	▽17.5	NR				
20	0.0 (1130)	CL	[CL], (10 YR 4/3), DAMP, HIGH PLASTICITY, SILT<10%, Fe-OXIDE STAINING, GRAY-BRN. MOTTLING		SB-88- 1140	
		NR				
	0.0 (1140)	SC	CLAYEY SILTY SAND (VFS+FS) [SC], (10 YR 3/3), DAMP, WELL SORTED, LOW PLASTICITY			
25		CL	SILTY CLAY [CL], (10 YR 3/3), DAMP, MED PLASTICITY		SB-88-1 1145	
		SW	CLEAN, WELL SORTED FS→MS [SW], (10 YR 3/3), WET, SUB-ROUNDED			
30						

TD=28' @ 1150

GGW @ 1200

Well Permit No.:
Date well drilled: 7.9.01
Date water level measured: 7.9.01
Well elevation:

Drilling Company: VIRONEX
Driller: BRIAN
Sampling Method: DIRECT PUSH
Hammer Weight: N/A

LF Geologist/Engineer: KPB

Sketch of Well Location:
SEE ATTACHED MAP

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-88

Project No. 7962.01.001

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION — Type of Security: PID	Graphic Log	LITHOLOGY — Description	SAMPLE DATA
		NR	GRASSY FIELD GRADE	
			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DRY, MED PLASTICITY, ROOTS	
5	0.0 (0855)		SILTY CLAY [CL], BLK (10 YR 2/1), DAMP, MED-HIGH PLASTICITY, OCCASSIONAL GRAVEL (<1%),	SB-89-... 0835 ; SB-89-5 0845
			SANDY, SILTY CLAY [CL], (10 YR 4/3), DAMP-DRY, MED PLASTICITY, Fe-OXIDE STAINING, BLACK MOTTLING	
		CL	[CL] (10 YR 3/3), VFS<5%, SILT<25%, DAMP, MED PLASTICITY	
10				SB-89-10 0900
			SAME AS ABOVE	
15	0.0 (0902)	ML	CLAYEY, SANDY SILT [ML], (10YR 3/3), LOW PLASTICITY, DAMP, VFS<20%, CLAY<20%, MINOR Fe-OXIDE STAINING	SB-89-15 0905
		SC	[SC] STRINGER, VFS+FS WELL GRADED, SILT+CLAY<30%, DAMP	
		CL	SILTY CLAY [CL] (10 YR 3/3), DAMP, MED-HIGH PLASTICITY, Fe-OXIDE STAINING/MOTTLING	
20	▽21.1			SB-89-20 0910
		SC	[SC] STRINGER (10 YR 3/3), DAMP, WELL GRADED VFS+FS, SILT+CLAY<30%	
		CL	[CL], (10 YR 3/3), DAMP,	
25				
	0.0 (0925)	ML/SC	SILTY, CLAYEY SAND (VFS), SILT [SC]/[ML], WET, LOW PLASTICITY	SB-89-2... 0920
30				
35			TD = 32' @ 0930 GGW @ 1000	

Well Permit No.:
Date well drilled: 7-9-01
Date water level measured: 7-9-01
Well elevation:

Drilling Company: VIRONEX
Driller: BRIAN
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location: SEE ATTACHED MAP

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-89

Project No. 7962.01.001

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION (Type of Security:)	Graphic Log	LITHOLOGY Description	SAMPLE DATA
0		NR	GRASSY FIELD GRADE	
2			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DRY, MED PLASTICITY, ROOT TRACES	SB-90-2. 1010
5	0.0 (1011)	CL		SB-90-5' 1020
6.5			COLOR CHANGE TO 10 YR 3/3, DAMP	
9		NR		
10			SILTY CLAY [CL], DAMP, SAME AS ABOVE	SB-90- 1025
15	∇ 17.6	CL		SB-90-15 1034
20	0.0 (1025)	CL/ML	SILTY CLAY/CLAYEY SILT [CL]/[ML]; (10 YR 3/3), DAMP, LOW PLASTICITY	SB-90-20 1039
23				SB-90-23 1042
26	0.0 (1036)	SC	CLAYEY, SILTY, SAND (VFS+FS) [SC], (10 YR 3/3), WET, LOW → ZERO PLASTICITY,	
30				

TD = 28' @ 1045

GGW @ 1100

Well Permit No.:
Date well drilled: 7·9·01
Date water level measured: 7·9·01
Well elevation:

Drilling Company: VIRONEX
Driller: BRIAN
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:
SEE ATTACHED MAP

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-90

Project No. 7962.01.001

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

APPENDIX C

Groundwater Monitoring Well Logs and Tank Removal Information

Gen Tech Environmental, Inc. San Jose, CA

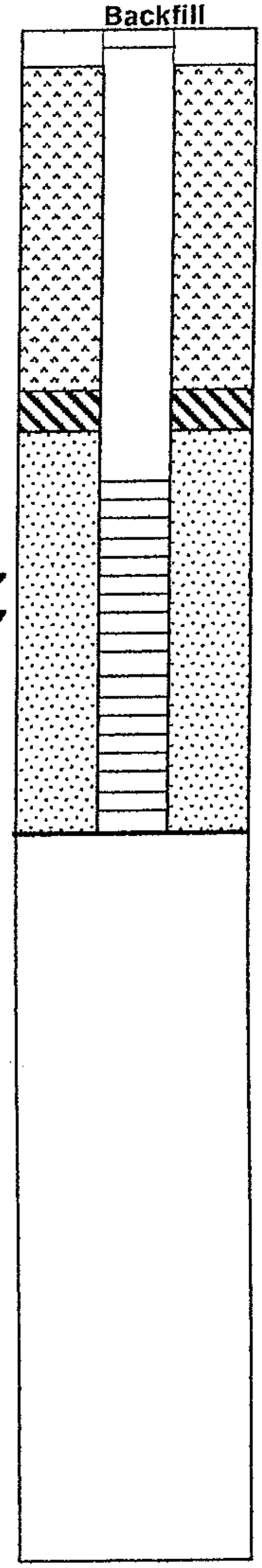
Project No. 9302 **Boring/Well No.** MW-1
Client: A. A. Bartese (Lloyd Wise Olds) **Date Drilled:** 4/16/93
Location: 105th Street, Oakland **Logged by:** E.L. and C.M.P.
Drilling Method: Hollowstem **Permit:** A.C.W.D.
Water Levels: 1st Enc: 16' Static: 15'

Exploratory Boring Log

Borehole Completion
Well Installed: 2" dia.
Total Depth: 21' Casing Depth: 19.5'
Screen Length: 9' Blank Length: 11.5'
Top Sand Pack:10.6' Top Bentonite:9.5'
Grout Seal: 9.5 ' to 0.5' vault box

Sample No.	OV	Blow Count	Sample	Depth	Lithology Log
					6" concrete, 2'deep void, Sand Fill below 2' GW - Class # structural fill backfill, damp
				5	Driller calls change at 7'
MW-1 @7		push			ML - Sandy SILT, 10YR 3/3 dark brown, 10% sand low plasticity, very soft, damp
MW-1 @10'		16		10	CL - Silty CLAY, 5GY 4/1 dark greenish gray, 30% silt, 5% sand, high plasticity, very stiff, damp same as above, 5Y 2.5/1 black, staining, odor
MW-1 @15'		14		15	CL to ML - Gravelly Silty CLAY to SILT, 10 YR 3/3 dark brown, 10% sand, 30% gravel, silt 30-50%, low plasticity, very moist to saturated, soft; driller calls resistance change at 18'
MW-1 @20'		4		20	CL - Silty CLAY, 10YR 5/4 yellowish brown, 45% silt, rare worm burrows (wet), med. plasticity, medium stiff, damp. (assumed aquitard)
					Bottom of Boring = 21 feet

Well Detail/ Backfill



CGS Sampling Specialists
Environmental Services
1172 Delmas Ave.
San Jose, CA 95125

Water-Quality Sampling Information

Date 2-24-07
Project No.
Sample No.

Project Name Batarse oak.
Address E. 14 St
Samplers Name Chris Solomon
Sampling Method
Analyses Request

Number/Types of Sample Bottles

Method of Shipment

Well Location Map

Not Sampled

Well Number MW #1-0
Well Diameter 2"
Depth to Water (ft.) 12.68
Total Well Depth (ft.) 23.65
Height of Water (ft)
Water Volume in Well (gal)

2 - inch casing = 0.16 gal/ft
4 - inch casing = 0.65 gal/ft
5 - inch casing = 1.02 gal/ft
6 - inch casing = 1.47 gal/ft

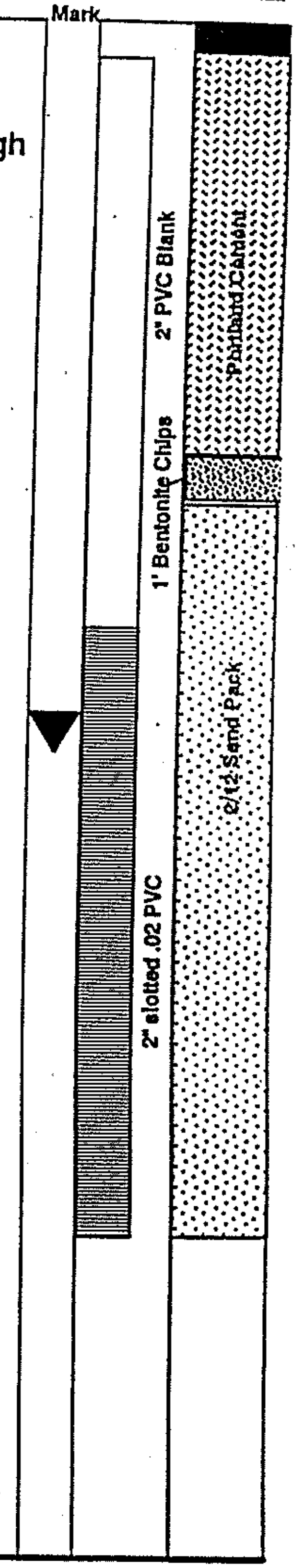
TIME	DEPTH TO WATER	VOLUME WITH-DRAWN	TEMP. (F)	pH (S.U)	COND. (mhos/cm)	PURGE VOLUMES	REMARKS

PIERS Environmental Services — *Exploratory Boring Log*

Project No. 95193 **Client: A.A. Batarse, Inc.** **Boring # MW-2** **Date 8-4-95**
Location: 10550 E. 14th St., Oakland, CA **Logged By: B. Halsted**
Drilling Method: 8 inch Hollow Stem **Permit: Zone 7** **Page 1 of 1**

Sample No.	Blow Count	Sample Type	Depth	USGS	Lithology Description
					4 inches asphalt, 8 inches baserock
				CL	Silty Clay - 15%–20% silt - Very Dark Gray/Brown, Very Moist, Medium/High Plasticity, Stiff, Medium/High D/S
MW-2 @5'	5/6/8	Soil	5'		
MW-2 @10'	4/7/8	Soil	10'		
MW-2 @15'	5/7/9	Soil	15'		Silty Clay - <15% silt, olive brown, dry to very little moisture, very stiff, high plasticity, Medium to High D/S, very slight petroleum odor.
MW-2 @20'	7/10/12	Soil	20'		No changes except increase in moisture.
MW-2 @25'	9/14/17	Soil	25'		Sily Clay, 35% silt, some very fine sand, olive brown, slightly moist, low to med. plasticity, med. D/S, very stiff.
MW-2 @30'	12/18/23	Soil	30'		BOH @ 30.5 ft.
			35'		
			40'		

H20 Mark — Well Const. Detail



JAMES RASP P.E.
Civil and Structural Engineering
5134 Elrose Avenue
San Jose, California 95124
(408) 448-6768

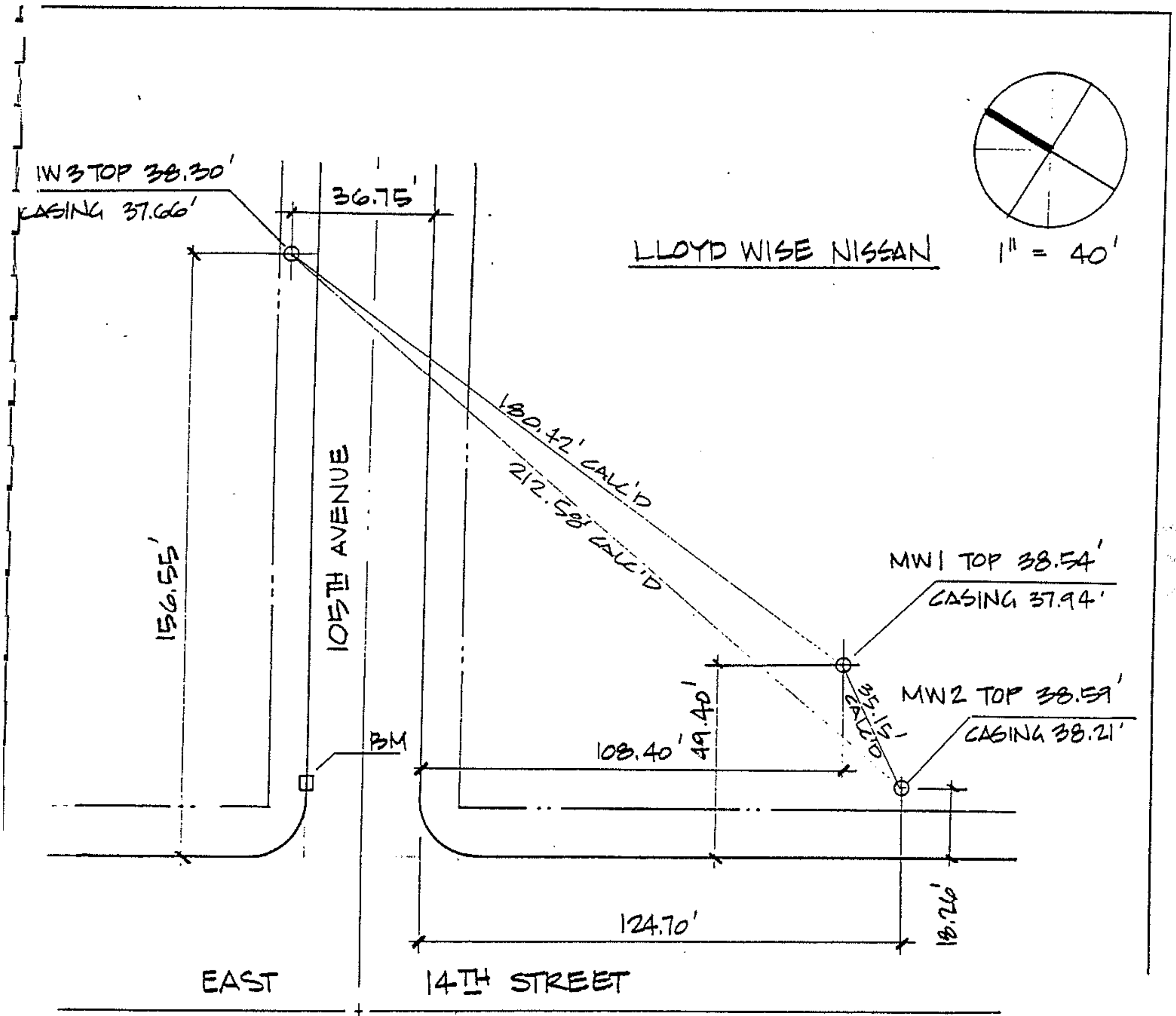
JOB 95073/ENVIRONMENTAL RESTORATION SERVICES

SHEET NO. 1 OF 1

CALCULATED BY JIM RASP DATE 8/95

CHECKED BY DATE

SCALE 1" = 40'



REGISTERED PROFESSIONAL ENGINEER
JAMES W. RASP
No. 17845
Exp. 6-30-97
CIVIL
STATE OF CALIFORNIA

CITY OF OAKLAND BENCHMARK # 1885
CUTSQUARE ELEV 37.311

TANK NUMBER A

Tank location	:	see map on page 3.
Tank age	:	30+ years
Tank material	:	steel
Depth to tank top	:	30"
Tank dimensions	:	46" x 144"
Tank capacity	:	1,000 gallons
Tank useage	:	product oil
Residual contents	:	75 gallons
Quantity pumped	:	75 gallons
Dry ice used	:	60 pounds
LEL reading	:	0%
Oxygen reading	:	18%
Tank coating	:	none
Condition of tank	:	heavily corroded, several visible holes

Backfill material	:	sand, odor of solvent				
Native soil	:	sandy clay, odor of solvent				
Water in excavation	:	yes, spillage from tank				
product piping	:	length:	10'	size:	2" diameter
material	:	steel		fate:	H&H
Vent piping	:	length:	10'	size:	2" diameter
material		steel		fate:	H&H
Remote fill	:	length:	30"	size:	4" diameter
material	:	steel		fate:	H&H

Sample Locations : see site map on Page 3.

# of soil samples : (3)   Container: 3" brass

# of water samples : (0)   Container: N/A

Type of soil : sandy clay

Sample #	Depth	Location	Analysis
SS9302-1	8'bgs	east end of tank	see Chain-of-Custody
SS9302-2	8'bgs	west end of tank	see Chain-of-Custody
SS9302-6	3'bgs	in backfill spoils	see Chain-of-Custody

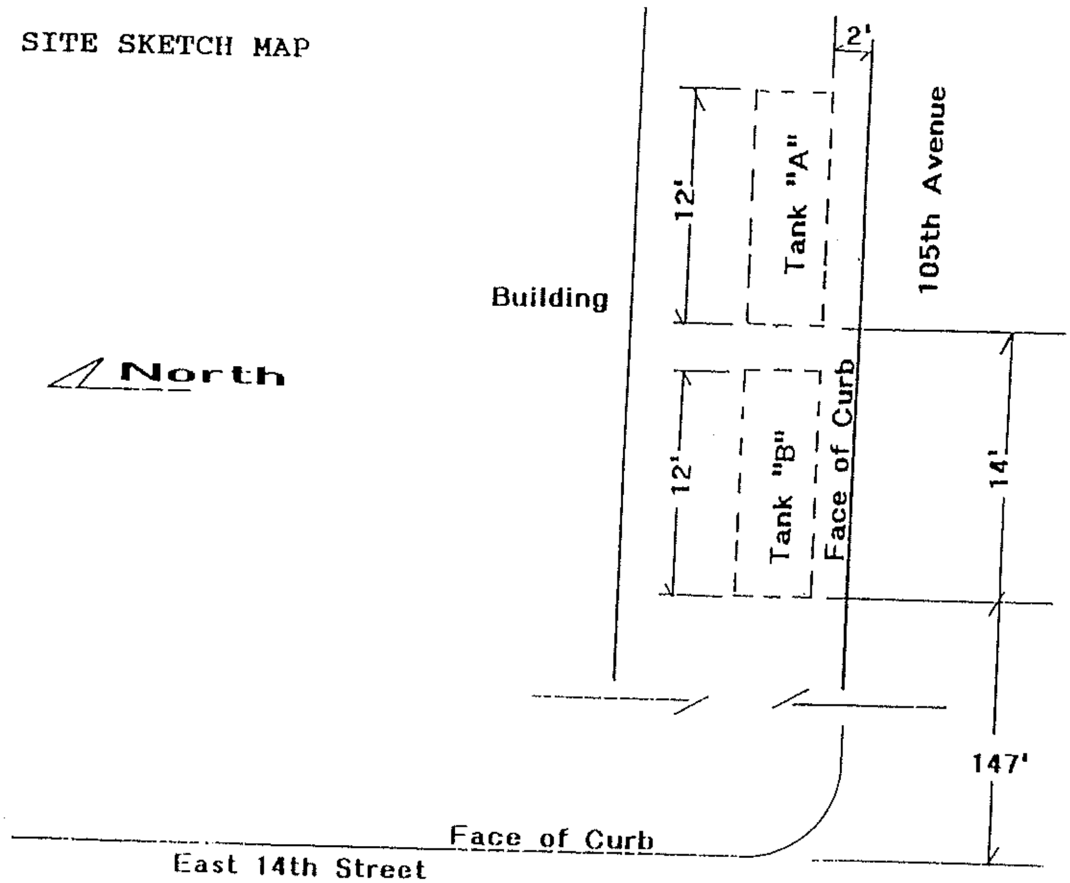
Odor in samples : solvent odor

Staining in samples : grey-green

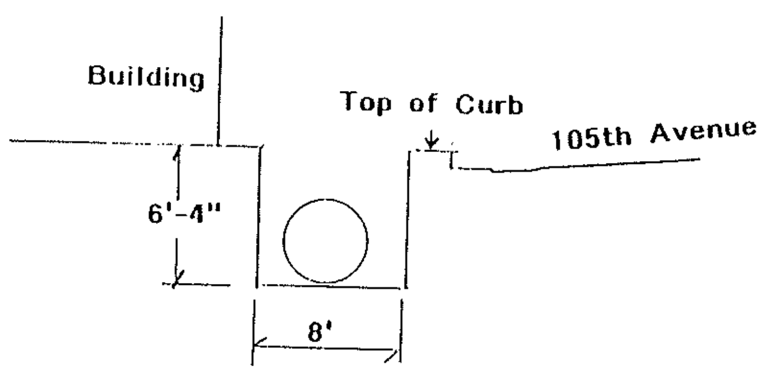
How were soil samples obtained: by hand

How were water samples obtained: by hand

SITE SKETCH MAP



SECTION VIEW of EXCAVATION



APPENDIX D

Preliminary Environmental Assessment Work Plan,
Batarse Project Site,
104th Avenue and East 14th Street,
Oakland, California,
May 25, 2001

Preliminary Environmental Assessment Work Plan
Batarse Project Site
104th Avenue and East 14th Street
Oakland, California

May 25, 2001
7962.01-001

Prepared for
Oakland Unified School District
955 High Street
Oakland, California 94601

May 25, 2001 7962.01-001

Ms. Janet Naito
California Environmental Protection Agency
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710

Subject: Preliminary Environmental Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California

Dear Ms. Naito:

LFR Levine · Fricke (LFR) has prepared this Preliminary Environmental Assessment (PEA) work plan on behalf of the Oakland Unified School District for the Batarse Project Site in Oakland, California ("the Site").

LFR has reviewed background information obtained from the "Phase I Environmental Site Assessment Report, Batarse Project Site, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000. On December 1, 2000, LFR personnel met with you and Dr. David Berry of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) to discuss the scope of the PEA work plan for the Site.

Our original work plan, dated January 30, 2001, has been revised to include the DTSC's comments as presented in documents issued by the DTSC on March 9, March 12, and March 19, 2001, and discussed during our teleconference on March 14, 2001. This work plan was prepared in general accordance with DTSC guidelines, as presented in the PEA Guidance Manual (January 1994, second printing June 1999).

If you have any questions or comments concerning the PEA work plan, please call either of the undersigned at (510) 652-4500.

Sincerely,

Lita D Freeman for
Alan D. Gibbs, R.G., R.E.A. II
Senior Associate Geologist

Charles Pardini
Charles H. Pardini, R.G.
Principal Geologist,
Assistant Operations Manager

cc: Ms. Ineda P. Adesanya, Oakland Unified School District
Mr. Jerry Suich, Oxbridge Development

May 25, 2001

7962.01-001

Ms. Ineda P. Adesanya
Director of Facilities
Oakland Unified School District
955 High Street
Oakland, California 94601

Subject: Preliminary Environmental Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California

Dear Ms. Adesanya:

LFR Levine · Fricke (LFR) has prepared this Preliminary Environmental Assessment (PEA) work plan on behalf of the Oakland Unified School District for the Batarse Project Site in Oakland, California ("the Site"). The Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by East 14th Street, to the east by Breed Avenue, and to the south by a maintenance facility owned by AC Transit.

LFR has reviewed background information obtained from the "Phase I Environmental Site Assessment Report, Batarse Project Site, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000. On December 1, 2000, LFR personnel met with Ms. Janet Naito and Dr. David Berry of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) to discuss the scope of the PEA work plan for the Site.

Our original work plan, dated January 30, 2001, has been revised to include the DTSC's comments as presented in documents issued by the DTSC on March 9, March 12, and March 19, 2001, and discussed during our teleconference on March 14, 2001. This work plan was prepared in general accordance with DTSC guidelines, as presented in the PEA Guidance Manual (January 1994, second printing June 1999).

If you have any questions or comments concerning this letter or the PEA work plan, please call either of the undersigned at (510) 652-4500.

Sincerely,

Lita D Freeman for
Alan D. Gibbs, R.G., R.E.A. II
Senior Associate Geologist

Charles H. Pardini, R.G.
Principal Geologist,
Assistant Operations Manager

cc: Mr. Jerry Suich, Oxbridge Development

CONTENTS

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

This Preliminary Environmental Assessment (PEA) work plan for the Batarse Project site, located at the intersection of 104th Avenue and East 14th Street in Oakland, California ("the Site"; Figure 1), is being submitted by LFR Levine·Fricke (LFR) on behalf of the Oakland Unified School District (OUSD). The Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by East 14th Street, to the east by Breed Avenue, and to the south by a bus maintenance facility owned by Alameda-Contra Costa Transit (AC Transit; Figures 1 and 2).

The site is being considered as a potential location for the construction of a new school. Information used in the preparation of this PEA work plan was obtained during LFR's drive-by visit of the Site on October 30, 2000, and from the following sources:

- "Underground Tank Technical Closure Report," prepared by Gen-Tech Environmental, dated March 26, 1993
- "Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 6, 1993
- "Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 20, 1994
- "Overview of Environmental Conditions at 10550 East 14th Avenue Nissan/Honda Auto Dealership in Oakland, California," prepared by Gen-Tech Environmental, dated October 11, 1994
- "Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated September 27, 1995
- "Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated March 13, 1997
- "Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland," prepared by Alameda County Health Care Services Agency (ACHCSA), dated August 14, 1998
- "Phase I Environmental Assessment for 1500-1510 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated June 5, 1996

for others outside its control who disregard such marked hazards or restricted access. This HSP has been prepared specifically for this project and is intended to address health and safety issues solely with respect to LFR's work. All references, therefore, to the site, the work, activities, site personnel, workers, persons, or subcontractors in this HSP are with respect to LFR work only.

2.0 SITE DESCRIPTION AND BACKGROUND

The Site is located within a city block in Oakland bounded to the north by 104th Avenue, to the west by East 14th Street, and to the east by Breed Avenue (see Figure 1 of the Work Plan). For convenience, the Site has been divided into eight groups of parcels to facilitate describing the proposed assessment areas. The site is being considered for the construction of a new school. A list of the properties and their current occupants is provided below:

Parcel Group	Parcel Group Name	Street Address	Assessor's Parcel Number
I	Lloyd Wise Inc.	10550 East 14th Street (eastern portion)	047-5519-005-02 (eastern portion)
		1424 105th Avenue (formerly part of East 14th Street)	047-5509-010-00
II	Bill & Bill's Auto Body	1500 105th Avenue	047-5509-009-01
III	Management Storage	1510 105th Avenue	047-5509-007-00 and 047-5509-006-00
IV	Ward's Custom Paint	1536, 1538, and 1544 105th Avenue	047-5509-003-00, 047-5509-004-00, and 047-5509-005-00
V	Chevron Tow	1560 and 1570 105th Avenue	047-5509-001-01
VI	Union Pacific Railroad	Center of 105th Avenue (see Figure 2 of Work Plan)	047-5519-004-10 and 047-5519-003
	Alameda-Contra Costa Transit (A/C Transit)	No assigned address (see Figure 2 of Work Plan)	047-5519-004-03
VII	West Side of 105th Avenue Commercial, Industrial, and Residential Parcel	1429/1433/1439 105th Avenue	047-5509-015-03
		1449 105th Avenue	047-5509-015-04
		1501 105th Avenue	047-5509-17
		1525 and 1545 105th Avenue	047-5509-021-01
		1557, 1559, and 1561 105th Avenue	047-5509-023-01
		105th Avenue Right of Way	NA

Parcel Group	Parcel Group Name	Street Address	Assessor's Parcel Number
I	Lloyd Wise, Inc.	10550 East 14th Street (eastern portion)	047-5519-005-02 (eastern portion)
		1424 105th Avenue (formerly part of East 14th Street)	047-5509-010-00
II	Bill & Bill's Auto Body	1500 105th Avenue	047-5509-009-01
III	Management Storage	1510, 1520, and 1528 105th Avenue	047-5509-007-00 and 047-5509-006-00
IV	Ward's Custom Paint	1536, 1538, 1544, and 1548 105th Avenue	047-5509-003-00, 047-5509-004-00, and 047-5509-005-00
V	Chevron Tow	1560 and 1570 105th Avenue	047-5509-001-01
VI	UPRR	Center of 105th Avenue (see Figure 2)	047-5519-004-10 and 047-5519-003
	Portion of AC Transit	No assigned address (see Figure 2)	047-5519-004-03
VII	West Side of 105th Avenue Commercial, Industrial, and Residential	1429/1433/1439 105th Avenue	047-5509-015-03
		1449 105th Avenue	047-5509-015-04
		1501 105th Avenue	047-5509-17
		1525 and 1545 105th Avenue	047-5509-021-01
		1557, 1559, and 1561 105th Avenue	047-5509-023-01
		105th Avenue Right of Way	NA
VIII	East Side of 104th Avenue Residential	10403 Walnut Street	047-5509-32-01
		1440 104th Avenue	047-5509-36-01
		1446 104th Avenue	047-5509-34-00
		1452 104th Avenue	047-5509-33-00
		1604 104th Avenue	047-5509-31-00
		1608 104th Avenue	047-5509-30-00
		1616 104th Avenue	047-5509-029-00
		1626 104th Avenue	047-5509-28-00
		1632 104th Avenue	047-5509-27-00
		1636 104th Avenue	047-5509-26-00
		1640 104th Avenue	047-5509-25-00
		1648 104th Avenue	047-5509-24-00

A summary of historical uses for each parcel group is presented below. This information was obtained from the Phase I Environmental Site Assessment (ESA) report prepared by ENSR (ENSR 2000). During their Phase I ESA, ENSR reviewed Sanborn fire insurance maps (Sanborn maps), aerial photographs and agency files for historical site usage information.

Lloyd Wise, Inc., Parcel Group – 10550 East 14th Street and 1424 105th Avenue

Sanborn maps indicate that the eastern portion of the parcel, known as 10550 East 14th Street, was vacant land from 1926 until the construction of a commercial building in 1981. This building appears to be the service building that is currently present on the parcel. During a reconnaissance visit on May 30, 2000, ENSR reported that two buildings exist on the eastern portion of the parcel, including the service building noted above and the maintenance shop that is currently known as 1424 East 14th Street (Figure 2). Both of these buildings were occupied by Lloyd Wise, Inc., during the site reconnaissance.

The western portions of 10500 and 10550 East 14th Street are occupied by the Lloyd Wise showroom and office buildings. These areas were not included in the study area.

According to information obtained by ENSR, a residence existed on the eastern portion of the parcel known as 1424 105th Avenue from 1926 to 1969. By the early 1980s, the residence had been replaced by a commercial building. This building appears to be the maintenance shop that is currently present on this parcel.

The history of the buildings on this parcel group are described briefly below:

- The service building (eastern portion of 10550 East 14th Street) was used for vehicle repairs until those operations were relocated in 1999. The first floor of the building is divided into eight maintenance bays, offices, a tool room, and an oil storage room. The second floor was used for offices and storage. The former aboveground hydraulic lifts have been removed (date unknown). According to information contained in ENSR's report, no underground hydraulic lifts were present in this building. ENSR noted that the floor drains in this building had been backfilled with concrete at the time of their visit.

  Four double-walled aboveground storage tanks (ASTs), ranging in capacity from 55 to 200 gallons and used for storage of motor oil, were formerly located in this building, according to ENSR's report. ENSR noted in their report that two oil stained areas, each measuring approximately 2 feet in diameter, were observed on the concrete floor of this room. No nearby floor drains or significant cracks were observed in the area of the former ASTs.

  ENSR representatives observed an approximately 300-gallon aboveground storage tank (AST) and an air compressor within a fenced enclosure outside the eastern end of the service building. Heavy oil staining was noted on the concrete pad of this enclosure.

- The maintenance shop (1424 East 14th Street) is divided into 10 vehicle maintenance bays. According to ENSR's report, one underground hydraulic lift was present at the southeastern end of the building at the time of their visit. ENSR reported that the remaining underground hydraulic lifts were removed in the early 1990s. At the time of ENSR's visit, one of the maintenance bays was being used for hand washing of automobiles; no maintenance work was being performed in the building.

  Six floor drains and a trench drain were formerly connected to a 600-gallon oil/water separator that remains in place near the northeastern corner of the maintenance building. Five of these floor drains have been backfilled with concrete. At the time of ENSR's site visit, the existing floor drain and the trench drain were still connected to the oil/water separator. ENSR representatives observed three ASTs ranging in capacity from 100 to 200 gallons along the northwestern wall of the shop. The ASTs were reportedly formerly used to store motor oil.

  A former underground sump and 550-gallon waste oil underground storage tank (UST) were reportedly located outside at the southeastern corner of the maintenance building at 1424 105th Avenue (formerly part of East 14th Street). The sump and waste oil UST were reportedly removed in 1993, according to previous consultants' reports cited by ENSR (ENSR 2000). Analytical results of soil samples collected in the vicinity of the former waste oil tank did not reveal significant levels of petroleum hydrocarbons, and the ACHCSA did not require further action in this area. The site owner and some of the reports and maps reviewed by LFR indicate that the location of this UST may have been misreported. The former UST may have been located across 105th Street, where two 1,000-gallon USTs containing product and waste oil were reportedly removed in 1993. Soil from the excavations of the two 1,000-gallon USTs was stockpiled across 105th Street (Gen-Tech Environmental 1993a).

Bill & Bill's Auto Body Parcel – 1500 105th Avenue

Sanborn maps and aerial photographs reviewed by ENSR showed this parcel to be a vacant lot from at least 1926 until 1951. A candy factory, constructed at 1500 105th Avenue between 1951 and 1952, was the first commercial building along 105th Avenue. The building was used as a roller rink in the early 1960s before being converted into a photographic laboratory in 1965. The building was subsequently used for automobile repairs and painting.

Bill and Bill's Auto Body (1500 105th Avenue) has occupied the building on this property since the mid-1990s. The body repair business is reportedly limited to spray painting and detailing. A paint spray booth is located in the building. This booth is operated under an air emissions permit issued by the Bay Area Air Quality Management District (BAAQMD). Approximately 250 one-pint and one-quart containers of paint were stored at the business during ENSR's site visit on May 30, 2000. The body shop reportedly uses approximately 85 gallons of paint thinner per year. Waste paints and thinners are placed in 55-gallon drums while on the premises and removed approximately every 1.5 to 2 years.

According to information contained in ENSR's report, the only floor drain inside the building has been backfilled with concrete.

Management Storage Parcel Group – 1510, 1520, and 1528 105th Avenue

According to Sanborn maps and aerial photographs reviewed by ENSR, residences were located at 1520 and 1528 105th Avenue from at least 1926 until the late 1970s or early 1980s. The residence located at 1520 105th Avenue was demolished in 1979, according to information obtained by ENSR from the Oakland Building Department. The residence at 1528 105th Avenue was apparently demolished between 1975 and 1981. According to information from the Oakland Building Department, a warehouse used as a roller derby training facility was constructed at 1510 105th Avenue in 1951.

Bill Thompson, a former property owner, was interviewed during a previous Phase I ESA for this parcel. According to Mr. Thompson, a candy factory occupied the building at 1510 105th Avenue during the 1950s. Two approximately 1.5-foot-deep sumps located at the rear of this building were observed during the previous Phase I ESA. Mr. Thompson noted that these sumps were used by the candy factory for containment of wastewater from floor washing activities. Mr. Thompson stated that the sumps had not been used during his occupancy of the building.

Management Storage (1510 105th Avenue), a real estate owner and management business, currently occupies the building at this address, as well as the vacant lot located adjacent to the east of the building. The building is divided into offices and warehouse space used for storing furniture and files. According to ENSR's report, the only chemicals reportedly used in this building are janitorial supplies. One floor drain that discharges into the sanitary sewer was present in the building at the time of ENSR's visit.

A former water supply well is located in a metal-covered vault near one of the front entrances to the building.

An office trailer, fencing, and a gasoline dispenser (not connected to a tank) were located in the vacant lot at the time of ENSR's site visit on May 30, 2000. ENSR noted that this lot was enclosed by a chain-link fence.

Ward's Custom Paint Parcel Group – 1536, 1538, 1544, and 1548 105th Avenue

Sanborn maps and aerial photographs reviewed by ENSR showed that a house was located along the northwestern portion of the 1536 105th Avenue parcel from at least 1926. This house appeared in the aerial photographs through 1975 but had been demolished by the time of the 1981 photographs. Photographs from 1981 and later indicate that this parcel was used for vehicle storage.

According to ENSR's report, the parcel known as 1544 105th Avenue was a vacant lot in the 1926 through 1961 Sanborn maps and the 1947 through 1959 aerial photographs. By 1966, one commercial building had been constructed on this parcel. This building appeared unchanged in the later photographs.

According to ENSR's report, a 1926 Sanborn map and 1947 aerial photograph indicate that 1548 105th Avenue was a vacant lot. Sanborn maps and aerial photographs from the 1950s and 1960s indicate that a single-family residence was present at this location. By the time of the 1971 aerial photographs, two commercial buildings were present on the parcel. These building appear unchanged in later photographs. A furniture warehouse was reportedly constructed at 1548 105th Avenue. According to ENSR's report, the parcel's previous address included 1550 105th Avenue. A building department application dated 1959 for 1550 105th Avenue indicated that the building at this address was being used as a print shop with offices and a factory.

According to ENSR's report, the parcel currently known as 1544 105th Avenue was previously occupied by Milichichi Auto Body Fender. This business was included on the United States Environmental Protection Agency (EPA) database as a Resource Conservation and Recovery Act small quantity hazardous waste generator. This facility generated paint-related wastes. No release has been reported at this location.

Ward's Custom Paint shop currently occupies the properties that comprise this parcel group. A paved parking lot used by Ward's Custom Paint shop is located at 1536 and 1538 105th Avenue. Two buildings located at 1544 105th Avenue are used for spray painting and detailing of automobiles with a paint booth located in the southernmost building. Numerous spray cans and one-quart and five-gallon paint containers were stored in a locked room in the southernmost building at the time of ENSR's visit. Other chemical storage noted by ENSR consisted of car cleaners and waxes and five-gallon containers of paint thinner. The facility was identified as generating paint-related waste and maintaining permits from BAAQMD for air emissions from the paint booth. The facility was also identified as maintaining a permit with East Bay Municipal Utility District for water discharges.

Chevron Tow Parcel – 1560 and 1570 105th Avenue

Residential dwellings occupied the parcels at Chevron Tow from at least 1926 until the early 1980s, according to information contained in ENSR's report. According to an aerial photograph, by 1981, the residences had been demolished and the parcels were being used for vehicle storage. At the time of ENSR's visit, most of the property was being used for vehicle washing, maintenance, and storage. A small office building was noted at the northwestern corner of the parcel.

Union Pacific Railroad/AC Transit Parcel Group – 105th Avenue

Railroad tracks were noted along 105th Avenue and across the eastern end of the study area (remainder of UPRR parcel group and AC Transit parcel group) in all of the

Sanborn maps and aerial photographs reviewed by ENSR. These tracks, which are owned by UPRR, are currently present along the center of 105th Avenue and across the eastern end of the study area.

AC Transit (no assigned address) occupies two properties to the east of 105th Avenue. The northeastern portion of the AC Transit property at the eastern end of 105th Avenue is included in the study area for this work plan. This area appeared as vacant land in the 1947 through 1981 aerial photographs, according to ENSR's report. Aerial photographs indicate that by 1985 a commercial building that extended onto the AC Transit property adjacent to the south of the study area had been constructed on the parcel. This building was present in all of the remaining photographs reviewed by ENSR.

West Side of 105th Avenue Commercial, Industrial, and Residential Parcel Group – 1429 through 1561 105th Avenue

The parcel group lying west of 105th Avenue consists of commercial, light industrial, and residential properties, and a trailer park. A description of each of the properties within this parcel is provided below:

- The property known as 1429, 1433, and 1439 105th Avenue was occupied by a door manufacturer from 1926 to 1969, according to ENSR's report. Other companies that historically occupied the property include a construction company, Winca Chemical Company (a manufacturer of dry cleaning, laundry detergent, and pool chemicals), and Akana Designs (a carpentry company). At the time of ENSR's visit, the property was occupied by United Acoustics (1929 and 1433 105th Avenue) and Winca Chemicals (1439 105th Avenue).

  According to ENSR's report, a release was reported at 1433 105th Avenue in 1991. The responsible party was listed as United Acoustics. ENSR noted that the case was granted closure by the local regulatory agency. Further information on this release was not available as files had reportedly been misplaced during transfer from the ACHCSA to the City of Oakland Fire Department.

- The property known as 1449 105th Avenue was occupied by a single-family residence on Sanborn maps dated 1926, 1951, and 1952, according to ENSR's Phase I ESA (ENSR 2000). On 1959 and subsequent Sanborn maps, this property was being used by the door manufacturer for wood storage and a cabinet shop. In aerial photographs dating back to 1947, the building on this property appeared to be associated with the commercial building complex known as 1429, 1433, and 1439 105th Avenue, according to ENSR's report.
- The property known as 1501 105th Avenue has been residential since at least 1926.
- A trailer park has existed at 1525 and 1545 105th Avenue since at least 1941. Before the trailer park, the parcels were occupied by residences and a lumber storage yard. The manager of the trailer park reported that coal was unloaded from

railroad cars on this property in the late 1800s. Anecdotal information indicates that an underground or buried coal bin might have existed on this property.

- The property known as 1557, 1559, and 1561 105th Avenue has been occupied by a multi-tenant commercial building since 1951, according to Sanborn maps reviewed by ENSR (ENSR 2000). One occupant was an antique Volkswagen business during ENSR's May 30, 2000, site visit. Former uses of the building included a plumbing and carpentry business, venetian blind manufacturer, drapery facility, plastic bag facility, machine shop, and vending machine storage company. According to telephone listings dated 2000, Gomez Foods occupies 1559 105th Avenue.

  According to ENSR's report, 35 gallons of oil were spilled at 1561 105th Avenue in 1992. No information was available on the responsible party, location of the spill, or the response action.

East Side of 104th Avenue Residential Parcel – 10403 Walnut Street and 1440 through 1648 104th Avenue

The parcels lying along the eastern side of 104th Avenue have consisted of residential properties since at least 1926 (ENSR 2000). According to building department files reviewed by ENSR, permits to apply pest control chemicals were issued to occupants of 1604 and 1616 104th Avenue.

2.0 PEA OBJECTIVES

The California Department of Education (CDE) Board has recently adopted an environmental policy requiring that, if applicable, ambient air, subsurface soils, and shallow groundwater at all new school sites will be evaluated. A "No Further Action" designation from the DTSC must be obtained before the CDE can allocate funds to a school district for the acquisition and/or construction of a new school site. The PEA is intended to identify whether a release or threatened release of hazardous substances exists at the site and evaluate the potential risk to human health or the environment before the DTSC issues a "No Further Action" designation.

The following are the overall objectives of the PEA:

- evaluate historical information regarding the past use, storage, disposal, or release of hazardous wastes/substances at the Site
- conduct a field sampling and analysis program to further characterize the nature, concentration, and extent of hazardous wastes/substances present in ambient air, soil, and groundwater at the Site
- estimate the potential threat to public health and/or the environment posed by known hazardous constituents at the Site using a residential land use scenario

Based on information that will be developed during the PEA and the conservative human and ecological risk evaluation to be conducted using the DTSC's PEA Guidance Manual, the DTSC will make an informed decision regarding potential risks, if any, posed by the Site.

Possible outcomes of the PEA decision include the following:

- the requirement for further assessment through the Remedial Investigation/Feasibility Study process if the Site is found to be significantly affected by hazardous substances
- the need to perform a Removal Action for areas where localized impacts by hazardous substance releases are found
- issuance of a "No Further Action" finding if the Site is found not to be impacted or risks to human health and the environment are found to be within acceptable levels based on the conservative screening level risk assessment

3.0 SITE DESCRIPTION AND CONTACTS

3.1 Site Name and Address

The Site has been identified by the OUSD as the Batarse Project Site, located southeast of the intersection of 104th Avenue and East 14th Street in Oakland, California.

3.2 Designated Contact Person and Mailing Address

Ms. Ineda P. Adesanya
Director of Facilities
Oakland Unified School District
955 High Street
Oakland, California 94601

Phone No. (510) 879-8385
Fax No. (510) 879-1860

3.3 Property Use

The Site consists of eight parcel groups that occupy approximately 7.6 acres. The Site is currently occupied by Lloyd Wise, Inc.; Bill and Bill's Auto Body; Management Storage; Ward's Custom Paint; Chevron Tow; UPRR; United Acoustics; Winca Chemicals; and other commercial, light industrial, and residential properties.

The Site is being considered for acquisition and construction of a proposed new school. The layout of the proposed school has not been finalized.

3.4 Assessor's Parcel Numbers and Maps

The APNs for the Site as identified by the Alameda County Assessor's Office and the street addresses on record for each of these parcels are listed in the table in Section 1.2.

3.5 Township, Range, Section, and Meridian

Based on the United States Geological Survey (USGS) San Leandro Quadrangle, California 7.5-Minute Topographic Map, the Site is located in Subsection P of Section 23, Township 2 South, Range 3 West (ENSR 2000). The approximate geographic coordinates of the Site are Latitude North 37° 44'21" and Longitude West 122° 09'52".

3.6 Site Zoning

The City of Oakland Planning Department has zoned the Site for manufacturing (M-20) and residential (R-30). The planned future use of the Site is for general community commercial (LFR 2001).

3.7 Site Maps and Photographs

A site location map is included as Figure 1. A site sampling plan is included as Figure 2. Previous site photographs are presented in the Phase I ESA report included as Appendix C.

3.8 Physical Setting

The Site is located approximately 40 to 42 feet above mean sea level according to the USGS San Leandro Quadrangle, California, 7.5-minute topographic map. The nearest body of surface water is San Leandro Creek, located approximately 5,000 feet south of the Site. This creek drains into San Leandro Bay, which is part of San Francisco Bay.

The Site is located within the Coast Range geomorphic province and is underlain by Holocene alluvial fan and fluvial deposits. These deposits are brown or tan, medium-dense to dense, gravely sand or sandy gravel that generally grade upward, to sandy or silty clay (Helley and Graymer 1997). Boring logs for two monitoring wells installed during previous investigations at 10500 East 14th Street indicate that relatively fine-grained materials consisting of silty sand, sandy silt, and silty clay are encountered to depths of approximately 30 feet below ground surface (bgs) at the Site.

The soil at the Site is classified by the United States Department of Agriculture (USDA) Soil Survey of Alameda County, Western Part, as the Yolo silt loam in the southwestern portion of the Site, and as urban land-Danville complex in the northeastern portion of the Site. These soils are used mainly for urban development. Runoff is slow and the erosion hazard is slight to none (USDA 1981).

The inferred direction of groundwater flow in the site vicinity is toward the west-southwest (Figure 2). The depth to groundwater reportedly ranged from approximately 8 to 28.3 feet bgs in 1993 (ACHCSA 1998a). Information regarding the depth to groundwater and direction of groundwater flow was obtained from the case closure summary prepared by the ACHCSA under the Leaking Underground Storage Tank Program for the former waste oil and gasoline USTs that were removed from 10500 East 14th Street in 1993.

3.9 Surrounding Property Land Use

Commercial businesses, light industry, a church, and residential areas comprise the surrounding property land use.

4.0 FIELD SAMPLING PLAN

4.1 Background

The Site consists of eight parcel groups totaling approximately 7.6 acres. The topography slopes slightly downward toward the north-northwest. The Site has been used for residential and commercial purposes. Building structures include several commercial and light industrial buildings, houses, and a trailer park.

A former water supply well reportedly exists at the Site. The well is reportedly located in an existing vault, and it is not currently in use. It is not known whether the well has been properly abandoned and sealed.

The potential environmental issues in the Site include former hydraulic lifts, sumps, an oil/water separator, a suspected former waste oil UST, floor drains, auto body painting operations, chemical use, a railroad spur, lead-based paint, and asbestos. Therefore, the chemicals of potential concern (COPCs) addressed in this investigation will include total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene and xylenes (BTEX); and volatile organic compounds (VOCs) including methyl-tertiary butyl ether (MTBE), because of their historical association with industrial, automobile maintenance, and painting operations. Other COPCs include Title 22 metals (formerly known as California Assessment Manual 17 metals) because of their historical association with industrial operations and lead-based paint; and semivolatile organic compounds (SVOCs) including polychlorinated biphenyls (PCBs), which will be analyzed in selected samples collected along the UPRR right-of-way.

LFR has prepared a table outlining eight areas (designated as Areas I through VIII) of potential environmental concern, the sampling program, and the analyses that will be performed at each area. Because of the ages of the structures on the Site, asbestos containing materials (ACMs) and lead-based paints may be present. A building materials survey for ACMs and lead-based paints will be conducted at the Site if OUSD decides to proceed with the project.

A soil-vapor survey will be conducted for potential fuel-related hydrocarbon impacts in the soil and groundwater if chemicals of concern are found at concentrations above EPA Region IX residential preliminary remediation goals (PRGs) in soils, or at 10 times the Maximum Contaminant Levels (MCLs) or detection limits (if no MCL is established for the COPC) in groundwater. If soil-vapor sampling is established to be necessary, vapor samples will be analyzed using EPA Test Method TO-14. A mobile laboratory will be used for analysis of the soil-vapor samples with four duplicate soil-vapor samples collected for off-site TO-14 analysis.

In the event that COPCs are detected, data regarding soil properties will be collected to model the fate and transport of chemicals in the environment. This data includes total organic carbon, grain size, bulk density, porosity, and moisture content. Total organic carbon will be analyzed by the Walkley-Black method; grain size will be analyzed by American Society for Testing and Materials (ASTM) D422M; and bulk density, porosity, and moisture content will be analyzed using American Petroleum Institute (API) RP40 method.

4.2 Sampling Locations and Analyses

The soil and groundwater sampling program presented herein was prepared by LFR with input provided by Ms. Janet Naito and Dr. Dave Berry of the DTSC during a scoping meeting on December 1, 2000. The sampling locations were selected based on information reported in the Phase I ESA and LFR's site visit on October 30, 2000. Proposed sampling locations are presented on Figure 2 and are summarized in Table 1. If analytical results indicate that there are chemicals present at the Site at levels of potential concern, they will be discussed with the OUSD and DTSC to establish whether additional sampling is necessary to complete the PEA.

Forty-nine soil borings are proposed, with total depths ranging from approximately 1 to 30 feet bgs. Groundwater samples will be collected from 46 of the soil borings. Additional borings may be warranted if visual, olfactory, or photoionization detector (PID) readings indicate a chemical release has likely occurred. Borings will be drilled to a depth of approximately 3 to 5 feet below the first groundwater encountered to allow collection of grab groundwater samples. An estimated 306 soil samples will be collected; additional samples may be collected if warranted by field observations. Soil samples collected from 20 feet bgs and deeper will be submitted to the laboratory but placed on hold pending our receipt and analysis of the shallower soil samples collected from the borings. The samples will be submitted to a laboratory certified by the State of California to perform the requested analyses (see Table 1).

During the PEA, LFR will attempt to locate published information on typical background concentrations for metals in the City of Oakland. LFR will also evaluate the data from the soil samples collected from the proposed borings to ascertain if the concentrations of metals detected are appropriate for use as typical background levels. If published information is not available and data from on-site borings are not valid for background metals concentrations, four additional borings may be drilled to a depth of approximately 1 foot bgs in areas assumed clean of past or present operations. Soil samples will be collected from these borings and analyzed to evaluate the natural background levels of metals in the area.

For quality assurance/quality control (QA/QC), LFR will also collect an estimated 31 field split soil samples. The duplicate sampling program represents 10 percent of the total number of samples proposed for analysis. Five field split groundwater samples will be collected along with the 46 groundwater samples proposed for collection and analysis, representing 10 percent of the total number of proposed groundwater samples. Equipment rinsate blank samples and travel blank samples will be collected daily, and at least three of each of these blanks will be analyzed. The equipment rinsate blanks and travel blanks will be prepared from laboratory-supplied, organic-free, deionized water.

Based on the present and past land use at the different parcel groups at the Site, the proposed sampling program at each parcel group is as follows:

Lloyd Wise, Inc., Parcel Group – 10550 East 14th Street and 1424 105th Avenue

This parcel group has been used for residential dwellings, commercial facilities, vehicle repairs, and a maintenance shop. Underground and above ground hydraulic lifts, motor oil ASTs, floor and trench drains, a 600-gallon oil/water separator, an underground sump, and a concrete pad heavily stained with oil are or have been present in the area. In addition, a 550-gallon waste oil UST may have been present on this parcel in the past. Therefore, it is anticipated that petroleum hydrocarbons, heavy metals, and solvents have been used in the area.

Four soil borings are proposed at locations adjacent to and downgradient from the drains and reported sump (if present) in the maintenance shop and the oil/water separator and, depending on available information, at a depth consistent with the bottom of these features. A magnetic survey will be conducted to establish the presence of remaining underground structures.

Three soil borings are proposed at locations adjacent to the suspected former waste oil UST location and at a location adjacent to and upgradient from the two former 1,000-gallon product and waste oil USTs located on the northern side of 105th Street. The boring near the former product and waste oil USTs will be advanced upgradient from the former USTs because of access constraints in the downgradient direction. This boring will be advanced to assess the possible impact of the two 1,000-gallon USTs formerly present at that location. One of these soil borings will be advanced downgradient from the approximate location of the soil stockpile produced during the removal of two 1,000-gallon USTs.

Finally, two soil borings will be advanced at locations upgradient from the oil-stained pad. Borings cannot be advanced in the downgradient direction because of the presence of the service building. Five borings will be advanced within the service building to assess soil and groundwater conditions in the areas of hydraulic lifts (if present), ASTs, sumps, and floor drains. Five borings are also proposed inside the maintenance building at the locations of the hydraulic lifts and in the stained area near the motor oil ASTs to assess potential impacts to soil and groundwater in these areas.

Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip. Depending on available information, soil samples will be collected from borings located adjacent to the drains, oil/water separators, and sumps at depths consistent with the bottom of the features.

The soil samples collected in this area will be analyzed for Title 22 metals, total volatile hydrocarbons (TVH), and total extractable hydrocarbons (TEH). In addition, soil samples collected near the hydraulic lifts will also be analyzed for hydraulic oil and PCBs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs. Additionally, the soil and groundwater samples from the boring adjacent to the two former 1,000-gallon product and waste oil USTs located on the northern side of 105th Street will be analyzed for antifreeze (ethylene glycol).

Bill & Bill's Auto Body Parcel – 1500 105th Avenue

Residential and commercial buildings, a photographic laboratory, and automobile repair businesses have been located on this parcel. The only floor drain inside the building was previously abandoned with concrete. Waste paints and thinners were previously stored in the area. It is also anticipated that petroleum hydrocarbons, heavy metals, and solvents may have been used in the area.

Three soil borings are proposed in this area. One of the proposed borings will be located adjacent to and downgradient from the drain. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip. Depending on available information, soil samples will be collected at a depth consistent with the bottom of the drain.

Soil samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples from the borings will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

Management Storage Parcel Group – 1510, 1520, and 1528 105th Avenue

One floor drain, two sumps, and a former water supply well are present in this area. The only chemicals reportedly used at this location are janitorial supplies. Three borings are proposed in the area of the drain and two sumps. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of soil recovered from the sampler tip. Depending on available information, soil samples will be collected at a depth consistent with the bottom of the drain and sumps.

Soil samples will be analyzed for Title 22 metals, TVH, and TEH. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered, and, if possible, at the former water supply well. Grab groundwater samples from the borings will be analyzed for Title 22 metals, TVH, and TEH.

Groundwater samples will be collected from the water supply well, if possible, and analyzed for Title 22 metals, TVH, TEH, and VOCs. The well will be abandoned and sealed by a licensed drilling subcontractor in accordance with applicable regulatory requirements, if OUSD proceeds with the project.

Ward's Custom Paint Parcel Group – 1536, 1538, 1544, and 1548 105th Avenue

A paint booth and paved parking lot are present in this area. Paint and paint thinner, car cleaners, and waxes are used and stored at this location. It is also anticipated that petroleum hydrocarbons, heavy metals, and solvents may have been used in the past. Five soil borings are proposed in this area. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip.

Soil samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs (including paint thinner). Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs (solvents and thinners).

Chevron Tow Parcel Group – 1560 and 1570 105th Avenue

Most of this property is used for vehicle washing, maintenance and storage. Therefore, it is anticipated that petroleum hydrocarbons, heavy metals, and solvents are currently being used or have been used in the past. Four soil borings are proposed in the area. Two of these four borings will be advanced at the eastern boundary of the parcel, directly downgradient from the neighboring property. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip.

Soil samples will be analyzed for Title 22 metals, TVH, and TEH. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples from one of the borings at the eastern boundary of the parcel are proposed to detect possible migration onto the Site from off-site sources. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

Union Pacific Railroad/AC Transit Parcel Group - 105th Avenue

Railroad tracks are currently present along the center of 105th Avenue. Therefore, it is anticipated that petroleum hydrocarbons and heavy metals may be present along the tracks. Four shallow soil borings (to a depth of approximately 3 feet) are proposed along the tracks on 105th Avenue. Samples will be collected at the first soil encountered beneath the railroad gravel ballast. Soil samples will be analyzed for Title 22 metals, TVH, TEH (including hydraulic oil), and SVOCs.

Three soil borings are proposed on the AC Transit parcel to establish a baseline of subsurface conditions. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip.

Soil samples from these three borings will be analyzed for Title 22 metals, TVH, and TEH. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples from each of the borings will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

West Side of 105th Avenue Commercial, Industrial, and Residential Parcel Group – 1429 through 1561105th Avenue

This parcel group consists of commercial, light industrial, residential properties, and a trailer park. Former facilities in the area include a chemical company that manufactured dry cleaning, laundry detergent, and pool chemicals. Therefore, it is anticipated that petroleum hydrocarbons, heavy metals, and solvents may have been used in the area.

Heating oil USTs may have been installed at the residences in the past. A visual reconnaissance and interviews with residence owners is proposed to assess the presence of heating oil USTs. Also, coal was reportedly unloaded from railroad cars and an underground or buried coal bin may have existed on the trailer park property. A geophysical survey will be conducted at this location to assess whether a buried coal bin exists. If a heating oil UST or coal bin is suspected or confirmed based on our interviews and observations, the DTSC will be contacted to discuss the need for sampling in the areas of the suspected or confirmed USTs and/or coal bin.

Nine soil borings are proposed in the area, including three in the reported location of the buried coal bin. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based on visual observations and PID readings of the soil recovered from the sampler tip. Soil samples from these borings will be analyzed for Title 22 metals, TVH, TEH, and SVOCs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, VOCs, and SVOCs. Additional locations, borings, or analyses may be required upon review of new information.

Additionally, one boring will be advanced in the area of the releases reported by United Acoustics at 1433 105th Avenue in 1991, and one boring will be advanced in the area of the oil spill reported at 1561 105th Avenue in 1992 if information on the locations of these releases is available. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based on visual observations and PID readings of the soil recovered from the sampler tip. Soil samples from these borings will be analyzed for Title 22 metals, TVH, TEH, and SVOCs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, VOCs, and SVOCs. Additional locations, borings or analyses may be required upon review of new information.

East Side of 104th Avenue Residential Parcel – 10403 Walnut Street and 1440 through 1648 104th Avenue

Several residential properties have been present in this area since at least 1926.

Heating oil USTs may have been installed at the residences in the past. A visual reconnaissance and interviews with residence owners is proposed to assess the presence of heating oil USTs. If the location of a heating oil UST is suspected or confirmed based on our interviews and observations, the DTSC will be contacted to discuss the need for sampling in the areas of the suspected or confirmed USTs.

Six shallow (1 foot bgs) soil borings are proposed in this area to evaluate possible impacts by lead-based paints. Soil samples will be collected within the drip line adjacent to the exterior walls of the residences exhibiting the most visible signs of weathered paint. These samples will be analyzed for lead. DTSC is currently finalizing the sampling protocol for soils that have suspected lead-based paint and that are in close proximity to buildings constructed before 1980. Collection of additional soil samples for lead analysis may be completed after demolition of the residential facilities. These additional soil samples will be collected from the first soil encountered in residential areas (from the surface to approximately 0.5 foot bgs) and analyzed for lead. Asbestos surveys of the structures will be performed at a later date if OUSD decides to proceed with the project.

It has also been reported that pest control chemicals were used on some parcels in the past. Because of limited information, LFR may not be able to determine areas to which pesticides were applied. LFR proposes to analyze the soil samples collected from the six shallow borings noted above for TVH, TEH, and pesticides to evaluate pesticide impacts.

One deep soil boring is proposed at the eastern boundary of the parcel group. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based on visual observations and PID readings of the soil collected from the sampling tip. Soil samples from this boring will be analyzed for Title 22 metals, TVH, TEH, VOCs, and pesticides. One grab groundwater samples will be collected from the deep boring if groundwater is encountered. The groundwater sample is intended to assess if an off-site release has impacted the Site. The groundwater sample will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

Surface soil samples from borings located in other portions of this parcel group will be analyzed for Title 22 metals and will be evaluated to assess background concentrations for lead.

4.3 Sample Collection

Sample containers will be sealed and labeled with the sampler's initials, time and date of collection, project number, project name, and a unique sample identification number, then placed on ice in a cooler for delivery to the laboratory under strict chain-of-custody (COC) protocol. Analytical methods, types of containers, preservation methods, and holding times are summarized in Table 2.

Shallow Soil Sampling

Twelve shallow soil samples will be collected from the railroad spur and residential areas (areas VI and VIII on Table 1) using a slide hammer manual sampling device. Along the railroad spur (area VI), shallow soil samples from below the gravel ballast will be collected at depths of up to approximately 3 feet. For these samples, a hand auger may be used to core to the desired depth and then a slide hammer with a brass or steel tube (2-inch by 6-inch) will be used for sample collection. In the residential area on the eastern side of 104th Street (area VIII), surface soil samples will be collected from the surface (after clearing of vegetation) to a depth of approximately 0.5 foot. Soil samples will be collected in standard 6-inch-long, 2-inch-diameter stainless-steel or brass sleeves. Alternatively, the sample may be placed in a glass jar if VOC analysis is not proposed. Both ends of the tubes will be capped with Teflon™ sheets and plastic caps, and properly labeled.

Subsurface Soil Sampling

LFR will collect soil samples from an estimated 49 deep soil borings, using a subcontracted Geoprobe™, or similar, direct-push method sampling rig. Soil samples will be collected in 1 11/16-inch-diameter, clear acetate sample tubes. Sample tubes will be advanced beneath the subsurface inside a stainless-steel sample probe in 3-foot sections. Upon recovery from the sample probe, soil samples will be cut to a desired length (6 to 8 inches), capped on both ends with Teflon™ sheets and plastic caps, and properly labeled.

After labeling, the soil samples will be sealed in plastic bags and placed in an ice-chilled cooler for transportation to the laboratory under strict COC protocol. Total sample recovery (3 feet) is not always achieved, particularly in loose, gravely, or dry soil types, or in very stiff or very soft clays. A sufficient sample to conduct the analytical methods proposed at each location will be collected during fieldwork.

Logging will be performed using continuous core samples for deep borings. Copies of the boring logs will be included in the PEA report. As requested, LFR will locate each borehole using global positioning system or by using a licensed surveyor to survey the lateral location to within the nearest foot. The coordinates will be presented in the PEA report.

Water Supply Well Sampling

If feasible, a groundwater sample will be collected from the water supply well located at 1510 105th Avenue. The method for collecting the groundwater sample will be established based on the accessibility and condition of the well, and with prior consultation with DTSC regarding the sampling methodology. If possible, the well will be purged of several volumes before sampling. Up to 100 gallons of water will be purged from the well and stored on-site in Department of Transportation–approved, 55-gallon drums pending our receipt and review of analytical data.

Groundwater Grab Sampling

Groundwater grab samples will be collected at an estimated 46 boring locations in areas I through V, VII and VIII as identified in Table 1. The samples will be collected using a Hydropunch™ sampler or factory-slotted polyvinyl chloride casing, advanced through a push-probe boring. It is expected that first groundwater will be encountered at an approximate depth of 15 feet bgs, as described in ENSR's report (ENSR 2000). The push-probe boring at the first groundwater sampling location will be continuously sampled to establish the approximate depth to groundwater.

Groundwater samples will be collected with new, disposable bailers. The groundwater samples will be decanted into pre-cleaned sample containers provided by the laboratory. To minimize volatilization of VOCs from groundwater during sampling, the following steps will be followed:

- the bailers will be extracted from the borings slowly and steadily to avoid creating air bubbles
- the water will be poured slowly into the containers to prevent agitating or mixing of water in the bailer
- bubbles will not be allowed to form in the volatile organic analysis (VOA) containers

Each groundwater sample collected for analysis of TEH will be decanted in two 1-liter, amber glass bottles preserved with hydrochloric acid (HCl). Each groundwater sample collected for analysis of TVH and VOCs will be decanted in three, HCl-preserved, 40-milliliter VOA vials. Each groundwater sample collected for analysis of dissolved Title 22 metals will be contained in one, unpreserved 300-milliliter poly bottle. Groundwater samples analyzed for metals will be filtered in the laboratory within 24 hours after sample collection. If the quantity of groundwater entering a borehole is insufficient for the proposed analyses (as listed in Table 1), then the VOC analysis will be the priority. Samples will be collected for TVH, TEH, and Title 22 metals analysis, in that order, depending on the quantity of groundwater.

Analytical methods, types of containers, preservation methods, and holding times are summarized in Table 2.

Ambient Air Sampling

Ambient air sampling will not be conducted for this PEA. Surrounding site conditions and activities described in Section 3.9 do not warrant air sampling.

4.3.1 Chain-of-Custody Records

COC records are used to document sample collection and shipment to laboratory for analysis. A COC record will be completed and sent with the samples for each laboratory and each shipment. If multiple coolers are sent to a single laboratory on a single day, individual COC forms will be completed and sent with each cooler.

The COC record will identify the contents of each shipment and maintain the custodial integrity of the samples. Information contained on the COC record includes the sampler's name, project number, sample number, date and time of sample collection, sample type, number of containers associated to each sample, analyses requested, and the names, dates, and times of custody.

Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until receipt by the laboratory, the custody of the samples will be the responsibility of the sample collector.

4.3.2 Decontamination Procedures

Equipment that comes into contact with potentially contaminated soil or groundwater will be decontaminated and rinsed with distilled water before use at each sampling location and sampling event to assure the integrity of samples collected. Disposable equipment intended for one-time use will be packaged for appropriate disposal and will not be reused. Drilling and sampling devices used will be decontaminated using high-pressure hot water (steam-cleaned) or by the following procedures:

- laboratory-grade detergent and tap water wash, in a 5-gallon plastic bucket, using a brush
- initial tap water rinse, in a 5-gallon plastic bucket
- final distilled water rinse in a 5-gallon plastic bucket

Equipment will be decontaminated in a pre-designated area over plastic sheeting, and clean bulky equipment will be stored on plastic sheeting in uncontaminated areas. Cleaned small equipment will be stored in plastic bags. Materials to be stored for more than a few hours will be covered.

4.3.3 Soil and Wastewater Disposal

Soil and wastewater generated from sampling and decontamination activities will be stored temporarily on site in DOT-approved 5-gallon buckets with press-sealing lids or 55-gallon drums with ring-top sealed lids. The drums will be labeled as non-hazardous waste soil or nonpotable water and identified with the generator's name (Oakland Unified School District), the sampling locations from which the waste was produced, and the date the waste was produced and placed in the container.

LFR assumes that the analytical data from the investigations will be sufficient to meet waste acceptance criteria set by the disposal facility, and that additional profiling of the waste soils and wastewater will not be necessary. At OUSD's request, LFR will make recommendations for the cost-effective, off-site disposal of waste produced at the Site. However, OUSD shall make the final determination for such disposal and shall direct LFR to make such disposal accordingly. LFR is not and will not be interpreted to be the generator or arranger for disposal of hazardous waste or hazardous substances.

5.0 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

QA/QC procedures are to be employed in both the field and the laboratory. QA/QC protocols include the collection of equipment rinsate samples, field blank samples, field split samples, and travel blank samples. The laboratories used for this project will employ their own QA/QC procedures.

5.1 Field Quality Assurance/Quality Control Procedures

Field QA/QC procedures will be performed at the Site and will consist of the following measures:

- COC forms will be used for sample submittal to the laboratory.
- Daily information regarding soil sample collection will be recorded in field logbooks or field sampling information forms. Sample types, soil descriptions, sample identification numbers, and sample times will be collected and recorded on field sampling information forms and/or in the field logbooks. Pages will be numbered, dated, and signed by the person recording the field data.

Field QA/QC samples will be collected and submitted for analysis along with the discrete soil samples using the following sampling frequency:

- equipment blanks - one equipment rinsate blank per field day
- field blanks - one field blank sample per field day
- field split samples – one field split sample for every 10 discrete samples
- travel (trip) blank samples – one travel blank per field day

5.1.1 Equipment Rinsate Blanks

One equipment rinsate blank (equipment blank) will be collected from the final water rinsed over equipment after cleaning activities have been performed. The equipment blank will be collected from non-disposable (reusable) sampling equipment such as soil sampling tools and sampling equipment. The equipment blank will be analyzed for VOCs, TVH, and Title 22 metals using the same analytical method used on the unique soil or groundwater samples.

To collect an equipment blank sample, distilled water will be poured over or through the recently cleaned equipment, and carefully collected in an appropriate sample container held over a bucket. Equipment blank samples will be stored and processed in the same manner as other aqueous samples.

5.1.2 Field Blanks

Field blank samples consist of a sample of the distilled water that was used as a final rinse for sampling equipment during equipment cleaning activities. The purpose of the field blank sample is to evaluate the distilled water for the presence of chemicals for which environmental samples are being analyzed. A field blank sample will be collected by pouring distilled water into the appropriate sample container. The field blank samples will be stored and processed in the same manner as other aqueous samples.

5.1.3 Field Split Samples

Field split soil and groundwater samples will be collected to evaluate the analytical procedures and methods employed by the laboratory. The field split soil sample will be collected immediately below the depth interval where the original soil sample is collected. The field split groundwater sample will be collected in appropriate laboratory-supplied bottles using the same bailer from which the primary sample was collected. One field split sample will be collected for every 10 soil and groundwater samples collected.

5.1.4 Travel Blank Samples

Trip blanks are used to detect VOC contamination during sample shipping and handling. Trip blanks are 40-mililiter VOA vials of ASTM Type II water that are filled in the laboratory, transported to the sampling site, and returned to the laboratory with VOC samples. Trip blanks are not opened in the field. The planned frequency for trip blanks is one per cooler containing samples for VOC analysis.

5.2 Laboratory QA/QC Procedures

Laboratory QA/QC procedures include the following:

- Laboratory analyses will be performed within the required holding time for samples submitted for initial analysis and those which are being held for analysis based upon the results of the initial analyses. Groundwater samples that are being laboratory filtered will be filtered and preserved in the laboratory within 24 hours of sample collection.
- Appropriate minimum reporting limits will be used for each analysis. The reporting limits will be lower than the corresponding PRGs established by the EPA Region IX for residential land use. For water samples, the detection limits for Low Concentration Volatiles in Water by gas chromatograph/mass spectrometer system will be used.
- The analytical method proposed for arsenic analysis will provide a detection limit sufficient for residential risk evaluation purposes.
- A laboratory certified by the State of California for the requested analysis will be used for the analyses.
- The laboratory will report the following information for each sample delivery group as follows:
    - a discussion of how the QA/QC criteria were met by the laboratory
    - a discussion of hold times
    - matrix spike/matrix spike duplicate results
    - relative percent difference
    - method blank data
    - surrogate recovery, instrument tuning, and calibration data
    - signed laboratory reports including the sample designation, date of sample collection, date of sample analysis, laboratory analytical method employed, sample volume, and the minimum reporting limit (any discrepancies will be detailed in a letter provided by the laboratory)

LFR will use a state-certified environmental testing laboratory for the sample analyses. LFR will confirm the DTSC's minimum reporting limits with the selected laboratory before submitting samples for analysis. Proposed laboratory reporting limits are included as Appendix D.

6.0 HUMAN HEALTH AND ECOLOGICAL SCREENING EVALUATION

A human health and ecological screening evaluation will be performed in accordance with the protocols detailed in the DTSC PEA Guidance Manual. The human health screening evaluation will include a health risk assessment (HRA). The purpose of the HRA is to estimate adverse human health affects by qualitatively and quantitatively addressing possible routes of exposure associated with the Site. The scope of work will include the specific tasks listed below.

6.1 Data Evaluation and Selection of Chemicals of Potential Concern

The data for the Site will be evaluated and a list of COPCs originating at the Site will be compiled. These COPCs will be the focus of the HRA.

6.2 Exposure Assessment (including fate and transport modeling)

The exposure assessment will follow EPA and DTSC risk assessment guidelines and use the Reasonable Maximum Exposure (RME) methods recommended by the EPA. A conceptual site model will be included in the PEA report.

6.3 Toxicity Assessment

The toxicity assessment section provides a list of the potential adverse health effects attributable to each of the COPCs included in the HRA.

6.4 Risk Characterization

Quantitative estimates of the noncarcinogenic and carcinogenic risk to human populations will be presented for the COPCs at the Site. Risk estimates derived using this health-conservative methodology will be compared to the acceptable National Contingency Plan incremental lifetime cancer risk level range of 1×10^{-4} to 1×10^{-6}, and the Cal/EPA acceptable incremental lifetime cancer risk level of 1×10^{-6}.

Historical land use and the analytical results from previous soil and groundwater investigations conducted at the Site indicate that detectable concentrations of COPCs in soil and groundwater are known or suspected to exist adjacent and in close proximity to the Site. The known or suspected COPCs are presented below:

- VOCs, including MTBE; BTEX; cis-1,2-dichloroethene; and trichloroethene
- inorganic chemicals, including Title 22 metals
- petroleum hydrocarbons, including gasoline-, diesel-, and motor oil-range hydrocarbons, and oil and grease

If COPCs are detected, data regarding soil properties, including organic carbon, grain size, bulk density, porosity, and moisture content, will be collected to model the fate and transport of chemicals in the environment. Total organic carbon will be analyzed by the Walkley-Black method, grain size will be analyzed by ASTM D422M, and bulk density, porosity, and moisture content will be analyzed using the API RP40 method.

Inorganic compounds detected above background concentrations will be considered COPCs. In the event that lead is found to be a COPC in soil, it will be evaluated using the DTSC Lead-Spread version 7 with the homegrown produce pathway turned off. If VOCs are detected in the soil and/or groundwater, the indoor air pathway will be considered in the risk assessment by using the Johnson-Ettinger model.

If COPCs are detected in groundwater, LFR will evaluate potential exposure pathways associated with direct contact and vapor intrusion as well as the ingestion exposure pathway if information is obtained during the PEA indicating that groundwater beneath the Site is a potential drinking water source.

7.0 COMMUNITY INVOLVEMENT

The DTSC and the OUSD will prepare and implement a plan to establish the procedures and protocols for informing the community surrounding the Site of the PEA evaluation. This plan will be prepared according to the public participation requirements of the California Education Code.

8.0 PEA REPORT PREPARATION

A PEA report presenting the results of the overall investigation will be prepared and submitted to the DTSC. The PEA report will be prepared in accordance with the PEA Guidance Manual (January 1994, second printing June 1999). The report will include site background and environmental setting information, field procedures, presentation of field observations including boring logs, analytical results including laboratory report sheets and a summary table summarizing the analytes, detection limits, minimum concentrations, maximum concentrations, 95th upper confidence level (UCL) concentrations (if appropriate), and exposure point concentrations. Concentrations of metals detected at the Site will be compared to the EPA Region IX residential soil PRGs and/or natural background concentrations for the area. Metals detected at concentrations above the PRGs and the background concentrations will be considered COPCs.

The PEA report will also include a summary of the Human Health and Ecological Screening Evaluation and the public participation activities implemented during the PEA. Electronic files with the field data, laboratory data, and at least one geo-referenced figure will be submitted to DTSC at the time of submission of the PEA Report.

Based on the Human Health and Ecological Screening Evaluation, the Summary and Conclusions section of the PEA report will address the following four main questions:

- Have current or past practices resulted in a release or threat of a release at the site?
- If a release has occurred or a threatened release exists, does it pose a significant threat to public health or the environment and, if not, why not?
- Does a release pose an immediate potential hazard to health or the environment so as to necessitate an emergency removal action and, if so, why?
- What further specific information and/or removal/remediation actions are necessary in order to better assess or mitigate health/environmental threats posed by the site?

Recommendations will be made regarding the need for additional action to further assess conditions at the Site or for limited removal action(s), if appropriate, based on site investigative findings and the screening risk evaluation. If further action is recommended, the PEA report will identify additional investigations and/or remediation needs and strategies. The PEA report will also include recommendations for expedited response actions necessary to mitigate any immediate potential hazards to public health or the environment, if needed. No Further Action recommendations will be made if levels of detected COPCs are established to be below risk-based screening levels.

9.0 PROPOSED WORK SCHEDULE

Upon approval of this work plan, LFR anticipates submitting a results report within five to seven weeks after completion of field activities. If no unanticipated delays occur, LFR estimates that two weeks will be required to schedule the fieldwork; 8 to 10 days will be needed to complete the fieldwork; laboratory analytical analysis will require 10 working days after sample submittal; and final report preparation will require an estimated three to five weeks after analytical results are received from the laboratory.

REFERENCES

Alameda County Health Care Services Agency. 1998a. Case Closure Summary for Lloyd Wise Nissan, 10500 East 14th Street, Oakland, California. April 29.

———. 1998b. Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland. August 14.

Department of Toxic Substances Control. 1994. PEA Guidance Manual. January.

ENSR Consulting and Engineering. 2000. Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California. October.

Gen-Tech Environmental. 1993a. Underground Tank Technical Closure Report, March 26.

———. 1993b. Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California. May 6.

———. 1994a. Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California. May 20.

———. 1994b. Overview of Environmental Conditions at 10550 East 14th Ave. [sic] Nissan/Honda Auto Dealership in Oakland, California. October 11.

Helley, E.J., and Graymer, 1997. R.W. Quaternary geology of Alameda County, and parts of Contra Costa, Santa Clara, San Mateo, San Francisco, Stanislaus, and San Joaquin Counties, California: A digital database. USGS Open File Report 97-97.

LFR Levine · Fricke. 2001. Personal communication between Mr. Alan Gibbs of LFR and Ms. Patricia Jeffery of Placemakers. January 30.

Piers Environmental Services. 1995. Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California. September 27.

———. 1996. Phase I Environmental Assessment for 1500–1510 105th Avenue, Oakland, California. June 5.

———. 1997. Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California. March 13.

———. 1998. Phase I Environmental Assessment for 1520 105th Avenue, Oakland, California. August 27.

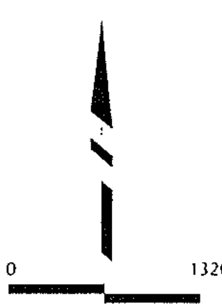
United States Department of Agriculture, Soil Conservation Service. 1981. Soil Survey of Alameda County, California, Western Part.

Table 2
Sample Collection Information
Batarse Project Site, Oakland, California

Sample Matrix and Test Method	Container	Preservative
Soil		
All analyses	Stainless-steel, brass, or butyrate sample tubes and caps or glass jars	Ice (4P C)
Groundwater		
Polychlorinated Biphenyls and Organochlorine Pesticides (EPA 8080A/8081/8082)	Two, 1-liter amber glass bottles	Ice (4P C)
Total Petroleum Hydrocarbons (EPA 8015 modified)	(2) 1-liter amber bottles and (3) 40-milliliter glass VOAs	Ice (40 C)/HCI
Volatile Organic Compounds (EPA 8260A)	(3) 40-milliliter glass VOAs	Ice (40 C)/HCI
Title 22 Metals (EPA 6010/7000)	(1) 300-milliliter plastic bottle	Ice - No preservative - samples to be filtered at laboratory

Notes:

VOA = volatile organic analysis
HCI = hydrochloric acid



Scale in feet

SOURCE: Delorme Street Atlas USA Version 6.0

7962SV01.CDR 1215000

Site Location Map

BATARSE PROJECT SITE, OAKLAND, CA.

LFR
LEVINE·FRICKE

Figure 1

APPENDIX A

Summary of Previous Reports

During the preparation of the Preliminary Environmental Assessment (PEA) work plan for the Oakland Unified School District Batarse Project Site ("the Site"), LFR Levine · Fricke (LFR) reviewed reports prepared for the Site by previous consultants. These reports included the following:

- "Underground Tank Technical Closure Report," prepared by Gen-Tech Environmental, dated March 26, 1993
- "Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 6, 1993
- "Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 20, 1994
- "Overview of Environmental Conditions at 10550 East 14th Avenue Nissan/Honda Auto Dealership in Oakland, California," prepared by Gen-Tech Environmental, dated October 11, 1994
- "Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated September 27, 1995
- "Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated March 13, 1997
- "Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland," prepared by Alameda County Health Care Services Agency (ACHCSA), dated August 14, 1998
- "Phase I Environmental Assessment for 1500–1510 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated June 5, 1996
- "Phase I Environmental Assessment for 1520 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated August 27, 1998
- "Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000 (ENSR 2000)

Information obtained from these reports is summarized below. The reports for the properties known as 10440 through 10550 East 14th Street detail work performed off Site; however, information contained in these reports is summarized in this work plan to evaluate possible impacts to the Site.

ON-SITE PROPERTIES

1500 through 1510 105th Avenue

Bill Thompson owned this property at the time of the environmental assessment by Piers Environmental. According to information contained in this report, the buildings

- TPH-g up to 20 milligrams per kilograms (mg/kg)
- TPH-d up to 660 mg/kg
- ethylene glycol up to 220 mg/kg
- toluene up to 140 micrograms per kilogram (μg/kg)
- ethylbenzene up to 93 μg/kg
- total xylenes up to 3,000 μg/kg
- oil and grease up to 1,400 μg/kg
- cis-1,2-dichloroethene up to 340 μg/kg
- tetrachoroethene up to 42 μg/kg

Analysis of the groundwater samples collected from the excavation revealed the following maximum concentrations of selected compounds:

- TPH-g at 27 milligrams per liter (mg/l);
- benzene at 780 micrograms per liter (μg/l);
- toluene at 8,700 μg/l
- ethylbenzene at 1,300 μg/l
- total xylenes at 6,300 μg/l

Cis-1,2-dichloroethene and tetrachloroethene were not detected in the groundwater samples at concentrations at or above the laboratory reporting limits.

Two additional USTs were removed in February 1993; the address given for the work site was listed as 10550 East 14th Street. According to information contained in previous reports reviewed by LFR, the two tanks were noted as a 2,000-gallon gasoline UST and a 550-gallon waste oil UST. According to the map provided, the gasoline UST was located on the southern side of 105th Avenue and adjacent to the western end of the Lloyd Wise auto dealership building while the waste oil UST was located on the northern side of 105th Avenue.

Soil samples collected at the time of the tank removals were analyzed for the following:

- TPH-g and TPH-d by EPA Test Method 8015 Modified
- BTEX by EPA Test Method 8020
- VOCs by EPA Test Method 8240
- SVOCs by EPA Test Method 8270
- oil and grease by Standard Method 5520 E&F
- five LUFT field manual metals

APPENDIX B

Site-Specific Health and Safety Plan

Health and Safety Plan
for Preliminary Environmental Assessment
Activities at the
Batarse Site
104th Avenue and East 14th Street
Oakland, California

May 25, 2001
7962.01-001

Prepared for
Oakland Unified School District
955 High Street
Oakland, California 94601

CONTENTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY		SAMPLE DATA
	Type of Security: CURRENT SECTION PID (ppm)	Graphic Log	Description	NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)
		NR	CONCRETE, SAND PACK Fe-OXIDIZED SAND + GRAVEL	NR
		ML	SILTY CLAY/CLAYEY SILT [ML], VERY DARK BRN (10 YR 2/2), DAMP, LOW-ZERO PLASTICITY, SOFT, BLACK MOTTLING	SB-70-3' 150
5		NR	SLIGHTLY CLAYEY-SILTY WELL GRADED FS-COARSE SAND [SW], BROWN (10 YR 4/3), DAMP, WELL GRADED	SB-70 1510
		CL	SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, HIGH PLASTICITY, STIFF, SILT < 15%	
10		ML	SILTY CLAY/CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, LOW PLASTICITY, SILT <50%, MINOR BLACK MOTTLING	SB-70 1522
			SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, LOW-MED PLASTICITY, SILT <40%, BLACK MOTTLING, MINOR Fe-OXIDE STAINING	
15		CL	(10 YR 3/3) [CL], MED PLASTICITY	SB-70- 153
			CLAYEY SILT [CL], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <30%, MED-LOW PLASTICITY, MINOR Fe-OXIDE STAINING, DARK GRAY STAINING BEGINS, BECOMES MORE PRONOUNCED BELOW 18.1'	SB-70-20'
20		CL	DARK GRAY STAINED SILTY CLAY [CL], SLIGHT HC ODOR STAINING DISAPPEARS AT 24.5'	SB-70-21; SB-70-22'; SB-70-23'; SB-70-2[illegible]
25		SC	CLAYEY SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, LOW-ZERO PLASTICITY, FINE SAND WELL SORTED, MINOR Fe-OXIDE STAINING, CLAY <30%	SB-70-25'
		NR		
		SP	SLIGHTLY CLAYEY FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), WET, ZERO PLASTICITY, FINE SAND WELL SORTED, CLAY <10%, Fe-OXIDE MOTTLING/STAINING	
30			TD = 28	
35			GGW@ 1630	

Well Permit No.:

Date well drilled: 4.3.01

Date water level measured:

Well elevation:

Drilling Company: PRECISION

Driller: KIAN JOSE

Sampling Method: DIRECT PUSH

Hammer Weight:

Sketch of Well Location:

↑ TO E. 14th

SB-70

LLOYD WISE MAINTAIN BLDG.

1'

DOOR

SB-70

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-70

Project No. 7962.01

LEVINE·FRICKE

CONSULTING ENGINEERS AND HYDROGEOLOGISTS

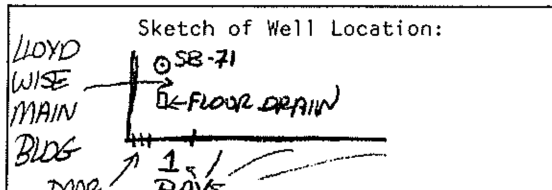
Depth, feet	WELL CONSTRUCTION — Type of Security: PID (ppm)	LITHOLOGY — Graphic Log	Description	SAMPLE DATA — Number / Interval / Penetration Rate (Blows/ft.)
0			CONCRETE, SANDPACK	
	<1	ML	SLIGHTLY GRAVELLY CLAY SILT [ML], BLACK (10 YR 2/1), DAMP, CLAY <40%, GRAVEL <5%, LOW-ZERO PLASTICITY, GRAVEL CLAST SUB-ROUNDED (3-5mm AVG DIAMETER)	SB-71- 1157
5		NR / SW / NR / SW	GRAVELLY FINE-COARSE SAND [SW], BROWN (10 YR 4/3), WET, CLAY <1%, SILT <5%, WELL-MODERATELY GRADED VFS→COARSE SAND, GRAVEL <15%, CLASTS SUB-ANGULAR, Fe-OXIDE STAINING	
		NR / SW	GRAVEL ~40%, SUBROUNDED, SAND MODERATELY GRADED	SB-71- 1200
		CL	SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, HIGH PLASTICITY, SILT <10%, STIFF	
10	<1		CLAYEY SILT/SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, MED PLASTICITY, SILT <40%, VERY STIFF, BLACK MOTTLING	SB-71-1 1215
			SILTY CLAY/CLAYEY SILT [ML], BROWN (10 YR 4/3), DAMP, LOW PLASTICITY, SILT <50%, VERY STIFF, MINOR Fe-OXIDE STAINING	
15			SILTY CLAY [CL], BROWN (10 YR 4/3), DAMP, MED PLASTICITY, SILT <30%, VERY STIFF, MINOR Fe-OXIDE STAINING	SB-71-1 1227
			SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, MED-LOW PLASTICITY, SILT <40%, Fe-OXIDE STAINING/MOTTLING + BLACK MOTTLING	
			SILTY CLAY [CL], (10 YR 4/3), HIGH PLASTICITY, GRAY-GREEN MOTTLING	SB-71-19 1258
20	<1		PRONOUNCED SILVER-GRAY-GREEN MOTTLING/DISCOLORATION, NO SMELL [CL] (10 YR 4/3)	SB-71- 21' 1312; SB-71- 131
			DARK GRAY SILTY CLAY [CL], (10 YR 4/1), DAMP, FAINT HC SMELL, MED-HIGH PLASTICITY, Fe-OXIDE STAINING, SILT <30%	SB-71-22 1314; SB-71-23'; SB-71-24' 13
25	<1	SC	CLAYEY FINE SAND [SC], BROWN (10 YR 4/3), DAMP→WET, SILT <10%, CLAY <20%, WELL SORTED FINE SAND, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	SB-71-25' 1
		SP	CLEAN WELL-SORTED MED SAND [SP], BROWN (10 YR 4/3), WET, SAND WELL GRADED	
		SC	SLIGHTLY CLAYEY FINE SAND [SC], WET, BROWN (10 YR 4/3), SILT <15% CLAY <20%, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	
			TD = 28'	
30				
			GGW @ 1400	
35				

Well Permit No.:
Date well drilled: 4.3.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-71

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	LITHOLOGY	SAMPLE DATA
	Type of Security: CURRENT SECTION; PID (ppm)	Graphic Log / Description	NUMBER / INTERVAL / PENETRATION RATE (Blows/ft.)

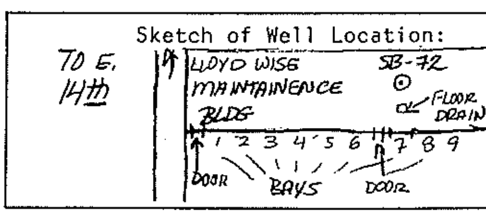
SAMPLE

- CONCRETE, SAND PACK, GRAVEL
- CLAYEY SILT[ML], VERY DARK BRN (10 YR 2/1), SLIGHTLY DAMP, ZERO PLASTICITY, CLAY < 20%, MINOR Fe-OXIDE STAINING
- GRAVELLY SILTY CLAY[CL], BLACK-DARK BRN (10 YR 2/1-2), DAMP, MED PLASTICITY, SILT < 30%, GRAVEL < 30%, Fe-OXIDE STAINING — SB-72- 1305
- NR
- 5 — CLEAN MED SAND W/INFREQUENT GRAVEL [SW], DARK BRN (10 YR 3/3), WELL SORTED MED SAND, NO STAINING — SB-72-6' 1307
- NR
- SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), HIGH PLASTICITY, DAMP, SILT < 15%, Fe-OXIDE STAINING/MOTTLING
- OLIVE BRN MOTTLING - SAME AS ABOVE — SB-72- 1320
- 10 — CLAYEY SILT/SILTY CLAY [ML], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY ~50%, VERY STIFF, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING, MINOR BLACK MOTTLING, VERY STIFF
- SILTY CLAY [CL], DARK BROWN (10 YR 3/3), DAMP, MINOR Fe-OXIDE STAINING, SILT < 30%, MED PLASTICITY, MINOR BLACK/DARK GRAY MOTTLING, VERY STIFF — SB-72- 1334
- 15
- [CL] (10 YR 3/3) MED PLASTICITY
- SILTY CLAY[CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED PLASTICITY, SILT < 25%, SOFT, PRONOUNCED Fe-OXIDE STAINING
- STIFF - SAME AS ABOVE — SB-72-2 1401
- 20 — SILTY CLAY[CL], OLIVE BRN (2.5 YR 4/3), DAMP, MED-HIGH PLASTICITY, SILT < 40%, SOFT, Fe-OXIDE STAINING
- [SC] (2.5 YR 4/3), LOW-ZERO PLASTICITY
- WELL SORTED FINE SAND [SP], OLIVE-BRN (2.5 YR 4/3), WET!, Fe-OXIDE STAINING, BLACK MOTTLING, WELL SORTED — SB-72-2 1413
- 25 — CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), WET-DAMP, LOW-ZERO PLASTICITY, CLAY < 30%, Fe-OXIDE + BLACK MOTTLING, VFS-FS WELL SORTED
- TD = 25'
- 30
- 35 — GGW@1440

Well Permit No.:
Date well drilled: 4-5-01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KRB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-72

Project No. 7962.01

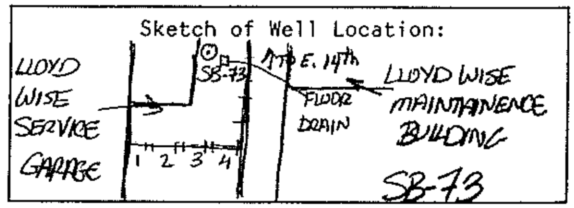
LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION	PID (ppm)	Graphic Log	LITHOLOGY Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
	Type of Security: CURRENT SECTION						SAMPLE
0–1				CONCRETE, SAND PACK			
1–2				Fe-OXIDIZED SAND PACK + GRAVEL (ANGULAR), GRADE + FILL			
2–4			SM	CLAYEY SILT/SAND [SM], VERY DARK BRN (10 YR 2/2), DAMP, ZERO PLASTICITY, FINE SAND <25%, CLAY <25%, SAND POORLY GRADED, SOFT		■	SB-73- 1351
4–5			SP	GRAVELLY MED-COARSE SAND [SP], OLIVE BRN (2.5 YR 4/4), WET, CLAY <10%, SILT <10%, MED-COARSE SAND MODERATELY SORTED, GRAVEL CLASTS <5%, AVERAGE SIZE ~8mm, ANGULAR BANDED BROWN + MAROON CHERTS, Fe OXIDE STAINING		■	SB-73- 135
5			NR		NR		
6			SP				
7–9			CL	SLIGHTLY SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, SILT <10%, HIGH PLASTICITY, MINOR Fe-OXIDE STAINING/MOTTLING			
9–10				BLACK-DARK BRN (10 YR 2/2) [CL], MED-HIGH PLASTICITY, <20% SILT Fe-OXIDE STAINING, OLIVE BRN. MOTTLING (MINOR)		■	SB-73-1 1408
10				CLAYEY SILT/SILTY CLAY [ML], DARK BRN (10 YR 3/3), DAMP, ZERO-LOW PLASTICITY, <50% SILT, Fe-OXIDE STAINING (MINOR), VERY STIFF			
14				DARK BRN (10 YR 3/3), SILTY CLAY [CL], DAMP, LOW PLASTICITY, <50% SILT, VERY STIFF		■	SB-73-1 1422
16				LOW-MED PLASTICITY, SILT <40%, DARK BRN (10 YR 3/3), [CL]			
17				DARK BRN (10 YR 3/3) [CL], MED-LOW PLASTICITY, DAMP, SILT <40%, Fe-OXIDE STAINING, VERY STIFF			
18.5				CLAYEY SILT [ML], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <30%, LOW PLASTICITY, SOFT, PRONOUNCED Fe-OXIDE STAINING		■	SB-73-2 1500
22				SILTY CLAY [CL], OLIVE BRN (2.5 YR 4/3), DAMP, CLAY <30%, MED PLASTICITY, STIFF, Fe-OXIDE STAINING			
24			SC	CLAYEY VFS + SILT [SC], OLIVE BRN (2.5 YR 4/3), DAMP, <30% CLAY, LOW-ZERO PLASTICITY, VFS WELL SORTED, PRONOUNCED Fe-OXIDE STAINING, SOFT		■	SB-73-2 1510
26			NR				
27			SP	SLIGHTLY CLAYEY FINE SAND [SP], OLIVE BRN (2.5 YR 4/3), WET, <10% SILT, <10% CLAY, ZERO PLASTICITY, FINE SAND WELL GRADED, PRONOUNCED Fe-OXIDE STAINING			
28				TD=28'			
35				GGW@1600			

Well Permit No.:
Date well drilled: 4·2·01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location:



LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-73

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

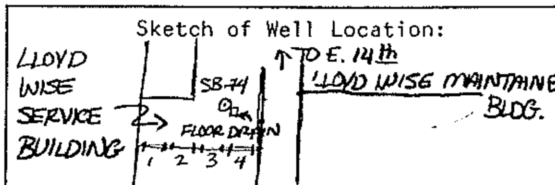
Depth, feet	WELL CONSTRUCTION Type of Security: CURRENT SECTION	PID (PPM)	LITHOLOGY Graphic Log	Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
			NR	ASPHALT, Fe-OXIDE GRAVEL + SAND, CLEAN SAND PACK, CONCRETE	NR		
		<1	CL	SILTY CLAY [CL], BLACK (10 YR 2/1), DAMP, MED PLASTICITY, MINOR Fe-OXIDE STAINING, SILT <20%	SB-74- 1111		
5			NR		NR		
			CL	SILTY CLAY [CL] VERY DARK BROWN - BLACK (10 YR 2/2), DAMP, MED PLASTICITY, OLIVE BRN + BLACK W/MINOR Fe-OXIDE MOTTLING, SILT <25%, STIFF	SB-74-B 1117		
10			ML	CLAYEY-SILT [ML], DARK OLIVE BRN (2.5 YR 3/3), DAMP, CLAY <30%, LOW-ZERO PLASTICITY, MINOR Fe-OXIDE STAINING, VERY STIFF	SB-74- 1120		
				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <15%, MED PLASTICITY, BLACK + Fe-OXIDE MOTTLING, VERY STIFF			
15		<1	CL	SILTY CLAY [CL], DARK GRAYISH BRN (10 YR 4/2), DAMP, SILT <25%, MED-LOW PLASTICITY, MINOR Fe-OXIDE STAINING/MOTTLING, VERY STIFF	SB-74 1135		
20				CLAYEY SILT/SILTY CLAY [CL], DARK GRAYISH BRN (10 YR 4/2), DAMP SILT <40%, VFS <15%, LOW PLASTICITY, Fe-OXIDE STAINING, SOFT MINOR BLACK MOTTLING	SB-74- 120		
				SILTY CLAY [CL], DARK GRAYISH BRN (10 YR 4/3), DAMP, SILT <20%, HIGH PLASTICITY, STIFF, Fe-OXIDE STAINING/MOTTLING			
				SILTY/CLAYEY SILT [			
25		<1	SC	CLAYEY FINE SAND [SC], OLIVE BRN (2.5 YR 4/3), DAMP, SILT <15%, CLAY <20%, LOW-ZERO PLASTICITY, FINE SAND WELL SORTED, PRONOUNCED Fe-OXIDE STAINING	SB-74-2 121		
			SM	SLIGHTLY CLAYEY FINE SAND [SM], OLIVE BRN (2.5 YR 4/3), WET, SILT <10%, CLAY <10%, FINE SAND WELL SORTED, ZERO PLASTICITY, PRONOUNCED Fe-OXIDE STAINING, BLACK MOTTLING, SOFT			
				TD = 28'			
30							
35				GGW@ 1240			

Well Permit No.:
Date well drilled: 4.2.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: KIAN JOSE
Sampling Method: DIRECT PUSH
Hammer Weight:

LF Geologist/Engineer: KPB

Sketch of Well Location:



FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-74

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

Depth, feet	WELL CONSTRUCTION Type of Security: CURRENT SECTION	PID (ppm)	LITHOLOGY Graphic Log	Description	SAMPLE DATA Number	Interval	Penetration Rate (Blows/ft.)
			NR	SAND PACK, GRAVEL (Fe-OXIDE STAINED), ASPHALT, CONCRETE	NR		SAMPLE I
5		<1		SILTY-CLAY [CL], BLACK (10 YR 2/1), DAMP, <25% SILT, MED PLASTICITY, INFREQUENT Fe-OXIDE STAINING	SB-75- 0920		
			CL	SILTY CLAY [CL], DARK BRN (10 YR 2/2), DAMP <30% SILT, MED PLASTICITY, VERY STIFF, INFREQUENT SALT XYLS (<1%)			
10		<1		CLAYEY SILT [ML], BROWN (10 YR 4/3), DAMP, CLAY <40%, LOW PLASTICITY, VERY STIFF, MINOR BLACK MOTTLING	SB-75-1 0927		
			ML	BROWN [ML]			
				SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, MED PLASTICITY, VERY STIFF, BLACK MOTTLING			
15				DARK BRN [CL]	SB-75-15 0946		
			CL	SILTY CLAY [CL], DARK BRN (10 YR 3/3), DAMP, SILT <30%, HIGH PLASTICITY, Fe-OXIDE STAINING/MOTTLING, MED STIFF			
20					SB-75-20 1004		
				CLAYEY SAND + SILT [SC], DARK GRAYISH BRN (2.5 YR 4/2), DAMP CLAY <40%, SILT ~30%, VFS ~30%, LOW-MED PLASTICITY, SOFT Fe-OXIDE STAINING PRONOUNCED			
25			SC	SLIGHTLY CLAYEY FINE SAND [SC], DARK GRAYISH BRN (10 YR 4/2), DAMP, CLAY <20%, LOW-ZERO PLASTICITY, Fe-OXIDE STAINING	SB-75-25 1019		
			NR				
			SC	SLIGHTLY-CLAYEY FINE SAND [SC], DARK GRAYISH BRN (10 YR 4/2), DAMP-WET, CLAY <10%, ZERO-LOW PLASTICITY, LIGHT GRAY + Fe-OXIDE MOTTLING			
				TD=28'			
30							
35				GGW @ 1045			

Well Permit No.:
Date well drilled: 4.2.01
Date water level measured:
Well elevation:

Drilling Company: PRECISION
Driller: JOSE KHAN
Sampling Method: DIRECT PUSH
Hammer Weight:

Sketch of Well Location: SB-75

LF Geologist/Engineer: KPB

FIELD LOG OF WELL CONSTRUCTION AND LITHOLOGY FOR SB-75

Project No. 7962.01

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

APPENDIX C

Groundwater Monitoring Well Logs and Tank Removal Information

Gen Tech Environmental, Inc. San Jose, CA

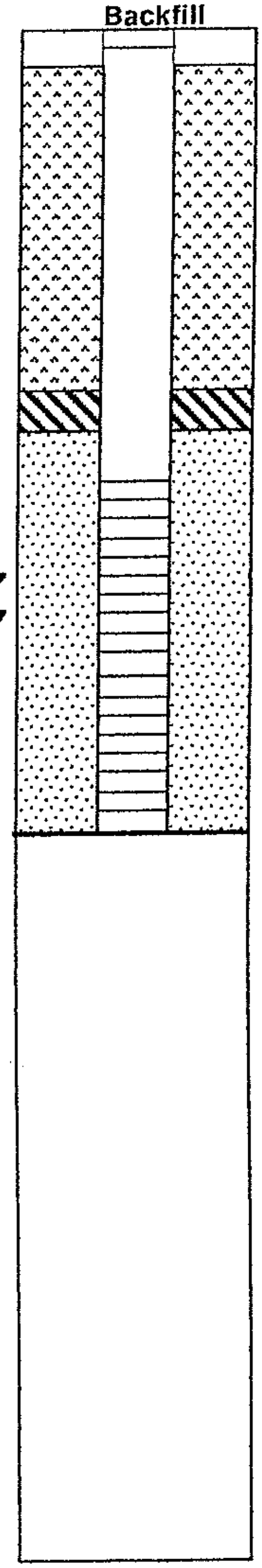
Project No. 9302 **Boring/Well No.** MW-1
Client: A. A. Bartese (Lloyd Wise Olds) **Date Drilled:** 4/16/93
Location: 105th Street, Oakland **Logged by:** E.L. and C.M.P.
Drilling Method: Hollowstem **Permit:** A.C.W.D.
Water Levels: 1st Enc: 16' Static: 15'

Exploratory Boring Log

Borehole Completion
Well Installed: 2" dia.
Total Depth: 21' Casing Depth: 19.5'
Screen Length: 9' Blank Length: 11.5'
Top Sand Pack:10.6' Top Bentonite:9.5'
Grout Seal: 9.5 ' to 0.5' vault box

Sample No.	OV	Blow Count	Sample	Depth	Lithology Log
					6" concrete, 2'deep void, Sand Fill below 2' GW - Class # structural fill backfill, damp
				5	Driller calls change at 7'
MW-1 @7		push			ML - Sandy SILT, 10YR 3/3 dark brown, 10% sand low plasticity, very soft, damp
MW-1 @10'		16		10	CL - Silty CLAY, 5GY 4/1 dark greenish gray, 30% silt, 5% sand, high plasticity, very stiff, damp same as above, 5Y 2.5/1 black, staining, odor
MW-1 @15'		14		15	CL to ML - Gravelly Silty CLAY to SILT, 10 YR 3/3 dark brown, 10% sand, 30% gravel, silt 30-50%, low plasticity, very moist to saturated, soft; driller calls resistance change at 18'
MW-1 @20'		4		20	CL - Silty CLAY, 10YR 5/4 yellowish brown, 45% silt, rare worm burrows (wet), med. plasticity, medium stiff, damp. (assumed aquitard)
					Bottom of Boring = 21 feet

Well Detail/ Backfill



CGS Sampling Specialists
Environmental Services
1172 Delmas Ave.
San Jose, CA 95125

Water-Quality Sampling Information

Date 2-24-07
Project No.________
Sample No.________

Project Name Batarse oak.
Address E. 14 St
Samplers Name Chris Solomon
Sampling Method ________
Analyses Request ________

Number/Types of
Sample Bottels ________

Method of Shipment ________

Well Location Map

Not Sampled

Well Number MW #1-0
Well Diameter 2"
Depth to Water (ft.) 12.68'
Total Well Depth (ft.) 23.65
Height of Water (ft) ________
Water Volume in Well (gal) ________

2 - inch casing = 0.16 gal/ft
4 - inch casing = 0.65 gal/ft
5 - inch casing = 1.02 gal/ft
6 - inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER	VOLUME WITH-DRAWN	TEMP. (F)	pH (S.U)	COND. (mhos/cm)	PURGE VOLUMES	REMARKS

PIERS Environmental Services — Exploratory Boring Log

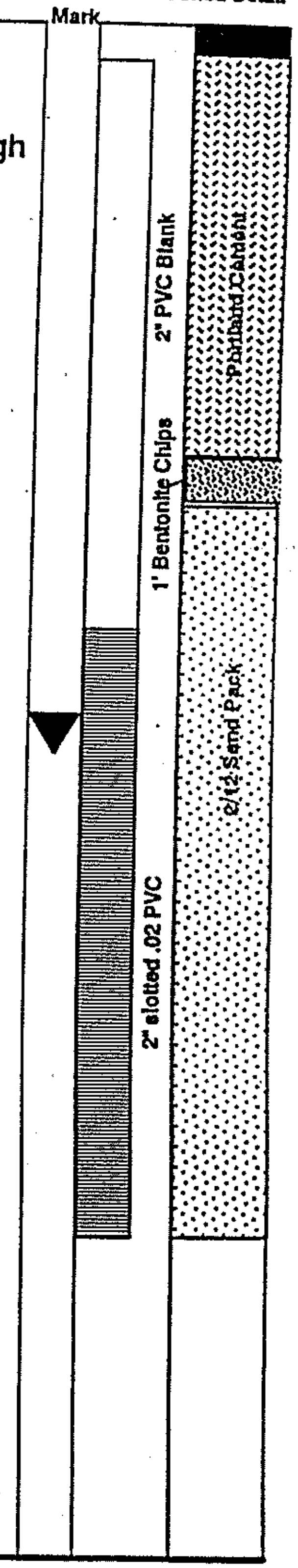
Project No. 95193 Client: A.A. Batarse, Inc. Boring # MW-2 Date 8-4-95

Location: 10550 E. 14th St., Oakland, CA Logged By: B. Halsted

Drilling Method: 8 inch Hollow Stem Permit: Zone 7

Sample No.	Blow Count	Sample Type	Depth	USGS	Lithology Description
					4 inches asphalt, 8 inches baserock
				CL	Silty Clay - 15%–20% silt - Very Dark Gray/Brown, Very Moist, Medium/High Plasticity, Stiff, Medium/High D/S
MW-2 @5'	5/6/8	Soil	5'		
MW-2 @10'	4/7/8	Soil	10'		
MW-2 @15'	5/7/9	Soil	15'		Silty Clay - <15% silt, olive brown, dry to very little moisture, very stiff, high plasticity, Medium to High D/S, very slight petroleum odor.
MW-2 @20'	7/10/12	Soil	20'		No changes except increase in moisture.
MW-2 @25'	9/14/17	Soil	25'		Sily Clay, 35% silt, some very fine sand, olive brown, slightly moist, low to med. plasticity, med. D/S, very stiff.
MW-2 @30'	12/18/23	Soil	30'		BOH @ 30.5 ft.
			35'		
			40'		

H20 Mark Well Const. Detail



JAMES RASP P.E.
Civil and Structural Engineering
5134 Elrose Avenue
San Jose, California 95124
(408) 448-6768

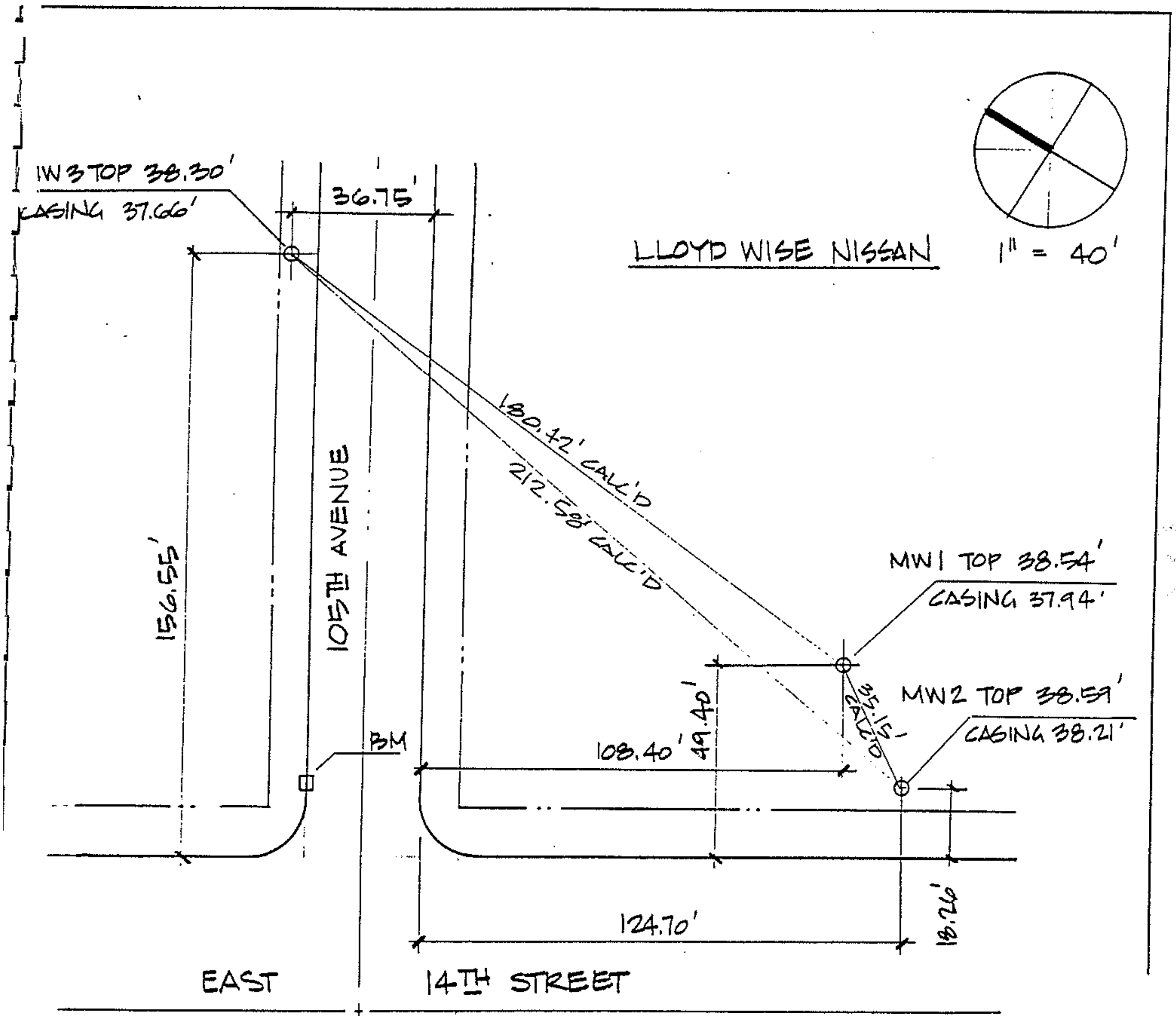
JOB 95073/ENVIRONMENTAL RESTORATION SERVICES

SHEET NO. 1 OF 1

CALCULATED BY JIM RASP DATE 8/95

CHECKED BY ______ DATE ______

SCALE 1" = 40'



REGISTERED PROFESSIONAL ENGINEER
JAMES W. RASP
Jim Rasp
No. 17845
Exp. 6-30-97
CIVIL
STATE OF CALIFORNIA

CITY OF OAKLAND BENCHMARK # 1885
CUTSQUARE ELEV 37.311

TANK NUMBER A

Tank location	:	see map on page 3.
Tank age	:	30+ years
Tank material	:	steel
Depth to tank top	:	30"
Tank dimensions	:	46" x 144"
Tank capacity	:	1,000 gallons
Tank useage	:	product oil
Residual contents	:	75 gallons
Quantity pumped	:	75 gallons
Dry ice used	:	60 pounds
LEL reading	:	0%
Oxygen reading	:	18%
Tank coating	:	none
Condition of tank	:	heavily corroded, several visible holes

Backfill material	:	sand, odor of solvent				
Native soil	:	sandy clay, odor of solvent				
Water in excavation	:	yes, spillage from tank				
product piping	:	length:	10'	size:	2" diameter	
material	:	steel		fate:	H&H	
Vent piping	:	length:	10'	size:	2" diameter	
material		steel		fate:	H&H	
Remote fill	:	length:	30"	size:	4" diameter	
material	:	steel		fate:	H&H	

Sample Locations : see site map on Page 3.

# of soil samples : (3) Container: 3" brass

# of water samples : (0) Container: N/A

Type of soil : sandy clay

Sample #	Depth	Location	Analysis
SS9302-1	8'bgs	east end of tank	see Chain-of-Custody
SS9302-2	8'bgs	west end of tank	see Chain-of-Custody
SS9302-6	3'bgs	in backfill spoils	see Chain-of-Custody

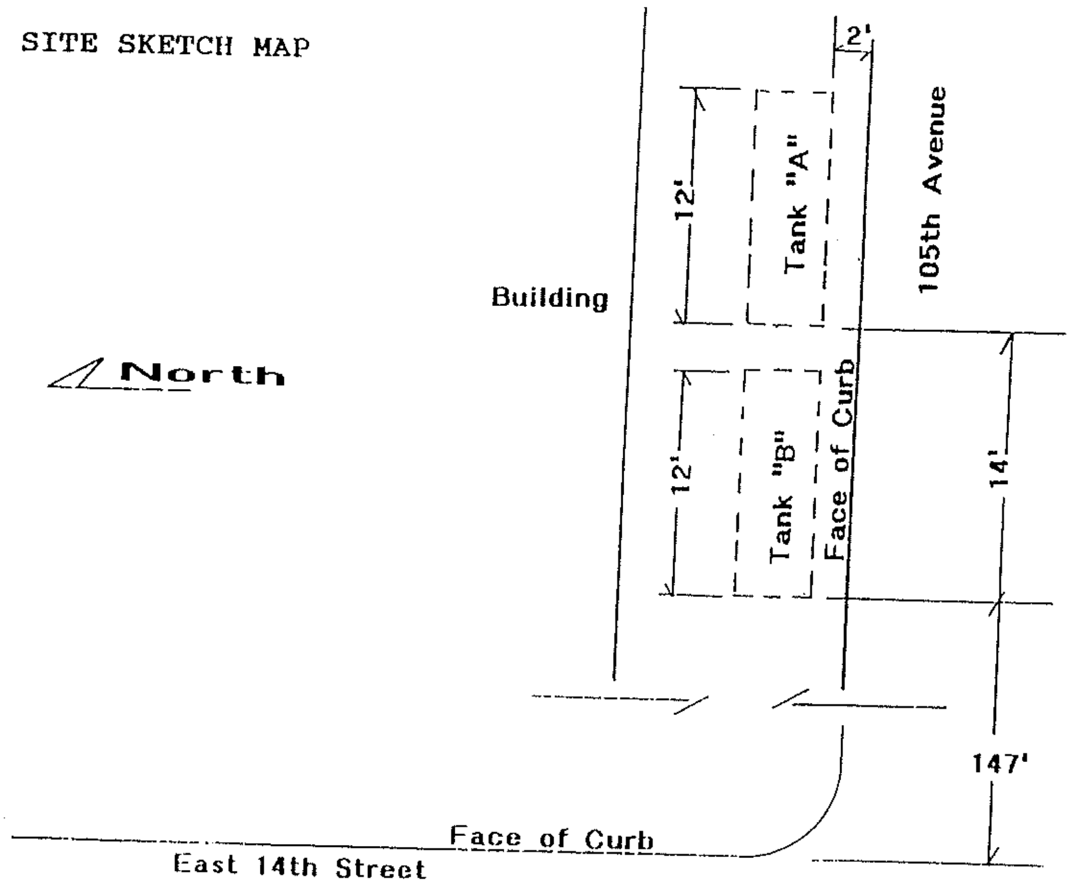
Odor in samples : solvent odor

Staining in samples : grey-green

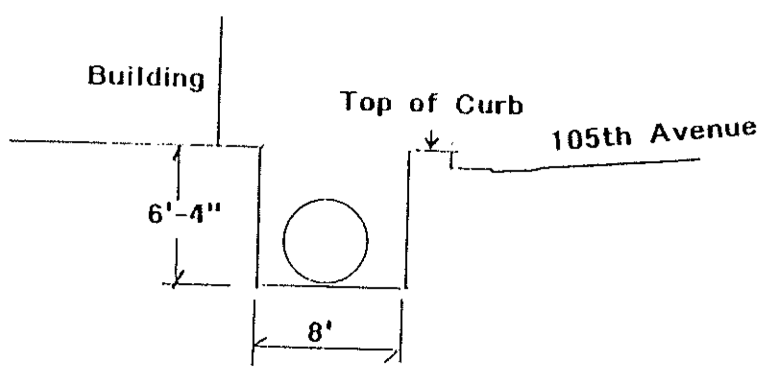
How were soil samples obtained: by hand

How were water samples obtained: by hand

SITE SKETCH MAP



SECTION VIEW of EXCAVATION



APPENDIX D

Preliminary Environmental Assessment Work Plan,
Batarse Project Site,
104th Avenue and East 14th Street,
Oakland, California,
May 25, 2001

Preliminary Environmental Assessment Work Plan
Batarse Project Site
104th Avenue and East 14th Street
Oakland, California

May 25, 2001
7962.01-001

Prepared for
Oakland Unified School District
955 High Street
Oakland, California 94601

May 25, 2001

7962.01-001

Ms. Janet Naito
California Environmental Protection Agency
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710

Subject: Preliminary Environmental Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California

Dear Ms. Naito:

LFR Levine · Fricke (LFR) has prepared this Preliminary Environmental Assessment (PEA) work plan on behalf of the Oakland Unified School District for the Batarse Project Site in Oakland, California ("the Site").

LFR has reviewed background information obtained from the "Phase I Environmental Site Assessment Report, Batarse Project Site, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000. On December 1, 2000, LFR personnel met with you and Dr. David Berry of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) to discuss the scope of the PEA work plan for the Site.

Our original work plan, dated January 30, 2001, has been revised to include the DTSC's comments as presented in documents issued by the DTSC on March 9, March 12, and March 19, 2001, and discussed during our teleconference on March 14, 2001. This work plan was prepared in general accordance with DTSC guidelines, as presented in the PEA Guidance Manual (January 1994, second printing June 1999).

If you have any questions or comments concerning the PEA work plan, please call either of the undersigned at (510) 652-4500.

Sincerely,

Zita D Freeman for
Alan D. Gibbs, R.G., R.E.A. II
Senior Associate Geologist

Charles H. Pardini, R.G.
Principal Geologist,
Assistant Operations Manager

cc: Ms. Ineda P. Adesanya, Oakland Unified School District
Mr. Jerry Suich, Oxbridge Development

LFR
LEVINE • FRICKE

May 25, 2001

7962.01-001

Ms. Ineda P. Adesanya
Director of Facilities
Oakland Unified School District
955 High Street
Oakland, California 94601

Subject: Preliminary Environmental Assessment Work Plan, Batarse Project Site, 104th Avenue and East 14th Street, Oakland, California

Dear Ms. Adesanya:

LFR Levine · Fricke (LFR) has prepared this Preliminary Environmental Assessment (PEA) work plan on behalf of the Oakland Unified School District for the Batarse Project Site in Oakland, California ("the Site"). The Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by East 14th Street, to the east by Breed Avenue, and to the south by a maintenance facility owned by AC Transit.

LFR has reviewed background information obtained from the "Phase I Environmental Site Assessment Report, Batarse Project Site, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000. On December 1, 2000, LFR personnel met with Ms. Janet Naito and Dr. David Berry of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) to discuss the scope of the PEA work plan for the Site.

Our original work plan, dated January 30, 2001, has been revised to include the DTSC's comments as presented in documents issued by the DTSC on March 9, March 12, and March 19, 2001, and discussed during our teleconference on March 14, 2001. This work plan was prepared in general accordance with DTSC guidelines, as presented in the PEA Guidance Manual (January 1994, second printing June 1999).

If you have any questions or comments concerning this letter or the PEA work plan, please call either of the undersigned at (510) 652-4500.

Sincerely,

Lita D Freeman for
Alan D. Gibbs, R.G., R.E.A. II
Senior Associate Geologist

Charles H. Pardini
Charles H. Pardini, R.G.
Principal Geologist,
Assistant Operations Manager

cc: Mr. Jerry Suich, Oxbridge Development

CONTENTS

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

This Preliminary Environmental Assessment (PEA) work plan for the Batarse Project site, located at the intersection of 104th Avenue and East 14th Street in Oakland, California ("the Site"; Figure 1), is being submitted by LFR Levine·Fricke (LFR) on behalf of the Oakland Unified School District (OUSD). The Site, which consists of numerous parcels, is located within an area bounded to the north by 104th Avenue, to the west by East 14th Street, to the east by Breed Avenue, and to the south by a bus maintenance facility owned by Alameda-Contra Costa Transit (AC Transit; Figures 1 and 2).

The site is being considered as a potential location for the construction of a new school. Information used in the preparation of this PEA work plan was obtained during LFR's drive-by visit of the Site on October 30, 2000, and from the following sources:

- "Underground Tank Technical Closure Report," prepared by Gen-Tech Environmental, dated March 26, 1993
- "Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 6, 1993
- "Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 20, 1994
- "Overview of Environmental Conditions at 10550 East 14th Avenue Nissan/Honda Auto Dealership in Oakland, California," prepared by Gen-Tech Environmental, dated October 11, 1994
- "Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated September 27, 1995
- "Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated March 13, 1997
- "Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland," prepared by Alameda County Health Care Services Agency (ACHCSA), dated August 14, 1998
- "Phase I Environmental Assessment for 1500–1510 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated June 5, 1996

for others outside its control who disregard such marked hazards or restricted access. This HSP has been prepared specifically for this project and is intended to address health and safety issues solely with respect to LFR's work. All references, therefore, to the site, the work, activities, site personnel, workers, persons, or subcontractors in this HSP are with respect to LFR work only.

2.0 SITE DESCRIPTION AND BACKGROUND

The Site is located within a city block in Oakland bounded to the north by 104th Avenue, to the west by East 14th Street, and to the east by Breed Avenue (see Figure 1 of the Work Plan). For convenience, the Site has been divided into eight groups of parcels to facilitate describing the proposed assessment areas. The site is being considered for the construction of a new school. A list of the properties and their current occupants is provided below:

Parcel Group	Parcel Group Name	Street Address	Assessor's Parcel Number
I	Lloyd Wise Inc.	10550 East 14th Street (eastern portion)	047-5519-005-02 (eastern portion)
		1424 105th Avenue (formerly part of East 14th Street)	047-5509-010-00
II	Bill & Bill's Auto Body	1500 105th Avenue	047-5509-009-01
III	Management Storage	1510 105th Avenue	047-5509-007-00 and 047-5509-006-00
IV	Ward's Custom Paint	1536, 1538, and 1544 105th Avenue	047-5509-003-00, 047-5509-004-00, and 047-5509-005-00
V	Chevron Tow	1560 and 1570 105th Avenue	047-5509-001-01
VI	Union Pacific Railroad	Center of 105th Avenue (see Figure 2 of Work Plan)	047-5519-004-10 and 047-5519-003
	Alameda-Contra Costa Transit (A/C Transit)	No assigned address (see Figure 2 of Work Plan)	047-5519-004-03
VII	West Side of 105th Avenue Commercial, Industrial, and Residential Parcel	1429/1433/1439 105th Avenue	047-5509-015-03
		1449 105th Avenue	047-5509-015-04
		1501 105th Avenue	047-5509-17
		1525 and 1545 105th Avenue	047-5509-021-01
		1557, 1559, and 1561 105th Avenue	047-5509-023-01
		105th Avenue Right of Way	NA

Parcel Group	Parcel Group Name	Street Address	Assessor's Parcel Number
I	Lloyd Wise, Inc.	10550 East 14th Street (eastern portion)	047-5519-005-02 (eastern portion)
		1424 105th Avenue (formerly part of East 14th Street)	047-5509-010-00
II	Bill & Bill's Auto Body	1500 105th Avenue	047-5509-009-01
III	Management Storage	1510, 1520, and 1528 105th Avenue	047-5509-007-00 and 047-5509-006-00
IV	Ward's Custom Paint	1536, 1538, 1544, and 1548 105th Avenue	047-5509-003-00, 047-5509-004-00, and 047-5509-005-00
V	Chevron Tow	1560 and 1570 105th Avenue	047-5509-001-01
VI	UPRR	Center of 105th Avenue (see Figure 2)	047-5519-004-10 and 047-5519-003
	Portion of AC Transit	No assigned address (see Figure 2)	047-5519-004-03
VII	West Side of 105th Avenue Commercial, Industrial, and Residential	1429/1433/1439 105th Avenue	047-5509-015-03
		1449 105th Avenue	047-5509-015-04
		1501 105th Avenue	047-5509-17
		1525 and 1545 105th Avenue	047-5509-021-01
		1557, 1559, and 1561 105th Avenue	047-5509-023-01
		105th Avenue Right of Way	NA
VIII	East Side of 104th Avenue Residential	10403 Walnut Street	047-5509-32-01
		1440 104th Avenue	047-5509-36-01
		1446 104th Avenue	047-5509-34-00
		1452 104th Avenue	047-5509-33-00
		1604 104th Avenue	047-5509-31-00
		1608 104th Avenue	047-5509-30-00
		1616 104th Avenue	047-5509-029-00
		1626 104th Avenue	047-5509-28-00
		1632 104th Avenue	047-5509-27-00
		1636 104th Avenue	047-5509-26-00
		1640 104th Avenue	047-5509-25-00
		1648 104th Avenue	047-5509-24-00

A summary of historical uses for each parcel group is presented below. This information was obtained from the Phase I Environmental Site Assessment (ESA) report prepared by ENSR (ENSR 2000). During their Phase I ESA, ENSR reviewed Sanborn fire insurance maps (Sanborn maps), aerial photographs and agency files for historical site usage information.

Lloyd Wise, Inc., Parcel Group – 10550 East 14th Street and 1424 105th Avenue

Sanborn maps indicate that the eastern portion of the parcel, known as 10550 East 14th Street, was vacant land from 1926 until the construction of a commercial building in 1981. This building appears to be the service building that is currently present on the parcel. During a reconnaissance visit on May 30, 2000, ENSR reported that two buildings exist on the eastern portion of the parcel, including the service building noted above and the maintenance shop that is currently known as 1424 East 14th Street (Figure 2). Both of these buildings were occupied by Lloyd Wise, Inc., during the site reconnaissance.

The western portions of 10500 and 10550 East 14th Street are occupied by the Lloyd Wise showroom and office buildings. These areas were not included in the study area.

According to information obtained by ENSR, a residence existed on the eastern portion of the parcel known as 1424 105th Avenue from 1926 to 1969. By the early 1980s, the residence had been replaced by a commercial building. This building appears to be the maintenance shop that is currently present on this parcel.

The history of the buildings on this parcel group are described briefly below:

- The service building (eastern portion of 10550 East 14th Street) was used for vehicle repairs until those operations were relocated in 1999. The first floor of the building is divided into eight maintenance bays, offices, a tool room, and an oil storage room. The second floor was used for offices and storage. The former aboveground hydraulic lifts have been removed (date unknown). According to information contained in ENSR's report, no underground hydraulic lifts were present in this building. ENSR noted that the floor drains in this building had been backfilled with concrete at the time of their visit.

  Four double-walled aboveground storage tanks (ASTs), ranging in capacity from 55 to 200 gallons and used for storage of motor oil, were formerly located in this building, according to ENSR's report. ENSR noted in their report that two oil stained areas, each measuring approximately 2 feet in diameter, were observed on the concrete floor of this room. No nearby floor drains or significant cracks were observed in the area of the former ASTs.

  ENSR representatives observed an approximately 300-gallon aboveground storage tank (AST) and an air compressor within a fenced enclosure outside the eastern end of the service building. Heavy oil staining was noted on the concrete pad of this enclosure.

- The maintenance shop (1424 East 14th Street) is divided into 10 vehicle maintenance bays. According to ENSR's report, one underground hydraulic lift was present at the southeastern end of the building at the time of their visit. ENSR reported that the remaining underground hydraulic lifts were removed in the early 1990s. At the time of ENSR's visit, one of the maintenance bays was being used for hand washing of automobiles; no maintenance work was being performed in the building.

  Six floor drains and a trench drain were formerly connected to a 600-gallon oil/water separator that remains in place near the northeastern corner of the maintenance building. Five of these floor drains have been backfilled with concrete. At the time of ENSR's site visit, the existing floor drain and the trench drain were still connected to the oil/water separator. ENSR representatives observed three ASTs ranging in capacity from 100 to 200 gallons along the northwestern wall of the shop. The ASTs were reportedly formerly used to store motor oil.

  A former underground sump and 550-gallon waste oil underground storage tank (UST) were reportedly located outside at the southeastern corner of the maintenance building at 1424 105th Avenue (formerly part of East 14th Street). The sump and waste oil UST were reportedly removed in 1993, according to previous consultants' reports cited by ENSR (ENSR 2000). Analytical results of soil samples collected in the vicinity of the former waste oil tank did not reveal significant levels of petroleum hydrocarbons, and the ACHCSA did not require further action in this area. The site owner and some of the reports and maps reviewed by LFR indicate that the location of this UST may have been misreported. The former UST may have been located across 105th Street, where two 1,000-gallon USTs containing product and waste oil were reportedly removed in 1993. Soil from the excavations of the two 1,000-gallon USTs was stockpiled across 105th Street (Gen-Tech Environmental 1993a).

Bill & Bill's Auto Body Parcel – 1500 105th Avenue

Sanborn maps and aerial photographs reviewed by ENSR showed this parcel to be a vacant lot from at least 1926 until 1951. A candy factory, constructed at 1500 105th Avenue between 1951 and 1952, was the first commercial building along 105th Avenue. The building was used as a roller rink in the early 1960s before being converted into a photographic laboratory in 1965. The building was subsequently used for automobile repairs and painting.

Bill and Bill's Auto Body (1500 105th Avenue) has occupied the building on this property since the mid-1990s. The body repair business is reportedly limited to spray painting and detailing. A paint spray booth is located in the building. This booth is operated under an air emissions permit issued by the Bay Area Air Quality Management District (BAAQMD). Approximately 250 one-pint and one-quart containers of paint were stored at the business during ENSR's site visit on May 30, 2000. The body shop reportedly uses approximately 85 gallons of paint thinner per year. Waste paints and thinners are placed in 55-gallon drums while on the premises and removed approximately every 1.5 to 2 years.

According to information contained in ENSR's report, the only floor drain inside the building has been backfilled with concrete.

Management Storage Parcel Group – 1510, 1520, and 1528 105th Avenue

According to Sanborn maps and aerial photographs reviewed by ENSR, residences were located at 1520 and 1528 105th Avenue from at least 1926 until the late 1970s or early 1980s. The residence located at 1520 105th Avenue was demolished in 1979, according to information obtained by ENSR from the Oakland Building Department. The residence at 1528 105th Avenue was apparently demolished between 1975 and 1981. According to information from the Oakland Building Department, a warehouse used as a roller derby training facility was constructed at 1510 105th Avenue in 1951.

Bill Thompson, a former property owner, was interviewed during a previous Phase I ESA for this parcel. According to Mr. Thompson, a candy factory occupied the building at 1510 105th Avenue during the 1950s. Two approximately 1.5-foot-deep sumps located at the rear of this building were observed during the previous Phase I ESA. Mr. Thompson noted that these sumps were used by the candy factory for containment of wastewater from floor washing activities. Mr. Thompson stated that the sumps had not been used during his occupancy of the building.

Management Storage (1510 105th Avenue), a real estate owner and management business, currently occupies the building at this address, as well as the vacant lot located adjacent to the east of the building. The building is divided into offices and warehouse space used for storing furniture and files. According to ENSR's report, the only chemicals reportedly used in this building are janitorial supplies. One floor drain that discharges into the sanitary sewer was present in the building at the time of ENSR's visit.

A former water supply well is located in a metal-covered vault near one of the front entrances to the building.

An office trailer, fencing, and a gasoline dispenser (not connected to a tank) were located in the vacant lot at the time of ENSR's site visit on May 30, 2000. ENSR noted that this lot was enclosed by a chain-link fence.

Ward's Custom Paint Parcel Group – 1536, 1538, 1544, and 1548 105th Avenue

Sanborn maps and aerial photographs reviewed by ENSR showed that a house was located along the northwestern portion of the 1536 105th Avenue parcel from at least 1926. This house appeared in the aerial photographs through 1975 but had been demolished by the time of the 1981 photographs. Photographs from 1981 and later indicate that this parcel was used for vehicle storage.

According to ENSR's report, the parcel known as 1544 105th Avenue was a vacant lot in the 1926 through 1961 Sanborn maps and the 1947 through 1959 aerial photographs. By 1966, one commercial building had been constructed on this parcel. This building appeared unchanged in the later photographs.

According to ENSR's report, a 1926 Sanborn map and 1947 aerial photograph indicate that 1548 105th Avenue was a vacant lot. Sanborn maps and aerial photographs from the 1950s and 1960s indicate that a single-family residence was present at this location. By the time of the 1971 aerial photographs, two commercial buildings were present on the parcel. These building appear unchanged in later photographs. A furniture warehouse was reportedly constructed at 1548 105th Avenue. According to ENSR's report, the parcel's previous address included 1550 105th Avenue. A building department application dated 1959 for 1550 105th Avenue indicated that the building at this address was being used as a print shop with offices and a factory.

According to ENSR's report, the parcel currently known as 1544 105th Avenue was previously occupied by Milichichi Auto Body Fender. This business was included on the United States Environmental Protection Agency (EPA) database as a Resource Conservation and Recovery Act small quantity hazardous waste generator. This facility generated paint-related wastes. No release has been reported at this location.

Ward's Custom Paint shop currently occupies the properties that comprise this parcel group. A paved parking lot used by Ward's Custom Paint shop is located at 1536 and 1538 105th Avenue. Two buildings located at 1544 105th Avenue are used for spray painting and detailing of automobiles with a paint booth located in the southernmost building. Numerous spray cans and one-quart and five-gallon paint containers were stored in a locked room in the southernmost building at the time of ENSR's visit. Other chemical storage noted by ENSR consisted of car cleaners and waxes and five-gallon containers of paint thinner. The facility was identified as generating paint-related waste and maintaining permits from BAAQMD for air emissions from the paint booth. The facility was also identified as maintaining a permit with East Bay Municipal Utility District for water discharges.

Chevron Tow Parcel – 1560 and 1570 105th Avenue

Residential dwellings occupied the parcels at Chevron Tow from at least 1926 until the early 1980s, according to information contained in ENSR's report. According to an aerial photograph, by 1981, the residences had been demolished and the parcels were being used for vehicle storage. At the time of ENSR's visit, most of the property was being used for vehicle washing, maintenance, and storage. A small office building was noted at the northwestern corner of the parcel.

Union Pacific Railroad/AC Transit Parcel Group – 105th Avenue

Railroad tracks were noted along 105th Avenue and across the eastern end of the study area (remainder of UPRR parcel group and AC Transit parcel group) in all of the

Sanborn maps and aerial photographs reviewed by ENSR. These tracks, which are owned by UPRR, are currently present along the center of 105th Avenue and across the eastern end of the study area.

AC Transit (no assigned address) occupies two properties to the east of 105th Avenue. The northeastern portion of the AC Transit property at the eastern end of 105th Avenue is included in the study area for this work plan. This area appeared as vacant land in the 1947 through 1981 aerial photographs, according to ENSR's report. Aerial photographs indicate that by 1985 a commercial building that extended onto the AC Transit property adjacent to the south of the study area had been constructed on the parcel. This building was present in all of the remaining photographs reviewed by ENSR.

West Side of 105th Avenue Commercial, Industrial, and Residential Parcel Group – 1429 through 1561 105th Avenue

The parcel group lying west of 105th Avenue consists of commercial, light industrial, and residential properties, and a trailer park. A description of each of the properties within this parcel is provided below:

- The property known as 1429, 1433, and 1439 105th Avenue was occupied by a door manufacturer from 1926 to 1969, according to ENSR's report. Other companies that historically occupied the property include a construction company, Winca Chemical Company (a manufacturer of dry cleaning, laundry detergent, and pool chemicals), and Akana Designs (a carpentry company). At the time of ENSR's visit, the property was occupied by United Acoustics (1929 and 1433 105th Avenue) and Winca Chemicals (1439 105th Avenue).

  According to ENSR's report, a release was reported at 1433 105th Avenue in 1991. The responsible party was listed as United Acoustics. ENSR noted that the case was granted closure by the local regulatory agency. Further information on this release was not available as files had reportedly been misplaced during transfer from the ACHCSA to the City of Oakland Fire Department.

- The property known as 1449 105th Avenue was occupied by a single-family residence on Sanborn maps dated 1926, 1951, and 1952, according to ENSR's Phase I ESA (ENSR 2000). On 1959 and subsequent Sanborn maps, this property was being used by the door manufacturer for wood storage and a cabinet shop. In aerial photographs dating back to 1947, the building on this property appeared to be associated with the commercial building complex known as 1429, 1433, and 1439 105th Avenue, according to ENSR's report.
- The property known as 1501 105th Avenue has been residential since at least 1926.
- A trailer park has existed at 1525 and 1545 105th Avenue since at least 1941. Before the trailer park, the parcels were occupied by residences and a lumber storage yard. The manager of the trailer park reported that coal was unloaded from

railroad cars on this property in the late 1800s. Anecdotal information indicates that an underground or buried coal bin might have existed on this property.

- The property known as 1557, 1559, and 1561 105th Avenue has been occupied by a multi-tenant commercial building since 1951, according to Sanborn maps reviewed by ENSR (ENSR 2000). One occupant was an antique Volkswagen business during ENSR's May 30, 2000, site visit. Former uses of the building included a plumbing and carpentry business, venetian blind manufacturer, drapery facility, plastic bag facility, machine shop, and vending machine storage company. According to telephone listings dated 2000, Gomez Foods occupies 1559 105th Avenue.

  According to ENSR's report, 35 gallons of oil were spilled at 1561 105th Avenue in 1992. No information was available on the responsible party, location of the spill, or the response action.

East Side of 104th Avenue Residential Parcel – 10403 Walnut Street and 1440 through 1648 104th Avenue

The parcels lying along the eastern side of 104th Avenue have consisted of residential properties since at least 1926 (ENSR 2000). According to building department files reviewed by ENSR, permits to apply pest control chemicals were issued to occupants of 1604 and 1616 104th Avenue.

2.0 PEA OBJECTIVES

The California Department of Education (CDE) Board has recently adopted an environmental policy requiring that, if applicable, ambient air, subsurface soils, and shallow groundwater at all new school sites will be evaluated. A "No Further Action" designation from the DTSC must be obtained before the CDE can allocate funds to a school district for the acquisition and/or construction of a new school site. The PEA is intended to identify whether a release or threatened release of hazardous substances exists at the site and evaluate the potential risk to human health or the environment before the DTSC issues a "No Further Action" designation.

The following are the overall objectives of the PEA:

- evaluate historical information regarding the past use, storage, disposal, or release of hazardous wastes/substances at the Site
- conduct a field sampling and analysis program to further characterize the nature, concentration, and extent of hazardous wastes/substances present in ambient air, soil, and groundwater at the Site
- estimate the potential threat to public health and/or the environment posed by known hazardous constituents at the Site using a residential land use scenario

Based on information that will be developed during the PEA and the conservative human and ecological risk evaluation to be conducted using the DTSC's PEA Guidance Manual, the DTSC will make an informed decision regarding potential risks, if any, posed by the Site.

Possible outcomes of the PEA decision include the following:

- the requirement for further assessment through the Remedial Investigation/Feasibility Study process if the Site is found to be significantly affected by hazardous substances
- the need to perform a Removal Action for areas where localized impacts by hazardous substance releases are found
- issuance of a "No Further Action" finding if the Site is found not to be impacted or risks to human health and the environment are found to be within acceptable levels based on the conservative screening level risk assessment

3.0 SITE DESCRIPTION AND CONTACTS

3.1 Site Name and Address

The Site has been identified by the OUSD as the Batarse Project Site, located southeast of the intersection of 104th Avenue and East 14th Street in Oakland, California.

3.2 Designated Contact Person and Mailing Address

Ms. Ineda P. Adesanya
Director of Facilities
Oakland Unified School District
955 High Street
Oakland, California 94601

Phone No. (510) 879-8385
Fax No. (510) 879-1860

3.3 Property Use

The Site consists of eight parcel groups that occupy approximately 7.6 acres. The Site is currently occupied by Lloyd Wise, Inc.; Bill and Bill's Auto Body; Management Storage; Ward's Custom Paint; Chevron Tow; UPRR; United Acoustics; Winca Chemicals; and other commercial, light industrial, and residential properties.

The Site is being considered for acquisition and construction of a proposed new school. The layout of the proposed school has not been finalized.

3.4 Assessor's Parcel Numbers and Maps

The APNs for the Site as identified by the Alameda County Assessor's Office and the street addresses on record for each of these parcels are listed in the table in Section 1.2.

3.5 Township, Range, Section, and Meridian

Based on the United States Geological Survey (USGS) San Leandro Quadrangle, California 7.5-Minute Topographic Map, the Site is located in Subsection P of Section 23, Township 2 South, Range 3 West (ENSR 2000). The approximate geographic coordinates of the Site are Latitude North 37° 44'21" and Longitude West 122° 09'52".

3.6 Site Zoning

The City of Oakland Planning Department has zoned the Site for manufacturing (M-20) and residential (R-30). The planned future use of the Site is for general community commercial (LFR 2001).

3.7 Site Maps and Photographs

A site location map is included as Figure 1. A site sampling plan is included as Figure 2. Previous site photographs are presented in the Phase I ESA report included as Appendix C.

3.8 Physical Setting

The Site is located approximately 40 to 42 feet above mean sea level according to the USGS San Leandro Quadrangle, California, 7.5-minute topographic map. The nearest body of surface water is San Leandro Creek, located approximately 5,000 feet south of the Site. This creek drains into San Leandro Bay, which is part of San Francisco Bay.

The Site is located within the Coast Range geomorphic province and is underlain by Holocene alluvial fan and fluvial deposits. These deposits are brown or tan, medium-dense to dense, gravely sand or sandy gravel that generally grade upward, to sandy or silty clay (Helley and Graymer 1997). Boring logs for two monitoring wells installed during previous investigations at 10500 East 14th Street indicate that relatively fine-grained materials consisting of silty sand, sandy silt, and silty clay are encountered to depths of approximately 30 feet below ground surface (bgs) at the Site.

The soil at the Site is classified by the United States Department of Agriculture (USDA) Soil Survey of Alameda County, Western Part, as the Yolo silt loam in the southwestern portion of the Site, and as urban land-Danville complex in the northeastern portion of the Site. These soils are used mainly for urban development. Runoff is slow and the erosion hazard is slight to none (USDA 1981).

The inferred direction of groundwater flow in the site vicinity is toward the west-southwest (Figure 2). The depth to groundwater reportedly ranged from approximately 8 to 28.3 feet bgs in 1993 (ACHCSA 1998a). Information regarding the depth to groundwater and direction of groundwater flow was obtained from the case closure summary prepared by the ACHCSA under the Leaking Underground Storage Tank Program for the former waste oil and gasoline USTs that were removed from 10500 East 14th Street in 1993.

3.9 Surrounding Property Land Use

Commercial businesses, light industry, a church, and residential areas comprise the surrounding property land use.

4.0 FIELD SAMPLING PLAN

4.1 Background

The Site consists of eight parcel groups totaling approximately 7.6 acres. The topography slopes slightly downward toward the north-northwest. The Site has been used for residential and commercial purposes. Building structures include several commercial and light industrial buildings, houses, and a trailer park.

A former water supply well reportedly exists at the Site. The well is reportedly located in an existing vault, and it is not currently in use. It is not known whether the well has been properly abandoned and sealed.

The potential environmental issues in the Site include former hydraulic lifts, sumps, an oil/water separator, a suspected former waste oil UST, floor drains, auto body painting operations, chemical use, a railroad spur, lead-based paint, and asbestos. Therefore, the chemicals of potential concern (COPCs) addressed in this investigation will include total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene and xylenes (BTEX); and volatile organic compounds (VOCs) including methyl-tertiary butyl ether (MTBE), because of their historical association with industrial, automobile maintenance, and painting operations. Other COPCs include Title 22 metals (formerly known as California Assessment Manual 17 metals) because of their historical association with industrial operations and lead-based paint; and semivolatile organic compounds (SVOCs) including polychlorinated biphenyls (PCBs), which will be analyzed in selected samples collected along the UPRR right-of-way.

LFR has prepared a table outlining eight areas (designated as Areas I through VIII) of potential environmental concern, the sampling program, and the analyses that will be performed at each area. Because of the ages of the structures on the Site, asbestos containing materials (ACMs) and lead-based paints may be present. A building materials survey for ACMs and lead-based paints will be conducted at the Site if OUSD decides to proceed with the project.

A soil-vapor survey will be conducted for potential fuel-related hydrocarbon impacts in the soil and groundwater if chemicals of concern are found at concentrations above EPA Region IX residential preliminary remediation goals (PRGs) in soils, or at 10 times the Maximum Contaminant Levels (MCLs) or detection limits (if no MCL is established for the COPC) in groundwater. If soil-vapor sampling is established to be necessary, vapor samples will be analyzed using EPA Test Method TO-14. A mobile laboratory will be used for analysis of the soil-vapor samples with four duplicate soil-vapor samples collected for off-site TO-14 analysis.

In the event that COPCs are detected, data regarding soil properties will be collected to model the fate and transport of chemicals in the environment. This data includes total organic carbon, grain size, bulk density, porosity, and moisture content. Total organic carbon will be analyzed by the Walkley-Black method; grain size will be analyzed by American Society for Testing and Materials (ASTM) D422M; and bulk density, porosity, and moisture content will be analyzed using American Petroleum Institute (API) RP40 method.

4.2 Sampling Locations and Analyses

The soil and groundwater sampling program presented herein was prepared by LFR with input provided by Ms. Janet Naito and Dr. Dave Berry of the DTSC during a scoping meeting on December 1, 2000. The sampling locations were selected based on information reported in the Phase I ESA and LFR's site visit on October 30, 2000. Proposed sampling locations are presented on Figure 2 and are summarized in Table 1. If analytical results indicate that there are chemicals present at the Site at levels of potential concern, they will be discussed with the OUSD and DTSC to establish whether additional sampling is necessary to complete the PEA.

Forty-nine soil borings are proposed, with total depths ranging from approximately 1 to 30 feet bgs. Groundwater samples will be collected from 46 of the soil borings. Additional borings may be warranted if visual, olfactory, or photoionization detector (PID) readings indicate a chemical release has likely occurred. Borings will be drilled to a depth of approximately 3 to 5 feet below the first groundwater encountered to allow collection of grab groundwater samples. An estimated 306 soil samples will be collected; additional samples may be collected if warranted by field observations. Soil samples collected from 20 feet bgs and deeper will be submitted to the laboratory but placed on hold pending our receipt and analysis of the shallower soil samples collected from the borings. The samples will be submitted to a laboratory certified by the State of California to perform the requested analyses (see Table 1).

During the PEA, LFR will attempt to locate published information on typical background concentrations for metals in the City of Oakland. LFR will also evaluate the data from the soil samples collected from the proposed borings to ascertain if the concentrations of metals detected are appropriate for use as typical background levels. If published information is not available and data from on-site borings are not valid for background metals concentrations, four additional borings may be drilled to a depth of approximately 1 foot bgs in areas assumed clean of past or present operations. Soil samples will be collected from these borings and analyzed to evaluate the natural background levels of metals in the area.

For quality assurance/quality control (QA/QC), LFR will also collect an estimated 31 field split soil samples. The duplicate sampling program represents 10 percent of the total number of samples proposed for analysis. Five field split groundwater samples will be collected along with the 46 groundwater samples proposed for collection and analysis, representing 10 percent of the total number of proposed groundwater samples. Equipment rinsate blank samples and travel blank samples will be collected daily, and at least three of each of these blanks will be analyzed. The equipment rinsate blanks and travel blanks will be prepared from laboratory-supplied, organic-free, deionized water.

Based on the present and past land use at the different parcel groups at the Site, the proposed sampling program at each parcel group is as follows:

Lloyd Wise, Inc., Parcel Group – 10550 East 14th Street and 1424 105th Avenue

This parcel group has been used for residential dwellings, commercial facilities, vehicle repairs, and a maintenance shop. Underground and above ground hydraulic lifts, motor oil ASTs, floor and trench drains, a 600-gallon oil/water separator, an underground sump, and a concrete pad heavily stained with oil are or have been present in the area. In addition, a 550-gallon waste oil UST may have been present on this parcel in the past. Therefore, it is anticipated that petroleum hydrocarbons, heavy metals, and solvents have been used in the area.

Four soil borings are proposed at locations adjacent to and downgradient from the drains and reported sump (if present) in the maintenance shop and the oil/water separator and, depending on available information, at a depth consistent with the bottom of these features. A magnetic survey will be conducted to establish the presence of remaining underground structures.

Three soil borings are proposed at locations adjacent to the suspected former waste oil UST location and at a location adjacent to and upgradient from the two former 1,000-gallon product and waste oil USTs located on the northern side of 105th Street. The boring near the former product and waste oil USTs will be advanced upgradient from the former USTs because of access constraints in the downgradient direction. This boring will be advanced to assess the possible impact of the two 1,000-gallon USTs formerly present at that location. One of these soil borings will be advanced downgradient from the approximate location of the soil stockpile produced during the removal of two 1,000-gallon USTs.

Finally, two soil borings will be advanced at locations upgradient from the oil-stained pad. Borings cannot be advanced in the downgradient direction because of the presence of the service building. Five borings will be advanced within the service building to assess soil and groundwater conditions in the areas of hydraulic lifts (if present), ASTs, sumps, and floor drains. Five borings are also proposed inside the maintenance building at the locations of the hydraulic lifts and in the stained area near the motor oil ASTs to assess potential impacts to soil and groundwater in these areas.

Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip. Depending on available information, soil samples will be collected from borings located adjacent to the drains, oil/water separators, and sumps at depths consistent with the bottom of the features.

The soil samples collected in this area will be analyzed for Title 22 metals, total volatile hydrocarbons (TVH), and total extractable hydrocarbons (TEH). In addition, soil samples collected near the hydraulic lifts will also be analyzed for hydraulic oil and PCBs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs. Additionally, the soil and groundwater samples from the boring adjacent to the two former 1,000-gallon product and waste oil USTs located on the northern side of 105th Street will be analyzed for antifreeze (ethylene glycol).

Bill & Bill's Auto Body Parcel – 1500 105th Avenue

Residential and commercial buildings, a photographic laboratory, and automobile repair businesses have been located on this parcel. The only floor drain inside the building was previously abandoned with concrete. Waste paints and thinners were previously stored in the area. It is also anticipated that petroleum hydrocarbons, heavy metals, and solvents may have been used in the area.

Three soil borings are proposed in this area. One of the proposed borings will be located adjacent to and downgradient from the drain. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip. Depending on available information, soil samples will be collected at a depth consistent with the bottom of the drain.

Soil samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples from the borings will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

Management Storage Parcel Group – 1510, 1520, and 1528 105th Avenue

One floor drain, two sumps, and a former water supply well are present in this area. The only chemicals reportedly used at this location are janitorial supplies. Three borings are proposed in the area of the drain and two sumps. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of soil recovered from the sampler tip. Depending on available information, soil samples will be collected at a depth consistent with the bottom of the drain and sumps.

Soil samples will be analyzed for Title 22 metals, TVH, and TEH. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered, and, if possible, at the former water supply well. Grab groundwater samples from the borings will be analyzed for Title 22 metals, TVH, and TEH.

Groundwater samples will be collected from the water supply well, if possible, and analyzed for Title 22 metals, TVH, TEH, and VOCs. The well will be abandoned and sealed by a licensed drilling subcontractor in accordance with applicable regulatory requirements, if OUSD proceeds with the project.

Ward's Custom Paint Parcel Group – 1536, 1538, 1544, and 1548 105th Avenue

A paint booth and paved parking lot are present in this area. Paint and paint thinner, car cleaners, and waxes are used and stored at this location. It is also anticipated that petroleum hydrocarbons, heavy metals, and solvents may have been used in the past. Five soil borings are proposed in this area. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip.

Soil samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs (including paint thinner). Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs (solvents and thinners).

Chevron Tow Parcel Group – 1560 and 1570 105th Avenue

Most of this property is used for vehicle washing, maintenance and storage. Therefore, it is anticipated that petroleum hydrocarbons, heavy metals, and solvents are currently being used or have been used in the past. Four soil borings are proposed in the area. Two of these four borings will be advanced at the eastern boundary of the parcel, directly downgradient from the neighboring property. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip.

Soil samples will be analyzed for Title 22 metals, TVH, and TEH. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples from one of the borings at the eastern boundary of the parcel are proposed to detect possible migration onto the Site from off-site sources. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

Union Pacific Railroad/AC Transit Parcel Group - 105th Avenue

Railroad tracks are currently present along the center of 105th Avenue. Therefore, it is anticipated that petroleum hydrocarbons and heavy metals may be present along the tracks. Four shallow soil borings (to a depth of approximately 3 feet) are proposed along the tracks on 105th Avenue. Samples will be collected at the first soil encountered beneath the railroad gravel ballast. Soil samples will be analyzed for Title 22 metals, TVH, TEH (including hydraulic oil), and SVOCs.

Three soil borings are proposed on the AC Transit parcel to establish a baseline of subsurface conditions. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based upon visual observations and PID readings of the soil recovered from the sampler tip.

Soil samples from these three borings will be analyzed for Title 22 metals, TVH, and TEH. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples from each of the borings will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

West Side of 105th Avenue Commercial, Industrial, and Residential Parcel Group – 1429 through 1561105th Avenue

This parcel group consists of commercial, light industrial, residential properties, and a trailer park. Former facilities in the area include a chemical company that manufactured dry cleaning, laundry detergent, and pool chemicals. Therefore, it is anticipated that petroleum hydrocarbons, heavy metals, and solvents may have been used in the area.

Heating oil USTs may have been installed at the residences in the past. A visual reconnaissance and interviews with residence owners is proposed to assess the presence of heating oil USTs. Also, coal was reportedly unloaded from railroad cars and an underground or buried coal bin may have existed on the trailer park property. A geophysical survey will be conducted at this location to assess whether a buried coal bin exists. If a heating oil UST or coal bin is suspected or confirmed based on our interviews and observations, the DTSC will be contacted to discuss the need for sampling in the areas of the suspected or confirmed USTs and/or coal bin.

Nine soil borings are proposed in the area, including three in the reported location of the buried coal bin. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based on visual observations and PID readings of the soil recovered from the sampler tip. Soil samples from these borings will be analyzed for Title 22 metals, TVH, TEH, and SVOCs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, VOCs, and SVOCs. Additional locations, borings, or analyses may be required upon review of new information.

Additionally, one boring will be advanced in the area of the releases reported by United Acoustics at 1433 105th Avenue in 1991, and one boring will be advanced in the area of the oil spill reported at 1561 105th Avenue in 1992 if information on the locations of these releases is available. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based on visual observations and PID readings of the soil recovered from the sampler tip. Soil samples from these borings will be analyzed for Title 22 metals, TVH, TEH, and SVOCs. Grab groundwater samples will be collected from each of the borings in which groundwater is encountered. Groundwater samples will be analyzed for Title 22 metals, TVH, TEH, VOCs, and SVOCs. Additional locations, borings or analyses may be required upon review of new information.

East Side of 104th Avenue Residential Parcel – 10403 Walnut Street and 1440 through 1648 104th Avenue

Several residential properties have been present in this area since at least 1926.

Heating oil USTs may have been installed at the residences in the past. A visual reconnaissance and interviews with residence owners is proposed to assess the presence of heating oil USTs. If the location of a heating oil UST is suspected or confirmed based on our interviews and observations, the DTSC will be contacted to discuss the need for sampling in the areas of the suspected or confirmed USTs.

Six shallow (1 foot bgs) soil borings are proposed in this area to evaluate possible impacts by lead-based paints. Soil samples will be collected within the drip line adjacent to the exterior walls of the residences exhibiting the most visible signs of weathered paint. These samples will be analyzed for lead. DTSC is currently finalizing the sampling protocol for soils that have suspected lead-based paint and that are in close proximity to buildings constructed before 1980. Collection of additional soil samples for lead analysis may be completed after demolition of the residential facilities. These additional soil samples will be collected from the first soil encountered in residential areas (from the surface to approximately 0.5 foot bgs) and analyzed for lead. Asbestos surveys of the structures will be performed at a later date if OUSD decides to proceed with the project.

It has also been reported that pest control chemicals were used on some parcels in the past. Because of limited information, LFR may not be able to determine areas to which pesticides were applied. LFR proposes to analyze the soil samples collected from the six shallow borings noted above for TVH, TEH, and pesticides to evaluate pesticide impacts.

One deep soil boring is proposed at the eastern boundary of the parcel group. Soil samples will be collected at the first native soil encountered, from approximately 5-, 10-, 15-, and 20-feet bgs, and from just above the first encountered groundwater. The sample from the approximately 20-foot depth will be placed on hold at the laboratory pending our receipt and review of analytical results for the shallower samples in the boring. Additional samples may be collected based on visual observations and PID readings of the soil collected from the sampling tip. Soil samples from this boring will be analyzed for Title 22 metals, TVH, TEH, VOCs, and pesticides. One grab groundwater samples will be collected from the deep boring if groundwater is encountered. The groundwater sample is intended to assess if an off-site release has impacted the Site. The groundwater sample will be analyzed for Title 22 metals, TVH, TEH, and VOCs.

Surface soil samples from borings located in other portions of this parcel group will be analyzed for Title 22 metals and will be evaluated to assess background concentrations for lead.

4.3 Sample Collection

Sample containers will be sealed and labeled with the sampler's initials, time and date of collection, project number, project name, and a unique sample identification number, then placed on ice in a cooler for delivery to the laboratory under strict chain-of-custody (COC) protocol. Analytical methods, types of containers, preservation methods, and holding times are summarized in Table 2.

Shallow Soil Sampling

Twelve shallow soil samples will be collected from the railroad spur and residential areas (areas VI and VIII on Table 1) using a slide hammer manual sampling device. Along the railroad spur (area VI), shallow soil samples from below the gravel ballast will be collected at depths of up to approximately 3 feet. For these samples, a hand auger may be used to core to the desired depth and then a slide hammer with a brass or steel tube (2-inch by 6-inch) will be used for sample collection. In the residential area on the eastern side of 104th Street (area VIII), surface soil samples will be collected from the surface (after clearing of vegetation) to a depth of approximately 0.5 foot. Soil samples will be collected in standard 6-inch-long, 2-inch-diameter stainless-steel or brass sleeves. Alternatively, the sample may be placed in a glass jar if VOC analysis is not proposed. Both ends of the tubes will be capped with Teflon™ sheets and plastic caps, and properly labeled.

Subsurface Soil Sampling

LFR will collect soil samples from an estimated 49 deep soil borings, using a subcontracted Geoprobe™, or similar, direct-push method sampling rig. Soil samples will be collected in 1$^{11}/_{16}$-inch-diameter, clear acetate sample tubes. Sample tubes will be advanced beneath the subsurface inside a stainless-steel sample probe in 3-foot sections. Upon recovery from the sample probe, soil samples will be cut to a desired length (6 to 8 inches), capped on both ends with Teflon™ sheets and plastic caps, and properly labeled.

After labeling, the soil samples will be sealed in plastic bags and placed in an ice-chilled cooler for transportation to the laboratory under strict COC protocol. Total sample recovery (3 feet) is not always achieved, particularly in loose, gravely, or dry soil types, or in very stiff or very soft clays. A sufficient sample to conduct the analytical methods proposed at each location will be collected during fieldwork.

Logging will be performed using continuous core samples for deep borings. Copies of the boring logs will be included in the PEA report. As requested, LFR will locate each borehole using global positioning system or by using a licensed surveyor to survey the lateral location to within the nearest foot. The coordinates will be presented in the PEA report.

Water Supply Well Sampling

If feasible, a groundwater sample will be collected from the water supply well located at 1510 105th Avenue. The method for collecting the groundwater sample will be established based on the accessibility and condition of the well, and with prior consultation with DTSC regarding the sampling methodology. If possible, the well will be purged of several volumes before sampling. Up to 100 gallons of water will be purged from the well and stored on-site in Department of Transportation–approved, 55-gallon drums pending our receipt and review of analytical data.

Groundwater Grab Sampling

Groundwater grab samples will be collected at an estimated 46 boring locations in areas I through V, VII and VIII as identified in Table 1. The samples will be collected using a Hydropunch™ sampler or factory-slotted polyvinyl chloride casing, advanced through a push-probe boring. It is expected that first groundwater will be encountered at an approximate depth of 15 feet bgs, as described in ENSR's report (ENSR 2000). The push-probe boring at the first groundwater sampling location will be continuously sampled to establish the approximate depth to groundwater.

Groundwater samples will be collected with new, disposable bailers. The groundwater samples will be decanted into pre-cleaned sample containers provided by the laboratory. To minimize volatilization of VOCs from groundwater during sampling, the following steps will be followed:

- the bailers will be extracted from the borings slowly and steadily to avoid creating air bubbles
- the water will be poured slowly into the containers to prevent agitating or mixing of water in the bailer
- bubbles will not be allowed to form in the volatile organic analysis (VOA) containers

Each groundwater sample collected for analysis of TEH will be decanted in two 1-liter, amber glass bottles preserved with hydrochloric acid (HCl). Each groundwater sample collected for analysis of TVH and VOCs will be decanted in three, HCl-preserved, 40-milliliter VOA vials. Each groundwater sample collected for analysis of dissolved Title 22 metals will be contained in one, unpreserved 300-milliliter poly bottle. Groundwater samples analyzed for metals will be filtered in the laboratory within 24 hours after sample collection. If the quantity of groundwater entering a borehole is insufficient for the proposed analyses (as listed in Table 1), then the VOC analysis will be the priority. Samples will be collected for TVH, TEH, and Title 22 metals analysis, in that order, depending on the quantity of groundwater.

Analytical methods, types of containers, preservation methods, and holding times are summarized in Table 2.

Ambient Air Sampling

Ambient air sampling will not be conducted for this PEA. Surrounding site conditions and activities described in Section 3.9 do not warrant air sampling.

4.3.1 Chain-of-Custody Records

COC records are used to document sample collection and shipment to laboratory for analysis. A COC record will be completed and sent with the samples for each laboratory and each shipment. If multiple coolers are sent to a single laboratory on a single day, individual COC forms will be completed and sent with each cooler.

The COC record will identify the contents of each shipment and maintain the custodial integrity of the samples. Information contained on the COC record includes the sampler's name, project number, sample number, date and time of sample collection, sample type, number of containers associated to each sample, analyses requested, and the names, dates, and times of custody.

Generally, a sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until receipt by the laboratory, the custody of the samples will be the responsibility of the sample collector.

4.3.2 Decontamination Procedures

Equipment that comes into contact with potentially contaminated soil or groundwater will be decontaminated and rinsed with distilled water before use at each sampling location and sampling event to assure the integrity of samples collected. Disposable equipment intended for one-time use will be packaged for appropriate disposal and will not be reused. Drilling and sampling devices used will be decontaminated using high-pressure hot water (steam-cleaned) or by the following procedures:

- laboratory-grade detergent and tap water wash, in a 5-gallon plastic bucket, using a brush
- initial tap water rinse, in a 5-gallon plastic bucket
- final distilled water rinse in a 5-gallon plastic bucket

Equipment will be decontaminated in a pre-designated area over plastic sheeting, and clean bulky equipment will be stored on plastic sheeting in uncontaminated areas. Cleaned small equipment will be stored in plastic bags. Materials to be stored for more than a few hours will be covered.

4.3.3 Soil and Wastewater Disposal

Soil and wastewater generated from sampling and decontamination activities will be stored temporarily on site in DOT-approved 5-gallon buckets with press-sealing lids or 55-gallon drums with ring-top sealed lids. The drums will be labeled as non-hazardous waste soil or nonpotable water and identified with the generator's name (Oakland Unified School District), the sampling locations from which the waste was produced, and the date the waste was produced and placed in the container.

LFR assumes that the analytical data from the investigations will be sufficient to meet waste acceptance criteria set by the disposal facility, and that additional profiling of the waste soils and wastewater will not be necessary. At OUSD's request, LFR will make recommendations for the cost-effective, off-site disposal of waste produced at the Site. However, OUSD shall make the final determination for such disposal and shall direct LFR to make such disposal accordingly. LFR is not and will not be interpreted to be the generator or arranger for disposal of hazardous waste or hazardous substances.

5.0 QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

QA/QC procedures are to be employed in both the field and the laboratory. QA/QC protocols include the collection of equipment rinsate samples, field blank samples, field split samples, and travel blank samples. The laboratories used for this project will employ their own QA/QC procedures.

5.1 Field Quality Assurance/Quality Control Procedures

Field QA/QC procedures will be performed at the Site and will consist of the following measures:

- COC forms will be used for sample submittal to the laboratory.
- Daily information regarding soil sample collection will be recorded in field logbooks or field sampling information forms. Sample types, soil descriptions, sample identification numbers, and sample times will be collected and recorded on field sampling information forms and/or in the field logbooks. Pages will be numbered, dated, and signed by the person recording the field data.

Field QA/QC samples will be collected and submitted for analysis along with the discrete soil samples using the following sampling frequency:

- equipment blanks - one equipment rinsate blank per field day
- field blanks - one field blank sample per field day
- field split samples – one field split sample for every 10 discrete samples
- travel (trip) blank samples – one travel blank per field day

5.1.1 Equipment Rinsate Blanks

One equipment rinsate blank (equipment blank) will be collected from the final water rinsed over equipment after cleaning activities have been performed. The equipment blank will be collected from non-disposable (reusable) sampling equipment such as soil sampling tools and sampling equipment. The equipment blank will be analyzed for VOCs, TVH, and Title 22 metals using the same analytical method used on the unique soil or groundwater samples.

To collect an equipment blank sample, distilled water will be poured over or through the recently cleaned equipment, and carefully collected in an appropriate sample container held over a bucket. Equipment blank samples will be stored and processed in the same manner as other aqueous samples.

5.1.2 Field Blanks

Field blank samples consist of a sample of the distilled water that was used as a final rinse for sampling equipment during equipment cleaning activities. The purpose of the field blank sample is to evaluate the distilled water for the presence of chemicals for which environmental samples are being analyzed. A field blank sample will be collected by pouring distilled water into the appropriate sample container. The field blank samples will be stored and processed in the same manner as other aqueous samples.

5.1.3 Field Split Samples

Field split soil and groundwater samples will be collected to evaluate the analytical procedures and methods employed by the laboratory. The field split soil sample will be collected immediately below the depth interval where the original soil sample is collected. The field split groundwater sample will be collected in appropriate laboratory-supplied bottles using the same bailer from which the primary sample was collected. One field split sample will be collected for every 10 soil and groundwater samples collected.

5.1.4 Travel Blank Samples

Trip blanks are used to detect VOC contamination during sample shipping and handling. Trip blanks are 40-mililiter VOA vials of ASTM Type II water that are filled in the laboratory, transported to the sampling site, and returned to the laboratory with VOC samples. Trip blanks are not opened in the field. The planned frequency for trip blanks is one per cooler containing samples for VOC analysis.

5.2 Laboratory QA/QC Procedures

Laboratory QA/QC procedures include the following:

- Laboratory analyses will be performed within the required holding time for samples submitted for initial analysis and those which are being held for analysis based upon the results of the initial analyses. Groundwater samples that are being laboratory filtered will be filtered and preserved in the laboratory within 24 hours of sample collection.
- Appropriate minimum reporting limits will be used for each analysis. The reporting limits will be lower than the corresponding PRGs established by the EPA Region IX for residential land use. For water samples, the detection limits for Low Concentration Volatiles in Water by gas chromatograph/mass spectrometer system will be used.
- The analytical method proposed for arsenic analysis will provide a detection limit sufficient for residential risk evaluation purposes.
- A laboratory certified by the State of California for the requested analysis will be used for the analyses.
- The laboratory will report the following information for each sample delivery group as follows:
  - a discussion of how the QA/QC criteria were met by the laboratory
  - a discussion of hold times
  - matrix spike/matrix spike duplicate results
  - relative percent difference
  - method blank data
  - surrogate recovery, instrument tuning, and calibration data
  - signed laboratory reports including the sample designation, date of sample collection, date of sample analysis, laboratory analytical method employed, sample volume, and the minimum reporting limit (any discrepancies will be detailed in a letter provided by the laboratory)

LFR will use a state-certified environmental testing laboratory for the sample analyses. LFR will confirm the DTSC's minimum reporting limits with the selected laboratory before submitting samples for analysis. Proposed laboratory reporting limits are included as Appendix D.

6.0 HUMAN HEALTH AND ECOLOGICAL SCREENING EVALUATION

A human health and ecological screening evaluation will be performed in accordance with the protocols detailed in the DTSC PEA Guidance Manual. The human health screening evaluation will include a health risk assessment (HRA). The purpose of the HRA is to estimate adverse human health affects by qualitatively and quantitatively addressing possible routes of exposure associated with the Site. The scope of work will include the specific tasks listed below.

6.1 Data Evaluation and Selection of Chemicals of Potential Concern

The data for the Site will be evaluated and a list of COPCs originating at the Site will be compiled. These COPCs will be the focus of the HRA.

6.2 Exposure Assessment (including fate and transport modeling)

The exposure assessment will follow EPA and DTSC risk assessment guidelines and use the Reasonable Maximum Exposure (RME) methods recommended by the EPA. A conceptual site model will be included in the PEA report.

6.3 Toxicity Assessment

The toxicity assessment section provides a list of the potential adverse health effects attributable to each of the COPCs included in the HRA.

6.4 Risk Characterization

Quantitative estimates of the noncarcinogenic and carcinogenic risk to human populations will be presented for the COPCs at the Site. Risk estimates derived using this health-conservative methodology will be compared to the acceptable National Contingency Plan incremental lifetime cancer risk level range of 1×10^{-4} to 1×10^{-6}, and the Cal/EPA acceptable incremental lifetime cancer risk level of 1×10^{-6}.

Historical land use and the analytical results from previous soil and groundwater investigations conducted at the Site indicate that detectable concentrations of COPCs in soil and groundwater are known or suspected to exist adjacent and in close proximity to the Site. The known or suspected COPCs are presented below:

- VOCs, including MTBE; BTEX; cis-1,2-dichloroethene; and trichloroethene
- inorganic chemicals, including Title 22 metals
- petroleum hydrocarbons, including gasoline-, diesel-, and motor oil-range hydrocarbons, and oil and grease

If COPCs are detected, data regarding soil properties, including organic carbon, grain size, bulk density, porosity, and moisture content, will be collected to model the fate and transport of chemicals in the environment. Total organic carbon will be analyzed by the Walkley-Black method, grain size will be analyzed by ASTM D422M, and bulk density, porosity, and moisture content will be analyzed using the API RP40 method.

Inorganic compounds detected above background concentrations will be considered COPCs. In the event that lead is found to be a COPC in soil, it will be evaluated using the DTSC Lead-Spread version 7 with the homegrown produce pathway turned off. If VOCs are detected in the soil and/or groundwater, the indoor air pathway will be considered in the risk assessment by using the Johnson-Ettinger model.

If COPCs are detected in groundwater, LFR will evaluate potential exposure pathways associated with direct contact and vapor intrusion as well as the ingestion exposure pathway if information is obtained during the PEA indicating that groundwater beneath the Site is a potential drinking water source.

7.0 COMMUNITY INVOLVEMENT

The DTSC and the OUSD will prepare and implement a plan to establish the procedures and protocols for informing the community surrounding the Site of the PEA evaluation. This plan will be prepared according to the public participation requirements of the California Education Code.

8.0 PEA REPORT PREPARATION

A PEA report presenting the results of the overall investigation will be prepared and submitted to the DTSC. The PEA report will be prepared in accordance with the PEA Guidance Manual (January 1994, second printing June 1999). The report will include site background and environmental setting information, field procedures, presentation of field observations including boring logs, analytical results including laboratory report sheets and a summary table summarizing the analytes, detection limits, minimum concentrations, maximum concentrations, 95th upper confidence level (UCL) concentrations (if appropriate), and exposure point concentrations. Concentrations of metals detected at the Site will be compared to the EPA Region IX residential soil PRGs and/or natural background concentrations for the area. Metals detected at concentrations above the PRGs and the background concentrations will be considered COPCs.

The PEA report will also include a summary of the Human Health and Ecological Screening Evaluation and the public participation activities implemented during the PEA. Electronic files with the field data, laboratory data, and at least one geo-referenced figure will be submitted to DTSC at the time of submission of the PEA Report.

Based on the Human Health and Ecological Screening Evaluation, the Summary and Conclusions section of the PEA report will address the following four main questions:

- Have current or past practices resulted in a release or threat of a release at the site?
- If a release has occurred or a threatened release exists, does it pose a significant threat to public health or the environment and, if not, why not?
- Does a release pose an immediate potential hazard to health or the environment so as to necessitate an emergency removal action and, if so, why?
- What further specific information and/or removal/remediation actions are necessary in order to better assess or mitigate health/environmental threats posed by the site?

Recommendations will be made regarding the need for additional action to further assess conditions at the Site or for limited removal action(s), if appropriate, based on site investigative findings and the screening risk evaluation. If further action is recommended, the PEA report will identify additional investigations and/or remediation needs and strategies. The PEA report will also include recommendations for expedited response actions necessary to mitigate any immediate potential hazards to public health or the environment, if needed. No Further Action recommendations will be made if levels of detected COPCs are established to be below risk-based screening levels.

9.0 PROPOSED WORK SCHEDULE

Upon approval of this work plan, LFR anticipates submitting a results report within five to seven weeks after completion of field activities. If no unanticipated delays occur, LFR estimates that two weeks will be required to schedule the fieldwork; 8 to 10 days will be needed to complete the fieldwork; laboratory analytical analysis will require 10 working days after sample submittal; and final report preparation will require an estimated three to five weeks after analytical results are received from the laboratory.

REFERENCES

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Table 2
Sample Collection Information
Batarse Project Site, Oakland, California

Sample Matrix and Test Method	Container	Preservative
Soil		
All analyses	Stainless-steel, brass, or butyrate sample tubes and caps or glass jars	Ice (4P C)
Groundwater		
Polychlorinated Biphenyls and Organochlorine Pesticides (EPA 8080A/8081/8082)	Two, 1-liter amber glass bottles	Ice (4P C)
Total Petroleum Hydrocarbons (EPA 8015 modified)	(2) 1-liter amber bottles and (3) 40-milliliter glass VOAs	Ice (40 C)/HCI
Volatile Organic Compounds (EPA 8260A)	(3) 40-milliliter glass VOAs	Ice (40 C)/HCI
Title 22 Metals (EPA 6010/7000)	(1) 300-milliliter plastic bottle	Ice - No preservative - samples to be filtered at laboratory

Notes:

VOA = volatile organic analysis
HCI = hydrochloric acid

0 1320'

Scale in feet

SOURCE: Delorme Street Atlas USA Version 6.0

7962SV01.CDR 1215000

Site Location Map

BATARSE PROJECT SITE, OAKLAND, CA.

LFR LEVINE-FRICKE

Figure 1

APPENDIX A

Summary of Previous Reports

During the preparation of the Preliminary Environmental Assessment (PEA) work plan for the Oakland Unified School District Batarse Project Site ("the Site"), LFR Levine · Fricke (LFR) reviewed reports prepared for the Site by previous consultants. These reports included the following:

- "Underground Tank Technical Closure Report," prepared by Gen-Tech Environmental, dated March 26, 1993
- "Monitoring Well Installation and Sampling, Lloyd Wise Olds, 10440 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 6, 1993
- "Soil and Groundwater Investigation Site at 10440 and 10550 East 14th Street, Oakland, California," prepared by Gen-Tech Environmental, dated May 20, 1994
- "Overview of Environmental Conditions at 10550 East 14th Avenue Nissan/Honda Auto Dealership in Oakland, California," prepared by Gen-Tech Environmental, dated October 11, 1994
- "Monitoring Well Installation and Groundwater Sampling for Lloyd Wise Oldsmobile/Nissan, 10550 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated September 27, 1995
- "Limited Phase II Environmental Assessment and Groundwater Monitoring Report, 10500 East 14th Street, Oakland, California," prepared by Piers Environmental Services, dated March 13, 1997
- "Fuel Leak Site Case Closure for 10500 East 14th Street, Oakland," prepared by Alameda County Health Care Services Agency (ACHCSA), dated August 14, 1998
- "Phase I Environmental Assessment for 1500–1510 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated June 5, 1996
- "Phase I Environmental Assessment for 1520 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated August 27, 1998
- "Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000 (ENSR 2000)

Information obtained from these reports is summarized below. The reports for the properties known as 10440 through 10550 East 14th Street detail work performed off Site; however, information contained in these reports is summarized in this work plan to evaluate possible impacts to the Site.

ON-SITE PROPERTIES

1500 through 1510 105th Avenue

Bill Thompson owned this property at the time of the environmental assessment by Piers Environmental. According to information contained in this report, the buildings

- TPH-g up to 20 milligrams per kilograms (mg/kg)
- TPH-d up to 660 mg/kg
- ethylene glycol up to 220 mg/kg
- toluene up to 140 micrograms per kilogram (μg/kg)
- ethylbenzene up to 93 μg/kg
- total xylenes up to 3,000 μg/kg
- oil and grease up to 1,400 μg/kg
- cis-1,2-dichloroethene up to 340 μg/kg
- tetrachoroethene up to 42 μg/kg

Analysis of the groundwater samples collected from the excavation revealed the following maximum concentrations of selected compounds:

- TPH-g at 27 milligrams per liter (mg/l);
- benzene at 780 micrograms per liter (μg/l);
- toluene at 8,700 μg/l
- ethylbenzene at 1,300 μg/l
- total xylenes at 6,300 μg/l

Cis-1,2-dichloroethene and tetrachloroethene were not detected in the groundwater samples at concentrations at or above the laboratory reporting limits.

Two additional USTs were removed in February 1993; the address given for the work site was listed as 10550 East 14th Street. According to information contained in previous reports reviewed by LFR, the two tanks were noted as a 2,000-gallon gasoline UST and a 550-gallon waste oil UST. According to the map provided, the gasoline UST was located on the southern side of 105th Avenue and adjacent to the western end of the Lloyd Wise auto dealership building while the waste oil UST was located on the northern side of 105th Avenue.

Soil samples collected at the time of the tank removals were analyzed for the following:

- TPH-g and TPH-d by EPA Test Method 8015 Modified
- BTEX by EPA Test Method 8020
- VOCs by EPA Test Method 8240
- SVOCs by EPA Test Method 8270
- oil and grease by Standard Method 5520 E&F
- five LUFT field manual metals

APPENDIX B

Site-Specific Health and Safety Plan

Health and Safety Plan
for Preliminary Environmental Assessment
Activities at the
Batarse Site
104th Avenue and East 14th Street
Oakland, California

May 25, 2001
7962.01-001

Prepared for
Oakland Unified School District
955 High Street
Oakland, California 94601

CONTENTS

1.0 GENERAL

LFR Levine · Fricke (LFR) has prepared this Health and Safety Plan (HSP) for use during the Preliminary Environmental Assessment (PEA) activities to be conducted at the Batarse Site located at 104th Avenue and East 14th Street (also called International Boulevard and Highway 185) in Oakland, California ("the Site"). This HSP is included as Appendix A in the work plan entitled "Draft Preliminary Endangerment Assessment Work Plan, Batarse Site, 104th Avenue and East 14th Street, Oakland, California," dated May 15, 2001 ("the Work Plan"). Activities conducted under LFR's direction at the Site will be in compliance with applicable Occupational Safety and Health Administration (OSHA) regulations, particularly those in Title 8 California Code of Regulations (CCR) 5192, and other applicable federal, state, and local laws, regulations, and statutes. A copy of this HSP will be kept on site during scheduled field activities.

This HSP addresses the potential hazards associated with planned field activities at the Site. It presents the minimum health and safety requirements for establishing and maintaining a safe working environment during the course of work. In the event of conflicting requirements, the procedures or practices that provide the highest degree of personnel protection will be implemented. If work plan specifications change or if site conditions encountered during the course of the work are found to differ substantially from those anticipated, the Corporate Director of Health and Safety must be informed immediately upon discovery, and appropriate changes will be made to this HSP.

It is the Project Manager's responsibility to ensure that health and safety procedures are enforced at the Site. Project personnel, including subcontractors, shall receive a copy of this HSP and sign the form to indicate acceptance before on-site project activities begin.

LFR's health and safety programs and procedures, including medical monitoring, respiratory protection, injury and illness prevention, hazard communication, and personal protective equipment (PPE), are documented in the LFR Corporate Health and Safety Manual. These health and safety procedures are incorporated herein by reference, and LFR employees will adhere to the procedures specified in the manual.

When specified in contract documents, this HSP may cover the activities of LFR subcontractors. However, this HSP may not address hazards associated with tasks and equipment that are specialties of the subcontractor (e.g., operation of a drill rig). Subcontractors are responsible for developing, maintaining, and implementing their own health and safety programs, policies, and procedures.

LFR is responsible for the safety of its employees and subcontractors under its control, but assumes no responsibility for the activities of other contractors or their subcontractors who may be working concurrently at the general project location. LFR will use a reasonable degree of care when marking potentially hazardous areas within its project work site and restricting access as appropriate. LFR will not be responsible

- "Phase I Environmental Assessment for 1520 105th Avenue, Oakland, California," prepared by Piers Environmental Services, dated August 27, 1998

- "Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California," prepared by ENSR Consulting and Engineering, dated October 2000 (ENSR 2000)

A summary of the reports prepared by previous consultants is included in Appendix A of this work plan. The reports for the properties known as 10440 through 10550 East 14th Street detail work performed off Site; however, information contained in these reports is summarized in this work plan to evaluate possible impacts to the Site.

LFR met with Ms. Janet Naito, Senior Hazardous Substances Scientist, and Dr. David Berry, Toxicologist, of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) on December 1, 2000, to discuss the scope of the PEA work plan for the Site. Our original work plan dated January 30, 2001, has been revised to include the DTSC's comments as presented in documents issued by the DTSC on March 9, March 12, and March 19, 2001, and discussed during our teleconference on March 14, 2001. This work plan was prepared in general accordance with DTSC guidelines, as presented in the PEA Guidance Manual (January 1994, second printing June 1999).

This work plan was prepared and will be implemented in general accordance with the guidelines of the DTSC, as detailed in the PEA Guidance Manual (January 1994, second printing June 1999). LFR has prepared a site-specific health and safety plan for the planned activities at the Site, and it is included with this work plan as Appendix B.

1.2 Summary of Background Information

At the request of the OUSD, LFR did not obtain access or observe the interior of all of the site buildings; however, access to most of the on-site buildings was gained by LFR to facilitate work at the Site.

For convenience, the Site has been divided into eight parcel groups, which are referred to as Lloyd Wise, Inc.; Bill & Bill's Auto Body; Management Storage; Ward's Custom Paint; Chevron Tow; Union Pacific Railroad (UPRR)/AC Transit; West Side of 105th Avenue Commercial, Industrial, and Residential; and East Side of 104th Avenue Residential. These parcels are located southeast of the intersection of 104th Avenue and East 14th Street (Figure 2). Information on the parcel groups, including the parcel group name, street address, and Assessor's Parcel Number (APN), is presented in the following table.

Parcel Group	Parcel Group Name	Street Address	Assessor's Parcel Number
VIII	East side of 104th Avenue Residential Parcel	10403 Walnut Street	047-5509-32-01
		1440 104th Avenue	047-5509-36-01
		1446 104th Avenue	047-5509-34-00
		1452 104th Avenue	047-5509-33-00
		1604 104th Avenue	047-5509-31-00
		1608 104th Avenue	047-5509-30-00
		1616 104th Avenue	047-5509-029-00
		1626 104th Avenue	047-5509-28-00
		1632 104th Avenue	047-5509-27-00
		1636 104th Avenue	047-5509-26-00
		1640 104th Avenue	047-5509-25-00
		1648 104th Avenue	047-5509-24-00

The eight groups of parcels included within the area to be addressed by the PEA are referred to as Lloyd Wise, Inc.; Bill & Bill's Auto Body; Management Storage; Ward's Custom Paint; Chevron Tow; Union Pacific Railroad (UPRR)/AC Transit; West Side of 105th Avenue Commercial, Industrial, and Residential; and East Side of 104th Avenue Residential. Each of these parcel groups is described in the Work Plan.

3.0 PLANNED SITE ACTIVITIES

Scheduled work will consist of the following activities:

- A total of 46 to 54 soil borings are proposed, with total depths ranging from 1 to at least 30 feet bgs. (Borings might be drilled deeper and additional borings might be drilled if warranted based on field observations.) A Geoprobe™, or similar direct-push method sampling rig will be used to collect soil samples. An estimated 288 to 336 soil samples are proposed to be collected. Additional samples might be collected if warranted based on field observations.

- A total of 43 to 51 "grab" groundwater samples will be collected using a Hydropunch™ sampler or factory-slotted PVC casing, advanced through a push-probe boring. Additional samples might be collected if warranted based on field observations. It is expected that first groundwater will occur within 8 to 30 feet bgs. In addition, one water supply well will be sampled if accessible.

Work is anticipated to begin in approximately mid-February 2001, and may last approximately two weeks.

4.0 KEY PROJECT PERSONNEL AND RESPONSIBILITIES

Project Manager	Michael B. Marsden, R.G., C.HG., Senior Associate Hydrogeologist
Site Safety Officer	Michael B. Marsden, R.G., C.HG., Senior Associate Hydrogeologist
Corporate Director of Health and Safety	Joanne M. Jaeger, CIH

The responsibilities of key project personnel are outlined below.

4.1 Project Manager

The Project Manager has the ultimate responsibility for the health and safety of LFR personnel at the Site. The Project Manager is responsible for:

- ensuring that project personnel review and understand the requirements of this HSP
- keeping the Corporate Director of Health and Safety informed of project developments
- keeping on-site personnel, including subcontractors, informed of the expected hazards and appropriate protective measures at the Site
- providing resources necessary for maintaining a safe and healthy work environment for LFR personnel

4.2 Corporate Director of Health and Safety

The Corporate Director of Health and Safety is responsible for the review, interpretation, and modification of this HSP. Modifications to this HSP that may result in less stringent precautions cannot be undertaken by the Project Manager or Site Safety Officer (SSO) without the approval of the Corporate Director of Health and Safety. In addition, he has the following responsibilities:

- advising the Project Manager and SSO on matters relating to health and safety on this project
- recommending appropriate safeguards and procedures
- modifying this HSP, when necessary
- approving changes in health and safety procedures employed at the Site

4.3 Site Safety Officer

The SSO is responsible for enforcing the requirements of this HSP once site work begins. The SSO has the authority to immediately correct situations where noncompliance with this HSP is noted and to immediately stop work in cases where an immediate danger to site workers or the environment is perceived. Responsibilities of the SSO also include:

- obtaining and distributing personal protective equipment (PPE) and air monitoring equipment necessary for this project
- limiting access at the Site to authorized personnel
- communicating unusual or unforeseen conditions at the Site to the Project Manager
- supervising and monitoring the safety performance of site personnel to evaluate the effectiveness of health and safety procedures and correct deficiencies
- conducting daily tailgate safety meetings before each day's activities begin
- conducting a site safety inspection prior to the commencement of each day's field activities

4.4 Subcontractor Personnel

Subcontractor personnel are expected to comply with the minimum requirements specified in this HSP. Failure to do so may result in the removal of the subcontractor or any of the subcontractor's workers from the job site. Subcontractors may employ health and safety procedures that afford them a greater measure of personal protection than those specified in this plan so long as they do not pose additional hazards to themselves, the environment or others working in the area.

5.0 HAZARDS OF KNOWN OR EXPECTED CHEMICALS OF CONCERN

The potential environmental issues present among the eight areas listed in Table 1 of the Work Plan include former hydraulic lifts, sumps, oil/water separator, former waste oil and antifreeze USTs, floor drains, auto body painting operations, chemical use, a railroad spur, lead-based paint, and asbestos.

Therefore, the potential chemicals of concern addressed in this investigation will include total volatile and extractable hydrocarbons (TVH and TEH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and volatile organic compounds (VOCs) because of their historical association with industrial, automobile maintenance, and painting operations; CAM 17/Title 22 metals because of their historical association with industrial operations and lead-based paint; and semivolatile organic compounds (SVOCs), including PCBs.

Information contained in ENSR's October 2000 Phase I Environmental Site Assessment Report was used to prepare the following table.

Known Compounds	Source (soil/water/drum, etc.)	Known Concentration Range (ppm, mg/kg, mg/l)	
		Lowest	Highest
Benzene	soil	ND	0.01
Toluene	soil	ND	0.21
Ethylbenzene	soil	ND	0.57
Total Xylenes	soil	ND	3.0
TVH (gasoline)	soil	ND	160
TEH (diesel)	soil	ND	660
Oil & Grease	soil	ND	1,400
VOCs	soil	NA	<10
Cadmium	soil	ND	NA
Chromium	soil	42	43
Lead	soil	15	16
Nickel	soil	45	50
Zinc	soil	42	45
Benzene	groundwater	<0.5	4.6
Toluene	groundwater	<0.5	8.7
Ethylbenzene	groundwater	<0.5	6.9
Total Xylenes	groundwater	<0.5	40
TVH (gasoline)	groundwater	<50	240
TEH (diesel)	groundwater	ND	NA
Oil & Grease	groundwater	ND	NA
Total Recoverable Petroleum Hydrocarbons (TRPH)	groundwater	<5,000	NA

Known Compounds	Source (soil/water/drum, etc.)	Known Concentration Range (ppm, mg/kg, mg/l)	
		Lowest	Highest
Methyl tertiary-butyl ether (MTBE)	groundwater	<5	23
VOCs	groundwater	ND	<0.01
Lead	groundwater	ND	0.01

ND – not detected

NA – not available

Exposure pathways of concern for chemical compounds that may be present at the Site are inhalation of airborne contaminants and direct skin contact with contaminated materials. Wearing protective equipment and following decontamination procedures listed in Section 9 can minimize dermal contact. To minimize inhalation hazards, dust control measures will be implemented, where necessary, and action levels will be observed during scheduled activities. Site-specific action levels are presented in Section 10. Chemical descriptions of chemicals of concern, including health effects and exposure limits, are located in Attachment A.

On-site worker exposure to airborne contaminants will be monitored during intrusive site activities. A calibrated photoionization detector (PID) or flame ionization detector (FID) will be used to monitor changes in exposure to volatile organic compounds (VOCs). Personnel will perform routine monitoring during site operations to evaluate concentrations of VOCs in employee breathing zones. If VOCs are detected above predetermined action levels specified in Section 10, the procedures found in Section 7 of this HSP will be followed.

In accordance with the Hazard Communication standard, material safety data sheets (MSDSs) will be maintained on site for chemical products used by LFR personnel at the Site. In addition, containers will be clearly labeled in English to indicate their contents and appropriate hazard warnings.

6.0 PHYSICAL HAZARDS

The following potential health and safety hazards may be encountered during scheduled activities at the Site:

- slips, trips, and falls
- heavy equipment
- cold stress

- noise
- electrical sources
- underground and overhead utilities
- materials and equipment handling
- fire/explosion
- traffic

6.1 General Safe Work Practices

- Workers will thoroughly clean their hands, faces, and other potentially contaminated areas before smoking, eating, or leaving the Site.
- Respiratory devices may not be worn with beards or long sideburns, or under other conditions that prevent a proper seal.
- Accidents and/or injuries associated with work at the Site will be immediately reported to the SSO. If necessary, an incident report will be initiated by the SSO.
- Periodic safety briefings will be held to discuss current site conditions, field tasks being performed, planned modifications, and work concerns.
- Site conditions may include uneven, unstable, or slippery work surfaces. Substantial care and personal observation is required on the part of each employee to prevent injuries from slips, trips, and falls.
- Workers will maintain good housekeeping practices during field activities to maintain a safe working environment. The work site will be kept free of debris, waste, and trash.
- The "buddy system" will be used whenever appropriate.
- To prevent head injury, ANSI-approved hard hats will be worn at all times while the worker is in an area where overhead obstructions or falling objects may be encountered.
- To prevent eye injuries, workers must wear ANSI-approved safety glasses during field activities.

6.2 Heavy Equipment

Equipment, including earth-moving equipment, drill rigs, or other heavy machinery, will be operated in compliance with the manufacturer's instructions, specifications, and limitations, as well as any applicable regulations. The operator is responsible for inspecting the equipment daily to verify that it is functioning properly and safely.

Operation of equipment at the Site for the activities outlined in Section 3 poses potential physical hazards. The following precautions should be observed whenever heavy equipment is in use:

- PPE, including steel-toed boots, safety glasses, and hard hats, must be worn.
- Personnel must be aware of the location and operation of heavy equipment and take precautions to avoid getting in the way of its operation. Workers must never assume that the equipment operator sees them; eye contact and hand signals should be used to inform the operator of intent.
- Traffic safety vests are required for personnel working near mobile heavy equipment or near high traffic areas.
- Personnel should not walk directly in back of, or to the side of, heavy equipment without the operator's knowledge.
- Nonessential personnel will be kept out of the work area.

6.3 Cold Stress

Workers performing activities during winter and spring months may encounter extremely cold temperatures, as well as conditions of snow and ice, making activities in the field difficult. Adequate cold weather gear, especially head and foot wear, is required under these conditions. Workers should be aware of signs and symptoms of hypothermia and frostbite, as well as first aid for these conditions. These are summarized in the table below.

Condition	Signs	Symptoms	Response
Hypothermia	Confusion, slurred speech, slow movement.	Sleepiness, confusion, warm feeling.	Remove subject to warm area, such as truck cab; give warm fluids; warm body core as rapidly as possible; remove outer clothing and wrap torso in blankets with hot water bottle or other heat source. Get medical attention immediately.
Frostbite	Reddish area on skin, frozen skin.	Numbness or lack of feeling on exposed skin.	Place affected extremity in warm, not hot, water, or wrap in warm towels. Get medical attention.

6.4 Noise

Noise may result primarily from the operation of drill rigs and mechanical equipment. The use of heavy equipment may generate noise above the Cal/OSHA permissible exposure limit for noise of 90 dBA for an 8-hour time-weighted average. Workers will wear appropriate hearing protection when operating or working near heavy equipment.

If loud noise is present or normal conversation becomes difficult, hearing protection in the form of ear plugs, or equivalent, will be required.

6.5 Electric Shock

Electrical equipment to be used during field activities will be suitably grounded and insulated. Ground fault circuit interrupters (GFCI), or equivalent, will be used with electrical equipment to reduce the potential for electrical shock.

Lockout/tagout procedures in accordance with 8 CCR 3314 will be conducted before activities begin on or near energized or mechanical equipment that may pose a hazard to site personnel. Workers conducting the operation will positively isolate the piece of equipment, lock/tag the energy source, and verify effectiveness of the isolation. Only employees who perform the lockout/tagout procedure may remove their own tags/locks. Employees will be thoroughly trained before initiating this procedure.

6.6 Underground and Overhead Utilities

The locations of underground pipes, electrical conductors, fuel lines, and water and sewer lines must be determined before soil intrusive work is performed. Lines must be de-energized, blocked out, or blinded where feasible. Equipment with articulated upright booms or masts shall not be permitted to pass within 20 feet of an overhead utility line while the boom is in the upright position.

6.7 Materials and Equipment Handling Procedures

The movement and handling of equipment and materials on the Site pose a risk to workers in the form of muscle strains and minor injuries. These injuries can be avoided by using safe handling practices, proper lifting techniques, and proper personal safety equipment such as steel-toed boots and sturdy work gloves. Where practical, mechanical devices will be utilized to assist in the movement of equipment and materials. Workers will not attempt to move heavy objects by themselves without using appropriate mechanical aids such as drum dollies or hydraulic lift gates.

6.8 Fire/Explosion

Site workers should have an increased awareness concerning fire and explosion hazards whenever working with or near flammable materials, especially when performing any activity that may generate sparks, flame, or other source of ignition. Intrinsically safe equipment is required when working in or near environments with the potential for an explosive atmosphere. The SSO will verify facility requirements for a "hot work" permit before activities that may serve as a source of ignition are conducted.

Flammable materials will be kept away from sources of ignition. In the event of fire, work will cease, the area will be evacuated, and the local fire response team will be notified immediately. Only trained, experienced fire fighters should attempt to extinguish substantial fires at the Site. Site personnel should not attempt to fight fires, unless properly trained and equipped to do so. A fully charged ABC dry chemical fire extinguisher will be readily available for use during all scheduled activities at the Site.

6.9 Traffic

Vehicular traffic presents opportunities for serious injury to persons or property. Traffic may consist of street traffic or motor vehicles operated by facility employees or visitors to the Site. Workers and other pedestrians are clearly at risk during periods of heavy traffic. Risk from motor vehicle operations may be minimized by good operating practices and alertness, and care on the part of workers and pedestrians.

Site personnel will wear high-visibility safety vests whenever activities are conducted in areas of heavy traffic. Work vehicles will be arranged to be used as a barrier between site workers and nearby traffic.

7.0 PERSONAL PROTECTIVE EQUIPMENT

The purpose of PPE is to protect employees from hazards and potential hazards they are likely to encounter during site activities. The amount and type of PPE used will be based on the nature of the hazard encountered of anticipated. Respiratory protection will be utilized when an airborne hazard has been identified using real-time air monitoring devices, or as a precautionary measure in areas designated by the Corporate Director of Health and Safety or SSO.

Dermal protection, primarily in the form of chemical-resistant gloves and coveralls, will be worn whenever contact with chemically affected materials (e.g., soil, groundwater, sludge) is anticipated, without regard to the level of respiratory protection required.

LFR personnel will be provided with appropriate personal safety equipment and protective clothing. The SSO is to inform each worker about necessary protection and must provide proper training in the use of the safety equipment. The required PPE to be worn is described below.

7.1 Conditions Requiring Level D Protection

In general, site activities will commence in Level D PPE unless otherwise specified, or if the SSO determines on site that a higher level of PPE is required. Air monitoring will be routinely conducted using real-time air monitoring devices to determine if upgrading to Level C PPE is necessary. Level D PPE will be permitted as long as air monitoring data indicate that airborne concentrations of chemicals of concern are maintained below the site-specific action levels defined in Section 10.

It is important to note that dermal protection is required whenever contact with chemically affected soils or groundwater is anticipated. The following equipment is specified as the minimum PPE required to conduct activities at the Site:

- work shirt and long pants
- ANSI-approved steel-toed boots or safety shoes
- ANSI-approved safety glasses
- ANSI-approved hard hat

Other personal protection readily available for use, if necessary, includes the following:

- outer nitrile gloves and inner nitrile surgical gloves when direct contact with chemically affected soils or groundwater is anticipated (nitrile surgical gloves may be used for collecting or classifying samples as long as they are removed and disposed of immediately after each sampling event)
- chemical-resistant clothing (e.g., Tyvek or polycoated Tyvek coveralls) when contact with chemically affected soils or groundwater is anticipated
- safety shoes/boots with protective overboots or knee-high PVC polyblend boots when direct contact with chemically affected soils is anticipated
- hearing protection
- sturdy work gloves

7.2 Conditions Requiring Level C Protection

If air monitoring indicates that the site-specific action levels defined in Section 10 are exceeded, workers in the affected area(s) will upgrade PPE to Level C. In addition to the protective equipment specified for Level D, Level C also includes the following:

- NIOSH/MSHA-approved half-face air-purifying respirator (APR) equipped with filter cartridges as specified in Section 10.0.
- chemical-resistant clothing (e.g., Tyvek, polycoated Tyvek, or Saranex coveralls) when contact with chemically affected soils or groundwater is anticipated
- outer nitrile gloves and inner nitrile surgical gloves when direct contact with chemically affected soils or groundwater is anticipated (nitrile surgical gloves may be used for collecting or classifying samples as long as they are removed and disposed of immediately after each sampling event)
- safety shoes/boots with protective overboots or knee-high PVC polyblend boots when direct contact with chemically affected soils is anticipated

If air monitoring indicates that the site-specific action levels defined in Section 10 are exceeded, workers in the affected area(s) will upgrade to NIOSH/MSHA-approved full-face APRs in lieu of half-face APRs and safety glasses.

If air monitoring indicates that the site-specific action levels defined in Section 10 are exceeded, activities must cease, and personnel must evacuate the Exclusion Zone (see Section 9). The Project Manager and Corporate Director of Health and Safety will be contacted immediately.

8.0 SAFETY PROCEDURES

Procedures must be followed to maintain site control so that persons who may be unaware of site conditions are not exposed to hazards. The work area will be barricaded by tape, warning signs, or other appropriate means. Pertinent equipment or machinery will be secured and stored safely.

Access inside the specified work area will be limited to authorized personnel. Only LFR employees and designated LFR subcontracted personnel, as well as designated employees of the client, will be admitted to the work site. Only those workers possessing evidence of the required current 40-hour OSHA health and safety training (or current 8-hour refresher) and physician's authorization to conduct hazardous waste activities will be permitted in the work area designated as the Exclusion Zone. The SSO will be responsible for requiring that workers wear proper personal protective clothing. Personnel entering the work area will sign the signature page of this HSP, indicating they have read and accepted the health and safety practices outlined in this plan.

Real-time air monitoring devices will be used to analyze for airborne contaminant concentrations every 30 minutes in the workers' breathing zones while workers are in the Exclusion Zone. If elevated concentrations are indicated, the monitoring frequency will be increased, as appropriate. The equipment will be calibrated daily, and the results will be recorded on LFR's Air Monitoring form or project log book. The results of air monitoring will be recorded on a LFR Air Monitoring Form or project log book and will be retained in the project files following completion of field activities. A copy of the Air Monitoring Form is located in Attachment B.

A daily morning briefing to cover safety procedures and contingency plans in the event of an emergency is to be included with a discussion of the day's activities. These daily meetings will be recorded on LFR Daily Tailgate Safety Meeting Forms. A debriefing to cover the activities is to be held upon completion of the work. A copy of the Daily Tailgate Safety Meeting Form is included in Attachment B.

The SSO will conduct a safety inspection of the work site before each day's activities begin to verify compliance with the requirements of the HSP. Results of the first day's inspection will be documented on an LFR Site Safety Checklist. A copy of the checklist is included in Attachment B.

Minimum emergency equipment maintained on site will include a fully charged 20-pound ABC dry chemical fire extinguisher, an adequately stocked first aid kit, and an emergency eyewash station.

Personnel entering the designated Exclusion Zone should exit at the same location. There must be an alternate exit established for emergency situations. In all instances, worker safety will take precedence over decontamination procedures. If decontamination of personnel is necessary, exiting the Site will include the decontamination procedures described below.

9.0 WORK ZONES AND DECONTAMINATION PROCEDURES

In some instances it may be necessary to define established work zones: an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. Work zones may be established based on the extent of anticipated contamination, projected work activities, and the presence or absence of non-project personnel. The physical dimensions and applicability of work zones will be determined for each area based on the nature of job activity and hazards present. Within these zones, prescribed operations will occur using appropriate PPE. Movement between zones will be controlled at checkpoints.

Considerable judgment is needed to maintain a safe working area for each zone, balanced against practical work considerations. Physical and topographical barriers may constrain ideal locations. Field measurements combined with climatic conditions may, in part, determine the control zone distances. Even when work is performed in an area that does not require the use of chemical-resistant clothing, work zone procedures may still be necessary to limit the movement of personnel and retain adequate site control.

Despite protective procedures, personnel may come in contact with potentially hazardous compounds while performing work tasks. If so, decontamination needs to take place using an Alconox or TSP wash, followed by a rinse with clean water. Standard decontamination procedures for levels C and D are as follows:

- equipment drop
- boot cover and outer glove wash and rinse
- boot cover and outer glove removal
- suit wash and rinse
- suit removal
- safety boot wash and rinse
- inner glove wash and rinse
- respirator removal
- inner glove removal
- field wash of hands and face

Workers should employ only applicable steps in accordance with level of PPE worn and extent of contamination present. The SSO shall maintain adequate quantities of clean water to be used for personal decontamination (i.e., field wash of hands and face) whenever a suitable washing facility is not located in the immediate vicinity of the work area. Disposable items will be disposed of in an appropriate container. Wash and rinse water generated from decontamination activities will be handled and disposed of properly. Nondisposable items may need to be sanitized before reuse. Each Site worker is responsible for the maintenance, decontamination, and sanitizing of their own PPE.

Used equipment may be decontaminated as follows:

- An Alconox or TSP and water solution will be used to wash the equipment.
- The equipment will then be rinsed with clean water.

Each person must follow these procedures to reduce the potential for transferring chemically affected materials off site.

10.0 ACTION LEVELS

The following action levels were developed for exposure monitoring with real-time air monitoring instruments. The air monitoring data will determine required PPE levels at the Site during scheduled intrusive activities. The action levels are based on sustained readings indicated by the instrument(s). Air monitoring will be performed and recorded at up to 30-minute intervals. If elevated concentrations are indicated, the monitoring frequency will be increased, as appropriate. If during this time, sustained measurements are observed, the following actions will be instituted, and the Project Manager and Director of Health and Safety will be notified. For purposes of this HSP, sustained readings are defined as the average airborne concentration maintained for a period of 5 minutes.

Activity	Action Level	Level of Respiratory Protection
soil borings/sampling	0 to 5 ppm above background	Level D: No respiratory protection required.
	6 to 50 ppm	Level C: Half-face air-purifying respirator fitted with organic vapor filter cartridges.
	51 to 100 ppm	Level C: Full-face air-purifying respirator fitted with organic vapor filter cartridges.
	> 100 ppm	Cease operations and evacuate work area. Contact Corporate Director of Health and Safety and Project Manager immediately.

11.0 CONTINGENCY PROCEDURES

In the event of an emergency, site personnel will signal distress with three blasts of a horn (a vehicle horn will be sufficient). Communication signals, such as hand signals, must be established where communication equipment is not feasible or in areas of loud noise.

It is the SSO's duty to evaluate the seriousness of the situation and to notify appropriate authorities. Section 12 of this plan contains emergency telephone numbers as well as directions to the hospital. Nearby telephone access must be identified and available to communicate with local authorities. If a nearby telephone is not available, a cellular telephone will be maintained on site during work activities.

Personnel should dial 911 in the event of an emergency.

11.1 Injury/Illness

If an exposure or injury occurs, work will be temporarily halted until an assessment can be made of whether it is safe to continue work. The SSO, in consultation with the Corporate Director of Health and Safety, will make the decision regarding the safety of continuing work. The SSO will conduct an investigation to determine the cause of the incident and steps to be taken to prevent recurrence.

In the event of an injury, the extent and nature of the victim's injuries will be assessed and first aid will be rendered as appropriate. If necessary, the individual may be transported to the nearby medical center. The mode of transportation and the eventual destination will be based on the nature and extent of the injury. A hospital route map is presented in Attachment C. In the event of a life-threatening emergency, the injured person will be given immediate first aid and emergency medical services will be contacted by dialing 911. The individual rendering first aid will follow directions given by emergency medical personnel via telephone. A person certified in first aid/CPR techniques will be present during field activities.

11.2 Fire

In the event of fire, personnel should contact the local fire department immediately by dialing 911. When representatives of the fire department arrive, the SSO, or designated representative, will advise the commanding officer of the location, nature, and identification of hazardous materials on site. Only trained, experienced fire fighters should attempt to extinguish substantial fires at the Site. Site personnel should not attempt to fight fires, unless properly trained and equipped to do so.

11.3 Underground Utilities

In the event that an underground conduit is damaged during excavation or drilling, mechanized equipment will immediately be shut off until the nature of the piping can be determined. Depending on the nature of the broken conduit (e.g., natural gas, water, or electricity), the appropriate local utility will be contacted.

11.4 Evacuation

The SSO will designate evacuation routes and refuge areas to be used in the event of an emergency. Site personnel will stay upwind from vapors or smoke and upgradient from spills. If workers are in an Exclusion or Contamination Reduction Zone at the start of an emergency, they should exit through the established decontamination areas whenever possible. If evacuation cannot be done through an established decontamination area, site personnel will go to the nearest safe location and remove contaminated clothing there or, if possible, leave it near the Exclusion Zone. Personnel will assemble at the predetermined refuge following evacuation and decontamination. The SSO, or designated representative, will count and identify Site personnel to verify that all have been evacuated safely.

11.5 Hazardous Material Spill

If a hazardous material spill occurs, site personnel should locate the source of the spill and determine the hazard to the health and safety of site workers and the public. Attempt to stop or reduce the flow if it can be done without risk to personnel. Isolate the spill area and do not allow entry by unauthorized personnel. De-energize sources of ignition within 100 feet of the spill, including vehicle engines. Should a spill be of the nature or extent that it cannot be safely contained, or poses an imminent threat to human health or the environment, an emergency cleanup contractor will be called out as soon as possible. Spill containment measures listed below are examples of responses to spills.

- Upright or rotate containers to stop the flow of liquids. This step may be accomplished as soon as the spill or leak occurs, providing it is safe to do so.
- Sorbent pads, booms, or adjacent soil may be used to dike or berm materials, subject to flow, and to solidify liquids.
- Sorbent pads, soil, or booms, if used, shall be placed in appropriate containers after use, pending disposal.
- Contaminated tools and equipment shall be collected for subsequent cleaning or disposal.

12.0 EMERGENCY CONTACTS

Ambulance:	911
Police:	911
Fire Department:	911
Hospital:	911
National Response Center:	(800) 424-8802
Poison Control Center:	(800) 876-4766
TOXLINE:	(301) 496-1131
CHEMTREC:	(800) 424-9300
LFR Director of Health and Safety (Raritan, New Jersey):	(908) 526-1000
LFR Emeryville office	(510) 652-4500
Nearby Hospital:	(510) 357-6500

San Leandro Hospital
13855 East 14th Street
San Leandro, California

DIRECTIONS TO HOSPITAL:

From the Site, go to East 14th Street (also called International Boulevard and Highway 185). Turn left on East 14th Street and head south for approximately 2-1/4 miles. San Leandro Hospital will be on the right.

A hospital route map is presented in Attachment B.

13.0 LFR APPROVALS

This HSP has been prepared for the following project:

Batarse Project Site
104th Avenue and East 14th Street
Oakland, California

LFR Project Number: 7962.01-001

This HSP has been reviewed and approved by the following LFR personnel:

Michael Marsden — 5-25-01

Michael B. Marsden, R.G., C.HG., — Date
Senior Associate Hydrogeologist
Site Safety Officer

Michael Marsden — 5-25-01

Michael B. Marsden, R.G., C.HG., — Date
Senior Associate Hydrogeologist
Project Manager

Lita D Freeman for — 5/25/01

Thomas Zakaria, for — Date
Joanne M. Jaeger, CIH
Corporate Director of Health and Safety

SIGNATURE PAGE

The following signatures indicate that this Health and Safety Plan has been read and accepted by LFR personnel as well as subcontractors and their personnel.

NAME	COMPANY	SIGNATURE	DATE

Important notice to subcontractor(s):

This Health and Safety Plan has been prepared solely for the use of LFR personnel. It is supplied to you for informational purposes only and may not be relied upon for protection of your employees. The Subcontractor is responsible for providing, at its cost, all personal protective clothing and equipment required for its employees to perform their work in a safe manner and in compliance with all applicable state and federal OSHA regulations. Subcontractor is responsible for ensuring that such equipment is in good condition and is properly inspected and maintained. Subcontractor must, at a minimum, use the equipment and follow the procedures described in this HSP. Failure to do so may result in immediate termination of Subcontractor's services. This does not relieve Subcontractor of the responsibility to provide equipment and institute procedures affording a greater degree of protection than those specified in this HSP should Subcontractor determine such measures are necessary to protect the health and welfare of its employees, second-tier subcontractors, or others under its control or direction.

ATTACHMENT A

Chemical Descriptions

CHEMICAL DESCRIPTIONS

The following chemical descriptions are presented for chemicals that may be present at the Site. Each chemical description includes physical and odor recognition characteristics, health effects associated with exposure, and exposure limits expressed as an eight-hour time weighted average (TWA). Provided are federal OSHA ("OSHA") permissible exposure limits (PELs; located in 29 CFR 1910.1000); California OSHA ("Cal/OSHA") PELs (located in 8 CCR 5155); and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).

ASBESTOS

Asbestos may be solid, crystals or crystalline, or fibrous in appearance, and comprises hydrated, fibrous silicates. It is light or pale gray in color and odorless.

There are two groups of asbestos mineral. The first is the serpentine group, commonly referred to as chrysotile. Chrysotile, which comprises approximately 93% of all asbestos in use in the United States, is characterized by long, soft and flexible strands that can be woven into a cloth. The second category occurs as a group of minerals called amphiboles. Amphibole fibers are characterized as being strong, brittle, and needle-like. The common names of the forms of the minerals within this group are crocidolite, amosite, tremolite, anthophyllite, and actinolite. Asbestos was formerly very popular for use in building materials and industry.

Dust from this material can be hazardous when inhaled. Exposure to asbestos dust can cause irritation of eyes and mucous membranes, upper respiratory irritation, delayed and often serious breathing problems, and stomach upsets. Asbestos can produce a lung fibrosis called asbestosis. The onset of asbestosis is usually gradual, developing over a period of 10 to 30 years of exposure to significant concentrations of asbestos. It is characterized by development of a thickening of the lung pleura (lining).

Asbestos is also a cancer-producing agent (lung cancer and mesothelioma, among others). Heavy exposure to dust containing asbestos can also cause skin irritation. Epidemiological studies have shown that lung cancer appears to be related to the degree of exposure, the type of asbestos and whether or not the individuals smoke cigarettes. It is significant that cigarette smoking greatly increases the risk of lung cancer in those who are exposed to asbestos. However, mesothelioma (a rare tumor of the chest cavity lining) appears to develop without regard to the amount of asbestos inhaled.

- The OSHA PEL is listed as 0.1 fibers per cubic centimeter (f/cc).
- The Cal/OSHA PEL is listed as 0.1 f/cc.
- The TLV is listed as 0.1 f/cc.

WARNING: This chemical is known to the State of California to cause cancer.

BENZENE

Benzene is a clear, volatile liquid. It is colorless, highly flammable, and toxic, with a characteristic odor. It is a severe eye and moderate skin irritant. Human effects by inhalation and ingestion include euphoria, changes in sleep and motor activity, nausea and vomiting, other blood effects, dermatitis, and fever. In industry, inhalation is the primary route of chronic benzene poisoning. If the liquid is aspirated into the lung it may cause pulmonary edema. Poisoning by skin contact has also been reported. Exposure to high concentrations (3,000 ppm) may result in acute poisoning, which is characterized by the narcotic action of benzene on the central nervous system. Chronic poisoning occurs most commonly through inhalation and dermal absorption. Benzene is a known human carcinogen that can cause leukemia.

- The OSHA PEL is listed as 1 ppm.
- The Cal/OSHA PEL is listed as 1 ppm.
- The TLV is listed as 0.5 ppm.

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

WARNING: This chemical is known to the State of California to cause cancer.

WARNING: This chemical is known to the State of California to cause birth defects or other reproductive harm.

1,2-DICHLOROBENZENE (1,2-DCB)

1,2-DCB (also known as o-dichlorobenzene) is a poison by ingestion and is moderately toxic by inhalation. It is an eye, skin, and mucous membrane irritant, and causes liver and kidney injury. It is an experimental teratogen and suspected carcinogen exhibiting experimental reproductive effects. It is flammable when exposed to heat or flame and can react vigorously with oxidizing materials.

- The OSHA PEL is listed as 50 ppm.
- The Cal/OSHA PEL is listed as 25 ppm.
- The TLV is listed as 25ppm.

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

1,3-DICHLOROBENZENE (1,3-DCB)

Limited toxicological information is available for 1,3-DCB (also known as m-dichlorobenzene). It is identified as a poison and mutation data are reported. It is reported in the EPA TSCA Inventory and Community Right-To-Know List. When heated to decomposition, it emits toxic fumes of Cl^-.

- No OSHA PEL, Cal/OSHA PEL, or TLV is listed for 1,3-dichlorobenzene.

1,4-DICHLOROBENZENE (1,4-DCB)

1,4-DCB (also known as p-dichlorobenzene) is a confirmed carcinogen and an experimental teratogen. It is moderately toxic to humans by ingestion. Human systemic effects by ingestion include unspecified changes in the eyes, lungs, thorax, and respiration. It is also an eye irritant. It is flammable when exposed to heat or flame and can react vigorously with oxidizing materials.

- The OSHA PEL is listed as 75 ppm.
- The Cal/OSHA PEL is listed as 75 ppm.
- The TLV is listed as 10 ppm.

DIESEL FUEL

Diesel fuel is a gas oil fraction available in various grades as required by different engines. Composition of diesel varies in ratios of predominantly aliphatic, olefinic, cycloparaffinic, aromatic hydrocarbons, and additives.

It is a severe skin irritant and ingestion of diesel can lead to systemic effects such as gastrointestinal irritation, vomiting, diarrhea, and, in severe cases, drowsiness and central nervous system depression, progressing to coma and death. Absorption of diesel fuel can cause hemorrhaging and pulmonary edema, progressing to pneumonitis and renal involvement. It is combustible when exposed to heat or flame, and can react with strong oxidizing materials.

- No OSHA PEL or Cal/OSHA PEL is listed for diesel.
- The TLV is listed as 100 mg/m^3.

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

WARNING: The exhaust from this chemical is known to the State of California to cause cancer.

ETHYLBENZENE

Ethylbenzene is a clear, colorless liquid. It is mildly toxic by inhalation and skin contact. Inhalation can cause eye, sleep, and pulmonary changes. It is an eye and skin irritant at levels as low as 0.1% (1,000 ppm) of the vapor in air. At higher concentrations, it is extremely irritating at first, then can cause dizziness, irritation of the nose and throat, and a sense of constriction in the chest. Exposure to high concentrations of ethylbenzene vapor may result in irritation of the skin and mucous membranes, dizziness, irritation of the nose and throat, and a sense of constriction of the chest.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 100 ppm.
- The TLV is listed as 100 ppm.

GASOLINE

Gasoline is produced from the light distillates during petroleum fractionation. Its major components include paraffins, olefins, naphthenes, aromatics, and recently ethanol. Gasoline also contains various functional additives as required for different uses, such as antiknock fluids, antioxidants, metal deactivators, corrosion inhibitors, anti-icing agents, preignition preventers, upper-cylinder lubricants, dyes, and decolorizers. Lead additives in particular were widely used in gasoline until the introduction of vehicle catalytic converters.

Mild cases of gasoline ingestion can cause inebriation, vomiting, vertigo, drowsiness, confusion, and fever. Aspiration into the lungs and secondary pneumonia may occur unless prevented. Gasoline can cause hyperemia of the conjunctiva and other eye disturbances. Gasoline is a skin irritant and a possible allergen. Repeated or chronic dermal contact can result in drying of the skin, lesions, and other dermatologic conditions.

- No OSHA PEL is listed for gasoline.
- The Cal/OSHA PEL is listed as 300 ppm.
- The TLV is listed as 300 ppm.

WARNING: The Exhaust from this chemical is known to the State of California to cause cancer.

HEAVY WASTE OILS

Heavy waste oils, including lubricants, grease, and used motor and hydraulic fluids, have been shown to cause skin cancer during prolonged dermal exposure in laboratory animals. Therefore, dermal protection must be provided when contact with used oil is suspected. Contaminated skin should be washed as soon as possible.

The above information is provided for a class of compounds. OSHA PELs, Cal/OSHA PELs, and TLVs (if listed) vary by specific compound.

LEAD

Lead (inorganic) is a bluish-white, silver or gray odorless solid. Short-term exposure to lead can cause decreased appetite, insomnia, headache, muscle and joint pain, colic, and constipation. Considerable data exist on the effects of lead exposure in humans. It is a poison by ingestion and a suspected human carcinogen of the lungs and kidneys. There are data to suggest that lead is a mutagen and can cause reproductive effects. Human systemic effects by ingestion and inhalation (the two routes of absorption) include loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations and distorted perceptions, muscle weakness, gastritis, and liver changes. Recent experimental evidence suggests that blood levels of lead below 10 $\mu g/dl$ (micrograms per deciliter) can have the effect of diminishing the IQ scores of children.

- The OSHA PEL is listed as 0.05 mg/m^3.
- The Cal/OSHA PEL is listed as 0.05 mg/m^3.
- The TLV is listed as 0.05 mg/m^3.

WARNING: This chemical is known to the State of California to cause cancer.

WARNING: This chemical is known to the State of California to cause birth defects or other reproductive harm.

MOTOR OIL

Motor oil is a dark viscous liquid. It is composed of aliphatic, olefinic, naphthenic (cycloparaffinic), and aromatic hydrocarbons, as well as additives depending on specific uses. Motor oil has a burning lubricating oil odor. Short-term exposure via dermal contact with motor oil can cause irritation to the skin and dermatitis. Inhalation of motor oil can cause aspiration. Target organs are the upper respiratory system and the skin.

- No OSHA PEL, Cal/OSHA PEL, or ACGIH TLV is listed for motor oil.

PETROLEUM HYDROCARBONS

Petroleum distillates (naphtha) are mildly toxic by inhalation. They can cause unconsciousness, dyspnea, and a bluish tint to the skin. Recovery follows after removal from exposure. In mild form, intoxication resembles drunkenness. On a chronic basis, no true poisoning occurs; however, effects may include headache, lack of appetite, dizziness, sleeplessness, indigestion, and nausea. It is combustible when exposed to heat or flame and can react with oxidizing materials.

- The OSHA PEL is listed as 500 ppm (as petroleum distillates).
- The Cal/OSHA PEL is listed as 300 ppm (as VM&P naphtha).
- The TLV is listed as 300 ppm (as VM&P naphtha).

POLYCHLORINATED BIPHENYLS (PCBS)

PCBs are a series of technical mixtures consisting of many isomers and compounds that vary from mobile oil liquids to white crystalline solids and hard non-crystalline resins. Technical products vary in composition, in the degree of chlorination, and possibly according to batch. Generally, they are moderately toxic by ingestion, and some are poisons by other routes. Most are suspect human carcinogens and experimental tumorigens, and exhibit experimental reproductive effects. They have two distinct actions on the body: a skin effect (chloracne) and a toxic action on the liver. The higher the chlorine content, the more toxic the PCBs tend to be.

- The OSHA PEL is listed as 0.5 mg/m^3 for 54% chlorine content (as a PCB) and 1.0 mg/m^3 for 42% chlorine content (as a PCB).
- The Cal/OSHA PEL is listed as 0.5 mg/m^3 for 54% chlorine content (as a PCB) and 1.0 mg/m^3 for 42% chlorine content (as a PCB).
- The TLV is listed as 0.5 mg/m^3 for 54% chlorine content (as a PCB) and 1.0 mg/m^3 for 42% chlorine content (as a PCB).

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

WARNING: This chemical is known to the State of California to cause cancer.

WARNING: This chemical is known to the State of California to cause birth defects or other reproductive harm.

POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)

PAHs constitute a class of materials of which benzo[a]pyrene (BaP) is one of the most common and also the most hazardous. In general, PAHs can be formed in any hydrocarbon combustion process. The less efficient the combustion process, the higher the PAH emission factor is likely to be. The major sources are stationary sources, such as heat and power generation, refuse burning, industrial activity, such as coke ovens, and coal refuse heaps. PAHs may also be released from oil spills. Because of the large number of sources, people are exposed to very low levels of PAHs every day.

Certain PAHs, such as the more common BaP, have been demonstrated to be carcinogenic at relatively high exposure levels in laboratory animals. BaP is a yellowish crystalline solid that consists of five benzene rings joined together. It is highly soluble in fat tissue and has been shown to produce tumors in the stomachs of laboratory mice. In addition, skin cancers have been induced in a variety of animals at very low levels and unspecified lengths of application.

It is important to recognize the PAHs' ability to adhere to soil and other particulates. Therefore, good particulate emission controls and the use of air purifying respirators with particulate filters are required for protection against airborne PAH hazards.

- The OSHA PEL is listed as 0.2 mg/m^3 (as coal tar pitch volatiles).
- The Cal/OSHA PEL is listed as 0.2 mg/m^3 (as coal tar pitch volatiles).
- The TLV is listed as 0.2 mg/m^3 (as coal tar pitch volatiles).

TETRACHLOROETHYLENE (PCE)

PCE (also known as perchloroethylene) is a colorless liquid with an ether-like odor. Short-term exposure to PCE may cause headaches, nausea, drowsiness, dizziness, incoordination, unconsciousness, irritation of the eyes, nose, and throat, and flushing of the face and neck. In addition, it may cause liver damage with such findings as yellow jaundice and dark urine. Liver damage may become evident several weeks after exposure. Skin contact may create a dry, scaly, itchy dermatitis. PCE is Classified by the U.S. Environmental Protection Agency as a Group B2 probable human carcinogen.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 25 ppm.
- The TLV is listed as 25 ppm.

WARNING: This chemical is known to the State of California to cause cancer.

TOLUENE

Toluene is a colorless liquid with a benzol-like odor. Human systemic effects of exposure to toluene include central nervous system changes, hallucinations or distorted perceptions, motor activity changes, psychophysiological changes, and bone marrow changes. It is a severe eye irritant and an experimental teratogen. Inhalation of high vapor concentrations may cause impairment of coordination and reaction time, headaches, nausea, eye irritation, loss of appetite, a bad taste in the mouth, and lassitude.

- The OSHA PEL is listed as 200 ppm.
- The Cal/OSHA PEL is listed as 50 ppm.
- The TLV is listed as 50 ppm.

Note: Published exposure limits designate a skin notation indicating that dermal contact can contribute to the overall exposure.

WARNING: This chemical is known to the State of California to cause birth defects or other reproductive harm.

TRICHLOROETHYLENE (TCE)

TCE is a clear, colorless liquid with a characteristic chloroform odor. It is a mildly toxic VOC that is also an experimental carcinogen, tumorigen, and teratogen. It can cause eye effects, hallucinations and distorted perceptions when inhaled. TCE is an eye and severe skin irritant. Exposure to vapors may cause eye, nose and throat irritation. Prolonged inhalation of moderate concentrations of vapor may cause headaches and drowsiness. Inhalation of high concentrations may cause narcosis and anesthesia. Severe, acute exposure can result in cardiac failure. Significant chronic exposure may damage the liver and other organs. Prolonged repeated skin contact with the liquid may cause irritation and dermatitis.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 25 ppm.
- The TLV is listed as 50 ppm.

WARNING: This chemical is known to the State of California to cause cancer.

XYLENE

Xylene is a clear, colorless liquid. It exhibits the general chlorinated hydrocarbon central nervous system effects, olfactory (smell) changes, eye irritation and pulmonary changes. It is a severe skin irritant. There are three isomers: ortho, meta, and para. Exposure to high concentrations of xylene vapor may result in eye and skin irritation. Eye irritation may occur at concentrations of about 200 ppm.

- The OSHA PEL is listed as 100 ppm.
- The Cal/OSHA PEL is listed as 100 ppm.
- The TLV is listed as 100 ppm.

ATTACHMENT B

LFR Levine·Fricke Forms

LFR
LEVINE • FRICKE

AIR MONITORING FORM

Date ____________ *LFR Project No.* ____________

Project Name ____________ *Type of Activities* ____________

Type of PID/FID ____________ *Serial No.* ____________

Initial Calibration Reading ____________ *End-of-Use Calibration Check* ____________

Calibration Standard/Concentration ____________

Mini-RAM Serial No. ____________ *Zeroed in Z-Bag?* ☐ Yes ☐ No

Time	Activity/Location	PID/FID (ppm)	Mini-RAM (mg/m^3)

Name (print) ____________ *Signature* ____________

LFR
LEVINE•FRICKE

SITE SAFETY CHECKLIST

Project Name ______________________ *LFR Project No.* ______________________

Project Activities ______________________

	YES	NO	N/A
Written Health and Safety Plan (HSP) is on site	☐	☐	☐
Addenda to the HSP are documented on site	☐	☐	☐
Information in the HSP matches conditions and activities at the site	☐	☐	☐
HSP has been read and signed by all site personnel, including visitors	☐	☐	☐
Daily tailgate safety meetings have been held and documented	☐	☐	☐
Site personnel have appropriate training and medical clearance	☐	☐	☐
Air monitoring is performed and documented as described in the HSP	☐	☐	☐
Air monitoring equipment has been calibrated daily	☐	☐	☐
Site zones are set up and observed where appropriate	☐	☐	☐
Access to the work area limited to authorized personnel	☐	☐	☐
Decontamination procedures are followed and match the requirements of the HSP	☐	☐	☐
Decontamination stations (including hand/face wash) are set up and used	☐	☐	☐
Personal protective equipment used matches HSP requirements	☐	☐	☐
Hearing protection used where appropriate	☐	☐	☐
Respirators are properly cleaned and stored	☐	☐	☐
Trenches and excavations are in compliance with federal, state, and local safety requirements before worker entry	☐	☐	☐
Spoils are placed no closer than 2 feet from the edge of an excavation	☐	☐	☐
Emergency and first aid equipment is on site as described in the HSP	☐	☐	☐
Drinking water is readily available	☐	☐	☐
Accessible phone is readily available for emergency use	☐	☐	☐
Proper drum and material handling techniques are used	☐	☐	☐
Drums and waste containers are labeled appropriately	☐	☐	☐
Extension cords are grounded and protected from water and vehicle traffic	☐	☐	☐
Ground-fault circuit interrupters (GFCI) are used with electrical equipment	☐	☐	☐
Tools and equipment are in good working order	☐	☐	☐
Lighting is adequate	☐	☐	☐
Compressed gas cylinders are upright and secured	☐	☐	☐

Notes (All "no" answers must be addressed and corrected immediately. Note additional health and safety observations here): ______________________

____

____

____

____

____

____

Conducted By: ______________ *Signature:* ______________ *Date:* ______________

LFR
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DAILY TAILGATE SAFETY MEETING FORM

Date ________ *Time* ____________ *LFR Project No.* ______________________________

Project Name ______________________________ *Specific Location* ____________________

Type of Work ____

Chemicals Present ____

SAFETY TOPICS DISCUSSED

Protective Clothing/Equipment ____

____

Hazards of Chemicals Present ____

____

Physical Hazards ____

____

Special Hazards ____

____

Other Topics ____

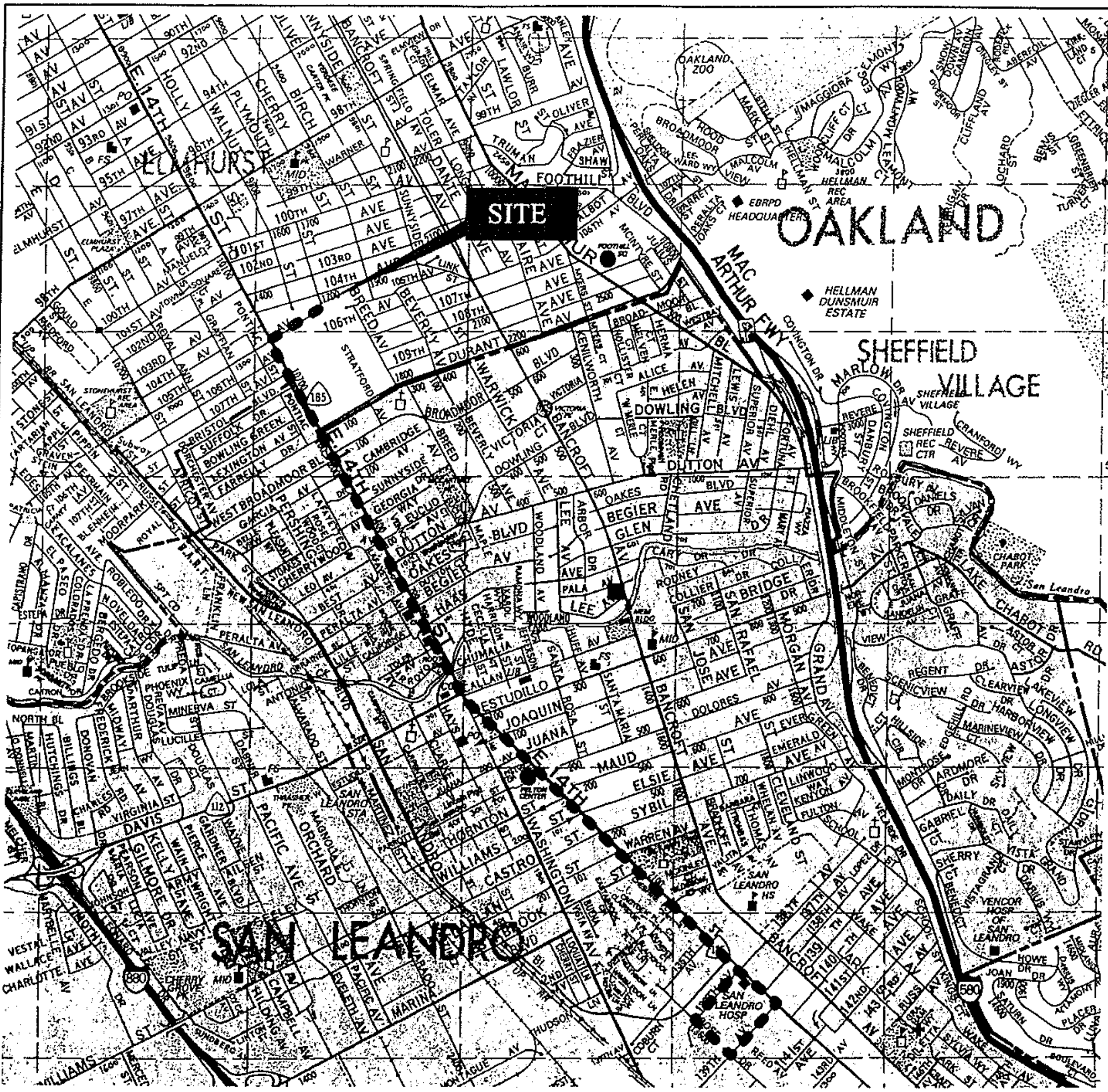
____

ATTENDEES

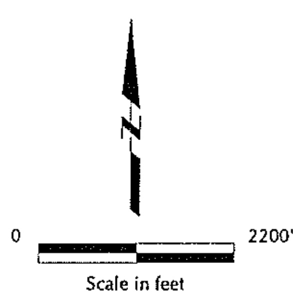
Name (please print)	***Signature***

ATTACHMENT C

Hospital Route Map



SOURCE: Thomas Brothers Guide



Hospital Route Map

BATARSE PROJECT SITE, OAKLAND, CA.

LFR
LEVINE•FRICKE

7962HR01.cdr 013001

APPENDIX C

Phase I Environmental Site Assessment Report, Batarse Project Site, East 14th Street and 105th Avenue, Oakland, California

(To conserve paper, we have not included this document. It is available upon request.)

APPENDIX D

Proposed Laboratory Reporting Limits

California Title 26 Metals

CAS#		Element	Reporting Limit (ug/L)	Reporting Limit (mg/Kg)
7440-36-0	Sb	Antimony	60	3
7440-38-2	As	Arsenic	5	0 25
7440-39-3	Ba	Barium	10	0 5
7440-41-7	Be	Beryllium	2	0 1
7440-43-9	Cd	Cadmium	5	0 25
7440-47-3	Cr	Chromium	10	0 5
7440-48-4	Co	Cobalt	20	1
7440-50-8	Cu	Copper	10	0 5
7439-92-1	Pb	Lead	3	0 15
7439-97-6	Hg	Mercury	0 2	0 04
7439-98-7	Mo	Molybdenum	20	1
7440-02-0	Ni	Nickel	20	1
7782-49-2	Se	Selenium	5	0 25
7440-22-4	Ag	Silver	5	0 25
7440-28-0	Tl	Thallium	5	0 25
7440-62-2	V	Vanadium	10	0 5
7440-66-6	Zn	Zinc	20	1

Cations

CAS#		Element	Reporting Limit (ug/L)	Reporting Limit (mg/Kg)
7429-90-5	Al	Aluminum	100	10
7440-70-2	Ca	Calcium	500	25
7439-89-6	Fe	Iron	100	5
7439-95-4	Mg	Magnesium	500	25
7439-96-5	Mn	Manganese	10	0 5
7440-09-7	K	Potassium	500	.25
7440-23-5	Na	Sodium	500	25

Miscellaneous Metals

CAS#		Element	Reporting Limit (ug/L)	Reporting Limit (mg/Kg)
7440-42-8	B	Boron	20	1
7723-14-0	P	Phosphorous	100	5
7440-21-3	Si	Silicon	200	10
7440-31-5	Sn	Tin	40	2
7440-32-6	T	Titanium	10	0 5

California LUFT Metals

Curtis & Tompkins, Ltd

CAS#		Element	Reporting Limit (ug/L)	Reporting Limit (mg/Kg)
7440-43-9	Cd	Cadmium	5	0.25
7440-47-3	Cr	Chromium	10	0 5
7439-92-1	Pb	Lead	3	0 15
7440-02-0	Ni	Nickel	20	1
7440-66-6	Zn	Zinc	20	1

RCRA Metals

CAS#		Element	Reporting Limit (ug/L)	Reporting Limit (mg/Kg)
7440-38-2	As	Arsenic	5	0 25
7440-39-3	Ba	Barium	10	0 5
7440-43-9	Cd	Cadmium	5	0 25
7440-47-3	Cr	Chromium	10	0 5
7439-92-1	Pb	Lead	3	0 15
7439-97-6	Hg	Mercury	0 2	0 04
7782-49-2	Se	Selenium	5	0 25
7440-22-4	Ag	Silver	5	0.25

Priority Pollutant Metals

CAS#		Element	Reporting Limit (ug/L)	Reporting Limit (mg/Kg)
7440-36-0	Sb	Antimony	60	3
7440-38-2	As	Arsenic	5	0 25
7440-41-7	Be	Beryllium	2	0 1
7440-43-9	Cd	Cadmium	5	0 25
7440-47-3	Cr	Chromium	10	0 5
7440-50-8	Cu	Copper	10	0.5
7439-92-1	Pb	Lead	3	0 15
7439-97-6	Hg	Mercury	0 2	0 04
7440-02-0	Ni	Nickel	20	1
7782-49-2	Se	Selenium	5	0 25
7440-22-4	Ag	Silver	5	0 25
7440-28-0	Tl	Thallium	5	0 25
7440-66-6	Zn	Zinc	20	1

Curtis & Tompkins, Ltd

EPA 8260 - Volatile Organic Compounds

CAS #	Target Compound	Reporting Limit (ug/L) or (ug/Kg)
67-64-1	Acetone	20
71-43-2	Benzene	5
108-86-1	Bromobenzene	5
74-97-5	Bromochloromethane	10
75-27-4	Bromodichloromethane	5
75-25-2	Bromoform	5
74-83-9	Bromomethane	10
78-93-3	2-Butanone	10
104-51-8	n-Butylbenzene	5
135-98-8	sec-Butylbenzene	5
98-06-6	tert-Butylbenzene	5
75-15-0	Carbon disulfide	5
56-23-5	Carbon tetrachloride	5
108-90-7	Chlorobenzene	5
75-00-3	Chloroethane	10
67-66-3	Chloroform	5
74-87-3	Chloromethane	10
95-49-8	2-Chlorotoluene	5
106-43-4	4-Chlorotoluene	5
124-48-1	Dibromochloromethane	5
96-12-8	1,2-Dibromo-3-chloropropane	5
106-93-4	1,2-Dibromoethane (EDB)	5
74-95-3	Dibromomethane	5
95-50-1	1,2-Dichlorobenzene	5
541-73-1	1,3-Dichlorobenzene	5
106-46-7	1,4-Dichlorobenzene	5
75-34-3	1,1-Dichloroethane	5
107-06-2	1,2-Dichloroethane	5
75-35-4	1,1-Dichloroethene	5
156-59-2	cis-1,2 Dichloroethene	5
156-60-5	trans-1,2-Dichloroethene	5
78-87-5	1,2-Dichloropropane	5
142-28-9	1,3-Dichloropropane	5
594-20-7	2,2-Dichloropropane	5
563-58-6	1,1-Dichloropropene	5
10061-01-5	cis-1,3-Dichloropropene	5
10061-02-6	trans 1,3-Dichloropropene	5
100-41-4	Ethylbenzene	5
75-71-8	Freon 12	10
76-13-1	Freon 113	5
87-68-3	Hexachlorobutadiene	5
591-78-6	2-Hexanone	10
98-82-8	Isopropylbenzene	5

CAS #	Target Compound	Reporting Limit (ug/L) or (ug/Kg)
99-87-6	para-Isopropyl toluene	5
75-09-2	Methylene chloride	20
108-10-1	4-Methyl-2-pentanone	10
1634-04-4	Methyl t-butyl ether (MTBE)	5
91-20-3	Naphthalene	5
103-65-1	Propylbenzene	5
100-42-5	Styrene	5
630-20-6	1,1,1,2-Tetrachloroethane	5
79-34-5	1,1,2,2-Tetrachloroethane	5
127-18-4	Tetrachloroethene	5
108-88-3	Toluene	5
87-61-6	1,2,3-Trichlorobenzene	5
120-82-1	1,2,4-Trichlorobenzene	5
71-55-6	1,1,1-Trichloroethane	5
79-00-5	1,1,2-Trichloroethane	5
79-01-6	Trichloroethene	5
75-69-4	Trichlorofluoromethane	5
96-18-4	1,2,3-Trichloropropane	5
95-63-6	1,2,4-Trimethylbenzene	5
108-67-8	1,3,5-Trimethylbenzene	5
108-05-4	Vinyl acetate	50
75-01-4	Vinyl chloride	10
1330-20-7	m,p-Xylenes	5
95-47-6	o-Xylene	5

Additional Compounds (may be added to target list)

110-75-8	2-Chloro ethyl vinyl ether
108-94-1	Cyclohexanone
64-17-5	Ethanol
110-54-3	Hexane
67-63-0	2-Propanol (IPA)
109-99-9	Tetrahydrofuran (THF)

Recommended Surrogates

460-00-4	Bromofluorobenzene
1868-53-7	Dibromofluoromethane
17060-07-0	1,2-Dichloroethane-d4
2037-26-5	Toluene-d8

NOTE Standard reporting limits are listed. lower reporting limits may be achievable for specific compounds

PETROLEUM HYDROCARBONS - Analytical Methods & Holding Times

LIMS Product	Analysis		Matrix	Prep Method[4]	Analytical Method	Reporting Limit	Holding Time[5]	Minimum Volume	Sample Container (water)	Preservative (water)[7]
BTXE	BTXE[1]		Water	EPA 5030	EPA 8020	0.5 ug/L	14 days	40 mL	2x40mL VOA	HCL[8]
			Soil	EPA 5030	EPA 8020	5 ug/Kg	14 days	5 g		
TVH	TPH/Gasoline[2]		Water	EPA 5030	EPA 8015 mod	50 ug/L	14 days	40 mL	2x40mL VOA	HCL[8]
			Soil	EPA 5030	EPA 8015 mod	1.0 mg/Kg	14 days	5 g		
TEH	TPH/Diesel[3]		Water	EPA 3520	EPA 8015 mod	50 ug/L	14/40[6]	500 mL	1L G	None
			Soil	CA LUFT[4]	EPA 8015 mod	1.0 mg/Kg	14/40[6]	50 g		
418.1	Oil & Grease, Petroleum (TRPH)	by IR	Water	METHOD[4]	EPA 418.1	1.0 mg/L	28 days	1 L	1L G	HCL
			Soil	METHOD[4]	EPA 418.1	25 mg/Kg	28 days	50 g		
5520BF	Oil & Grease, Petroleum.	gravimetric	Water	METHOD[4]	SM 5520BF	5.0 mg/L	28 days	1 L	1L G	HCL
5520EF			Soil	METHOD[4]	SM 5520EF	50 mg/Kg	28 days	50 g		
5520B	Oil & Grease, Total,	gravimetric	Water	METHOD[4]	SM 5520B	5.0 mg/L	28 days	1 L	1L G	HCL
5520E			Soil	METHOD[4]	SM 5520E	50 mg/Kg	28 days	50 g		
413.1	Oil & Grease, Total,	gravimetric	Water	METHOD[4]	EPA 413.1	5.0 mg/L	28 days	1 L	1L G	HCL
			Soil	METHOD[4]	EPA 413.1	50 mg/Kg	28 days	50 g		
413.2	Oil & Grease, Total,	by IR	Water	METHOD[4]	EPA 413.2	1.0 mg/L	28 days	1 L	1L G	HCL
			Soil	METHOD[4]	EPA 413.2	25 mg/Kg	28 days	50 g		

Footnotes:

1.) Benzene, toluene, ethylbenzene, and xylenes. MTBE (methyl tert-butyl ether) may be added upon request.

2.) Total Petroleum Hydrocarbons as Gasoline. JP-4, mineral spirits, or stoddard solvent may be added upon request. Reporting limits may be higher for fuels other than gasoline.

3.) Total Petroleum Hydrocarbons as Diesel: motor oil, commercial jet fuel, JP-5, hydraulic oil, transformer oil, or Bunker C may be added upon request. Reporting limits may be higher for fuels other than diesel.

4.) CA LUFT California Department of Health Services Leaking Underground Fuel Tank Manual, May 1988. "Method" indicates that the prep method is an integral part of the analytical method.

5.) Holding times specified in 40CFR 136 3 Table 2 (Clean Water Act/ NPDES) and SW-846 Table 2-36 Revision 3, December 1996.

6.) 14/40: 14 days from sample collection to extraction, then 40 days from extraction to analysis.

7.) Samples should be kept at 4°C from time of collection until analysis. Preserved containers can be supplied by Curtis & Tompkins.
HCL: hydrochloric acid to pH<2 H_2SO_4: sulfuric acid to pH<2   NaOH: sodium hydroxide to pH > 12

8.) Free chlorine should be neutralized with 0.008% $Na_2S_2O_3$

Legend:

ug/L: micrograms per liter (ppb)
mg/L: milligrams per liter (ppm)
ug/Kg: micrograms per kilogram (ppb)
mg/Kg: milligrams per kilogram (ppm)

VOA: amber VOA vial
G: amber Glass
P: Polyethylene

Curtis & Tompkins, Ltd.

2/98 rev 1.0

Curtis & Tompkins.

EPA 8270 - Semivolatile Organic Compounds

CAS #	Target Compound	Reporting Limit (ug/L)	Reporting Limit (ug/Kg)
83-32-9	Acenaphthene	10	330
208-96-8	Acenaphthylene	10	330
120-12-7	Anthracene	10	330
103-33-3	Azobenzene	10	330
56-55-3	Benzo(a)anthracene	10	330
50-32-8	Benzo(a)pyrene	10	330
205-99-2	Benzo(b,k)fluoranthene	10	330
191-24-2	Benzo(g,h,i)perylene	10	330
65-85-0	Benzoic acid	50	1,700
100-51-6	Benzyl alcohol	10	330
111-91-1	bis(2-Chloroethoxy)methane	10	330
111-44-4	bis(2-Chloroethyl)ether	10	330
108-60-1	bis(2-Chloroisopropyl)ether	10	330
117-81-7	bis(2-Ethylhexyl)phthalate	10	330
101-55-3	4-Bromophenyl-phenylether	10	330
85-68-7	Butylbenzylphthalate	10	330
106-47-8	4-Chloroaniline	10	330
59-50-7	4-Chloro-3-methylphenol	10	330
91-58-7	2-Chloronaphthalene	10	330
95-57-8	2-Chlorophenol	10	330
7005-72-3	4-Chlorophenyl-phenylether	10	330
218-01-9	Chrysene	10	330
53-70-3	Dibenz(a,h)anthracene	10	330
132-64-9	Dibenzofuran	10	330
95-50-1	1,2-Dichlorobenzene	10	330
541-73-1	1,3-Dichlorobenzene	10	330
106-46-7	1,4-Dichlorobenzene	10	330
91-94-1	3,3'-Dichlorobenzidine	50	1,700
120-83-2	2,4-Dichlorophenol	10	330
84-66-2	Diethylphthalate	10	330
105-67-9	2,4-Dimethylphenol	10	330
131-11-3	Dimethylphthalate	10	330
84-74-2	Di-n-butylphthalate	10	330
534-52-1	4,6-Dinitro-2-methylphenol	50	1,700
51-28-5	2,4-Dinitrophenol	50	1,700
121-14-2	2,4-Dinitrotoluene	10	330
606-20-2	2,6-Dinitrotoluene	10	330
117-84-0	Di-n-octylphthalate	10	330
206-44-0	Fluoranthene	10	330
86-73-7	Fluorene	10	330
118-74-1	Hexachlorobenzene	10	330
87-68-3	Hexachlorobutadiene	10	330
77-47-4	Hexachlorocyclopentadiene	50	1,700
67-72-1	Hexachloroethane	10	330
193-39-5	Indeno(1,2,3-cd)pyrene	10	330
78-59-1	Isophorone	10	330
91-57-6	2-Methylnaphthalene	10	330
95-48-7	2-Methylphenol	10	330
1319-77-3	3- 4-Methylphenol	10	330
88-74-4	2-Nitroaniline	50	1,700
99-09-2	3-Nitroaniline	50	1,700
100-01-6	4-Nitroaniline	50	1,700
88-75-5	2-Nitrophenol	50	1,700
100-02-7	4-Nitrophenol	50	1,700
621-64-7	N-Nitroso-di-n-propylamine	10	330
62-75-9	N-Nitrosodimethylamine	10	330
86-30-6	N-Nitrosodiphenylamine	10	330
91-20-3	Naphthalene	10	330
98-95-3	Nitrobenzene	10	330
87-86-5	Pentachlorophenol	10	1,700
85-01-8	Phenanthrene	10	330
108-95-2	Phenol	10	330
129-00-0	Pyrene	10	330
120-82-1	1,2,4-Trichlorobenzene	10	330
95-95-4	2,4,5-Trichlorophenol	50	1,700
88-06-2	2,4,6-Trichlorophenol	10	330

Additional Compounds (may be added to target list):

CAS #	Compound	(ug/L)	(ug/Kg)
62-53-3	Aniline	10	330
92-87-5	Benzidine	10	330
87-65-0	2,6-Dichlorophenol	10	330
110-86-1	Pyridine	100	1,700
58-90-2	2,3,4,6-Tetrachlorophenol	10	330

Recommended Surrogates

CAS #	Compound
321-60-8	2-Fluorobiphenyl
367-12-4	2-Fluorophenol
4165-60-0	Nitrobenzene-d5
13127-88-3	Phenol-d5
1718-51-0	Terphenyl-d14
118-79-6	2,4,6-Tribromophenol

NOTE: Standard reporting limits are listed. lower reporting limits may be achievable for specific compounds

Curtis & Tompkins, Ltd

Low Concentration Volatiles in Water by GCMS

CAS #	Target Compound	Reporting Limit (ug/L)
67-64-1	Acetone	10
71-43-2	Benzene	0.5
108-86-1	Bromobenzene	0.5
74-97-5	Bromochloromethane	0.5
75-27-4	Bromodichloromethane	0.5
75-25-2	Bromoform	1
74-83-9	Bromomethane	1
78-93-3	2-Butanone	10
104-51-8	n-Butylbenzene	0.5
135-98-8	sec-Butylbenzene	0.5
98-06-6	tert-Butylbenzene	0.5
75-15-0	Carbon disulfide	0.5
56-23-5	Carbon tetrachloride	0.5
108-90-7	Chlorobenzene	0.5
75-00-3	Chloroethane	1
67-66-3	Chloroform	0.5
74-87-3	Chloromethane	1
95-49-8	2-Chlorotoluene	0.5
106-43-4	4-Chlorotoluene	0.5
124-48-1	Dibromochloromethane	0.5
96-12-8	1,2-Dibromo-3-chloropropane	0.5
106-93-4	1,2-Dibromoethane (EDB)	0.5
74-95-3	Dibromomethane	0.5
95-50-1	1,2-Dichlorobenzene	0.5
541-73-1	1,3-Dichlorobenzene	0.5
106-46-7	1,4-Dichlorobenzene	0.5
75-34-3	1,1-Dichloroethane	0.5
107-06-2	1,2-Dichloroethane	0.5
75-35-4	1,1-Dichloroethene	0.5
156-59-2	cis-1,2-Dichloroethene	0.5
156-60-5	trans-1,2-Dichloroethene	0.5
78-87-5	1,2-Dichloropropane	0.5
142-28-9	1,3-Dichloropropane	0.5
594-20-7	2,2-Dichloropropane	0.5
563-58-6	1,1-Dichloropropene	0.5
10061-01-5	cis-1,3-Dichloropropene	0.5
10061-02-6	trans-1,3-Dichloropropene	0.5
100-41-4	Ethylbenzene	0.5
75-71-8	Freon 12	1
76-13-1	Freon 113	5
87-68-3	Hexachlorobutadiene	0.5
591-78-6	2-Hexanone	10
98-82-8	Isopropylbenzene	0.5
99-87-6	para-Isopropyl toluene	0.5
75-09-2	Methylene chloride	10
1634-04-4	Methyl t-butyl ether (MTBE)	0.5
108-10-1	4-Methyl-2-pentanone	10
91-20-3	Naphthalene	0.5
103-65-1	Propylbenzene	0.5
100-42-5	Styrene	0.5
630-20-6	1,1,1,2-Tetrachloroethane	0.5
79-34-5	1,1,2,2-Tetrachloroethane	0.5
127-18-4	Tetrachloroethene	0.5
108-88-3	Toluene	0.5
87-61-6	1,2,3-Trichlorobenzene	0.5
120-82-1	1,2,4-Trichlorobenzene	0.5
71-55-6	1,1,1-Trichloroethane	0.5
79-00-5	1,1,2-Trichloroethane	0.5
79-01-6	Trichloroethene	0.5
75-69-4	Trichlorofluoromethane	0.5
96-18-4	1,2,3-Trichloropropane	0.5
95-63-6	1,2,4-Trimethylbenzene	0.5
108-67-8	1,3,5-Trimethylbenzene	0.5
108-05-4	Vinyl acetate	10
75-01-4	Vinyl chloride	0.5
1330-20-7	m,p-Xylenes	0.5
95-47-6	o-Xylene	0.5

Additional Compounds (may be added to target list)

CAS #	Target Compound	Reporting Limit (ug/L)
110-75-8	2-Chloro ethyl vinyl ether	10

Recommended Surrogates

460-00-4	Bromofluorobenzene
1868-53-7	Dibromofluoromethane
17060-07-0	1,2-Dichloroethane-d4
2037-26-5	Toluene-d8

NOTE Standard reporting limits are listed. lower reporting limits may be achievable for specific compounds

APPENDIX E

Permits

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-5554 MARLON MAGALLANES/FRANK CODD (510) 670-5783
FAX (510)782-1939

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT: BATARSI SITE, OAKLAND, CA
AREA BOUNDED BY
104th Ave, EAST 14th St,
A/C TRANSIT UNION PACIFIC RR
* See ATTACHED LOCATION MAP

CLIENT
Name: OAKLAND UNIFIED SCHOOL DISTRICT (OUSD)
Address: 955 HIGH ST Phone:
City: OAKLAND CA Zip: 94601

APPLICANT
Name: LFR LEVINE-FRICKE
Fax: 510 652-2246
Address: 1900 POWELL ST Phone: 510 652-4500
City: EMERYVILLE, CA Zip: 94608

TYPE OF PROJECT
Well Construction / Geotechnical Investigation
Cathodic Protection ☐ General ☐
Water Supply ☐ Contamination ☒
Monitoring ☐ Well Destruction ☐

PROPOSED WATER SUPPLY WELL USE
New Domestic ☐ Replacement Domestic ☐
Municipal ☐ Irrigation ☐
Industrial ☐ Other ______ ☐

DRILLING METHOD:
Mud Rotary ☐ Air Rotary ☐ Auger ☒
Cable ☐ Other ☐

DRILLER'S NAME: ~~SPECTRUM EXPL.~~ PRECISION DRILLING of RICHMOND

DRILLER'S LICENSE NO. ~~51 8208~~ 636 387

WELL PROJECTS
Drill Hole Diameter ______ in. Maximum
Casing Diameter ______ in. Depth ______ ft.
Surface Seal Depth ______ ft. Owner's Well Number ______

GEOTECHNICAL PROJECTS
Number of Borings 48 Maximum
Hole Diameter 6 in. Depth 30 ft.

ESTIMATED STARTING DATE 3.12.01
ESTIMATED COMPLETION DATE 3.26.01

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Taylor Bennett for OUSD DATE 3/6/01

PLEASE PRINT NAME Taylor Bennett

Rev.6-5-00

FOR OFFICE USE

PERMIT NUMBER W01-166
WELL NUMBER
APN

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources-Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings.

E. CATHODIC
Fill hole anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
See attached requirements for destruction of shallow wells. Send a map of work site. A different permit application is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 3-6-01

CITY OF OAKLAND
Office of Planning and Building

EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

TEST BORES

PERMIT NUMBER X010 0570		SITE ADDRESS/LOCATION 1600 104TH AVE
APPROX. START DATE	APPROX. END DATE	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number)
CONTRACTOR'S LICENSE # AND CLASS		CITY BUSINESS TAX #

ATTENTION:

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: ____________

2) **48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.**

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

☐ I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law).

☐ I am exempt under Sec. ____________, B&PC for this reason ____________.

WORKER'S COMPENSATION

☐ I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).

Policy # ____________ Company Name ____________

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Title 12 Chapter 12.12 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

[signature] 3.16.01

Signature of Permittee ☐ Agent for ☐ Contractor ☐ Owner Date

DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED? ☐ YES ☒ NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) ☐ YES ☒ NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) ☐ YES ☒ NO
ISSUED BY Curtis		DATE ISSUED 3-16-01	

Office of Planning and Building

EXCAVATION PERMIT

TO EXCAVATE IN STREETS OR OTHER SPECIFIED WORK

CIVIL ENGINEERING

TEST BORES

PERMIT NUMBER X010 0569		SITE ADDRESS/LOCATION 1500 105th AVE	
APPROX. START DATE	APPROX. END DATE	24-HOUR EMERGENCY PHONE NUMBER (Permit not valid without 24-Hour number)	
CONTRACTOR'S LICENSE # AND CLASS		CITY BUSINESS TAX #	

ATTENTION:

1) State law requires that the contractor/owner call *Underground Service Alert (USA)* two working days before excavating. This permit is not valid unless applicant has secured an inquiry identification number issued by USA. The USA telephone number is 1 (800) 642-2444. UNDERGROUND SERVICE ALERT (USA) #: ______

2) **48 hours prior to starting work, YOU MUST CALL (510) 238-3651 TO SCHEDULE AN INSPECTION.**

OWNER/BUILDER

I hereby affirm that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5 Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he is licensed pursuant to the provisions of the Contractor's License law Chapter 9 (commencing with Sec. 7000) of Division 3 of the Business and Professions Code, or that he is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than $500):

☐ I, as an owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his own employees, provided that such improvements are not intended or offered for sale. If however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he did not build or improve for the purpose of sale).

☐ I, as owner of the property, am exempt from the sale requirements of the above due to: (1) I am improving my principal place of residence or appurtenances thereto, (2) the work will be performed prior to sale, (3) I have resided in the residence for the 12 months prior to completion of the work, and (4) I have not claimed exemption on this subdivision on more than two structures more than once during any three-year period. (Sec. 7044 Business and Professions Code).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project, (Sec. 7044, Business and Professions Code: The Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License law).

☐ I am exempt under Sec. ______, B&PC for this reason ______.

WORKER'S COMPENSATION

☐ I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Worker's Compensation Insurance, or a certified copy thereof (Sec. 3700, Labor Code).

Policy # ______ Company Name ______

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation Laws of California (not required for work valued at one hundred dollars ($100) or less).

NOTICE TO APPLICANT: If, after making this Certificate of Exemption, you should become subject to the Worker's Compensation provisions of the Labor Code, you must forthwith comply with such provisions or this permit shall be deemed revoked. This permit is issued pursuant to all provisions of Title 12 Chapter 12.12 of the Oakland Municipal Code. It is granted upon the express condition that the permittee shall be responsible for all claims and liabilities arising out of work performed under the permit or arising out of permittee's failure to perform the obligations with respect to street maintenance. The permittee shall, and by acceptance of the permit agrees to defend, indemnify, save and hold harmless the City, its officers and employees, from and against any and all suits, claims, or actions brought by any person for or on account of any bodily injuries, disease or illness or damage to persons and/or property sustained or arising in the construction of the work performed under the permit or in consequence of permittee's failure to perform the obligations with respect to street maintenance. This permit is void 90 days from the date of issuance unless an extension is granted by the Director of the Office of Planning and Building.

I hereby affirm that I am licensed under provisions of Chapter 9 of Division 3 of the Business and Professions Code and my license is in full force and effect (if contractor), that I have read this permit and agree to its requirements, and that the above information is true and correct under penalty of law.

Signature of Permittee ☐ Agent for ☐ Contractor ☐ Owner — Date 3.16.01

DATE STREET LAST RESURFACED	SPECIAL PAVING DETAIL REQUIRED? ☐ YES ☒ NO	HOLIDAY RESTRICTION? (NOV 1 - JAN 1) ☐ YES ☒ NO	LIMITED OPERATION AREA? (7AM-9AM & 4PM-6PM) ☐ YES ☒ NO
ISSUED BY J. Curtis		DATE ISSUED 3-16-01	

APPENDIX F

Water Supply Well Sampling Sheet

Microparge Water Quality Parameters

Project #: 7962.01

Date: ~~3/19/01~~ 3/23/01

Well #: Domesticwell at 1510A 105th Ave

Project Name: OUSD

Sample ID: DW-1

Location: Oakland, CA

Blank: —

Dup: —

Sampling Plan: THB

DTW: 12.65

Inlet: ≃ 50 FT TD is believed to be 100' Screened interval is unknown But well pump is at ≃ 63'

Field Staff: MXD,

Purge Method: Peristaltic Pump w/ New tubing

Laboratory: Curtis and Tompkins

Delivery: Courier

Analysis:
8260 VOCs + MTBE
8015M TVH + TEH
BTEX
Title 22 metals (Filtered in Field)

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	pH	COMMENTS
Stabilization if 3 successive parameters are within:				+\-3%	+\-10%	+\-10 mv	+\-10%	(+/-0.1)	
1120		0	START PURGE; Solinst won't fit down w/ Tubing Pump as slow as possible and Final DTW will show draw down						
1125		0.1	17.36	0.569	2.28	292	22.1	6.91	clear
1130		0.2	17.38	0.571	1.99	293	16.3	6.90	clear DTSC ONSITE
1136		0.3	17.67	0.568	2.04	293	3.64	6.93	clear DTSC OFFSITE
1140		0.4	17.64	0.569	1.93	293	0.98	6.91	clear
1145		0.5	17.76	0.568	1.66	293	0.89	6.91	clear
1150		0.6	17.62	0.568	1.64	294	0.88	6.90	clear
1155		0.7	18.34	0.568	1.62	293	0.96	6.91	clear
1200		0.8	18.35	0.568	1.62	293	0.77	6.92	clear

well is on South side of vault Flush w/ Bottom of vault.

LFR Levine Fricke

Micropurge Water Quality Parameters

Project #: 7962.01

Project Name: OUSD

Location: Oakland, CA

Sampling Plan: THB

Field Staff: MXD,

Date: ~~3/19/01~~ 3/23/01 MXD

Well #: Domestic well at 1510A 105th

Sample ID: DW-1

Blank: –

Dup: –

DTW: –

Inlet: ±50 FT

Purge Method: Peristaltic Pump w/ New tubing

Laboratory: Curtis and Tompkins

Delivery: Courier

Analysis: see pg 1

Stabilization if 3 successive parameters are within

TIME	DTW	VOLUME	TEMP (C)	COND (ms/cm) +\-3%	DO (mg/L) +\-10%	ORP (mv) +\-10 mv	Turbidity (NTU) +\-10%	pH (+/-0.1)	COMMENTS
1205	see note pg 1	0.9	18.23	0.567	1.61	293	0.74	6.92	clear
1210		1.0	18.36	0.568	1.63	292	0.75	6.91	clear
1215		1.1	18.39	0.567	1.63	290	0.73	6.92	Clear
1220									Sample
1245	12.71	±2	complete sampling break down and return to shop						

MAR 23 '01 15:41

APPENDIX G

Quality Assurance/Quality Control Tables

Summary of Field QC Samples

Lab Report No.	Lab Sample No.	Field Sample No.	Sample Matrix	Sample Date	Analytical Method	Chemical Group
150980	150980-001	TRIP-3/21/01	Water	03/21/2001	EPA 8260B	VOCs
151006	151006-001	TRIP-032201	Water	03/22/2001	EPA 8260B	VOCs
151006	151006-002	EQUIP-032201	Filtrate	03/22/2001	EPA 6020A	Metals
151006	151006-002	EQUIP-032201	Filtrate	03/22/2001	EPA 7470	Metals
151006	151006-002	EQUIP-032201	Water	03/22/2001	EPA 8015M	TEH
151006	151006-002	EQUIP-032201	Water	03/22/2001	EPA 8015M	TVH
151006	151006-002	EQUIP-032201	Water	03/22/2001	EPA 8260B	VOCs
151006	151006-003	FB-032201	Filtrate	03/22/2001	EPA 6020A	Metals
151006	151006-003	FB-032201	Filtrate	03/22/2001	EPA 7470	Metals
151006	151006-003	FB-032201	Water	03/22/2001	EPA 8015M	TEH
151006	151006-003	FB-032201	Water	03/22/2001	EPA 8015M	TVH
151006	151006-003	FB-032201	Water	03/22/2001	EPA 8260B	VOCs
151006	2103270524	EQUIP-032201	Water	03/22/2001	ML/EPA 504.1	VOCs
151018	151018-011	EQUI-032301	Filtrate	03/23/2001	EPA 6020A	Metals
151018	151018-011	EQUI-032301	Filtrate	03/23/2001	EPA 7470	Metals
151018	151018-011	EQUI-032301	Water	03/23/2001	EPA 8015M	TEH
151018	151018-011	EQUI-032301	Water	03/23/2001	EPA 8015M	TVH
151018	151018-011	EQUI-032301	Water	03/23/2001	EPA 8260B	VOCs
151018	2103270522	EQUI-032301	Water	03/23/2001	ML/EPA 504.1	VOCs
151039	151039-001	TB-032301	Water	03/23/2001	EPA 8260B	VOCs
151061	151061-001	TRIP BLANK-032601	Water	03/26/2001	EPA 8015M	TVH
151061	151061-001	TRIP BLANK-032601	Water	03/26/2001	EPA 8260B	VOCs
151061	151061-017	EQUIP-032601	Filtrate	03/26/2001	EPA 6020A	Metals
151061	151061-017	EQUIP-032601	Filtrate	03/26/2001	EPA 7470	Metals
151061	151061-017	EQUIP-032601	Water	03/26/2001	EPA 8015M	TEH
151061	151061-017	EQUIP-032601	Water	03/26/2001	EPA 8015M	TVH
151061	151061-017	EQUIP-032601	Water	03/26/2001	EPA 8260B	VOCs
151061	2103280321	TRIP BLANK-032601	Water	03/26/2001	ML/EPA 504.1	VOCs
151061	2103280324	EQUIP-032601	Water	03/26/2001	ML/EPA 504.1	VOCs
151087	151087-001	TRIP BLANK-032701	Water	03/27/2001	EPA 8015M	TVH
151087	151087-001	TRIP BLANK-032701	Water	03/27/2001	EPA 8260B	VOCs
151087	2103290010	TRIP BLANK-032701	Water	03/27/2001	ML/EPA 504.1	VOCs
151116	151116-001	TRIP BLANK	Water	03/28/2001	EPA 8015M	TVH
151116	151116-001	TRIP BLANK	Water	03/28/2001	EPA 8260B	VOCs
151116	151116-009	EQUIP-032801	Filtrate	03/28/2001	EPA 6020A	Metals
151116	151116-009	EQUIP-032801	Filtrate	03/28/2001	EPA 7470	Metals
151116	151116-009	EQUIP-032801	Water	03/28/2001	EPA 8015M	TEH
151116	151116-009	EQUIP-032801	Water	03/28/2001	EPA 8015M	TVH
151116	151116-009	EQUIP-032801	Water	03/28/2001	EPA 8260B	VOCs
151116	200103654*1TB	TRIP BLANK	Water	03/28/2001	504.1	VOCs
151116	200103654*3	EQUIP-032801	Water	03/28/2001	504.1	VOCs
151133	151133-001	TRIP BLANK-032901	Water	03/29/2001	EPA 8015M	TVH
151133	151133-001	TRIP BLANK-032901	Water	03/29/2001	EPA 8260B	VOCs
151133	151133-016	EQUIP-032901	Filtrate	03/29/2001	EPA 6020A	Metals
151133	151133-016	EQUIP-032901	Filtrate	03/29/2001	EPA 7470	Metals
151133	151133-016	EQUIP-032901	Water	03/29/2001	EPA 8015M	TEH
151133	151133-016	EQUIP-032901	Water	03/29/2001	EPA 8015M	TVH
151133	151133-016	EQUIP-032901	Water	03/29/2001	EPA 8260B	VOCs
151133	200103830*1TB	TRIP BLANK-032901	Water	03/29/2001	504.1	VOCs
151133	200103830*4	EQUIP-032901	Water	03/29/2001	504.1	VOCs

Summary of Field QC Samples

Lab Report No.	Lab Sample No.	Field Sample No.	Sample Matrix	Sample Date	Analytical Method	Chemical Group
151165	151165-004	EQUIP-033001	Filtrate	03/30/2001	EPA 6020A	Metals
151165	151165-004	EQUIP-033001	Filtrate	03/30/2001	EPA 7470	Metals
151165	151165-004	EQUIP-033001	Water	03/30/2001	EPA 8015M	TEH
151165	151165-004	EQUIP-033001	Water	03/30/2001	EPA 8015M	TVH
151165	151165-004	EQUIP-033001	Water	03/30/2001	EPA 8260B	VOCs
151165	151165-005	TRIP BLANK-033001	Water	03/30/2001	EPA 8015M	TVH
151165	151165-005	TRIP BLANK-033001	Water	03/30/2001	EPA 8260B	VOCs
151165	200103829*4	EQUIP-033001	Water	03/30/2001	504.1	VOCs
151165	200103829*5TB	TRIPBLANK-033001	Water	03/30/2001	504.1	VOCs
151169	151169-019	EQUIP-033101	Filtrate	03/31/2001	EPA 6020A	Metals
151169	151169-019	EQUIP-033101	Filtrate	03/31/2001	EPA 7470	Metals
151169	151169-019	EQUIP-033101	Water	03/31/2001	EPA 8015M	TEH
151169	151169-019	EQUIP-033101	Water	03/31/2001	EPA 8015M	TVH
151169	151169-019	EQUIP-033101	Water	03/31/2001	EPA 8260B	VOCs
151169	200103828*3	EQUIP-033101	Water	03/31/2001	504.1	VOCs
151187	151187-001	TRIP BLANK-040201	Water	04/02/2001	EPA 8015M	TVH
151187	151187-001	TRIP BLANK-040201	Water	04/02/2001	EPA 8260B	VOCs
151187	151187-015	EQUIP-040201	Filtrate	04/02/2001	EPA 6020A	Metals
151187	151187-015	EQUIP-040201	Filtrate	04/02/2001	EPA 7470	Metals
151187	151187-015	EQUIP-040201	Water	04/02/2001	EPA 8015M	TEH
151187	151187-015	EQUIP-040201	Water	04/02/2001	EPA 8015M	TVH
151187	151187-015	EQUIP-040201	Water	04/02/2001	EPA 8260B	VOCs
151187	200103838*1TB	TRIP BLANK-040201	Water	04/02/2001	504.1	VOCs
151187	200103838*4	EQUIP-010201	Water	04/02/2001	504.1	VOCs
151208	151208-001	TRIP BLANK-040301	Water	04/03/2001	EPA 8015M	TVH
151208	151208-001	TRIP BLANK-040301	Water	04/03/2001	EPA 8260B	VOCs
151208	200103906*1TB	TRIP BLANK-040301	Water	04/03/2001	504.1	VOCs
151241	151241-001	TRIP BLANK-040401	Water	04/04/2001	EPA 8015M	TVH
151241	151241-001	TRIP BLANK-040401	Water	04/04/2001	EPA 8260B	VOCs
151241	151241-013	EQUIP-040401	Filtrate	04/04/2001	EPA 6020A	Metals
151241	151241-013	EQUIP-040401	Filtrate	04/04/2001	EPA 7470	Metals
151241	151241-013	EQUIP-040401	Water	04/04/2001	EPA 8015M	TEH
151241	151241-013	EQUIP-040401	Water	04/04/2001	EPA 8015M	TVH
151241	151241-013	EQUIP-040401	Water	04/04/2001	EPA 8260B	VOCs
151241	200103966*1TB	TRIP BLANK-040401	Water	04/04/2001	504.1	VOCs
151241	200103966*4	EQUIP-040401	Water	04/04/2001	504.1	VOCs
151265	151265-001	TRIP BLANK-040501	Water	04/05/2001	EPA 8015M	TVH
151265	151265-001	TRIP BLANK-040501	Water	04/05/2001	EPA 8260B	VOCs
151265	200104172*1TB	TRIP BLANK-040501	Water	04/05/2001	504.1	VOCs
152945	152945-001	TB-070901	Water	07/09/2001	EPA 8260B	VOCs
152945	152945-023	SB-88-FB	Filtrate	07/09/2001	EPA 6020A	Metals
152945	152945-023	SB-88-FB	Filtrate	07/09/2001	EPA 7470A	Metals
152945	152945-023	SB-88-FB	Water	07/09/2001	EPA 8015M	TEH
152945	152945-023	SB-88-FB	Water	07/09/2001	EPA 8015M	TVH
152945	152945-023	SB-88-FB	Water	07/09/2001	EPA 8260B	VOCs

Summary of Field QC Blank Detections

Lab Report No.	Field Sample Id.	Sample Date	Sample Matrix	Preparation Method	Analytical Method	Analyte	Result	Qualifier	Units
151006	EQUIP-032201	03/22/2001	Water	EPA 3520	EPA 8015M	Diesel C10-C24	110	Y	ug/L
151018	EQUI-032301	03/23/2001	Water	EPA 3520	EPA 8015M	Diesel C10-C24	50	YZ	ug/L
151061	EQUIP-032601	03/26/2001	Water	EPA 5030	EPA 8260B	Acetone	11		ug/L
151061	EQUIP-032601	03/26/2001	Water	EPA 5030	EPA 8260B	1,1-Dichloroethene	0.5		ug/L
151116	EQUIP-032801	03/28/2001	Water	EPA 3520	EPA 8015M	Diesel C10-C24	53	Y	ug/L
151133	EQUIP-032901	03/29/2001	Water	EPA 3520	EPA 8015M	Diesel C10-C24	56	Y	ug/L
151133	EQUIP-032901	03/29/2001	Water	EPA 5030	EPA 8260B	Acetone	11		ug/L
151165	EQUIP-033001	03/30/2001	Water	EPA 5030	EPA 8260B	Acetone	13		ug/L
151165	EQUIP-033001	03/30/2001	Water	EPA 5030	EPA 8260B	Carbon Disulfide	0.8		ug/L
151169	EQUIP-033101	03/31/2001	Water	EPA 5030	EPA 8260B	Acetone	10		ug/L
151187	EQUIP-040201	04/02/2001	Water	EPA 5030	EPA 8260B	Acetone	14		ug/L
152945	SB-88-FB	07/09/2001	Water	EPA 5030	EPA 8260B	Acetone	12		ug/L
151241	EQUIP-040401	04/04/2001	Water	EPA 3520	EPA 8015M	Diesel C10-C24	52	Y	ug/L
151241	EQUIP-040401	04/04/2001	Water	EPA 5030	EPA 8260B	Acetone	22		ug/L

Summary of Method Blank Detections

Lab Report No.	Lab Sample No.	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
150954	QC140833	Filtrate	EPA 6020A	62421	03/27/2001	03/27/2001	7440-50-8	Copper	3.3		ug/L
150980	QC140833	Filtrate	EPA 6020A	62421	03/27/2001	03/27/2001	7440-50-8	Copper	3.3		ug/L
151006	QC140833	Filtrate	EPA 6020A	62421	03/27/2001	03/27/2001	7440-50-8	Copper	3.3		ug/L
151006	QC141004	Soil	EPA 8081A	62460	03/29/2001	03/29/2001	319-86-8	delta-BHC	3.0	C	ug/Kg
151006	QC141004	Soil	EPA 8081A	62460	03/29/2001	03/29/2001	319-86-8	delta-BHC	3.0	C	ug/Kg
151039	QC141267	Water	EPA 6020A	62528	03/29/2001	03/29/2001	7440-47-3	Chromium	4.3		ug/L
151187	QC142217	Soil	EPA 6010B	62770	04/09/2001	04/09/2001	7440-66-6	Zinc	1.4		mg/Kg

Summary of Matrix Spike and Matrix Spike Duplicate Exceedances

Lab Report No.	Lab Sample No.	Sample Matrix	Spike Sample Type	Preparation Method	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	Analyte	Spike Percent	Qualifier	Lower Control Limit	Upper Control Limit	Relative Percent Difference	Units
152945	152896-001	Soil	MS	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Chromium	144		21	137		%REC
152945	152896-001	Soil	MS	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Copper	16	NM	24	150		%REC
152945	152896-001	Soil	MS	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Nickel	154	NM	21	142		%REC
152945	152896-001	Soil	MS	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Lead	153		24	132		%REC
152945	152896-001	Soil	MS	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Zinc	-172	>LRNM	20	146		%REC
152945	152896-001	Soil	MSD	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Chromium	173		21	137	9	%REC
152945	152896-001	Soil	MSD	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Copper	-240	NM	24	150	9	%REC
152945	152896-001	Soil	MSD	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Nickel	546	NM	21	142	33	%REC
152945	152896-001	Soil	MSD	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Lead	-3		24	132	36	%REC
152945	152896-001	Soil	MSD	EPA 3050	EPA 6010B	64914	07/12/2001	07/19/2001	Zinc	-264	>LRNM	20	146		%REC
152945	152845-001	Water	MS	METHOD	EPA 7470A	64839	07/10/2001	07/10/2001	Mercury	64		80	114		%REC
152945	152845-001	Water	MSD	METHOD	EPA 7470A	64839	07/10/2001	07/10/2001	Mercury	60		80	114	6	%REC
152945	152945-023	Filtrate	MS	METHOD	EPA 7470A	64839	07/10/2001	07/10/2001	Mercury	59		80	114		%REC
150932	150927-020	Soil	MS	EPA 3050	EPA 6010B	62329	03/21/2001	03/21/2001	Silver	-282		36	137		%REC
150932	150927-020	Soil	MS	EPA 3050	EPA 6010B	62329	03/21/2001	03/21/2001	Copper	15		36	132		%REC
150932	150927-020	Soil	MSD	EPA 3050	EPA 6010B	62329	03/21/2001	03/21/2001	Silver	-254		36	137	7	%REC
150932	150927-020	Soil	MSD	EPA 3050	EPA 6010B	62329	03/21/2001	03/21/2001	Antimony	13		15	112	21	%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Silver	45		72	125		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Beryllium	57		71	124		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Cadmium	57		70	127		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Cobalt	58		73	122		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Chromium	57		70	124		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Copper	57		74	122		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Nickel	58		70	123		%REC
150932	150932-001	Filtrate	MS	METHOD	EPA 6020A	62303	03/20/2001	03/20/2001	Zinc	56		69	129		%REC
150954	150920-021	Soil	MS	EPA 3050	EPA 6010B	62350	03/24/2001	03/24/2001	Zinc	0		30	132		%REC
150965	150959-001	Soil	MS	EPA 3050	EPA 6010B	62364	03/23/2001	03/23/2001	Nickel	12		32	132		%REC
150980	150980-002	Soil	MS	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Nickel	30		32	132		%REC
150980	150980-002	Soil	MS	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Antimony	9		15	112		%REC
150980	150980-002	Soil	MS	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Zinc	-8		30	132		%REC
150980	150980-002	Soil	MSD	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Antimony	12		15	112	30	%REC
150980	150894-057	Soil	MS	AKER TAB	EPA 8015M	62458	03/28/2001	03/28/2001	Diesel C10-C24	-8		35	146		%REC
150980	150894-057	Soil	MSD	AKER TAB	EPA 8015M	62458	03/28/2001	03/28/2001	Diesel C10-C24	12		35	146	20	%REC
151006	150980-002	Soil	MS	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Nickel	30		32	132		%REC
151006	150980-002	Soil	MS	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Antimony	9		15	112		%REC
151006	150980-002	Soil	MS	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Zinc	-8		30	132		%REC
151006	150980-002	Soil	MSD	EPA 3050	EPA 6010B	62420	03/28/2001	03/28/2001	Antimony	12		15	112	30	%REC
151006	151068-004	Soil	MS	METHOD	EPA 7470	62494	03/27/2001	03/27/2001	Mercury	139		62	135		%REC
151006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Aldrin	175	U	42	136		%REC
151006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	4,4'-DDT	DO	U	38	140		%REC
151006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Dieldrin	DO	U	45	135		%REC
151006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Endrin	DO	U	21	150		%REC

Summary of Matrix Spike and Matrix Spike Duplicate Exceedances

Lab Report No.	Lab Sample No.	Sample Matrix	Spike Sample Type	Preparation Method	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	Analyte	Spike Percent	Qualifier	Lower Control Limit	Upper Control Limit	Relative Percent Difference	Units
51006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Heptachlor	142	U	49	133		%REC
51006	151006-018	Soil	MSD	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	4,4'-DDT	DO	U	38	140		%REC
51006	151006-018	Soil	MSD	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Dieldrin	DO	U	45	135		%REC
51006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Endrin	DO	U	21	150		%REC
51006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Aldrin	175	U	42	136		%REC
51006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	4,4'-DDT	DO	U	38	140		%REC
51006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Dieldrin	DO	U	45	135		%REC
51006	151006-018	Soil	MS	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Endrin	DO	U	21	150		%REC
51006	151006-018	Soil	MSD	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Heptachlor	142	U	49	133		%REC
51006	151006-018	Soil	MSD	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	4,4'-DDT	DO	U	38	140		%REC
51006	151006-018	Soil	MSD	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Dieldrin	DO	U	45	135		%REC
51006	151006-018	Soil	MSD	EPA 3550	EPA 8081A	62460	03/30/2001	03/30/2001	Endrin	DO	U	21	150		%REC
51018	151018-001	Soil	MS	EPA 3050	EPA 6010B	62500	03/28/2001	03/28/2001	Copper	147		36	132		%REC
51018	151018-006	Filtrate	MS	METHOD	EPA 7470	62508	03/28/2001	03/28/2001	Mercury	79		80	114		%REC
51039	151018-006	Filtrate	MS	METHOD	EPA 7470	62508	03/28/2001	03/28/2001	Mercury	79		80	114		%REC
51061	151061-002	Soil	MS	EPA 3050	EPA 6010B	62565	04/04/2001	04/04/2001	Antimony	10		15	112		%REC
51061	151061-002	Soil	MSD	EPA 3050	EPA 6010B	62565	04/04/2001	04/04/2001	Antimony	9		15	112	16	%REC
51061	151167-001	Soil	MSD	METHOD	EPA 7470	62679	04/03/2001	04/03/2001	Mercury	-19		62	135		%REC
51061	151061-018	Soil	MS	AKER TAB	EPA 8015M	62609	04/01/2001	04/01/2001	Diesel C10-C24	-91		35	146		%REC
51061	151061-018	Soil	MSD	AKER TAB	EPA 8015M	62609	04/01/2001	04/01/2001	Diesel C10-C24	-56		35	146	32	%REC
51087	151119-001	Soil	MS	EPA 3050	EPA 6010B	62607	04/02/2001	04/02/2001	Nickel	-138	NM	32	132		%REC
51087	151134-002	Soil	MS	METHOD	EPA 7470	62678	04/03/2001	04/03/2001	Mercury	332		62	135		%REC
51087	151134-002	Soil	MSD	METHOD	EPA 7470	62678	04/03/2001	04/03/2001	Mercury	55		62	135	62	%REC
51165	151165-006	Soil	MS	EPA 3050	EPA 6010B	62736	04/10/2001	04/10/2001	Zinc	135		30	132		%REC
51169	151169-001	Soil	MSD	EPA 3050	EPA 6010B	62823	04/09/2001	04/09/2001	Zinc	29		30	132	11	%REC
51187	151187-007	Filtrate	MS	METHOD	EPA 6020A	62783	04/07/2001	04/07/2001	Silver	57		72	125		%REC
51208	151169-001	Soil	MSD	EPA 3050	EPA 6010B	62823	04/09/2001	04/09/2001	Zinc	29		30	132	11	%REC
51208	151251-007	Soil	MS	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Cobalt	8		45	115		%REC
51208	151251-007	Soil	MS	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Chromium	-75		23	141		%REC
51208	151251-007	Soil	MS	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Nickel	-1283	NM	32	132		%REC
51208	151251-007	Soil	MSD	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Cobalt	44		45	115	21	%REC
51208	151251-007	Soil	MSD	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Chromium	-30		23	141	19	%REC
51208	151251-007	Soil	MSD	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Nickel	-557	NM	32	132	41	%REC
51208	151187-007	Filtrate	MS	METHOD	EPA 6020A	62783	04/07/2001	04/07/2001	Silver	57		72	125		%REC
51208	151208-030	Soil	MS	EPA 5030	EPA 8015M	62846	04/10/2001	04/10/2001	Gasoline C7-C12	-1659	>LRNM	41	132		%REC
51208	151208-030	Soil	MSD	EPA 5030	EPA 8015M	62846	04/10/2001	04/10/2001	Gasoline C7-C12	-634	>LRNM	41	132		%REC
51208	151208-032	Soil	MS	AKER TAB	EPA 8015M	62801	04/10/2001	04/10/2001	Diesel C10-C24	20		35	146		%REC
51208	151208-032	Soil	MSD	AKER TAB	EPA 8015M	62801	04/10/2001	04/10/2001	Diesel C10-C24	4		35	146	17	%REC
1241	151251-007	Soil	MS	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Cobalt	8		45	115		%REC
1241	151251-007	Soil	MS	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Chromium	-75		23	141		%REC
1241	151251-007	Soil	MS	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Nickel	-1283	NM	32	132		%REC
1241	151251-007	Soil	MSD	EPA 3050	EPA 6010B	62864	04/11/2001	04/11/2001	Cobalt	44		45	115	21	%REC

Summary of Surrogate Spike Exceedances

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Spike Percent	Qualifier	Units	Lower Control Limit	Upper Control Limit
151006-018	SB-65	03/22/2001	Soil	EPA 8081A	62460	03/30/2001	03/30/2001	2051-24-3	Decachlorobiphenyl	DO		%REC	33	144
151006-018	SB-65	03/22/2001	Soil	EPA 8081A	62460	03/30/2001	03/30/2001	877-09-8	TCMX	DO		%REC	39	150
151061-003	SB-31-7'	03/26/2001	Soil	EPA 8015M	62616	03/31/2001	03/31/2001	460-00-4	Bromofluorobenzene (FID)	262	>LRb	%REC	46	150
151061-004	SB-31-10'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	460-00-4	Bromofluorobenzene (FID)	281	>LRb	%REC	46	150
151061-005	SB-31-15'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	460-00-4	Bromofluorobenzene (FID)	173		%REC	46	150
151061-007	SB-31-23'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	460-00-4	Bromofluorobenzene (FID)	264	>LRb	%REC	46	150
151169-001	SB-2-3'	03/31/2001	Soil	EPA 8015M	62739	04/07/2001	04/07/2001	630-01-3	Hexacosane	DO		%REC	60	136
151187-024	SB-51-GGW	04/02/2001	Water	EPA 8015M	62750	04/09/2001	04/09/2001	630-01-3	Hexacosane	DO		%REC	44	121
151208-040	SB-53-2'	04/03/2001	Soil	EPA 8015M	62801	04/11/2001	04/11/2001	630-01-3	Hexacosane	DO		%REC	60	136
151208-017	SB-71-23'	04/03/2001	Soil	EPA 8260B	62892	04/11/2001	04/11/2001	460-00-4	Bromofluorobenzene	128		%REC	77	126
151208-031	SB-70-GGW	04/03/2001	Water	EPA 8260B	62927	04/12/2001	04/12/2001	17060-07-0	1,2-Dichloroethane-d4	124		%REC	78	123
151241-030	SB-22-2'	04/04/2001	Soil	EPA 8015M	62876	04/12/2001	04/12/2001	630-01-3	Hexacosane	DO		%REC	60	136
151241-031	SB-22-5'	04/04/2001	Soil	EPA 8015M	62876	04/13/2001	04/13/2001	630-01-3	Hexacosane	DO		%REC	60	136
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8015M	62906	04/13/2001	04/13/2001	630-01-3	Hexacosane	DO		%REC	44	121
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8015M	62906	04/13/2001	04/13/2001	630-01-3	Hexacosane	DO		%REC	44	121
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8270C	62792	04/12/2001	04/12/2001	4165-60-0	Nitrobenzene-d5	DO		%REC	34	126
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8270C	62792	04/12/2001	04/12/2001	118-79-6	2,4,6-Tribromophenol	DO		%REC	19	136
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8270C	62792	04/12/2001	04/12/2001	367-12-4	2-Fluorophenol	DO		%REC	17	119
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8270C	62792	04/12/2001	04/12/2001	321-60-8	2-Fluorobiphenyl	DO		%REC	30	121
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8270C	62792	04/12/2001	04/12/2001	1718-51-0	Terphenyl-d14	DO		%REC	15	142
151265-028	SB-81-GGW	04/05/2001	Water	EPA 8270C	62792	04/12/2001	04/12/2001	4165-62-2	Phenol-d5	DO		%REC	18	129
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8270C	62792	04/11/2001	04/11/2001	4165-60-0	Nitrobenzene-d5	DO		%REC	34	126
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8270C	62792	04/11/2001	04/11/2001	118-79-6	2,4,6-Tribromophenol	DO		%REC	19	136
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8270C	62792	04/11/2001	04/11/2001	367-12-4	2-Fluorophenol	DO		%REC	17	119
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8270C	62792	04/11/2001	04/11/2001	321-60-8	2-Fluorobiphenyl	DO		%REC	30	121
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8270C	62792	04/11/2001	04/11/2001	1718-51-0	Terphenyl-d14	DO		%REC	15	142
151265-029	SB-181-GGW	04/05/2001	Water	EPA 8270C	62792	04/11/2001	04/11/2001	4165-62-2	Phenol-d5	DO		%REC	18	129
151265-038	SB-11-3'	04/05/2001	Soil	EPA 8310	62855	04/11/2001	04/11/2001	90-12-0	1-Methylnaphthalene (UV)	153		%REC	30	122

Summary of Preparation and Hold Time Exceedances

Lab Sample No.	Field Sample Id.	Sample Matrix	Preparation Method	Analytical Method	Sample Date	Preparation Date	Analysis Date	Preparation Hold Time	Analysis Hold Time
151390-008	SB-51-10'RE	Soil	EPA 3550	EPA 8270C	04/02/2001	04/24/2001	04/24/2001	22	22
151390-009	SB-51-23'RE	Soil	EPA 3550	EPA 8270C	04/02/2001	04/24/2001	04/24/2001	22	22
151390-012	SB-52-25'RE	Soil	EPA 3550	EPA 8270C	04/02/2001	04/26/2001	04/26/2001	24	24
151390-011	SB-52-4'RE	Soil	EPA 3550	EPA 8270C	04/02/2001	04/26/2001	04/26/2001	24	24
151390-010	SB-81-26'RE	Soil	EPA 3550	EPA 8270C	04/05/2001	04/24/2001	04/24/2001	19	19

Summary of Qualified Analytical Results

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-41-7	Beryllium	2.0	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-43-9	Cadmium	5.0	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-47-3	Chromium	10	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-48-4	Cobalt	20	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-50-8	Copper	10	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-02-0	Nickel	20	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-22-4	Silver	5.0	UJ	ug/L
50932-001	SB-12GGW	03/19/2001	Filtrate	EPA 6020A	62303	03/20/2001	03/20/2001	7440-66-6	Zinc	20	UJ	ug/L
50980-002	SB-8-4	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.8	UJ	mg/Kg
50980-002	SB-8-4	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	53	J	mg/Kg
50980-002	SB-8-4	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	76	J	mg/Kg
50980-003	SB-8-5	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
50980-003	SB-8-5	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-02-0	Nickel	46	J	mg/Kg
50980-003	SB-8-5	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-66-6	Zinc	28	J	mg/Kg
50980-004	SB-8-10	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
50980-004	SB-8-10	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-02-0	Nickel	57	J	mg/Kg
50980-004	SB-8-10	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-66-6	Zinc	40	J	mg/Kg
50980-005	SB-8-15	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-36-0	Antimony	2.8	UJ	mg/Kg
50980-005	SB-8-15	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-02-0	Nickel	60	J	mg/Kg
50980-005	SB-8-15	03/21/2001	Soil	EPA 6010B	62420	03/29/2001	03/29/2001	7440-66-6	Zinc	50	J	mg/Kg
50980-007	SB-8-25	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.6	UJ	mg/Kg
50980-007	SB-8-25	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	48	J	mg/Kg
50980-007	SB-8-25	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	35	J	mg/Kg
50980-010	SB-58-4	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	3.0	UJ	mg/Kg
50980-010	SB-58-4	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	52	J	mg/Kg
50980-010	SB-58-4	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	46	J	mg/Kg
50980-011	SB-58-5.5	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	3.0	UJ	mg/Kg
50980-011	SB-58-5.5	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	47	J	mg/Kg
50980-011	SB-58-5.5	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	40	J	mg/Kg
50980-012	SB-58-10	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.5	UJ	mg/Kg
50980-012	SB-58-10	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	38	J	mg/Kg
50980-012	SB-58-10	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	34	J	mg/Kg
0980-013	SB-58-15	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.8	UJ	mg/Kg
0980-013	SB-58-15	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	41	J	mg/Kg
0980-013	SB-58-15	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	34	J	mg/Kg
0980-015	SB-58-25	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.5	UJ	mg/Kg
0980-015	SB-58-25	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	51	J	mg/Kg
0980-015	SB-58-25	03/21/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	38	J	mg/Kg
1006-004	SB-36-4	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.5	UJ	mg/Kg
1006-004	SB-36-4	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	19	J	mg/Kg
1006-004	SB-36-4	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	64	J	mg/Kg
1006-005	SB-36-5.5	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.4	UJ	mg/Kg
1006-005	SB-36-5.5	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	52	J	mg/Kg
1006-005	SB-36-5.5	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	44	J	mg/Kg
1006-006	SB-36-10	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-36-0	Antimony	2.8	UJ	mg/Kg
1006-006	SB-36-10	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-02-0	Nickel	53	J	mg/Kg
1006-006	SB-36-10	03/22/2001	Soil	EPA 6010B	62420	03/28/2001	03/28/2001	7440-66-6	Zinc	41	J	mg/Kg

Summary of Qualified Analytical Results

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
51061-005	SB-31-15'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	0	Mineral Spirits C7-C12	190	JYL	mg/Kg
51061-005	SB-31-15'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	0	Stoddard Solvent C7-C12	89	J	mg/Kg
51061-007	SB-31-23'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-007	SB-31-23'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	8006-61-9	Gasoline C7-C12	80	JYH	mg/Kg
51061-007	SB-31-23'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	0	Mineral Spirits C7-C12	87	JYL	mg/Kg
51061-007	SB-31-23'	03/26/2001	Soil	EPA 8015M	62570	03/30/2001	03/30/2001	0	Stoddard Solvent C7-C12	40	J	mg/Kg
51061-008	SB-31-25'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-010	SB-32-4'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	3.0	UJ	mg/Kg
51061-011	SB-32-5'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-012	SB-32-9.5'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-013	SB-32-15'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	3.0	UJ	mg/Kg
51061-015	SB-32-25'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-018	SB-33-4'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-019	SB-33-6.5'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-020	SB-33-10'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-021	SB-33-15'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51061-023	SB-33-25'	03/26/2001	Soil	EPA 6010B	62565	04/04/2001	04/04/2001	7440-36-0	Antimony	2.9	UJ	mg/Kg
51165-006	SB-77-4'	03/30/2001	Soil	EPA 6010B	62736	04/10/2001	04/10/2001	7440-66-6	Zinc	55	J	mg/Kg
51165-007	SB-77-5'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	34	J	mg/Kg
51165-008	SB-77-10'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	41	J	mg/Kg
51165-009	SB-77-15'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	43	J	mg/Kg
51165-010	SB-77-20'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	44	J	mg/Kg
51165-011	SB-77-25'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	34	J	mg/Kg
51165-012	SB-76-4'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	49	J	mg/Kg
51165-013	SB-76-7'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	38	J	mg/Kg
51165-014	SB-76-10'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	39	J	mg/Kg
51165-015	SB-76-15'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	53	J	mg/Kg
51165-016	SB-76-20'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	57	J	mg/Kg
51165-017	SB-76-25'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	38	J	mg/Kg
51165-018	SB-56-4'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	44	J	mg/Kg
51165-019	SB-56-6'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	36	J	mg/Kg
51165-020	SB-56-10'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	40	J	mg/Kg
51165-021	SB-56-15'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	41	J	mg/Kg
51165-022	SB-56-20'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	60	J	mg/Kg
51165-023	SB-56-25'	03/30/2001	Soil	EPA 6010B	62736	04/11/2001	04/11/2001	7440-66-6	Zinc	46	J	mg/Kg
51169-001	SB-2-3'	03/31/2001	Soil	EPA 6010B	62823	04/09/2001	04/09/2001	7440-66-6	Zinc	48	J	mg/Kg
51169-002	SB-5-3'	03/31/2001	Soil	EPA 6010B	62823	04/10/2001	04/10/2001	7440-66-6	Zinc	37	J	mg/Kg
51169-005	SB-7-15'	03/31/2001	Soil	EPA 6010B	62823	04/10/2001	04/10/2001	7440-66-6	Zinc	43	J	mg/Kg
1169-006	SB-7-26'	03/31/2001	Soil	EPA 6010B	62823	04/10/2001	04/10/2001	7440-66-6	Zinc	36	J	mg/Kg
1169-007	SB-6-10'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	38	J	mg/Kg
1169-009	SB-6-15'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	45	J	mg/Kg
1169-012	SB-7-2'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	35	J	mg/Kg
1169-013	SB-7-10'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	41	J	mg/Kg
1169-014	SB-6-6'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	40	J	mg/Kg
1169-015	SB-7-5'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	41	J	mg/Kg
1169-016	SB-6-2'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	34	J	mg/Kg
1169-017	SB-6-27'	03/31/2001	Soil	EPA 6010B	62823	04/11/2001	04/11/2001	7440-66-6	Zinc	32	J	mg/Kg

Summary of Qualified Analytical Results

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	88-75-5	2-Nitrophenol	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	91-94-1	3,3'-Dichlorobenzidine	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	1319-77-3	3-,4-Methylphenol	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	99-09-2	3-Nitroaniline	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	534-52-1	4,6-Dinitro-2-methylphenol	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	101-55-3	4-Bromophenyl-phenylether	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	59-50-7	4-Chloro-3-methylphenol	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	106-47-8	4-Chloroaniline	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	7005-72-3	4-Chlorophenyl-phenylether	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	100-01-6	4-Nitroaniline	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	100-02-7	4-Nitrophenol	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	83-32-9	Acenaphthene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	208-96-8	Acenaphthylene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	120-12-7	Anthracene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	103-33-3	Azobenzene	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	56-55-3	Benzo(a)anthracene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	50-32-8	Benzo(a)pyrene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	205-99-2	Benzo(b)fluoranthene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	191-24-2	Benzo(g,h,i)perylene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	207-08-9	Benzo(k)fluoranthene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	65-85-0	Benzoic acid	1600	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	100-51-6	Benzyl alcohol	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	111-91-1	bis(2-Chloroethoxy)methane	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	111-44-4	bis(2-Chloroethyl)ether	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	108-60-1	bis(2-Chloroisopropyl) ether	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	117-81-7	bis(2-Ethylhexyl)phthalate	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	85-68-7	Butylbenzylphthalate	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	218-01-9	Chrysene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	53-70-3	Dibenz(a,h)anthracene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	132-64-9	Dibenzofuran	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	84-66-2	Diethylphthalate	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	131-11-3	Dimethylphthalate	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	84-74-2	Di-n-butylphthalate	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	117-84-0	Di-n-octylphthalate	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	206-44-0	Fluoranthene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	86-73-7	Fluorene	49	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	118-74-1	Hexachlorobenzene	330	UJ	ug/Kg
51390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	87-68-3	Hexachlorobutadiene	330	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	77-47-4	Hexachlorocyclopentadiene	1600	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	67-72-1	Hexachloroethane	330	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	193-39-5	Indeno(1,2,3-cd)pyrene	49	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	78-59-1	Isophorone	330	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	91-20-3	Naphthalene	49	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	98-95-3	Nitrobenzene	330	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	62-75-9	N-Nitrosodimethylamine	330	UJ	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	621-64-7	N-Nitroso-di-n-propylamine	220	J	ug/Kg
1390-001	SB-51-10'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	86-30-6	N-Nitrosodiphenylamine	330	UJ	ug/Kg

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	218-01-9	Chrysene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	53-70-3	Dibenz(a,h)anthracene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	132-64-9	Dibenzofuran	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	84-66-2	Diethylphthalate	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	131-11-3	Dimethylphthalate	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	84-74-2	Di-n-butylphthalate	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	117-84-0	Di-n-octylphthalate	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	206-44-0	Fluoranthene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	86-73-7	Fluorene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	118-74-1	Hexachlorobenzene	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	87-68-3	Hexachlorobutadiene	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	77-47-4	Hexachlorocyclopentadiene	1700	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	67-72-1	Hexachloroethane	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	193-39-5	Indeno(1,2,3-cd)pyrene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	78-59-1	Isophorone	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	91-20-3	Naphthalene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	98-95-3	Nitrobenzene	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	62-75-9	N-Nitrosodimethylamine	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	621-64-7	N-Nitroso-di-n-propylamine	240	J	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	86-30-6	N-Nitrosodiphenylamine	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	87-86-5	Pentachlorophenol	1700	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	85-01-8	Phenanthrene	50	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	108-95-2	Phenol	330	UJ	ug/Kg
51390-002	SB-51-23'	04/02/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	129-00-0	Pyrene	50	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	120-82-1	1,2,4-Trichlorobenzene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	95-50-1	1,2-Dichlorobenzene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	541-73-1	1,3-Dichlorobenzene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	106-46-7	1,4-Dichlorobenzene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	95-95-4	2,4,5-Trichlorophenol	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	88-06-2	2,4,6-Trichlorophenol	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	120-83-2	2,4-Dichlorophenol	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	105-67-9	2,4-Dimethylphenol	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	51-28-5	2,4-Dinitrophenol	1700	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	121-14-2	2,4-Dinitrotoluene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	606-20-2	2,6-Dinitrotoluene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	91-58-7	2-Chloronaphthalene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	95-57-8	2-Chlorophenol	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	91-57-6	2-Methylnaphthalene	330	UJ	ug/Kg
51390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	95-48-7	2-Methylphenol	330	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	88-74-4	2-Nitroaniline	1700	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	88-75-5	2-Nitrophenol	1700	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	91-94-1	3,3'-Dichlorobenzidine	1700	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	1319-77-3	3-,4-Methylphenol	330	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	99-09-2	3-Nitroaniline	1700	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	534-52-1	4,6-Dinitro-2-methylphenol	1700	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	101-55-3	4-Bromophenyl-phenylether	330	UJ	ug/Kg
1390-003	SB-81-26'	04/05/2001	Soil	EPA 8270C	63022	04/18/2001	04/18/2001	59-50-7	4-Chloro-3-methylphenol	330	UJ	ug/Kg

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	106-46-7	1,4-Dichlorobenzene	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	95-95-4	2,4,5-Trichlorophenol	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	88-06-2	2,4,6-Trichlorophenol	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	120-83-2	2,4-Dichlorophenol	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	105-67-9	2,4-Dimethylphenol	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	51-28-5	2,4-Dinitrophenol	1700	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	121-14-2	2,4-Dinitrotoluene	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	606-20-2	2,6-Dinitrotoluene	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	91-58-7	2-Chloronaphthalene	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	95-57-8	2-Chlorophenol	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	91-57-6	2-Methylnaphthalene	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	95-48-7	2-Methylphenol	330	UJ	ug/Kg
151390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	88-74-4	2-Nitroaniline	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	88-75-5	2-Nitrophenol	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	91-94-1	3,3'-Dichlorobenzidine	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	1319-77-3	3-,4-Methylphenol	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	99-09-2	3-Nitroaniline	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	534-52-1	4,6-Dinitro-2-methylphenol	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	101-55-3	4-Bromophenyl-phenylether	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	59-50-7	4-Chloro-3-methylphenol	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	106-47-8	4-Chloroaniline	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	7005-72-3	4-Chlorophenyl-phenylether	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	100-01-6	4-Nitroaniline	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	100-02-7	4-Nitrophenol	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	83-32-9	Acenaphthene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	208-96-8	Acenaphthylene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	120-12-7	Anthracene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	103-33-3	Azobenzene	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	56-55-3	Benzo(a)anthracene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	50-32-8	Benzo(a)pyrene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	205-99-2	Benzo(b)fluoranthene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	191-24-2	Benzo(g,h,i)perylene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	207-08-9	Benzo(k)fluoranthene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	65-85-0	Benzoic acid	1700	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	100-51-6	Benzyl alcohol	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	111-91-1	bis(2-Chloroethoxy)methane	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	111-44-4	bis(2-Chloroethyl)ether	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	108-60-1	bis(2-Chloroisopropyl) ether	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	117-81-7	bis(2-Ethylhexyl)phthalate	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	85-68-7	Butylbenzylphthalate	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	218-01-9	Chrysene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	53-70-3	Dibenz(a,h)anthracene	50	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	132-64-9	Dibenzofuran	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	84-66-2	Diethylphthalate	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	131-11-3	Dimethylphthalate	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	84-74-2	Di-n-butylphthalate	330	UJ	ug/Kg
51390-004	SB-52-4'	04/02/2001	Soil	EPA 8270C	63022	04/19/2001	04/19/2001	117-84-0	Di-n-octylphthalate	330	UJ	ug/Kg

Summary of Qualified Analytical Results

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	103-33-3	Azobenzene	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	56-55-3	Benzo(a)anthracene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	50-32-8	Benzo(a)pyrene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	205-99-2	Benzo(b)fluoranthene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	191-24-2	Benzo(g,h,i)perylene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	207-08-9	Benzo(k)fluoranthene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	65-85-0	Benzoic acid	1700	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	100-51-6	Benzyl alcohol	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	111-91-1	bis(2-Chloroethoxy)methane	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	111-44-4	bis(2-Chloroethyl)ether	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	108-60-1	bis(2-Chloroisopropyl) ether	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	117-81-7	bis(2-Ethylhexyl)phthalate	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	85-68-7	Butylbenzylphthalate	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	218-01-9	Chrysene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	53-70-3	Dibenz(a,h)anthracene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	132-64-9	Dibenzofuran	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	84-66-2	Diethylphthalate	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	131-11-3	Dimethylphthalate	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	84-74-2	Di-n-butylphthalate	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	117-84-0	Di-n-octylphthalate	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	206-44-0	Fluoranthene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	86-73-7	Fluorene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	118-74-1	Hexachlorobenzene	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	87-68-3	Hexachlorobutadiene	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	77-47-4	Hexachlorocyclopentadiene	1700	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	67-72-1	Hexachloroethane	330	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	193-39-5	Indeno(1,2,3-cd)pyrene	50	UJ	ug/Kg
151390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	78-59-1	Isophorone	330	UJ	ug/Kg
.51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	91-20-3	Naphthalene	50	UJ	ug/Kg
.51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	98-95-3	Nitrobenzene	330	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	62-75-9	N-Nitrosodimethylamine	330	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	621-64-7	N-Nitroso-di-n-propylamine	330	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	86-30-6	N-Nitrosodiphenylamine	330	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	87-86-5	Pentachlorophenol	1700	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	85-01-8	Phenanthrene	50	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	108-95-2	Phenol	330	UJ	ug/Kg
51390-005	SB-52-25'	04/02/2001	Soil	EPA 8270C	63022	04/20/2001	04/20/2001	129-00-0	Pyrene	50	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	120-82-1	1,2,4-Trichlorobenzene	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	95-50-1	1,2-Dichlorobenzene	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	541-73-1	1,3-Dichlorobenzene	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	106-46-7	1,4-Dichlorobenzene	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	95-95-4	2,4,5-Trichlorophenol	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	88-06-2	2,4,6-Trichlorophenol	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	120-83-2	2,4-Dichlorophenol	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	105-67-9	2,4-Dimethylphenol	330	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	51-28-5	2,4-Dinitrophenol	1700	UJ	ug/Kg
51390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	121-14-2	2,4-Dinitrotoluene	330	UJ	ug/Kg

Summary of Qualified Analytical Results

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	78-59-1	Isophorone	330	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	91-20-3	Naphthalene	50	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	98-95-3	Nitrobenzene	330	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	62-75-9	N-Nitrosodimethylamine	330	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	621-64-7	N-Nitroso-di-n-propylamine	230	Jb	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	86-30-6	N-Nitrosodiphenylamine	330	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	87-86-5	Pentachlorophenol	1700	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	85-01-8	Phenanthrene	50	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	108-95-2	Phenol	330	UJ	ug/Kg
151390-008	SB-51-10'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	129-00-0	Pyrene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	120-82-1	1,2,4-Trichlorobenzene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	95-50-1	1,2-Dichlorobenzene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	541-73-1	1,3-Dichlorobenzene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	106-46-7	1,4-Dichlorobenzene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	95-95-4	2,4,5-Trichlorophenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	88-06-2	2,4,6-Trichlorophenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	120-83-2	2,4-Dichlorophenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	105-67-9	2,4-Dimethylphenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	51-28-5	2,4-Dinitrophenol	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	121-14-2	2,4-Dinitrotoluene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	606-20-2	2,6-Dinitrotoluene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	91-58-7	2-Chloronaphthalene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	95-57-8	2-Chlorophenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	91-57-6	2-Methylnaphthalene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	95-48-7	2-Methylphenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	88-74-4	2-Nitroaniline	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	88-75-5	2-Nitrophenol	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	91-94-1	3,3'-Dichlorobenzidine	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	1319-77-3	3-,4-Methylphenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	99-09-2	3-Nitroaniline	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	534-52-1	4,6-Dinitro-2-methylphenol	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	101-55-3	4-Bromophenyl-phenylether	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	59-50-7	4-Chloro-3-methylphenol	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	106-47-8	4-Chloroaniline	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	7005-72-3	4-Chlorophenyl-phenylether	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	100-01-6	4-Nitroaniline	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	100-02-7	4-Nitrophenol	1700	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	83-32-9	Acenaphthene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	208-96-8	Acenaphthylene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	120-12-7	Anthracene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	103-33-3	Azobenzene	340	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	56-55-3	Benzo(a)anthracene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	50-32-8	Benzo(a)pyrene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	205-99-2	Benzo(b)fluoranthene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	191-24-2	Benzo(g,h,i)perylene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	207-08-9	Benzo(k)fluoranthene	50	UJ	ug/Kg
151390-009	SB-51-23'RE	04/02/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	65-85-0	Benzoic acid	1700	UJ	ug/Kg

Summary of Qualified Analytical Results

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
151390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	91-94-1	3,3'-Dichlorobenzidine	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	1319-77-3	3-,4-Methylphenol	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	99-09-2	3-Nitroaniline	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	534-52-1	4,6-Dinitro-2-methylphenol	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	101-55-3	4-Bromophenyl-phenylether	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	59-50-7	4-Chloro-3-methylphenol	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	106-47-8	4-Chloroaniline	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	7005-72-3	4-Chlorophenyl-phenylether	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	100-01-6	4-Nitroaniline	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	100-02-7	4-Nitrophenol	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	83-32-9	Acenaphthene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	208-96-8	Acenaphthylene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	120-12-7	Anthracene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	103-33-3	Azobenzene	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	56-55-3	Benzo(a)anthracene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	50-32-8	Benzo(a)pyrene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	205-99-2	Benzo(b)fluoranthene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	191-24-2	Benzo(g,h,i)perylene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	207-08-9	Benzo(k)fluoranthene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	65-85-0	Benzoic acid	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	100-51-6	Benzyl alcohol	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	111-91-1	bis(2-Chloroethoxy)methane	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	111-44-4	bis(2-Chloroethyl)ether	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	108-60-1	bis(2-Chloroisopropyl) ether	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	117-81-7	bis(2-Ethylhexyl)phthalate	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	85-68-7	Butylbenzylphthalate	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	218-01-9	Chrysene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	53-70-3	Dibenz(a,h)anthracene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	132-64-9	Dibenzofuran	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	84-66-2	Diethylphthalate	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	131-11-3	Dimethylphthalate	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	84-74-2	Di-n-butylphthalate	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	117-84-0	Di-n-octylphthalate	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	206-44-0	Fluoranthene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	86-73-7	Fluorene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	118-74-1	Hexachlorobenzene	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	87-68-3	Hexachlorobutadiene	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	77-47-4	Hexachlorocyclopentadiene	1700	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	67-72-1	Hexachloroethane	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	193-39-5	Indeno(1,2,3-cd)pyrene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	78-59-1	Isophorone	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	91-20-3	Naphthalene	50	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	98-95-3	Nitrobenzene	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	62-75-9	N-Nitrosodimethylamine	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	621-64-7	N-Nitroso-di-n-propylamine	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	86-30-6	N-Nitrosodiphenylamine	330	UJ	ug/Kg
51390-010	SB-81-26'RE	04/05/2001	Soil	EPA 8270C	63189	04/24/2001	04/24/2001	87-86-5	Pentachlorophenol	1700	UJ	ug/Kg

Lab Sample No.	Field Sample Id.	Sample Date	Sample Matrix	Analytical Method	QC Batch No.	Preparation Date	Analysis Date	CAS No.	Analyte	Result	Qualifier	Units
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	53-70-3	Dibenz(a,h)anthracene	50	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	132-64-9	Dibenzofuran	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	84-66-2	Diethylphthalate	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	131-11-3	Dimethylphthalate	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	84-74-2	Di-n-butylphthalate	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	117-84-0	Di-n-octylphthalate	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	206-44-0	Fluoranthene	50	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	86-73-7	Fluorene	50	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	118-74-1	Hexachlorobenzene	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	87-68-3	Hexachlorobutadiene	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	77-47-4	Hexachlorocyclopentadiene	1700	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	67-72-1	Hexachloroethane	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	193-39-5	Indeno(1,2,3-cd)pyrene	50	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	78-59-1	Isophorone	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	91-20-3	Naphthalene	50	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	98-95-3	Nitrobenzene	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	62-75-9	N-Nitrosodimethylamine	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	621-64-7	N-Nitroso-di-n-propylamine	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	86-30-6	N-Nitrosodiphenylamine	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	87-86-5	Pentachlorophenol	1700	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	85-01-8	Phenanthrene	50	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	108-95-2	Phenol	330	UJ	ug/Kg
151390-011	SB-52-4'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	129-00-0	Pyrene	50	UJ	ug/Kg
151390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	120-82-1	1,2,4-Trichlorobenzene	330	UJ	ug/Kg
151390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	95-50-1	1,2-Dichlorobenzene	330	UJ	ug/Kg
151390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	541-73-1	1,3-Dichlorobenzene	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	106-46-7	1,4-Dichlorobenzene	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	95-95-4	2,4,5-Trichlorophenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	88-06-2	2,4,6-Trichlorophenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	120-83-2	2,4-Dichlorophenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	105-67-9	2,4-Dimethylphenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	51-28-5	2,4-Dinitrophenol	1700	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	121-14-2	2,4-Dinitrotoluene	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	606-20-2	2,6-Dinitrotoluene	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	91-58-7	2-Chloronaphthalene	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	95-57-8	2-Chlorophenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	91-57-6	2-Methylnaphthalene	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	95-48-7	2-Methylphenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	88-74-4	2-Nitroaniline	1700	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	88-75-5	2-Nitrophenol	1700	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	91-94-1	3,3'-Dichlorobenzidine	1700	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	1319-77-3	3-,4-Methylphenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	99-09-2	3-Nitroaniline	1700	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	534-52-1	4,6-Dinitro-2-methylphenol	1700	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	101-55-3	4-Bromophenyl-phenylether	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	59-50-7	4-Chloro-3-methylphenol	330	UJ	ug/Kg
51390-012	SB-52-25'RE	04/02/2001	Soil	EPA 8270C	63189	04/26/2001	04/26/2001	106-47-8	4-Chloroaniline	330	UJ	ug/Kg

APPENDIX H

Screening Level Evaluation

INTRODUCTION

A human health screening evaluation was performed for the Site, in conformance with the PEA Guidance Manual. Analytical data from the sampling events conducted by LFR were used for this evaluation.

The purpose of the screening evaluation was to provide the risk manager with an estimate of the potential chronic health risk/hazard from affected soils identified at the Site. The screening evaluation was used to assist in evaluating whether further site characterization, risk assessment, or remediation was necessary. The risk/hazard estimates are calculated for exposure pathways most frequently encountered in a residential setting.

Under the residential scenario, the receptors are assumed to be exposed 24 hours a day, 350 days per year for 30 years for the reasonable maximum exposure (RME) case (i.e., 6 years for a child and 24 years for an adult; Cal/EPA Department of Toxic Substances Control [DTSC] 1994). The residents are assumed to be exposed via inhalation of airborne particulate and vapor emissions from the Site. Inhalation rates of 0.83 cubic meter per hour (m^3/hr) for a 24-hour day (i.e., 20 cubic meter per day, m^3/day) for an adult resident and of 0.43 m^3/hr for a 24-hour day (i.e., 10 m^3/day) for a child resident were used for the residents evaluations as recommended by Cal/EPA for the RME case. Residents are also assumed to use the shallow groundwater as a domestic source. Groundwater ingestion rates of two liters per day for adult residents and one liter per day for child residents are used in the evaluation. To add a level of conservatism, volatile organic compounds (VOCs) are assumed to migrate into the indoor air. Inhalation of VOCs during bathing is also considered.

The residents are also assumed to be exposed via incidental ingestion and direct dermal contact with soils at the Site. Ingestion rates of 100 milligrams per day (mg/day) for an adult resident and of 200 mg/day for a child resident were used for the residents evaluations, as recommended by Cal/EPA for the RME case. The exposed skin surface areas of 5,800 square centimeters per day (cm^2/day) for an adult resident and of 2,000 cm^2/day for a child resident were used for the residential evaluations as recommended by Cal/EPA for the RME case. The default value for soil-to-skin adherence factor of 1 milligram per square centimeter (mg/cm^2) was used in the residential evaluations for direct dermal exposure. The adult resident was assumed to be exposed to soils via the direct dermal route two times per week or 100 days per year. The child resident was assumed to be exposed to soils via the direct dermal route seven times per week or 350 days per year. The average body weights of an adult resident and a child resident were assumed to be 70 kilograms (kg) and 15 kg, respectively.

The DTSC-modified Johnson and Ettinger vapor transport model was used to estimate VOC concentrations in indoor air. Silty clay soils are assumed to best represent the Site, and appropriate model parameters were selected. The results of the modeling are presented in Attachment 1 and summarized in Tables 25 and 26.

were identified in the shallow groundwater. Modeling was performed to estimate the air concentration of the VOCs migrating from the groundwater, through the soil column and into the breathing zone. Direct contact to groundwater was considered. The risk/hazard was calculated for the soil, groundwater, and air media of concern.

EXPOSURE POINT CONCENTRATIONS AND CHEMICAL GROUPS

All chemicals detected above laboratory detection limits in soil and groundwater samples were initially selected as COPCs. Maximum detected metal concentrations were compared to the range of background levels for soils in the local regional area (Oakland Urban Land Development). Metals with maximum detected concentrations below background levels (i.e., antimony, beryllium, cobalt, copper, molybdenum, nickel, selenium, silver, thallium, and vanadium) were excluded as soil COPCs.

Metals with maximum concentrations in discrete soil samples (i.e., arsenic, barium, cadmium, chromium, lead, mercury, and zinc) above background levels were selected as COPCs.

The final soil COPCs selected for the human health screening evaluation also included OCPs, PAHs, SVOCs, and VOCs in soil. No background metal concentration in groundwater was available for the Site. Metals detected in groundwater (i.e., antimony, arsenic, barium, cobalt, copper, lead, molybdenum, nickel, and zinc) were selected as groundwater COPCs. SVOCs and VOCs were also selected as COPCs in groundwater. The selection of COPCs in soil and groundwater is summarized in Tables 20 and 21, respectively.

As authorized by DTSC, 95% UCLs of the mean were considered to represent exposure point concentrations in soil and groundwater based on the robust data set (personal communication, Ms. Janet Naito of DTSC, August 16, 2001). In addition, DTSC's representatives agreed with LFR that the concentration of chromium at 160 milligrams per kilogram (mg/kg) in the soil sample collected at the 3-foot depth from boring BASB013, and the concentration of arsenic at 33 mg/kg in the soil sample collected at the 2-foot depth at boring BASB023, could be considered outliers of the data set and could be excluded from the risk assessment. COPC distributions in both soil and groundwater were evaluated using either the Shapiro-Wilk W-test for samples size less the 50 or the D'Agostino Y-Test for sample size greater than 50. The distribution and 95% UCL concentrations are presented in Tables 25 and 26. The 95% UCL concentrations for COPCs are used in the groundwater vapor transport modeling. The DTSC-modified Johnson and Ettinger vapor transport model provided via e-mail by Ms. Naito was used in this evaluation to estimate indoor air VOC concentrations. For non-volatile COPCs in soils, the air exposure point concentrations are calculated using the equations presented in Figure 2.8 in the PEA Guidance Manual.

- The DTSC groundwater spreadsheet for the noncarcinogenic compounds does not indicate a significant hazard (greater than 1) for the indirect inhalation pathway to indoor air at the Site.
- The PEA Guidance Manual's model did reveal a significant hazard (2) for the domestic use pathway for groundwater at the Site. As previously stated, this pathway includes exposures from ingestion and bathing. Because the Site is located in an urban setting, public supply water will most likely be used as the domestic water source. Therefore, although the estimated risk from this model is above the target for this exposure scenario, direct contact with shallow groundwater is actually considered highly unlikely, and does not represent an actual complete exposure pathway.

Because lead is a COPC at the Site, blood lead level calculations were performed, using the DTSC's LeadSpread Model (Version 7.0) and inputting the 95% UCL lead concentration in soils at the Site (10 micrograms per gram [μg/g]). Lead concentrations detected in groundwater at the site was not incorporated into the model because public supply water will most likely be used as the domestic water source. The default value of 15 μg/L was used for the lead concentration in water in the model calculations. These results are presented in Table 27. The calculations were performed with the "home-grown produce" pathway turned on, to produce a conservative result. LFR assumed that up to 7 percent of vegetables consumed by a family would be raised on the Site. According to LFR's calculations, the 95th percentile blood lead levels for adults and children are below 10 micrograms per deciliter, indicating that concentrations of lead detected at the Site is not a health concern.

ATTACHMENT 1

Modeling Results

DATA ENTRY SHEET FOR TRICHLOROFLUOROMETHANE

VERSION 1.5
26-Jan-01
DTSC / HERD

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
75694	0.35	Trichlorofluoromethane

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)
15	640	SIC	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIC			1.5	0.36	0.24

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET FOR TRICHLOROFLUOROMETHANE

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zon effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
625.00	0.120	0.586	7.48E-11	0.643	4.81E-11	192.31	0.36	0.111	0.249	3,844

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
5.63E+04	9.24E+05	4.16E-04	15	6,574	2.71E+00	1.14E+02	1.77E-04	5.76E-04	4.39E-04	5.26E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m³)
625.00	15	4.01E+04	0.10	4.60E-02	5.76E-04	3.84E+02	2.26E+01	8.05E-07	3.22E-02	NA	7.0E-01

CHEMICAL PROPERTIES SHEET FOR para-ISOPROPYL TOLUENE

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.50E-02	7.10E-06	4.92E+01	25	11,039	449.70	651.00	2.20E+02	6.10E+01	0.0E+00	3.9E-01

DATA ENTRY SHEET FOR PROPYLBENZENE

VERSION 1.5
26-Jan-01
DTSC / HERD

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
103651	2.6	Propylbenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)
15	640	SIC	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIC			1.5	0.36	0.24

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET FOR PROPYLBENZENE

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm³/cm³)	Vadose zon effective total fluid saturation, S_{te} (cm³/cm³)	Vadose zone soil intrinsic permeability, k_i (cm²)	Vadose zone soil relative air permeability, k_{rg} (cm²)	Vadose zone soil effective vapor permeability, k_v (cm²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm³/cm³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm³/cm³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm³/cm³)	Floor-wall seam perimeter, X_{crack} (cm)
625.00	0.120	0.586	7.48E-11	0.643	4.81E-11	192.31	0.36	0.111	0.249	3,844

Bldg. ventilation rate, $Q_{building}$ (cm³/s)	Area of enclosed space below grade, A_B (cm²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m³/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm²/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm²/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm²/s)
5.63E+04	9.24E+05	4.16E-04	15	12,789	2.54E-01	1.07E+01	1.77E-04	4.97E-04	3.79E-04	4.53E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm³/s)	Crack effective diffusion coefficient, D^{crack} (cm²/s)	Area of crack, A_{crack} (cm²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m³)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)
625.00	15	2.79E+04	0.10	4.60E-02	4.97E-04	3.84E+02	3.73E+01	7.84E-07	2.19E-02	NA	3.5E-02

CHEMICAL PROPERTIES SHEET FOR sec-BUTYLBENZENE

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.50E-02	7.80E-06	7.67E-01	25	11,069	446.00	664.00	2.15E+03	1.70E+01	0.0E+00	3.5E-02

DATA ENTRY SHEET FOR n-BUTYLBENZENE

VERSION 1.5
26-Jan-01
DTSC / HERD

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
104518	1.8	n-Butylbenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)
15	640	SIC	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIC			1.5	0.36	0.24

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET FOR n-BUTYLBENZENE

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
625.00	0.120	0.586	7.48E-11	0.643	4.81E-11	192.31	0.36	0.111	0.249	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	14,003	2.37E-01	1.00E+01	1.77E-04	4.97E-04	3.79E-04	4.53E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
625.00	15	1.80E+04	0.10	4.60E-02	4.97E-04	3.84E+02	3.73E+01	7.84E-07	1.41E-02	NA	3.5E-02

CHEMICAL PROPERTIES SHEET FOR ISOPROPYLBENZENE

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
7.50E-02	7.10E-06	4.92E+01	25	10,335	425.80	631.10	2.20E+02	6.10E+01	0.0E+00	3.9E-01

DATA ENTRY SHEET FOR 1,2,4-TRIMETHYLBENZENE

VERSION 1.5
26-Jan-01
DTSC / HERD

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (μg/L)	Chemical
95636	4.8	1,2,4-Trimethylbenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)
15	640	SIC	15

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SIC			1.5	0.36	0.24

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET FOR 1,2,4-TRIMETHYLBENZENE

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zon effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
625.00	0.120	0.586	7.48E-11	0.643	4.81E-11	192.31	0.36	0.111	0.249	3,844

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)
5.63E+04	9.24E+05	4.16E-04	15	13,359	1.07E-01	4.52E+00	1.77E-04	4.97E-04	3.79E-04	4.53E-04

Diffusion path length, L_d (cm)	Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)
625.00	15	2.17E+04	0.10	4.60E-02	4.97E-04	3.84E+02	3.73E+01	7.84E-07	1.70E-02	NA	6.0E-03

CHEMICAL PROPERTIES SHEET FOR 1,3,5-TRIMETHYLBENZENE

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
7.50E-02	7.10E-06	3.16E-01	25	10,517	437.70	637.30	8.19E+02	4.80E+01	0.0E+00	6.0E-03

CHEMICAL PROPERTIES SHEET FOR NAPHTHALENE

Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$)	Henry's law constant reference temperature, T_R (°C)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Pure component water solubility, S (mg/L)	Unit risk factor, URF ($(\mu g/m^3)^{-1}$)	Reference conc., RfC (mg/m^3)
5.90E-02	7.50E-06	4.83E-04	25	10,373	491.14	748.40	2.00E+03	3.10E+01	0.0E+00	9.0E-03

Preliminary Environmental Assessment Report
Batarse Site
104th Avenue and East 14th Street
Oakland, California

October 3, 2001
7962.01-003

Volume II
Laboratory Analytical Sheets and
Chain-of-Custody Documents

Prepared for
Oakland Unified School District
955 High Street
Oakland, California 94601

Vol II

not Attached