

SITE INVESTIGATION REPORT

Volume 1 of 2

**The Oakland Mole
San Francisco-Oakland Bay Bridge
East Span Seismic Safety Project
Alameda County, California**

PREPARED FOR:

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 04
DIVISION OF TOLL BRIDGE PROGRAM
111 GRAND AVENUE
OAKLAND, CALIFORNIA**

PREPARED BY:

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
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DIVISION OF TOLL BRIDGE PROGRAM
ENVIRONMENTAL ENGINEERING BRANCH
111 GRAND AVENUE
OAKLAND, CALIFORNIA**



AND

**GEOCON CONSULTANTS, INC
2356 RESEARCH DRIVE
LIVERMORE, CALIFORNIA**





Project No. E8000-06-13
October 4, 2001

California Department of Transportation - District 4
Division of Toll Bridge Program
Environmental Engineering Branch
111 Grand Avenue, 14th Floor
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Attention: Mr. Allen Baradar

Subject: SITE INVESTIGATION REPORT
ROUTE 80 - OAKLAND MOLE
ALAMEDA COUNTY, CALIFORNIA
CONTRACT NO. 43A0012
TASK ORDER NO. 04-012000-FC

Dear Mr. Baradar:

In accordance with Caltrans Contract No. 43A0012 and Task Order No. 04-012000-FC, Geocon Consultants, Inc. (Geocon) has performed environmental engineering services at the above-referenced project site. The project Site consists of the land area of the Oakland Mole at the Interstate 80 (San Francisco – Oakland Bay Bridge) East touchdown, west of the toll plaza metering lights.

The accompanying report summarizes the services performed, including the advancement of soil borings, the collection of soil and groundwater samples, and chemical analyses.

If there are any questions concerning the contents of this report, or if Geocon may be of further service, please contact the undersigned at your convenience.

Sincerely,

GEOCON CONSULTANTS, INC.


Matthew W. Hanko, REA
Senior Project Scientist

MWH:RWD:mwh

(5) Addressee


Richard W. Day, CEG, CHG
Regional Manager



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REPORT LIMITATIONS

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. This report presents our professional judgment based upon data and findings identified in this report and the interpretation of such data based on our experience and background, and no warranty, either expressed or implied, is made. The conclusions presented are based on the current regulatory climate and may require revision if future regulatory changes occur.

The findings identified in this report are predicated on the results of the limited sampling and laboratory testing performed. This report does not address impacts related to sources other than those specified herein.

The contents of this report reflect the views of Geocon Consultants, Inc., who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

GEOCON CONSULTANTS, INC.



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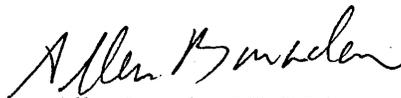
CALIFORNIA DEPARTMENT OF TRANSPORTATION DIVISION OF TOLL BRIDGE PROGRAM - ENVIRONMENTAL ENGINEERING BRANCH

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EXECUTIVE SUMMARY

In accordance with California Department of Transportation (Caltrans) Contract No. 43A0012 and Task Order No. 04-012000-FC, Geocon Consultants, Inc. (Geocon) has performed a chemical evaluation of materials that will be excavated for a Caltrans construction project at the San Francisco - Oakland Bay Bridge (SFOBB) Interstate 80 East Span on the Oakland Mole in Alameda County, California. The work has been performed in response to a Caltrans proposal to replace the SFOBB East Span, located between Yerba Buena Island (YBI) and the SFOBB Toll Plaza. The preferred replacement alternative is to construct a new bridge on an alignment that varies from 0 to 350 meters north of the existing alignment. The bridge will transition from a double-deck viaduct at YBI to two parallel bridge decks, supported by a combination of suspension and skyway designs (transition structures) to the existing touchdown area. In addition, temporary structures (detour structures) are required to shift traffic from the existing structure while the transition structures are being built. The area investigated consists of the land area of the Oakland Mole at the Interstate 80 (SFOBB) Oakland touchdown west of the toll plaza metering lights.

The purpose of the investigation was to characterize soil and groundwater that will be encountered during construction activities. This work was accomplished through the advancement of soil borings, the collection of soil and groundwater samples, and the performance of laboratory analyses. The investigative results will be used by Caltrans to evaluate health and safety issues; soil re-use issues, site remediation, and appropriate soil and groundwater disposal measures.

Soil borings ranged in depth from 0.3 to 17 meters below ground surface (bgs).

Petroleum Hydrocarbons in Soil

Total petroleum hydrocarbons as diesel (TPHd) were present in 136 of 136 soil samples analyzed. TPHd was most commonly reported at concentrations of less than 200 milligrams per kilogram (mg/kg). The maximum TPHd concentration was 1,780 mg/kg in sample B2 at 2.3 meters bgs.

Total petroleum hydrocarbons as motor oil (TPHmo) were present in 136 of 136 soil samples analyzed. TPHmo was most commonly reported at concentrations ranging between 100 and 1,000 mg/kg. The maximum TPHmo concentration was 4,800 mg/kg in sample PL3 at the surface.

- Total petroleum hydrocarbons as gasoline (TPHg) was present in one of 115 soil samples analyzed at a concentration of 1.3 mg/kg in sample E36L at the surface. TPHg was not present in the remaining soil samples at or above the laboratory reporting limit of 1.0 mg/kg.

Petroleum hydrocarbon concentrations in soil are at levels that are not likely to restrict re-use or disposal.

Volatile organic compounds (VOCs) were present in five of 116 soil samples analyzed. The most commonly detected analyte was methylene chloride ranging in concentration from 1.3 to 4.8 micrograms per kilogram (ug/kg). Methylene chloride is a common laboratory contaminant. The only other VOCs detected were ethylbenzene and xylenes in sample B5 at the surface at respective concentrations of 5.2 ug/kg and 3.7 ug/kg.

Organochlorine Pesticides and PCBs in Soil

Organochlorine pesticides detected in soil samples included dichloro-diphenyl-trichloroethane (DDT) and its metabolites dichloro-diphenyl-trichloroethylene (DDE) and dichloro-diphenyl-dichloroethane (DDD). Other pesticides included Endosulfan II, Endrin, and Endrin Aldehyde. The maximum pesticide concentration reported was 55 ug/kg (DDT) in sample MD11 at the surface. The Title 22 Total Threshold Limit Concentration (TTLC) is represented by a cumulative concentration of DDT and its metabolites at 1,000 ug/kg. The highest cumulative concentration of DDT and its metabolites was reported at 111 ug/kg in sample MD11 at the surface. Reported concentrations of organochlorine pesticides at the project site were also below their respective Preliminary Remediation Goals (PRGs) for industrial soil.

The polychlorinated biphenyl (PCB) Aroclors 1254, 1260, and 1262 detected in soil were present at concentrations less than the respective TTLC value of 50 mg/kg and the respective PRG values.

Title 22 Metals in Soil

A total of 139 discrete soil samples were analyzed for Title 22 metals. A total of 98 discrete soil samples were analyzed for lead only. Thus, 237 lead analytical results were obtained from discrete soil samples. With the exception of lead, Title 22 metals were not detected at total concentrations greater than their respective TTLC values. Total lead was detected at concentrations exceeding the TTLC value in eight of the 237 discrete lead soil samples. Additionally, lead was detected at total concentrations exceeding 10 times its Soluble Threshold Limit Concentration (STLC) value in 148 of the 237 discrete lead soil samples. Soluble lead concentrations that exceeded the STLC value were present in 125 of the 148 discrete soil samples. A total of seven Toxic Characteristic Leaching Procedure (TCLP) analyses were performed for discrete soil samples where the total lead concentration exceeded 1,000 mg/kg. Two results (surface sample AR3 and sample SS4 at 0.3 meter bgs) exceeded the lead TCLP value of 5 milligrams per liter (mg/l).

A statistical analysis for lead data was performed for two sets: 1) borings located in the Utility Trench (UT) and Structure Demolition (E24 through E39) areas, and 2) all other borings (Eastbound Detour, Structure, Substation, Detention Basin, and Bent boring locations). The 90% Upper Confidence Limits (UCLs) for the total lead means for the borings located in the Utility Trench and Structure Demolition areas ranged from 116 mg/kg at the surface to 482 mg/kg at 0.9 meter bgs, and from 413 mg/kg at surface to 268 mg/kg at 0.91 meter bgs for all other boring locations. The statistical analysis is included as Appendix D.

Copper was also detected at total concentrations that exceeded 10 times its respective STLC in two of 139 discrete soil samples (samples AR4 and SS4 at 0.3 meter bgs). Soluble copper concentrations that exceeded the STLC (25 mg/l) were present in both samples. Several other samples contained concentrations of arsenic, chromium, and mercury that exceeded 10 times the respective STLC value; however, none of the soluble data for those samples exceeded the respective STLC values.

Polycyclic Aromatic Hydrocarbons (PAHs) in Soil

A total of 118 discrete soil samples were analyzed for polycyclic aromatic hydrocarbons (PAHs). Of the 118 discrete soil samples analyzed for PAHs, 90 samples had concentrations of PAHs above the respective laboratory reporting limits and two samples contained concentrations of various PAHs that exceeded the respective Universal Treatment Standard (UTS). None of the PAH concentrations that exceeded the UTS were present at concentrations greater than 10 times the respective UTSS; thus, there should be no Land Disposal Restrictions (LDRs) for soil containing PAHs. The PAH concentrations in all remaining soil samples were present at concentrations less than the UTS and generally less than 1 mg/kg. The two boring locations that had detectable concentrations of PAHs greater than the UTS are borings MD13 and UT2.

Groundwater Analytical Data

MD9, B1, B5, and B8 were the only borings from which groundwater samples were collected at the Site. TPHd and TPHmo were detected in all groundwater samples ranging in concentration from 0.05 to 0.6 mg/l. TPHg and VOCs were not detected in groundwater samples at or above the respective laboratory limits. Xylene and toluene were detected at 1.1 and 1.2 micrograms per liter (ug/l), respectively in groundwater sample MD9. Naphthalene (61 ug/l) and 2-methylnaphthalene (24 ug/l), acenaphthene (21 ug/l), dibenzofuran (16 ug/l), fluorene (20 ug/l), and phenanthrene (29 ug/l) were detected in the upper groundwater sample from B5.

Based on laboratory analytical data obtained from groundwater samples collected from borings MD9, B1, and B8, groundwater encountered during construction is not likely to require treatment. The upper groundwater sample from B5 contained concentrations of semi-volatile organic compounds (SVOCs, aka: PAHs) exceeding the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) 24-hour averaged allowable concentration of 15.0 ug/l. However, since PAHs were detected in the soil at this location and PAHs were not detected in groundwater at the other sampling locations it is likely that the detected contaminants were attached to soil particles in the grab sample, not dissolved in the groundwater. If dewatering is to be conducted during construction activities, it is recommended that confirmation sampling of groundwater from the excavation be performed before dewatering operations commence. If elevated results are confirmed, the discharge must conform to the Basin Plan Water Quality Objectives (WQOs).

PROJECT TEAM

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LIST OF ACRONYMS

40 CFR	Chapter 40 of the Code of Federal Regulations
ATL	Advanced Technology Laboratories
Basin Plan	Water Quality Control Plan for the San Francisco Bay Basin
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEG	Certified Engineering Geologist
CHG	Certified Hydrogeologist
DDD	Dichlorodiphenyl dichloroethane
DDE	Dichlorodiphenyl dichloroethylene
DDT	Dichlorodiphenyl trichloroethane
DOD	Department of Defense
ELAP	Environmental Laboratory Accreditation Program
EPA	United States Environmental Protection Agency
Geocon	Geocon Environmental Consultants, Inc.
GPS	Global Positioning System
LDR	Land Disposal Restriction
mg/kg	Milligrams per Kilogram
mg/l	Milligrams per Liter
mm	Millimeters
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PE	Professional Engineer
ppt	Parts Per Thousand
PRG	EPA Region 9, Preliminary Remediation Goal
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RCRA	Resource, Conservation, and Recovery Act
REA	Registered Environmental Assessor
RG	Registered Geologist
ROW	Right-Of-Way
RWQCB	Regional Water Quality Control Board
SFOBB	San Francisco- Oakland Bay Bridge
STLC	Soluble Threshold Limit Concentration
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristics Leaching Procedure
TO	Task Order
TPH	Total Petroleum Hydrocarbons
TPHd	Total Petroleum Hydrocarbons as diesel
TPHg	Total Petroleum Hydrocarbons as gasoline
TPHmo	Total Petroleum Hydrocarbons as motor oil
TTLC	Total Threshold Limit Concentration
UCL	Upper Confidence Limit

ug/kg	Micrograms per Kilogram
ug/l	Micrograms per Liter
UTS	Universal Treatment Standard
VOC	Volatile Organic Compound
WET	Waste Extraction Test
WQO	Water Quality Objective
YBI	Yerba Buena Island

SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Site Investigation Report presents the results of a limited chemical evaluation of subsurface soil and groundwater investigation performed at the subject Site. The investigation and preparation of this Site Investigation Report was performed under California Department of Transportation (Caltrans) Contract No. 43A0012 and Task Order (TO) No. 04-012000-FC in two phases. The first phase of the investigation was performed in December 1999 and the second phase was performed in June 2001.

The work performed for this investigation took place in Alameda County, California at the San Francisco-Oakland Bay Bridge (SFOBB) Interstate 80 East Span on the Oakland Mole. The investigation focused on the land area of the Oakland Mole at the Interstate 80 (SFOBB) East touchdown west of the toll plaza metering lights. The project location is depicted on the Vicinity Map, Figure 1.

1.1 Proposed Improvements and Project Description

Caltrans proposes to replace the SFOBB East Span, located between Yerba Buena Island (YBI) and the SFOBB Toll Plaza in San Francisco and Alameda Counties. The preferred replacement alternative is to construct a new bridge on an alignment that varies from 0 to 350 meters north of the existing alignment. The bridge will transition from a double-deck viaduct at YBI to two parallel bridge decks (transition structures), supported by a combination of suspension and skyway designs, to the existing Oakland touchdown area. In addition, temporary structures (detour structures) are required to shift traffic from the existing structure while the transition structures are being built.

1.2 Purpose

The purpose of the scope of work outlined in the Geocon Consultants, Inc. (Geocon) *Site Investigation Workplan* dated January 2001 for TO No. 04-012000-FC was to chemically characterize soil and groundwater for potential contaminants that may be encountered during construction activities. This work was accomplished through the advancement of soil borings and the collection and analysis of soil and groundwater samples. The soil boring locations are depicted on Figures 2a through 2c. The investigative results will be used by Caltrans to evaluate health and safety issues, appropriate soil re-use and disposal criteria, discharge requirements for groundwater removed from excavations, and groundwater isolation measures to prevent cross-contamination of water-bearing zones during pile and tie down installation.

2.0 BACKGROUND

The following sections present a brief historical use perspective of the Oakland Mole and background information on lead sources in soils along major freeways.

2.1 Historical Use

Current land use within the project limits includes highway right-of-way (roadway and maintenance facilities), U.S. Army property, and Port of Oakland property. Ongoing testing by Caltrans has indicated that aerial deposited lead exists along major freeway routes due to emissions from vehicles powered by leaded gasoline. Caltrans reports that total lead concentrations in soil adjacent to the freeways have typically ranged between 50 and 3,000 milligrams per kilogram (mg/kg). The aerial deposited lead is generally limited to the upper 0.6 meter of soil material within the unpaved shoulder and median areas.

2.2 Contaminants of Concern

The primary contaminants of concern at the subject Site are (1) aerial lead deposits due to vehicle emissions, (2) lead-containing paint debris, and (3) total petroleum hydrocarbons (TPH) due to transmission, storage, and imported fill. In addition to lead and TPH, select soil and groundwater samples were analyzed for the following list of compounds due to prior and current industrial and Department of Defense (DOD) activities.

- Title 22 metals (soil samples only)
- Polychlorinated Biphenyls (PCBs - soil samples only)
- Organochlorine Pesticides (soil samples only)
- Polycyclic Aromatic Hydrocarbons (PAHs - soil samples only) and other Semi-Volatile Organic Compounds (SVOCs - groundwater samples only)
- Volatile Organic Compounds (VOCs – soil and groundwater samples)
- Benzene, toluene, ethylbenzene, and xylene (BTEX - groundwater samples only)

2.3 Hazardous Waste Determination Criteria

If the excavated soil is not intended to be reused within the Caltrans right-of-way (ROW), then hazardous waste determination of the soil would be based on total and soluble lead concentrations. Regulatory criteria to classify a waste as “Resource, Conservation, and Recovery Act (RCRA) hazardous” and “non-RCRA hazardous” for handling and disposal purposes are contained in the California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Article 3 and Chapter 40 of the Code of Federal Regulations (40 CFR), Chapter 1, Part 261. For a waste containing metals, the

waste is classified as “non-RCRA hazardous” when: 1) the total metal content exceeds its Total Threshold Limit Concentration (TTLC); or 2) the soluble metal content exceeds its Soluble Threshold Limit Concentration (STLC) based on Waste Extraction Test using acid extract (WET) analysis. A material is classified as “RCRA hazardous” when the soluble metal content exceeds the Federal Regulatory Level based on Toxicity Characteristic Leaching Procedure (TCLP) testing. When total metals concentrations are greater than ten times their STLC value, regulatory agencies typically initiate the requirement for a solubility test for the constituent of concern. The solubility test is known as the WET and it is the results from the WET method that may be compared to the STLC value. The TTLC value for lead is 1,000 mg/kg and the STLC value for lead using acid extract is 5.0 milligrams per liter (mg/l).

State and/or federal regulatory levels have also been established for select pesticides, VOCs, SVOCs, and PAH. Currently, regulatory criteria for the classification of wastes containing petroleum hydrocarbons have not been promulgated.

The above regulatory criteria are based on toxicity. Wastes may also be classified as hazardous based on other criteria such as corrosivity and ignitability. However, for the purposes of this investigation, toxicity (e.g., concentration) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for corrosivity, ignitability or other criteria.

Waste that is classified as either “non-RCRA hazardous” or “RCRA hazardous” requires management as a hazardous waste. According to 40 CFR 268.49, soil containing listed wastes or exhibiting a characteristic of a hazardous waste are subject to Land Disposal Restrictions (LDRs) and must undergo treatment to reduce the contaminant concentration by 90 percent. If the 90 percent reduction would result in a concentration less than 10 times the Universal Treatment Standard (UTS), treatment to achieve a concentration of less than 10 times the UTS does not have to be performed. In effect, if the contaminant concentration in soil does not exceed 10 times the UTS, treatment prior to land disposal is not required.

3.0 SCOPE OF SERVICES

Geocon performed the following scope of services that included site meetings, on-site fieldwork, laboratory analyses, and preparation of this Site Investigation Report.

3.1 Pre-Field Activities

- Conducted the pre-work Site visits attended by Geocon representatives and Caltrans representatives. The pre-work meetings were performed to locate and inspect the work areas, and to discuss logistics. During this meeting, the Caltrans and Geocon contract managers executed the Site Visit Checklist, Completion Schedule, and Notice to Proceed.
- Prepared a *Health and Safety Plan* for the field activities. The *Health and Safety Plan* provided guidelines on the use of personal protective equipment and health/safety procedures to be implemented during the field activities.
- Obtained a Caltrans encroachment permit (Permit No. 0498-NSV-2229) to perform the field activities within Caltrans right-of-way. A copy of the permit is included in Appendix A.
- Contacted the local public utilities via Underground Service Alert to attempt to delineate subsurface public utilities and conduits in proximity to the boring locations.
- Retained the services of Gregg Drilling, a Caltrans-approved and California licensed driller, to perform the drilling work; Advanced Technology Laboratories (ATL), a California certified hazardous materials testing laboratory (ELAP No.: 1838), to perform soil and groundwater analyses; and Cruz Brothers Subsurface Locators, Inc. to locate underground utilities in the vicinity of the boring locations.

3.2 Field Activities

- Performed fieldwork for this project under the direct supervision of Geocon's field supervisor and/or project manager.
- Utilized a Global Positioning System (GPS) unit to locate each boring with the exception of the surface sample locations associated with the Demolition Structures (E24 through E39) and the borings associated with the Bents (B1 through B10). In the absence of adequate satellite connections to the GPS unit, boring locations were based on landmarks.
- Performed a utility survey by Cruz Brothers Subsurface Locators, Inc. prior to drilling activities to identify and delineate potential underground utilities and structures at designated boring locations.
- In December 1999, advanced a total of 10 soil borings (B1 through B10) using hollow stem auger and direct push methodologies for sample collection. The boring locations are depicted on Figure 2c.

- In June 2001, advanced 194 borings using hand auger or direct push methods at the subject site. The boring locations and identifications are depicted on Figures 2a and 2b. The boring locations were categorized into several investigation units as follows:
 1. Eastbound (EB) Maintenance Road Detour (ED1 through ED6 and MD1 through MD18);
 2. Structure (E23);
 3. Substation and Utility Trench (AR1 through AR4, SS1 through SS4, PL1 through PL4, and UT1 through UT7, UT13 through UT18). Soil samples were not collected at borings UT8 through UT12; in that, they were located either on the existing paved highway or on the shoulder and it was not safe to advance these borings.
 4. Structure Demolition (E23L through E39C); and
 5. Detention Basin (DB1 through DB4).
- Collected soil samples from borings at various depths.
- Collected grab groundwater samples from borings B1, B5, B8, and MD9.
- Placed soil and groundwater samples on ice in labeled coolers and transported them to Advanced Technology Laboratory, a State certified laboratory in Signal Hill, California for chemical analyses under standard chain-of-custody procedures.
- Logged soil borings under the responsible charge of a California Certified Engineering Geologist (CEG) using the Unified Soil Classification System. Boring logs are included as Appendix B.
- Decontaminated sampling equipment prior to initial use and following each subsequent use with a Liquinox™ wash solution, rinsed with tap water, and final rinsed with distilled water. New glove liners were used for each sampling event.
- Backfilled borings to surface grade with cement-bentonite grout. Borings within paved areas were completed with an asphalt or concrete patch of equal thickness to existing pavement.

4.0 INVESTIGATIVE METHODS

The rationale and method of investigation for the boring advancement, sampling procedures and protocols, and laboratory analyses are discussed below.

4.1 Soil Sampling

The boring locations, soil boring identification, the soil and groundwater sampling frequency, and the analytical program were specified by Caltrans' Division of Toll Bridge - Office of Environmental Engineering personnel. The boring locations were chosen to fall within the limits of planned excavation for the planned excavations. The soil sampling intervals were selected systematically with denser spacing at shallow depths where lead deposits are generally found.

Coordinates for the boring locations, advanced in June 2001, were derived from the Caltrans provided Microstation files and the designated borings were located with a Trimble Pathfinder GPS unit prior to advancing borings with the exception of the Structure Demolition boring locations and the Bent locations. The accuracy of the GPS unit is within one meter of horizontal delineation. The GPS unit receives global positioning information from a network of satellites. A summary of the GPS surveyed coordinates is presented in Table 1.

Some boring locations, sample depths, and laboratory analysis deviated from the TO protocol with concurrence by the Caltrans contract manager. Some soil samples designated in the TO were not collected from various borings due to refusal (e.g.; encountered bedrock) or elimination based on instruction from the Caltrans Contract Manager.

Soil borings and soil sampling were performed at various locations by one of the following three methods:

- A stainless steel hand auger was used to advance borings. Soil samples to be analyzed for target analytes other than metals, and all surface soil samples were retrieved utilizing a slide hammer equipped sample bucket lined with one 152.4-millimeter (mm) long by 50.8-mm diameter (6-inch long by 2-inch diameter) stainless steel sample tube to facilitate sample handling and storage. For all soil samples that were to be analyzed for metals only, the soil sample was collected from the auger bucket and placed into sealable plastic bags.
- A truck-mounted Geoprobe sampling system was used to advance borings, and soil samples were retained in acetate liners to facilitate sample handling and storage.
- A truck-mounted hollow-stem auger drilling rig was used to advance borings, and soil samples were collected utilizing an 0.45-meter (18-inch) California Modified Split Spoon sample bucket lined with three 152.4-mm by 50.8-mm stainless steel sample tubes to facilitate sampling handling and storage.

The sleeve sections from the Geoprobe sampling system and stainless steel sample tubes from the slide hammer were fitted with Teflon® sheets on each end, and secured with plastic caps. All samples were labeled, placed in a chilled cooler, and transported to ATL using standard chain-of-custody procedures.

Borings were advanced until refusal was encountered or to the designated termination depth. The borings ranged in depth from 0.3 to 17 meters below ground surface (bgs). The actual sampling depths for each boring are presented in Tables 2 through 5.

Quality assurance/quality control (QA/QC) procedures provided during the field activities included cleansing/rinsing of the sampling equipment and the use of pre-cleaned samplers at each boring location. Cleansing/rinsing of the sampling equipment was performed prior to initial use and following each subsequent use with a Liquinox™ wash solution, rinsed with tap water, and final rinsed with distilled water. New glove liners were used for each sampling event.

4.2 Groundwater Sampling

Groundwater was encountered at a depth of approximately 2.5 meters bgs in borings MD9, B1, B5, and B8. A polyvinyl chloride (PVC) slotted casing was installed to the termination depth of the open borehole and used as a temporary casing. Groundwater samples were collected from within the temporary casing using a disposable bailer. For borings B1, B5, and B8 the temporary casings were removed from the borehole and the boring was advanced to approximately 17.6 meters bgs and an additional groundwater sample was collected at depth utilizing a Hydropunch sampling apparatus to ensure a discrete at depth groundwater sample. The shallow and deep groundwater samples collected from B1, B5, and B8 are referred to in the analytical data tables as upper and lower samples, respectively. Groundwater samples were placed in appropriate laboratory-provided containers, labeled, placed in a chilled cooler, and transferred to ATL under standard chain-of-custody procedures. The PVC casing was removed following sample collection. The borehole was then abandoned by grouting with Portland cement.

4.3 Laboratory Analyses

Samples were submitted to the laboratory for the following analyses:

- Title 22 metals (soil samples only) following United States Environmental Protection Agency (EPA) Test Methods 6010/7471;
- Organochlorine Pesticides (soil samples only) and PCBs (soil samples only) following EPA Test Methods 8080/8081;
- PAHs following EPA Test Method 8100;
- Single Element (lead – soil samples only) following EPA Test Method 6010;
- Total Petroleum Hydrocarbons as gasoline (TPHg - soil and groundwater samples) following EPA Test Method 8015;
- Total Petroleum Hydrocarbons as diesel and motor oil (TPHd and TPHmo -soil and groundwater samples) following EPA Test Method 8015M;
- VOCs and SVOCs (various soil and groundwater samples) following EPA Test Methods 8260/8021B/8270; and
- BTEX (groundwater samples from June 2001 only) following EPA Test Method 8020.

In addition to the above analyses, soil samples that exhibited a total metal concentration greater than ten times its respective STLC values were subsequently analyzed for the appropriate soluble metal via the WET. Those samples that contained total lead concentrations greater than 1,000 mg/kg were analyzed by TCLP.

QA/QC procedures were performed for each method of analysis with specificity for each analyte listed in the test method's QA/QC. The laboratory QA/QC procedures included the following:

- One method blank for every ten samples, batch of samples, or type of matrix, whichever was more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples, or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples, or type of matrix, whichever was more frequent, with the spike made at ten times the detection limit or at the analyte level.

Prior to submitting the soil and groundwater samples to the laboratory, the chain-of-custody documentation was reviewed for accuracy and completeness. The laboratory reports were also reviewed for accuracy and consistency with the chain-of-custody documentation. In addition, the laboratory QA/QC summary reports were reviewed to determine if the laboratory results are within tolerance control limits. Based upon this review process, the data quality appears to be adequate.

5.0 INVESTIGATION RESULTS

The investigation results from the soil and groundwater sampling are discussed below.

5.1 Soil

A summary of the analytical laboratory test results for TPHg, TPHd, TPHmo, VOCs, Organochlorine Pesticides, and PCBs in soil is presented in Table 2. Table 3 summarizes the analytical laboratory test results for total Title 22 metals in soil. Table 4 summarizes the analytical laboratory test results for PAHs in soil. Table 5 summarizes the analytical laboratory test results for total and soluble lead in soil.

Figure 3 depicts a distribution of TPH contaminants in soil. Figure 4 depicts a distribution of Organochlorine Pesticide and PCB contaminants in soil. Figure 5 depicts the lead distribution in soil.

Copies of the laboratory analytical reports and chain-of-custody documentation for soil samples are included in Appendix C.

5.1.1 Petroleum Hydrocarbons and VOCs

A total of 64 soil samples were analyzed for TPHd and TPHmo, 52 were analyzed for TPHg, and 53 were analyzed for VOCs. Of the soil samples subjected to TPHd, TPHmo, TPHg, and VOC laboratory analyses:

- TPHd was present in 136 of 136 soil samples analyzed. TPHd was most commonly reported at concentrations of less than 200 mg/kg. The maximum TPHd concentration was 1,780 mg/kg in sample B2 at 2.3 meters bgs.
- TPHmo was present in 136 of 136 soil samples analyzed. TPHmo were most commonly reported at concentrations ranging between 100 and 1,000 mg/kg. The maximum TPHmo concentration was 4,800 mg/kg in sample PL3 at the surface.
- TPHg was present in 1 of 115 soil samples analyzed at a concentration of 1.3 mg/kg in sample E36L at the surface. TPHg was not present in the remaining soil samples at or above the laboratory reporting limit of 1.0 mg/kg.
- VOCs were present in 5 of 116 soil samples analyzed. The most commonly detected analyte was methylene chloride ranging in concentration from 1.3 to 4.8 micrograms per kilogram (ug/kg). Methylene chloride is a common laboratory contaminant. The only other VOCs detected were ethylbenzene and xylenes in sample B5 at the surface at respective concentrations of 5.2 ug/kg and 3.7 ug/kg.

5.1.2 Organochlorine Pesticides and PCBs

A total of 115 soil samples were analyzed for Organochlorine Pesticides and PCBs. Of the 115 soil samples subjected to laboratory analyses, pesticides were present in 33 and PCBs were present in 13. The pesticides detected were dichlorodiphenyl-trichloroethane (DDT) and its metabolites dichlorodiphenyl-dichloroethylene (DDE) and dichlorodiphenyl-dichloroethane (DDD), Endosulfan II, Endrin, and Endrin Aldehyde. The cumulative concentration of DDT and its metabolites ranged from 4.1 ug/kg in surface sample E32L to 111 ug/kg in surface sample MD11. Endosulfan II and Endrin were present each only in one sample at respective concentrations of 7.0 ug/kg and 71 ug/kg. Endrin Aldehyde was present in two surface soil samples at 4.4 ug/kg and 5.3 ug/kg.

The PCB Aroclors detected included Aroclor 1248 at 110 ug/kg in sample MD11 at the surface; Aroclor 1254 at 620 and 270 ug/kg in surface samples AR4 and E34L, respectively; and Aroclor 1262 at 430 and 480 ug/kg in surface samples E23AL and E24C, respectively. Aroclor 1260 was present in eight soil samples ranging in concentration from 35 ug/kg to 210 ug/kg.

5.1.3 Metals

A total of 139 discrete soil samples were analyzed for Title 22 metals. A total of 98 discrete soil samples were analyzed for lead only. Thus, 237 lead analytical results were obtained from discrete soil samples. With the exception of lead, Title 22 metals were not detected at total concentrations greater than their respective TTLC values. Total lead was detected at concentrations exceeding its TTLC value in eight of the 237 discrete lead soil samples. Additionally, lead was detected at total concentrations exceeding 10 times its STLC value in 148 of the 237 discrete lead soil samples. Soluble lead concentrations that exceeded the STLC value were present in 125 of the 148 discrete soil samples. A total of eight TCLP analyses were performed for discrete soil samples where the total lead concentration exceeded its TTLC value of 1,000 mg/kg. Two results (surface sample AR3 and sample SS4 at 0.3 meter bgs) exceeded the lead TCLP value of 5 mg/l.

A statistical analysis for lead data was performed for two sets: 1) borings located in the Utility Trench (UT) and Structure Demolition (E24 through E39) areas, and 2) All other borings. The 90% upper confidence levels (UCLs) for the total lead means for the borings located in the Utility Trench and Structure Demolition areas ranged from 116 mg/kg at the surface to 482 mg/kg at 0.9 meter bgs, and from 413 mg/kg at surface to 268 mg/kg at 0.91 meter bgs for all other boring locations. The statistical analysis is included as Appendix D.

Copper was also detected at total concentrations that exceeded 10 times its respective STLC in two of 139 discrete soil samples (samples AR4 and SS4 at 0.3 meter bgs). Soluble copper concentrations that exceeded the STLC (25 mg/l) were present in both samples. Several other samples contained concentrations of arsenic, chromium, and mercury that exceeded 10 times the respective STLC value; however, none of the soluble data for those samples exceeded the respective STLC values.

5.1.4 PAHs

A total of 118 discrete soil samples were analyzed for PAHs. Of the 118 samples, 90 samples had detectable concentrations of PAHs above the respective laboratory reporting limits. Two samples (surface sample MD13 and sample UT02 at 0.9 meter bgs) contained concentrations of various PAHs that exceeded the respective UTS concentrations, including anthracene, fluoranthene, phenanthrene, and pyrene. The PAH concentrations in all remaining soil samples were present at concentrations less than the UTS and generally less than 1 mg/kg.

5.2 Groundwater

A summary of groundwater analytical test results for TPHg, TPHd, TPHmo, VOCs, and SVOCs is presented in Table 6 and total and dissolved metals is summarized in Table 7. Copies of the laboratory analytical reports and chain-of-custody documentation for groundwater samples are included in Appendix C.

MD9, B1, B5, and B8 were the only borings from which groundwater samples were collected at the Site. TPHd and TPHmo were detected in all groundwater samples ranging in concentrations from 0.05 to 0.6 mg/l. TPHg and VOC were not detected in groundwater samples at or above the respective laboratory limits. Xylene and toluene were detected at 1.1 and 1.2 micrograms per liter (ug/l), respectively in groundwater sample MD9. Naphthalene (61 ug/l) and 2-methylnaphthalene (24 ug/l), acenaphthene (21 ug/l), dibenzofuran (16 ug/l), fluorene (20 ug/l), and phenanthrene (29 ug/l) were present in the upper groundwater sample from B5.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Samples collected from the subject Site exhibited detectable concentrations of:

- TPHd (soil and groundwater);
- TPHmo (soil and groundwater);
- TPHg (soil only);
- Organochlorine Pesticides (DDT, DDE, and DDD – soil only);
- PCB (Aroclor 1248, 1254, 1260, and 1262 – soil only);
- Title 22 metals (soil only);
- PAHs/SVOCs; and
- BTEX (groundwater only).

The following conclusions are presented based on a site wide distribution of contaminants of concern.

6.1 Petroleum Hydrocarbons and VOCs in Soil

TPHd and TPHmo were detected throughout the investigation area at levels that would not restrict reuse or disposal. TPHg was present in one soil sample at a negligible concentration. Methylene chloride was present at concentrations between 1.3 and 4.8 ug/kg and is likely a result of laboratory contamination.

6.2 Organochlorine Pesticides and PCBs in Soil

The highest cumulative concentration of DDT and its metabolites was reported at 111 ug/kg in sample MD11 at the surface and below the TTLC value. Other pesticides were present in at concentrations below the respective TTLC values. All reported concentrations of Organochlorine Pesticides at the project site are below their respective Preliminary Remediation Goals (PRGs) for industrial soil.

Reported concentrations of PCB Aroclors at the Site were below their respective UTS and PRG for industrial soil.

6.3 Metals in Soil

With the exception of lead, Title 22 metals were not detected at total concentrations greater than their respective TTLC values. Total lead was detected at concentrations exceeding its TTLC value in eight of the 237 discrete lead soil samples. Additionally, lead was detected at total concentrations exceeding 10 times its STLC in 148 of the 237 discrete lead soil samples. Soluble lead concentrations that exceeded the STLC were present in 125 of the 148 discrete soil samples. A total of eight TCLP analyses were performed for discrete soil samples where the total lead concentration exceeded 1,000 mg/kg. Two results exceeded the lead TCLP value (boring AR3 at the surface and SS4 at 0.3 meter bgs).

6.4 PAHs in Soil

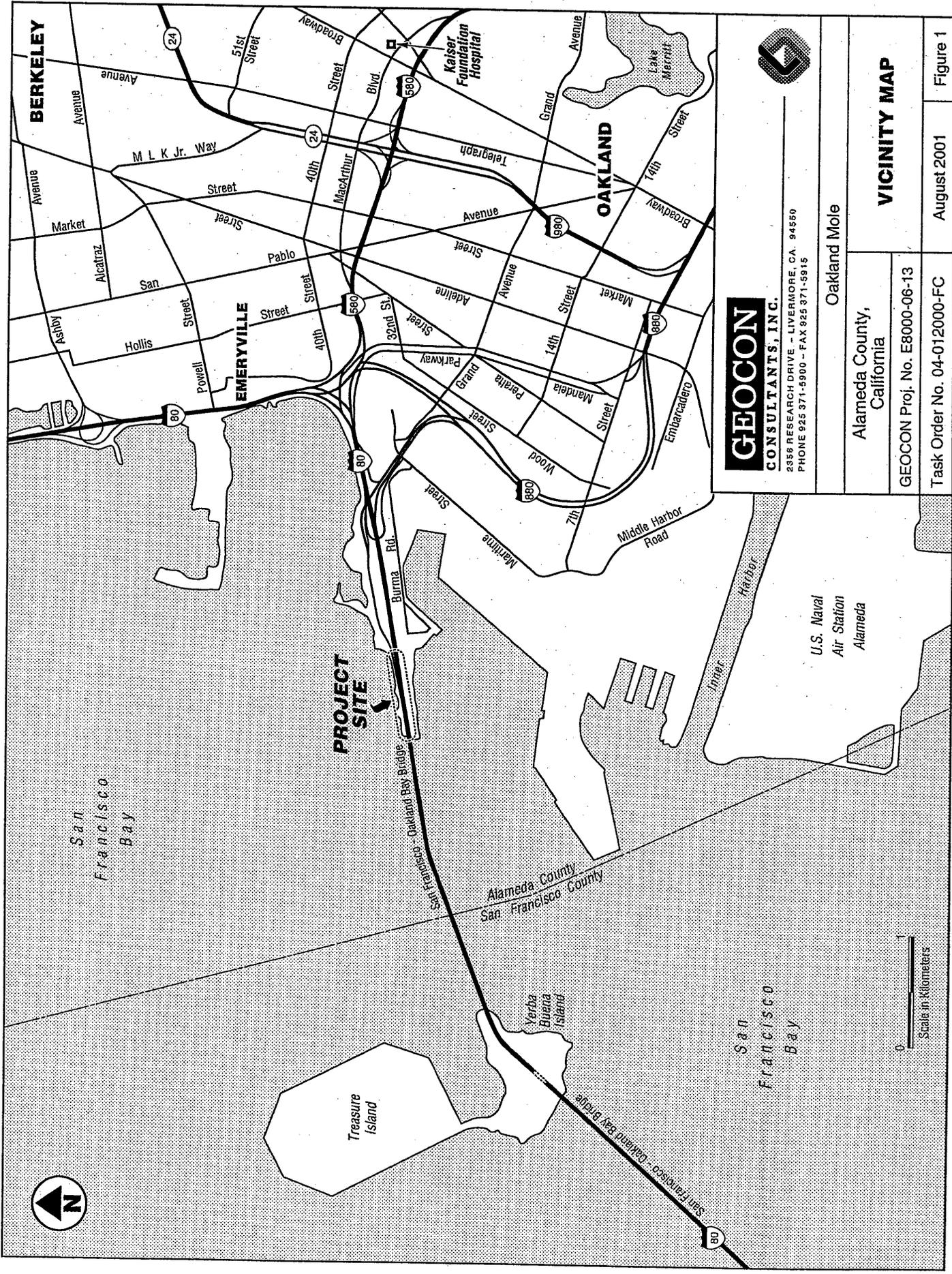
Of 118 discrete soil samples analyzed for PAHs, 90 samples had concentrations of PAHs above the respective laboratory reporting limits and two samples contained concentrations of various PAHs that exceeded the respective UTS. None of the PAH concentrations that exceeded the UTS were present at concentrations greater than 10 times the respective UTS; thus, there should be no LDRs for soil containing PAHs. The PAH concentrations in all remaining soil samples were present at concentrations less than the UTS and generally less than 1 mg/kg. The two boring locations that had detectable concentrations of PAHs greater than the UTS are borings MD13 at 0.3 meter bgs and UT02 at 0.9 meter bgs.

6.5 Groundwater

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan), adopted by the California Regional Water Quality Control Board (RWQCB) - San Francisco Bay Region on June 21, 1995, is the master policy document governing water quality regulation in the San Francisco Bay region. Water Quality Objectives (WQOs) for groundwater and surface waters are presented in Section 3 of the Basin Plan.

The WQO for surface waters are divided into two categories; one for surface waters with salinity greater than 5 parts per thousand (ppt) and one for surface waters with salinity less than 5 ppt. Since groundwater generated during the construction activities would likely be discharged to the adjacent San Francisco Bay, the receiving water salinity would likely be greater than 5 ppt and therefore the first category will apply. The WQO do not list concentration standards for total petroleum hydrocarbons, VOCs, or BTEX for surface water bodies.

Based on laboratory analytical data obtained from groundwater samples collected from borings MD9, B1, and B8, groundwater encountered during construction is not likely to require treatment. The upper groundwater sample from B5 contained concentrations of SVOCs (aka: PAHs) exceeding the 24-hour averaged allowable concentration of 15.0 ug/l. However, since PAHs were detected in the soil at this location and PAHs were not detected in groundwater at the other sampling locations it is likely that the detected contaminants were attached to soil particles in the grab sample, not dissolved in the groundwater. If dewatering is to be conducted during construction activities, it is recommended that confirmation sampling of groundwater from the excavation be performed before dewatering operations commence. If elevated results are confirmed, the discharge must conform to the Basin Plan WQO.



0 1
Scale in Kilometers

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Oakland Mole

Alameda County,
California

VICINITY MAP

GEOCON Proj. No. E8000-06-13

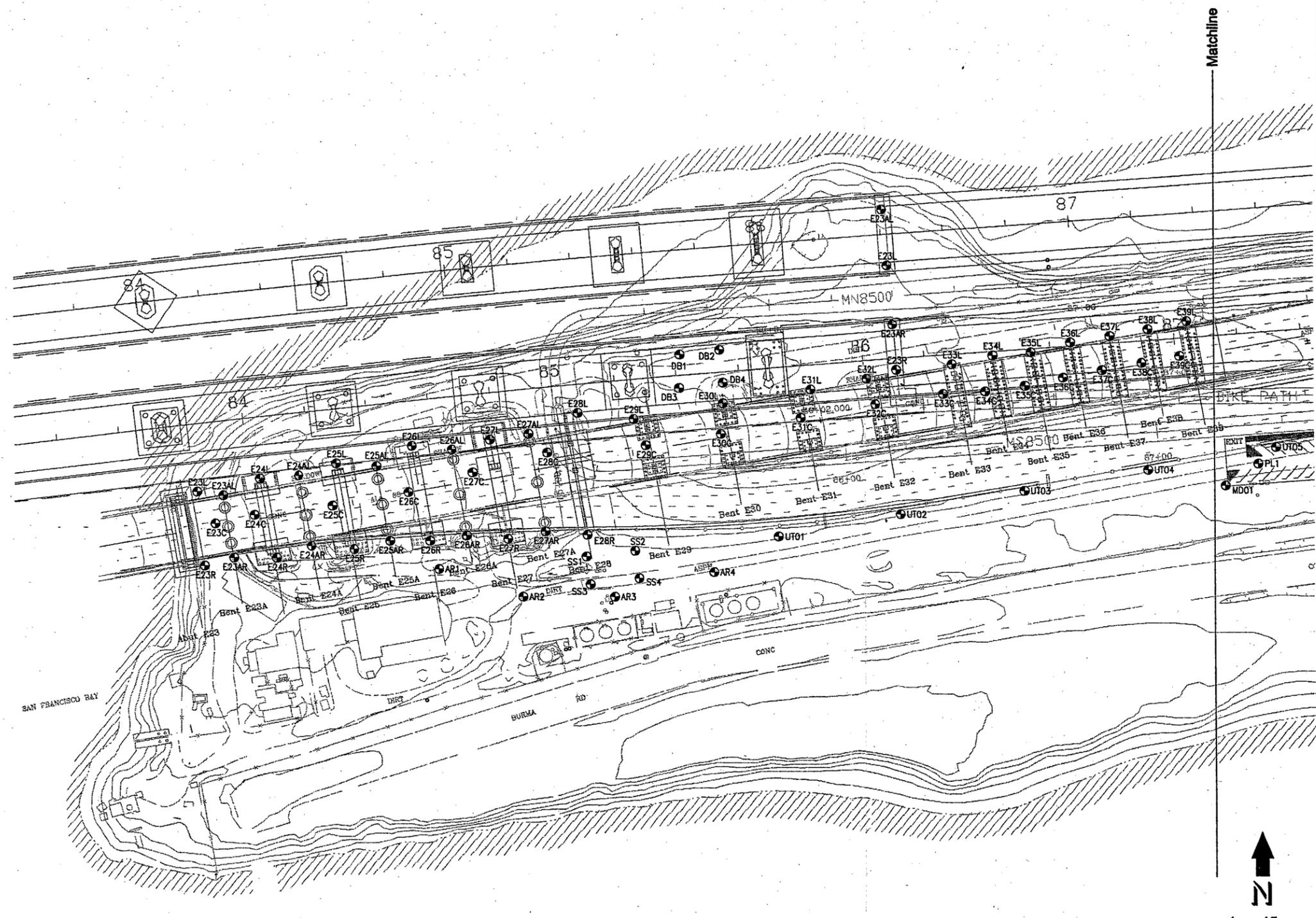
Task Order No. 04-012000-FC

August 2001

Figure 1

LEGEND:

- Soil Sample Location



Matchline



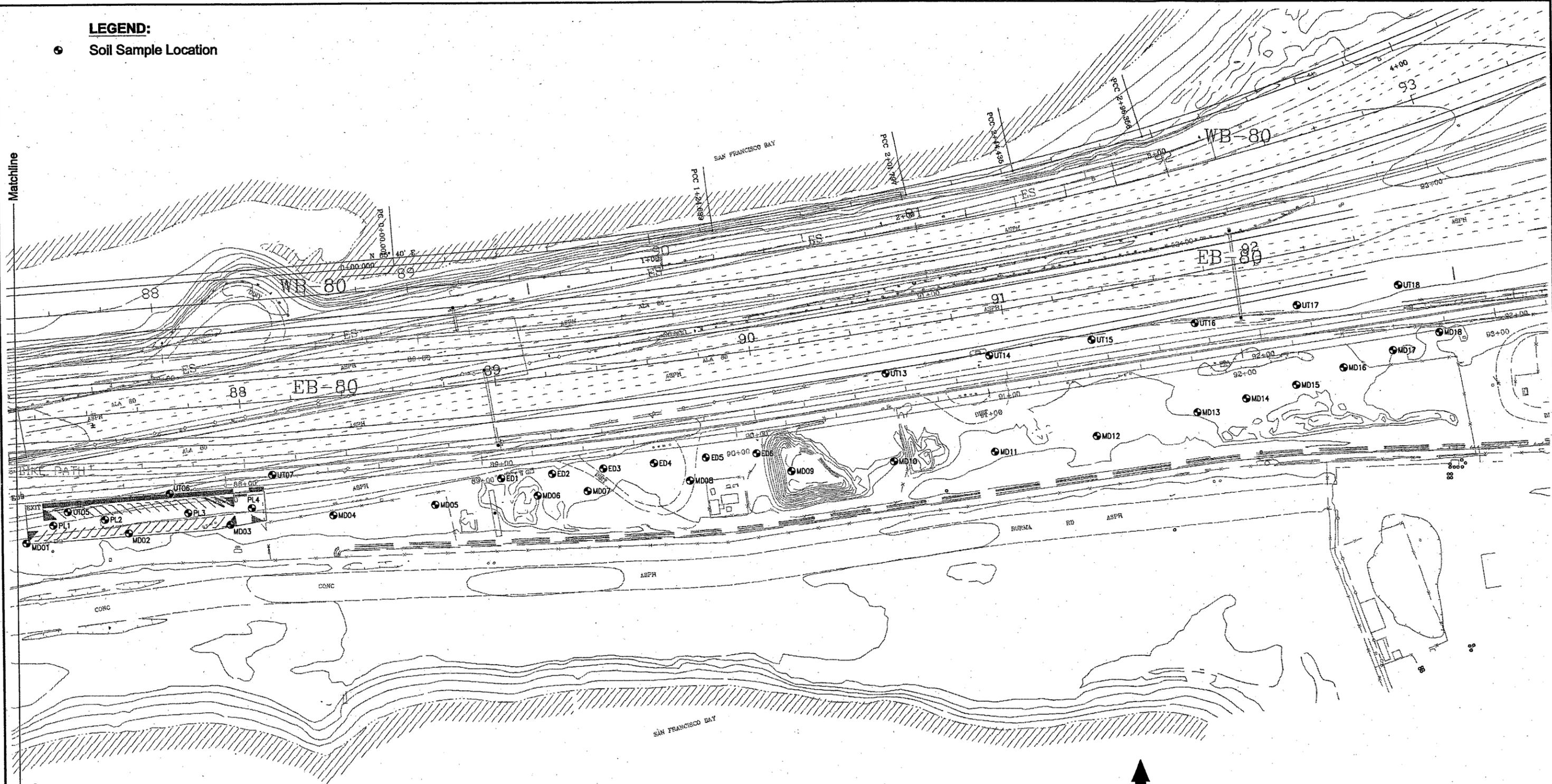
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<p>San Francisco-Oakland Bay Bridge</p>		
<p>Alameda County, California</p>		<p>Sample Locations</p>
<p>GEOCON Proj. No. E8000-06-13</p>		<p>September 2001</p>
<p>Task Order No. 04-012000-FC</p>	<p>September 2001</p>	<p>Figure 2a</p>

LEGEND:

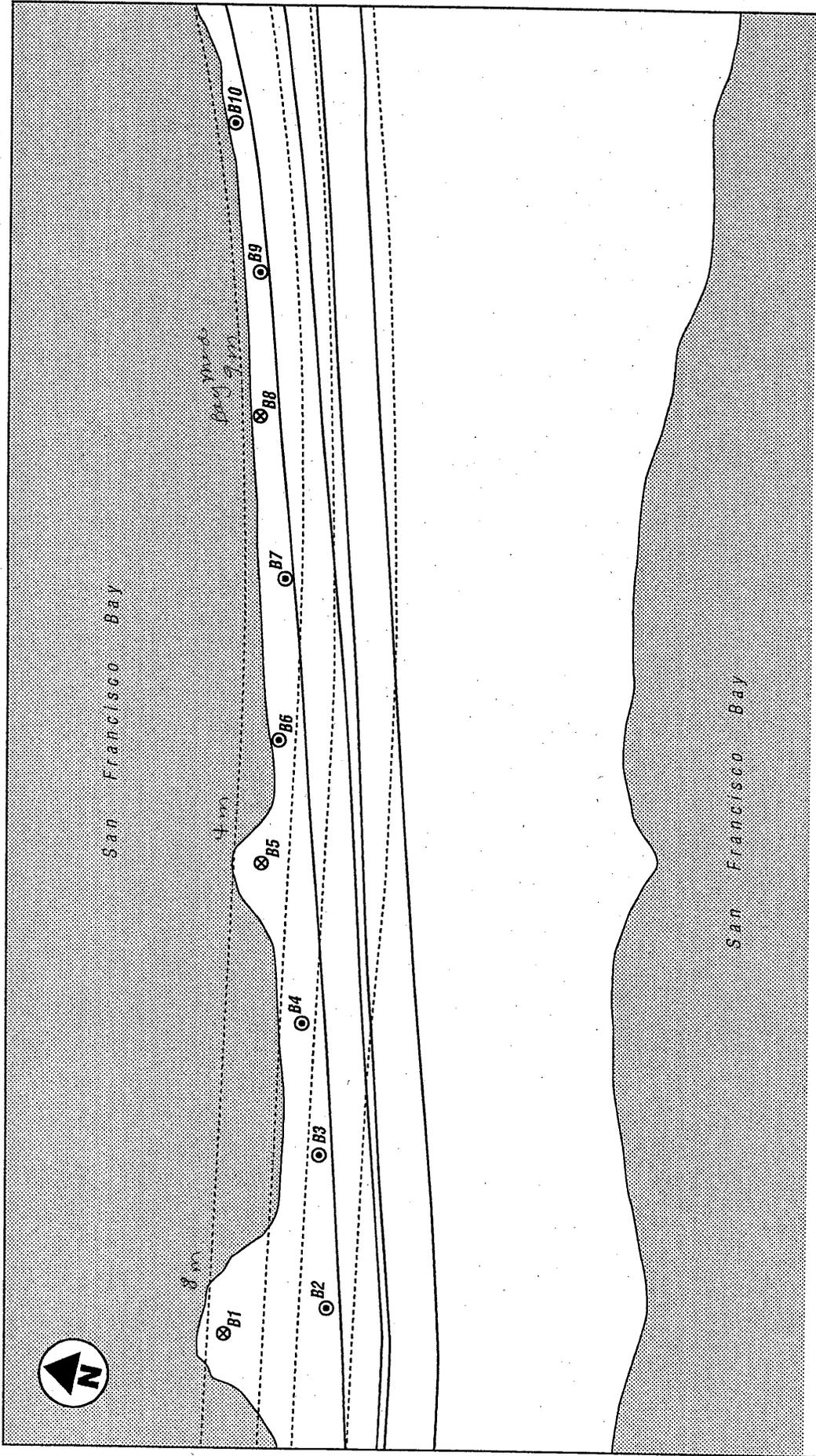
- Soil Sample Location

Matchline



1cm=15m

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<p>San Francisco-Oakland Bay Bridge</p>		
<p>Alameda County, California</p>		<p>Sample Locations</p>
<p>GEOCON Proj. No. E8000-06-13</p>		
<p>Task Order No. 04-012000-FC</p>	<p>September 2001</p>	



LEGEND:

- B1 ⊗ Approximate Hollow-Stem Auger Boring Location
- B2 ● Approximate Direct-Push Boring Location
- Existing Bridge
- - - - - New Bridge Alignment

NO SCALE



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Alameda County,
 California

SAMPLE LOCATIONS

GEOCON Proj. No. E8000-06-13

Task Order No. 04-012000-FC

October 2001

Figure 2c

LEGEND:

Soil Sample Location

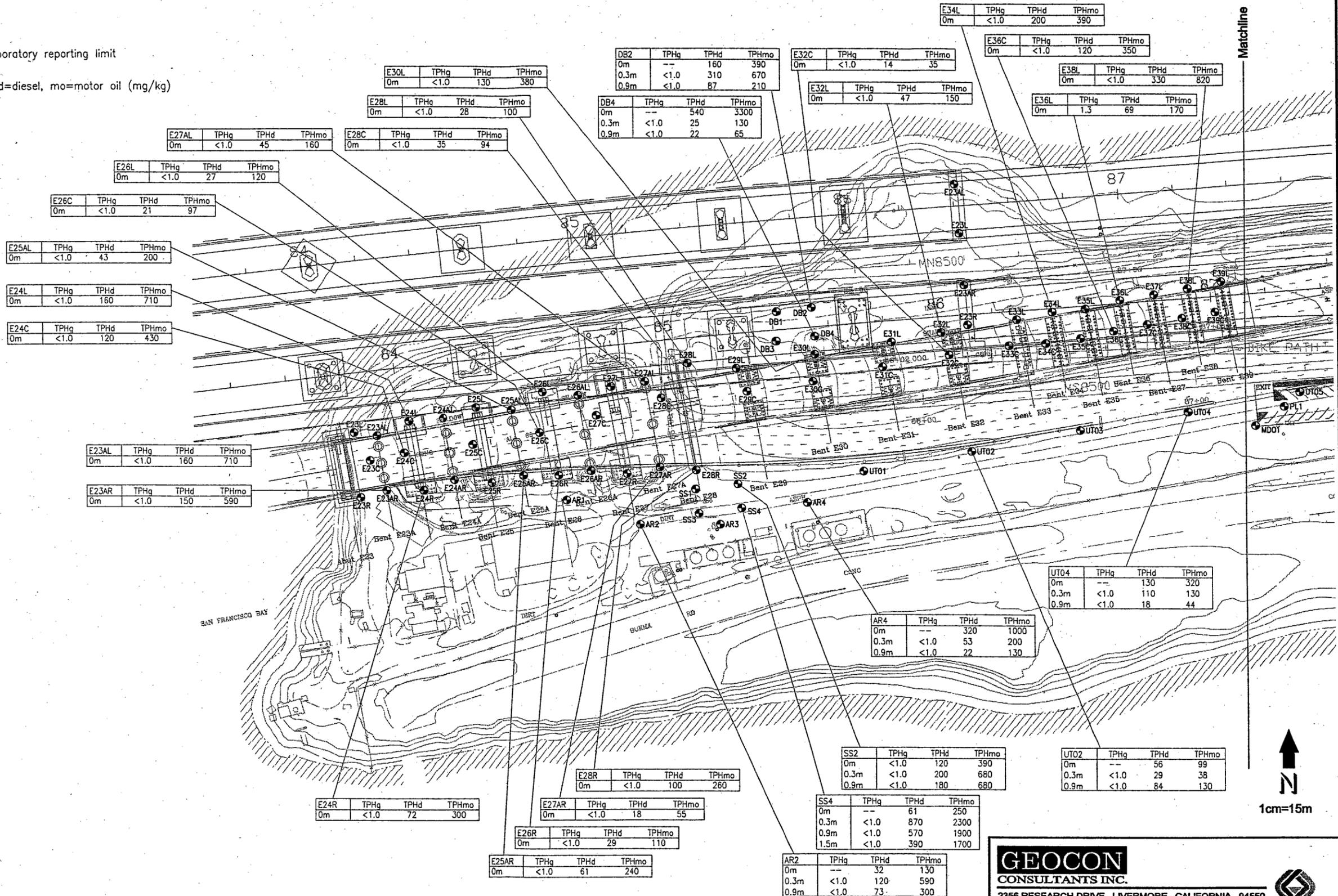
< Analyte was not detected above the stated laboratory reporting limit

-- Not Analyzed

TPH Total Petroleum Hydrocarbons as g=gasoline, d=diesel, mo=motor oil (mg/kg)

mg/kg milligrams per kilogram

m meters



Matchline



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Alameda County, California

Petroleum Hydrocarbon Distribution in Soil

GEOCON Proj. No. E8000-06-13

Task Order No. 04-012000-FC

September 2001

Figure 3a

LEGEND:

● Soil Sample Location

< Analyte not detected above the stated laboratory reporting limit
 --- Not Analyzed

TPH Total Petroleum Hydrocarbons as g=gasoline, d=diesel, mo=motor oil (mg/kg)
 mg/kg milligrams per kilogram
 m meters

UT14	TPHg	TPHd	TPHmo	UT16	TPHg	TPHd	TPHmo
0m	--	6.9	18	0m	--	31	86
0.3m	<1.0	26	89	0.3m	<1.0	28	75
0.9m	<1.0	3.2	9.7	0.9m	<1.0	700	1300
1.5m	<1.0	1.5	3.8				

ED6	TPHg	TPHd	TPHmo
0m	--	77	340
0.3m	<1.0	370	680
0.6m	<1.0	36	210

ED2	TPHg	TPHd	TPHmo
0m	--	100	410
0.3m	<1.0	46	170

UT06	TPHg	TPHd	TPHmo
0m	--	170	590
0.3m	<1.0	340	1100

MD17	TPHg	TPHd	TPHmo
0m	<1.0	78	160
0.3m	<1.0	6.9	20

MD15	TPHg	TPHd	TPHmo
0m	<1.0	200	630
0.3m	<1.0	87	250
0.9m	<1.0	120	400

MD13	TPHg	TPHd	TPHmo
0m	<1.0	150	400
0.3m	<1.0	96	260

MD11	TPHg	TPHd	TPHmo
0m	--	120	360
0.3m	<1.0	260	1000

ED4	TPHg	TPHd	TPHmo
0m	--	160	530
0.3m	<1.0	35	180
0.6m	<1.0	83	270

MD05	TPHg	TPHd	TPHmo
0m	--	130	530
0.3m	<1.0	230	1200

MD07	TPHg	TPHd	TPHmo
0m	--	48	160
0.3m	<1.0	170	450
0.6m	<1.0	37	130

MD09	TPHg	TPHd	TPHmo
0m	<1.0	96	540
0.3m	<1.0	66	400
0.9m	<1.0	160	890

PL1	TPHg	TPHd	TPHmo
0m	--	13	45
0.3m	<1.0	4.4	6.7
0.9m	<1.0	4.4	14

PL3	TPHg	TPHd	TPHmo
0m	--	610	4800
0.3m	<1.0	530	3000
0.9m	<1.0	80	410

MD01	TPHg	TPHd	TPHmo
0m	--	26	130
0.3m	<1.0	27	140

MD03	TPHg	TPHd	TPHmo
0m	--	220	780
0.3m	<1.0	240	730
0.9m	<1.0	440	1500



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Alameda County, California

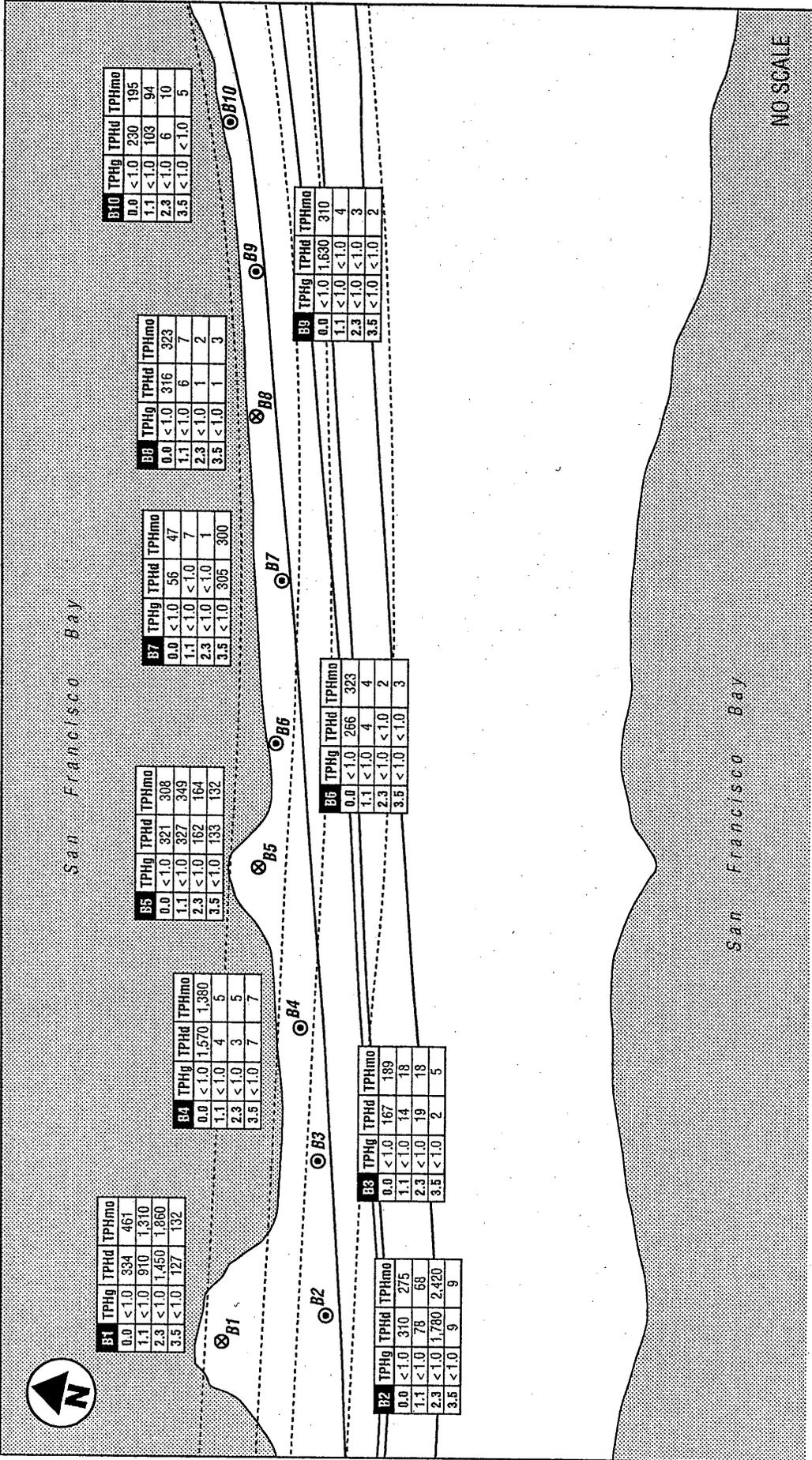
Petroleum Hydrocarbon Distribution in Soil

GEOCON Proj. No. E8000-06-13

Task Order No. 04-012000-FC

September 2001

Figure 3b



B1	TPHg	TPHd	TPHmo
0.0	<1.0	334	461
1.1	<1.0	910	1,310
2.3	<1.0	1,450	1,860
3.5	<1.0	127	132

B4	TPHg	TPHd	TPHmo
0.0	<1.0	1,570	1,380
1.1	<1.0	4	5
2.3	<1.0	3	5
3.5	<1.0	7	7

B5	TPHg	TPHd	TPHmo
0.0	<1.0	321	308
1.1	<1.0	327	349
2.3	<1.0	162	164
3.5	<1.0	133	132

B7	TPHg	TPHd	TPHmo
0.0	<1.0	56	47
1.1	<1.0	<1.0	7
2.3	<1.0	<1.0	1
3.5	<1.0	305	300

B8	TPHg	TPHd	TPHmo
0.0	<1.0	316	323
1.1	<1.0	6	7
2.3	<1.0	1	2
3.5	<1.0	1	3

B10	TPHg	TPHd	TPHmo
0.0	<1.0	230	195
1.1	<1.0	103	94
2.3	<1.0	6	10
3.5	<1.0	<1.0	5

B2	TPHg	TPHd	TPHmo
0.0	<1.0	167	189
1.1	<1.0	14	18
2.3	<1.0	19	18
3.5	<1.0	2	5

B3	TPHg	TPHd	TPHmo
0.0	<1.0	266	323
1.1	<1.0	4	4
2.3	<1.0	<1.0	2
3.5	<1.0	<1.0	3

B6	TPHg	TPHd	TPHmo
0.0	<1.0	266	323
1.1	<1.0	4	4
2.3	<1.0	<1.0	2
3.5	<1.0	<1.0	3

B9	TPHg	TPHd	TPHmo
0.0	<1.0	1,630	310
1.1	<1.0	<1.0	4
2.3	<1.0	<1.0	3
3.5	<1.0	<1.0	2

LEGEND:

- B1 ⊗ Approximate Hollow-Stem Auger Boring Location
- B2 ⊙ Approximate Direct-Push Boring Location
- Existing Bridge
- - - - - New Bridge Alignment
- < 1.0 Analyte Not Detected Above the Stated Laboratory Reporting Limit

Sample Depth Measured in Meters

TPHg = Total Petroleum Hydrocarbons as Gasoline (mg/kg)
 TPHd = Total Petroleum Hydrocarbons as Diesel (mg/kg)
 TPHmo = Total Petroleum Hydrocarbons as Motor Oil (mg/kg)

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Alameda County,
California

**Petroleum
Hydrocarbon
Distribution In Soil**

GEOCON Proj. No. E8000-06-13

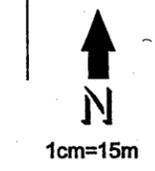
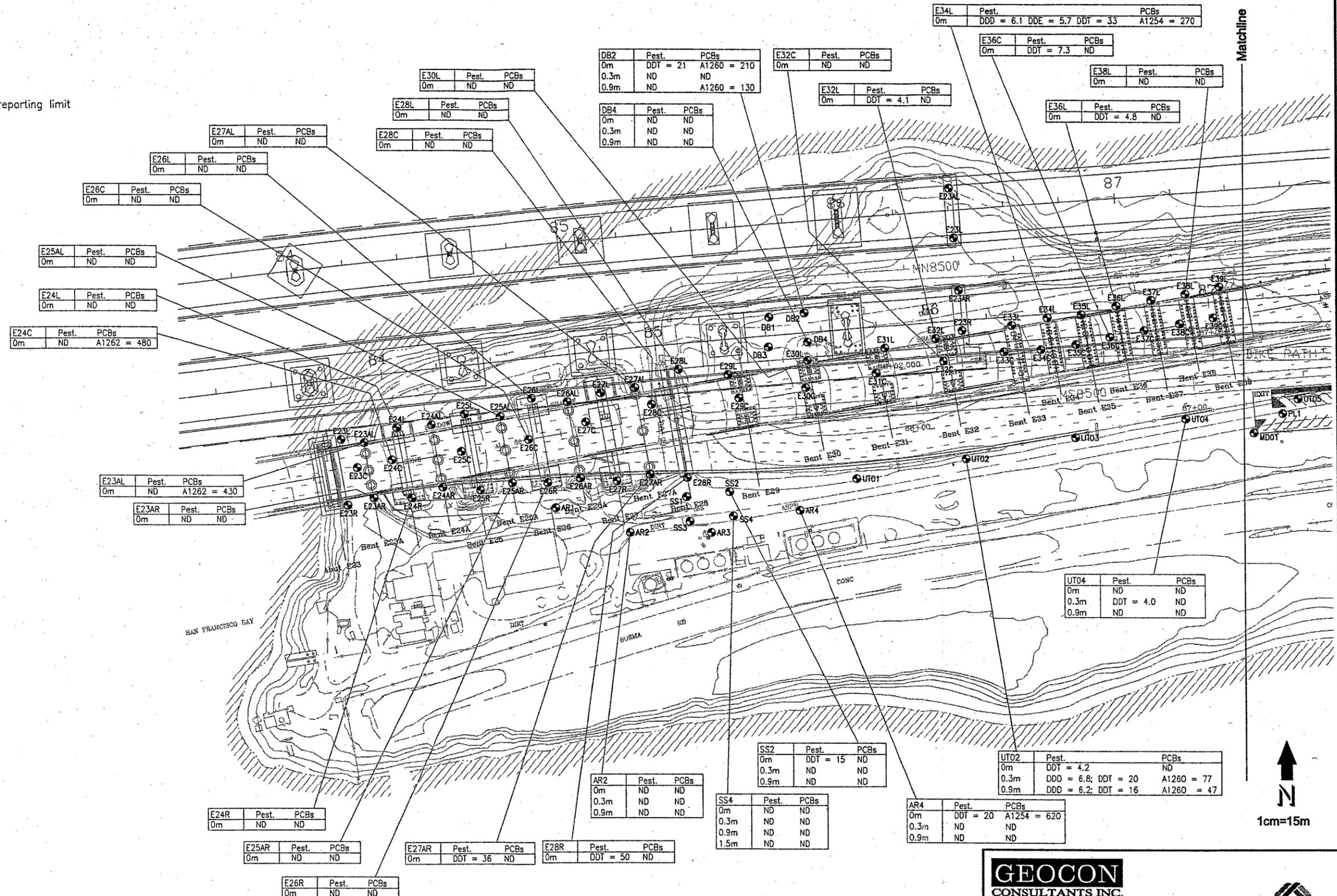
Task Order No. 04-012000-FC

October 2001

Figure 3c

LEGEND:

- Soil Sample Location
- Not Analyzed
- Pest. Chlorinated Pesticides (ug/kg)
- PCBs Polychlorinated Biphenyls (ug/kg)
- ND No analytes were reported above the laboratory reporting limit
- ug/kg micrograms per kilogram
- m meters
- A1254 PCB Aroclor number



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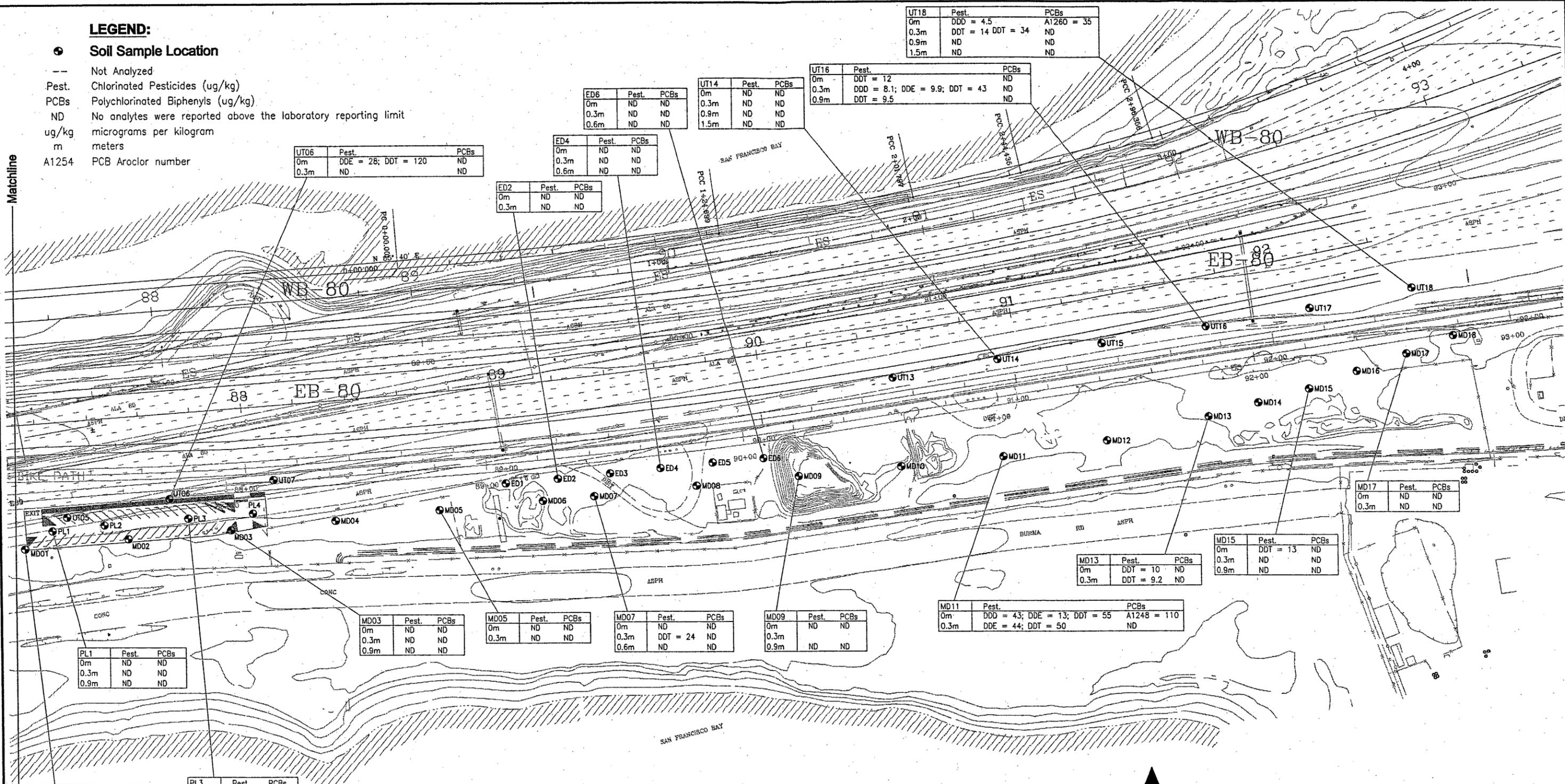
Alameda County, California	Pesticide and Polychlorinated Biphenyls in Soil
GEOCON Proj. No. E8000-06-13	September 2001
Task Order No. 04-012000-FC	Figure 4a

LEGEND:

● **Soil Sample Location**

- Not Analyzed
- Pest. Chlorinated Pesticides (ug/kg)
- PCBs Polychlorinated Biphenyls (ug/kg)
- ND No analytes were reported above the laboratory reporting limit
- ug/kg micrograms per kilogram
- m meters
- A1254 PCB Aroclor number

Matchline



UT18	Pest.	PCBs
0m	DDD = 4.5	A1260 = 35
0.3m	DDT = 14	DDT = 34
0.9m	ND	ND
1.5m	ND	ND

UT16	Pest.	PCBs
0m	DDT = 12	ND
0.3m	DDD = 8.1; DDE = 9.9; DDT = 43	ND
0.9m	DDT = 9.5	ND

ED6	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND
0.6m	ND	ND

UT14	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND
0.9m	ND	ND
1.5m	ND	ND

ED4	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND
0.6m	ND	ND

ED2	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND

UT06	Pest.	PCBs
0m	DDE = 26; DDT = 120	ND
0.3m	ND	ND

MD17	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND

MD15	Pest.	PCBs
0m	DDT = 13	ND
0.3m	ND	ND
0.9m	ND	ND

MD13	Pest.	PCBs
0m	DDT = 10	ND
0.3m	DDT = 9.2	ND

MD11	Pest.	PCBs
0m	DDD = 43; DDE = 13; DDT = 55	A1248 = 110
0.3m	DDE = 44; DDT = 50	ND

MD09	Pest.	PCBs
0m	ND	ND
0.3m	DDT = 24	ND
0.9m	ND	ND

MD07	Pest.	PCBs
0m	ND	ND
0.3m	DDT = 24	ND
0.6m	ND	ND

MD05	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND

MD03	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND
0.9m	ND	ND

PL1	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND
0.9m	ND	ND

PL3	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND
0.9m	ND	ND

MD01	Pest.	PCBs
0m	ND	ND
0.3m	ND	ND

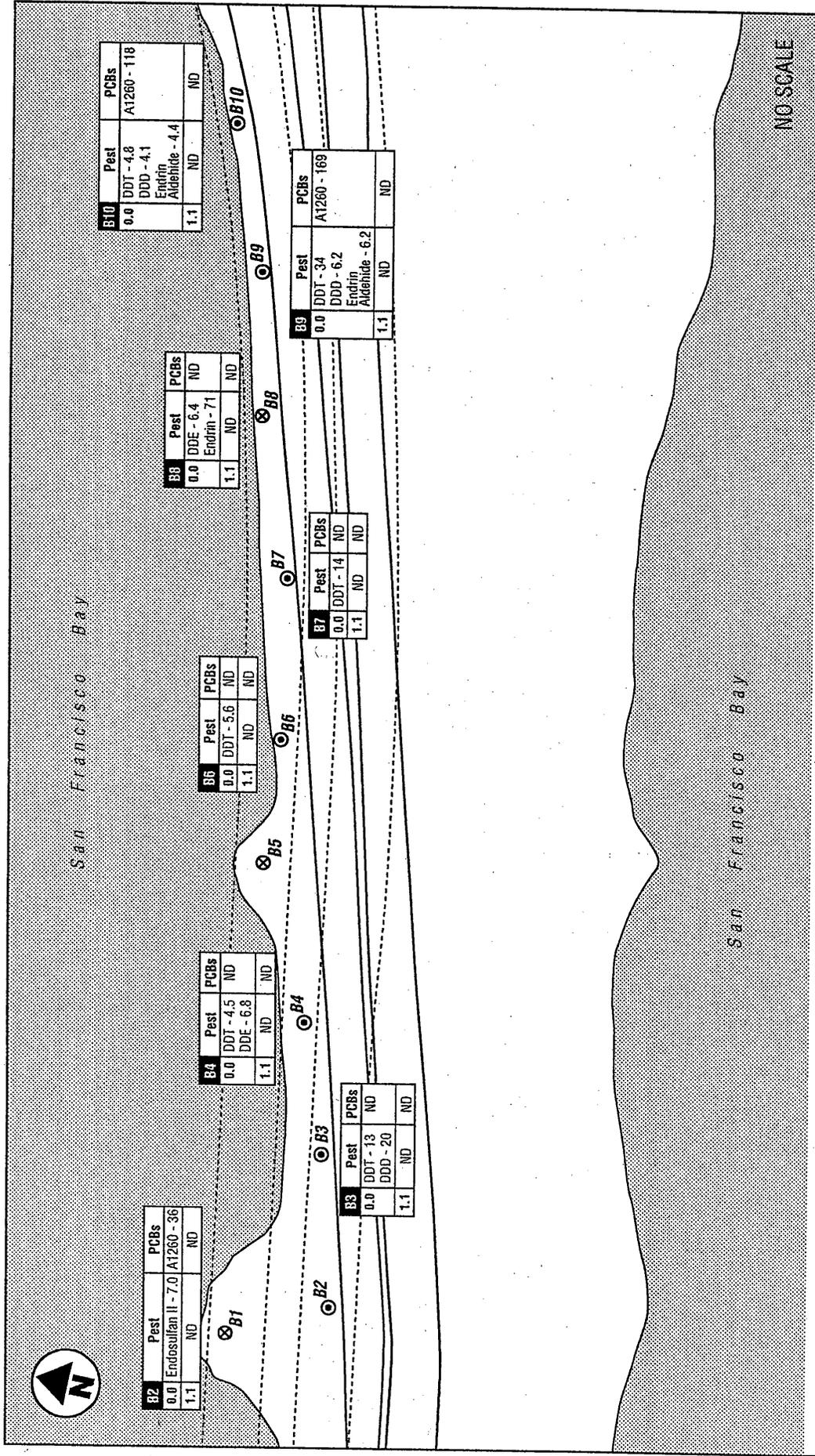


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PHONE 925 371-5900 - FAX 925 371-5915

San Francisco-Oakland Bay Bridge

Alameda County, California	Pesticide and Polychlorinated Biphenyls in Soil
GEOCON Proj. No. E8000-06-13	Task Order No. 04-012000-FC
September 2001	Figure 4b



GEOCON
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San Francisco-Oakland Bay Bridge - Oakland Mole

Alameda County, California

Pesticide and Polychlorinated Biphenyl Distribution in Soil

GEOCON Proj. No. E8000-06-13

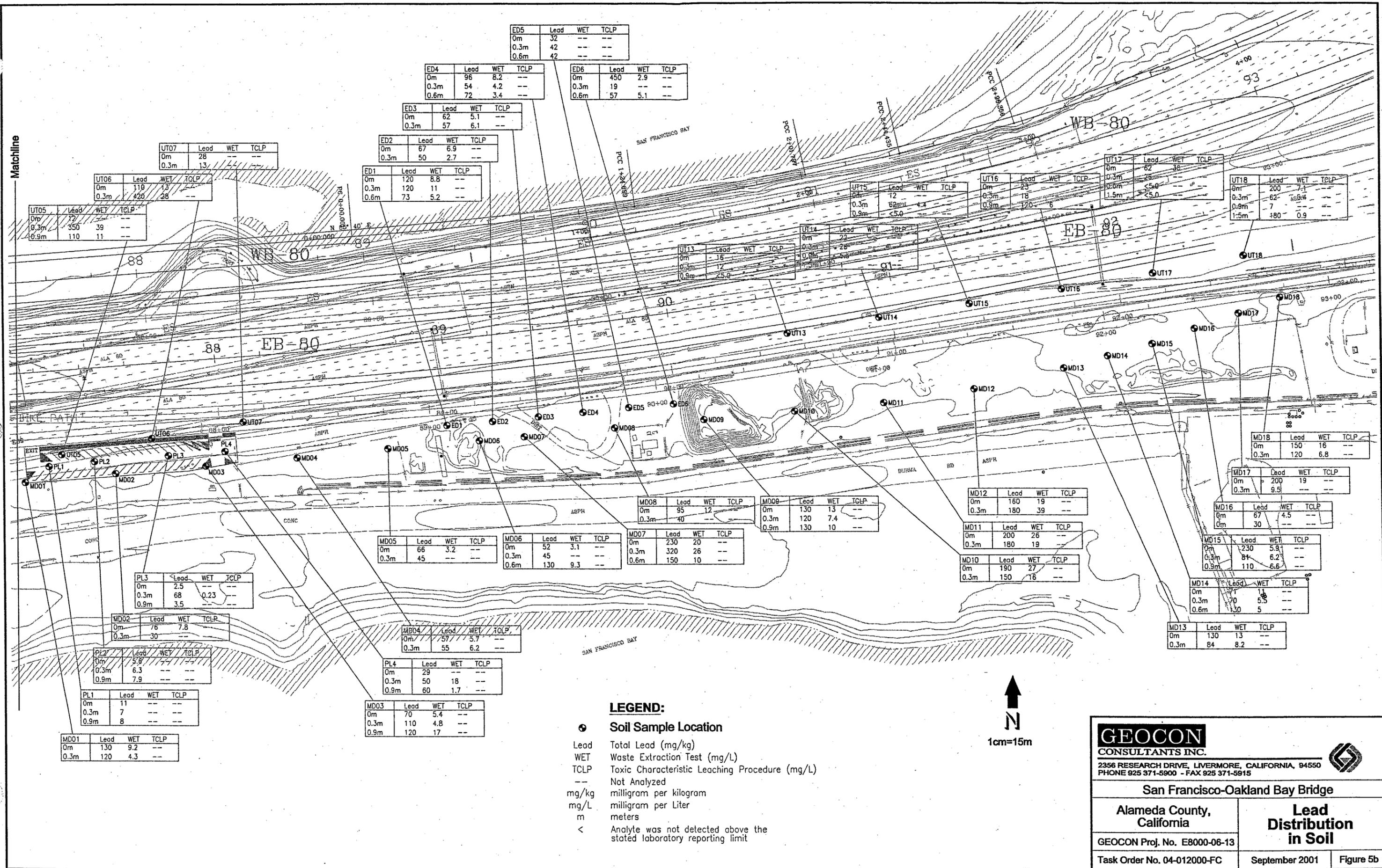
Task Order No. 04-012000-FC

October 2001

Figure 4c

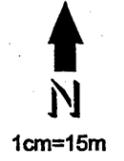
LEGEND:

- B1 ⊗ Approximate Hollow-Stem Auger Boring Location
- B2 ⊙ Approximate Direct-Push Boring Location
- Existing Bridge
- - - - - New Bridge Alignment
- ND No Analytes Were Detected Above the Laboratory Reporting Limit
- Sample Depth Measured in Meters
- Pest = Chlorinated Pesticides (ug/kg)
- PCBs = Polychlorinated Biphenyls (ug/kg)
- A = Aroclor (ug/kg)



Matchline

- LEGEND:**
- Soil Sample Location
 - Lead Total Lead (mg/kg)
 - WET Waste Extraction Test (mg/L)
 - TCLP Toxic Characteristic Leaching Procedure (mg/L)
 - Not Analyzed
 - mg/kg milligram per kilogram
 - mg/L milligram per Liter
 - m meters
 - < Analyte was not detected above the stated laboratory reporting limit

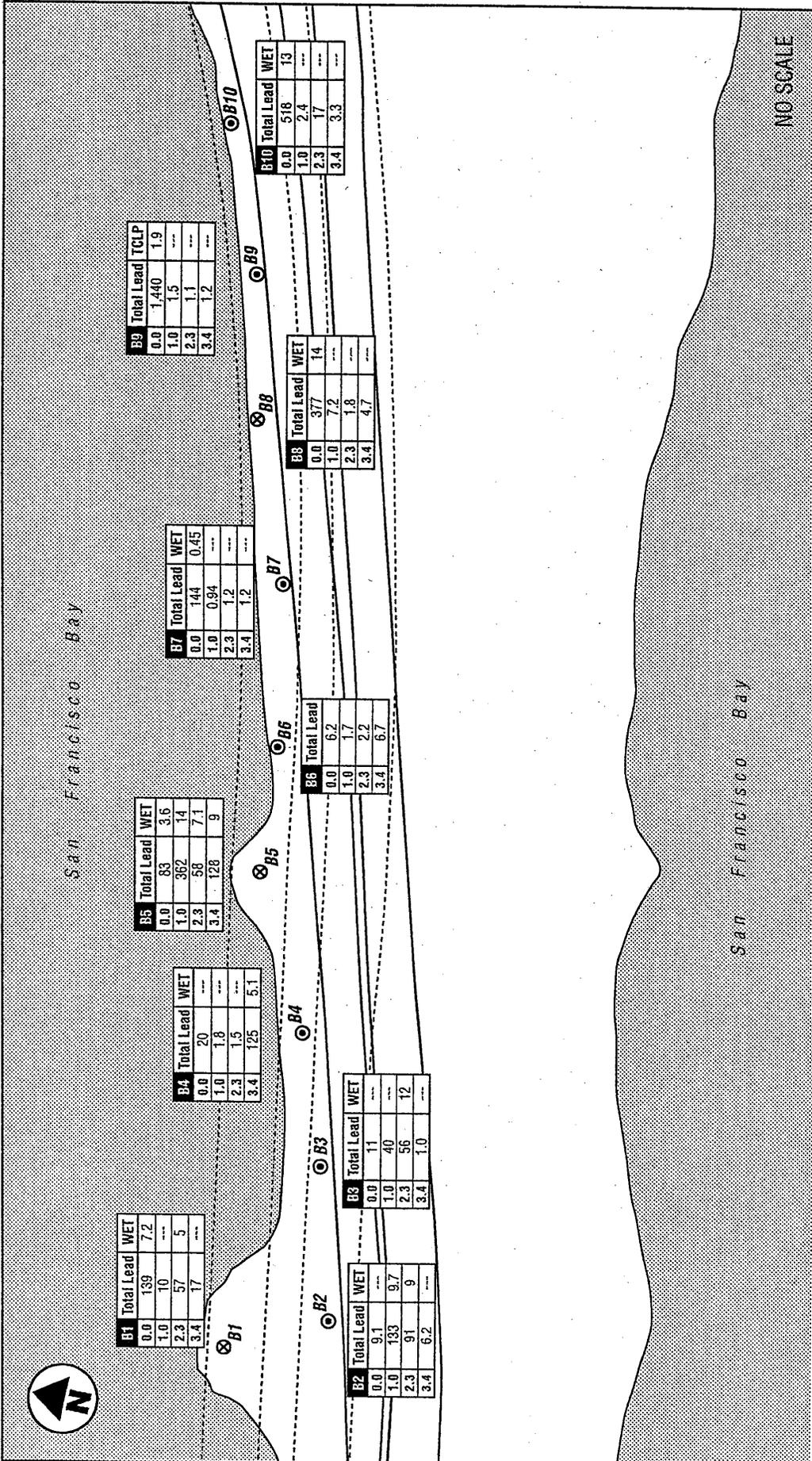


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San Francisco-Oakland Bay Bridge

Alameda County, California	Lead Distribution in Soil
GEOCON Proj. No. E8000-06-13	September 2001
Task Order No. 04-012000-FC	Figure 5b



LEGEND:

- B1** ⊗ Approximate Hollow-Stem Auger Boring Location
- B2** ⊙ Approximate Direct-Push Boring Location
- Existing Bridge
- - - New Bridge Alignment
- Not Analyzed

Sample Depth Measured in Meters

Total Lead = Total Lead (mg/kg)
 WET = Waste Extraction Test (mg/l)
 TCLP = Toxic Characteristic Leaching Procedure (mg/l)

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San Francisco-Oakland Bay Bridge - Oakland Mole
 Alameda County,
 California

**Lead Distribution
 In Soil**

GEOCON Proj. No. E8000-06-13
 Task Order No. 04-012000-FC

October 2001
 Figure 5c

TABLE 1
SUMMARY OF SOIL BORING DATA
OAKLAND MOLE, ALAMEDA COUNTY

Sample Location	Northing (m)	Easting (m)	Target Depth (m)	Target Depth (ft)	Sampling Method
UT05	648240.347	1839224.102	1.5	5	DP
UT06	648247.512	1839264.019	1.5	5	DP
UT07	648254.825	1839304.086	1.5	5	DP
UT13	648293.481	1839543.709	1.5	5	DP
UT14	648300.473	1839584.204	1.5	5	DP
UT15	648306.575	1839624.191	1.5	5	DP
UT16	648313.059	1839664.177	1.5	5	DP
UT17	648320.051	1839704.163	1.5	5	DP
UT18	648327.934	1839743.768	1.5	5	DP
PL1	648235.025	1839218.508	0.9	3	HA
PL2	648237.281	1839238.505	0.9	3	HA
PL3	648239.885	1839271.195	0.9	3	HA
PL4	648241.795	1839296.06	0.9	3	HA
Structure Demolition					
E24L	648229.554	1838898.486	0.3	1	HA
E24C	648217.868	1838896.743	0.3	1	HA
E24R	648204.093	1838903.707	0.3	1	HA
E24AL	648230.583	1838910.937	0.3	1	HA
E24AR	648207.951	1838914.956	0.3	1	HA
E25L	648220.884	1838921.766	0.3	1	HA
E25C	648234.498	1838922.959	0.3	1	HA
E25R	648206.922	1838928.781	0.3	1	HA
E25AL	648233.583	1838936.269	0.3	1	HA
E25AR	648209.58	1838940.545	0.3	1	HA
E26L	648240.098	1838947.689	0.3	1	HA
E26C	648225.218	1838946.537	0.3	1	HA
E26R	648209.58	1838953.511	0.3	1	HA
E26AL	648238.859	1838960.706	0.3	1	HA
E26AR	648211.252	1838965.313	0.3	1	HA
E27L	648242.049	1838972.767	0.3	1	HA
E27C	648231.507	1838967.29	0.3	1	HA
E27R	648210.155	1838978.498	0.3	1	HA
E27AL	648243.863	1838985.298	0.3	1	HA
E27AR	648212.555	1838990.516	0.3	1	HA
E28L	648250.584	1839000.885	0.3	1	HA
E28C	648237.853	1838991.167	0.3	1	HA
E28R	648240.242	1839022.61	0.3	1	HA
E28L	648211.458	1839003.77	0.3	1	HA
E29C	648248.685	1839018.742	0.3	1	HA
E30L	648253.849	1839047.303	0.3	1	HA
E30C	648243.99	1839046.553	0.3	1	HA
E31L	648258.372	1839075.386	0.3	1	HA
E31C	648249.245	1839072.163	0.3	1	HA

TABLE 1
SUMMARY OF SOIL BORING DATA
OAKLAND MOLE, ALAMEDA COUNTY

Sample Location	Northing (m)	Easting (m)	Target Depth (m)	Target Depth (ft)	Sampling Method
<i>Eastbound Detour</i>					
MD01	648228.022	1839208.099	0.3	1	HA
MD02	648231.894	1839247.859	0.3	1	HA
MD03	648235.299	1839287.643	0.9	3	HA
MD04	648238.844	1839327.707	0.3	1	HA
MD05	648242.816	1839367.487	0.3	1	HA
MD06	648246.362	1839407.409	0.6	2	HA
MD07	648248.064	1839427.014	0.6	2	HA
MD08	648252.009	1839466.945	0.3	1	HA
MD09	648255.565	1839506.682	4.9	16	DP
MD10	648259.181	1839546.724	0.3	1	HA
MD11	648262.929	1839586.059	0.3	1	HA
MD12	648269.019	1839625.883	0.3	1	HA
MD13	648278.211	1839664.839	0.3	1	HA
MD14	648283.625	1839684.165	0.6	2	HA
MD15	648288.964	1839703.587	0.6	2	HA
MD16	648295.709	1839722.024	0.3	1	HA
MD17	648302.453	1839741.446	0.3	1	HA
MD18	648309.499	1839759.686	0.3	1	HA
ED1	648253.17	1839393.202	0.6	2	HA
ED2	648254.872	1839413.233	0.6	2	HA
ED3	648256.857	1839433.123	0.6	2	HA
ED4	648258.857	1839453.049	0.6	2	HA
ED5	648260.98	1839473.117	0.6	2	HA
ED6	648262.576	1839492.931	0.6	2	HA
<i>Structure</i>					
E23RA	648279.331	1839102.085	3.0	10	DP
E23RB	648264.732	1839103.319	3.0	10	DP
E23LA	648316.303	1839098.545	1.5	5	DP
E23LB	648298.306	1839100.37	1.5	5	DP
<i>Substation</i>					
AR1	648200.503	1838956.373	0.9	3	HA
AR2	648191.559	1838983.285	0.9	3	HA
AR3	648191.559	1839012.398	0.9	3	HA
AR4	648199.625	1839044.199	0.9	3	HA
SS1	648204.478	1839003.429	0.9	3	HA
SS2	648206.384	1839018.989	0.9	3	HA
SS3	648195.553	1839004.661	0.9	3	HA
SS4	648197.555	1839020.342	0.9	3	HA
UT01	648211.126	1839064.968	1.5	5	DP
UT02	648218.394	1839104.441	1.5	5	DP
UT03	648226.168	1839143.818	1.5	5	DP
UT04	648233.034	1839183.287	1.5	5	DP

TABLE 1
SUMMARY OF SOIL BORING DATA
OAKLAND MOLE, ALAMEDA COUNTY

Sample Location	Northing (m)	Easting (m)	Target Depth (m)	Target Depth (ft)	Sampling Method
E32L	648261.827	1839093.449	0.3	1	HA
E32C	648253.639	1839096.348	0.3	1	HA
E33L	648266.643	1839121.201	0.3	1	HA
E33C	648257.06	1839118.395	0.3	1	HA
E34L	648269.48	1839134.07	0.3	1	HA
E34C	648257.928	1839131.764	0.3	1	HA
E35L	648270.635	1839146.122	0.3	1	HA
E35C	648259.797	1839144.198	0.3	1	HA
E36L	648273.789	1839158.663	0.3	1	HA
E36C	648262.466	1839156.298	0.3	1	HA
E37L	648275.9	1839171.158	0.3	1	HA
E37C	648264.92	1839168.651	0.3	1	HA
E38L	648278.162	1839183.392	0.3	1	HA
E38C	648267.297	1839181.316	0.3	1	HA
E39L	648280.775	1839195.877	0.3	1	HA
E39C	648269.578	1839193.6	0.3	1	HA
<i>Detention Basin</i>					
DB1	648269.398	1839033.651	0.9	3	HA
DB2	648271.014	1839046.234	0.9	3	HA
DB3	648258.646	1839033.442	0.9	3	HA
DB4	648260.442	1839047.355	0.9	3	HA
<i>Bents</i>					
B1	No Coordinates		18	60	HS
B2	No Coordinates		3.6	12	HS
B3	No Coordinates		3.6	12	HS
B4	No Coordinates		3.6	12	HS
B5	No Coordinates		18	60	HS
B6	No Coordinates		3.6	12	HS
B7	No Coordinates		3.6	12	HS
B8	No Coordinates		18	60	HS
B9	No Coordinates		3.6	12	HS
B10	No Coordinates		3.6	12	HS

Notes:

Northing and Easting coordinates relative to North American Datum 1983 (NAD83)

m = meters

ft = feet

HA = Hand Auger

DP = Direct Push

HS = Hollow Stem Auger

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
<i>EB Detour</i>							
MD1	0.0	---	26	130	---	ND	ND
	0.3	<1.0	27	140	<5.0	ND	ND
MD3	0.0	---	220	780	---	ND	ND
	0.3	<1.0	240	730	<5.0	ND	ND
	0.9	<1.0	440	1500	<5.0	ND	ND
MD5	0.0	---	130	530	---	ND	ND
	0.3	<1.0	230	1200	<5.0	ND	ND
MD7	0.0	---	48	160	---	ND	ND
	0.3	<1.0	170	450	<5.0	DDT = 24	ND
	0.6	<1.0	37	130	<5.0	ND	ND
MD9	0.0	<1.0	96	540	<5.0	ND	ND
	0.3	<1.0	66	400	<5.0		
	0.9	<1.0	160	890	<5.0	ND	ND
MD11	0.0	---	120	360	---	DDD = 43 DDE = 13 DDT = 55	A1248 = 110
	0.3	<1.0	260	1000	<5.0	DDE = 44 DDT = 50	ND
MD13	0.0	<1.0	150	400	<5.0	DDT = 10	ND
	0.3	<1.0	96	260	<5.0	DDT = 9.2	ND
MD15	0.0	<1.0	200	630	<5.0	DDT = 13	ND
	0.3	<1.0	87	250	<5.0	ND	ND
	0.9	<1.0	120	400	<5.0	ND	ND
MD17	0.0	<1.0	78	160	<5.0	ND	ND
	0.3	<1.0	6.9	20	<5.0	ND	ND

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
ED2	0.0	---	100	410	---	ND	ND
	0.3	<1.0	46	170	<5.0	ND	ND
ED4	0.0	---	160	530	---	ND	ND
	0.3	<1.0	35	180	<5.0	ND	ND
	0.6	<1.0	83	270	<5.0	ND	ND
ED6	0.0	---	77	340	---	ND	ND
	0.3	<1.0	370	680	<5.0	ND	ND
	0.6	<1.0	36	210	<5.0	ND	ND
<i>Structure</i>							
E23AL	0.0	<1.0	160	710	<5.0	ND	A1262 = 430
E23AR	0.0	<1.0	150	590	<5.0	ND	ND
<i>Substation</i>							
AR2	0.0	---	32	130	---	ND	ND
	0.3	<1.0	120	590	<5.0	ND	ND
	0.9	<1.0	73	300	<5.0	ND	ND
AR4	0.0	---	320	1000	<5.0	DDT = 20	A1254 = 620
	0.3	<1.0	53	200	<5.0	ND	ND
	0.9	<1.0	22	130	<5.0	ND	ND
SS2	0.0	<1.0	120	390	<5.0	DDT = 15	ND
	0.3	<1.0	200	680	<5.0	ND	ND
	0.9	<1.0	180	680	<5.0	ND	ND
SS4	0.0	---	61	250	<5.0	ND	ND
	0.3	<1.0	870	2300	<5.0	ND	ND
	0.9	<1.0	570	1900	<5.0	ND	ND
	1.5	<1.0	390	1700	<5.0	ND	ND

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
	0.0	---	56	99	---	DDT = 4.2	ND
UT02	0.3	<1.0	29	38	<5.0	DDD = 6.8 DDT = 20	A1260 = 77
	0.9	<1.0	84	130	<5.0	DDD = 6.2 DDT = 16	A1260 = 47
UT04	0.0	---	130	320	---	ND	ND
	0.3	<1.0	110	130	<5.0	DDT = 4.0	ND
	0.9	<1.0	18	44	---	ND	ND
UT06	0.0	---	170	590	---	DDE = 28 DDT = 120	ND
	0.3	<1.0	340	1100	<5.0	ND	ND
UT14	0.0	---	6.9	18	---	ND	ND
	0.3	<1.0	26	89	<5.0	ND	ND
	0.9	<1.0	3.2	9.7	<5.0	ND	ND
	1.5	<1.0	1.5	3.8	<5.0	ND	ND
	0.0	---	31	86	---	DDT = 12	ND
UT16	0.3	<1.0	28	75	<5.0	DDD = 8.1 DDE = 9.9 DDT = 43	ND
	0.9	<1.0	700	1300	<5.0	DDT = 9.5	ND
UT18	0.0	---	150	320	---	DDD = 4.5 DDT = 34	A1260 = 35
	0.3	<1.0	29	63	<5.0	DDT = 14	ND
	0.9	<1.0	1.4	1.6	<5.0	ND	ND
	1.5	<1.0	42	160	<5.0	ND	ND

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
PL1	0.0	---	13	45	<5.0	ND	ND
	0.3	<1.0	4.4	6.7	<5.0	ND	ND
	0.9	<1.0	4.4	14	<5.0	ND	ND
PL3	0	---	610	4800	<5.0	ND	ND
	0.3	<1.0	530	3000	<5.0	ND	ND
	0.9	<1.0	80	410	<5.0	ND	ND
<i>Structure Demolition</i>							
E24C	0.0	<1.0	120	430	<5.0	ND	A1262 = 480
E24L	0.0	<1.0	160	710	<5.0	ND	ND
E24R	0.0	<1.0	72	300	<5.0	ND	ND
E25AL	0.0	<1.0	43	200	<5.0	ND	ND
E25AR	0.0	<1.0	61	240	<5.0	ND	ND
E26C	0.0	<1.0	21	97	<5.0	ND	ND
E26L	0.0	<1.0	27	120	<5.0	ND	ND
E26R	0.0	<1.0	29	110	<5.0	ND	ND
E27AL	0.0	<1.0	45	160	<5.0	ND	ND
E27AR	0.0	<1.0	18	55	<5.0	DDT = 36	ND
E28C	0.0	<1.0	35	94	<5.0	ND	ND
E28L	0.0	<1.0	28	100	<5.0	ND	ND
E28R	0.0	<1.0	100	260	<5.0	DDT = 50	ND
E30L	0.0	<1.0	130	380	<5.0	ND	ND

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
E32C	0.0	<1.0	14	35	<5.0	ND	ND
E32L	0.0	<1.0	47	150	<5.0	DDT = 4.1	ND
E34L	0.0	<1.0	200	390	<5.0	DDD = 6.1 DDE = 5.7 DDT = 33	A1254 = 270
E36C	0.0	<1.0	120	350	<5.0	DDT = 7.3	ND
E36L	0.0	1.3	69	170	<5.0	DDT = 4.8	ND
E38L	0.0	<1.0	330	820	<5.0	ND	ND
<i>Detention Basin</i>							
DB2	0.0	---	160	390	---	DDT = 21	A1260 = 210
	0.3	<1.0	310	670	<5.0	ND	ND
	0.9	<1.0	87	210	<5.0	ND	A1260 = 130
DB4	0.0	---	540	3300	---	ND	ND
	0.3	<1.0	25	130	<5.0	ND	ND
	0.9	<1.0	22	65	<5.0	ND	ND
<i>Bents</i>							
B1	0.0	<1.0	334	461	<1.0	Endosulfan II = 7.0	A1260 = 36
	1.1	<1.0	910	1310	<1.0	ND	ND
	2.3	<1.0	1450	1860	methylene chloride = 1.3	---	---
	3.5	<1.0	127	132	<1.0	---	---
B2	0.0	<1.0	310	275	<1.0	ND	ND
	1.1	<1.0	78	68	<1.0	ND	ND
	2.3	<1.0	1780	2420	<1.0	---	---
	3.5	<1.0	9	9	<1.0	---	---

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
B3	0.0	<1.0	167	189	<1.0	4,4-DDT = 13 4,4-DDD = 7.0	ND
	1.1	<1.0	14	18	<1.0	ND	ND
	2.3	<1.0	19	18	<1.0	---	---
	3.5	<1.0	2	5	<1.0	---	---
B4	0.0	<1.0	1570	1380	methylene chloride = 4.8	4,4-DDT = 4.5 4,4-DDE = 6.8	ND
	1.1	<1.0	4	5	<1.0	ND	ND
	2.3	<1.0	3	5	<1.0	---	---
	3.5	<1.0	7	7	<1.0	---	---
B5	0.0	<1.0	321	308	ethylbenzene = 5.2 xylenes = 3.7	ND	ND
	1.1	<1.0	327	349	<1.0	ND	ND
	2.3	<1.0	162	164	<1.0	---	---
	3.5	<1.0	133	132	<1.0	---	---
B6	0.0	<1.0	266	323	<1.0	4,4-DDT = 5.6	ND
	1.1	<1.0	4	4	methylene chloride = 1.6	ND	ND
	2.3	<1.0	<1.0	2	methylene chloride = 1.9	---	---
	3.5	<1.0	<1.0	3	<1.0	---	---
B7	0.0	<1.0	56	47	<1.0	4,4-DDT = 14	ND
	1.1	<1.0	<1.0	7	<1.0	ND	ND
	2.3	<1.0	<1.0	1	<1.0	---	---
	3.5	<1.0	305	300	<1.0	---	---
B8	0.0	<1.0	316	323	<1.0	4,4-DDE = 6.4 Endrin = 71	ND
	1.1	<1.0	6	7	<1.0	ND	ND
	2.3	<1.0	1	2	<1.0	---	---
	3.5	<1.0	1	3	<1.0	---	---

TABLE 2
SUMMARY OF TPHg, TPHd, TPHmo, VOCs, PESTICIDES, AND PCBs
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	VOCs (µg/kg)	Chlorinated Pesticides (µg/kg)	PCBs (µg/kg)
B9	0.0	<1.0	1630	310	<1.0	4,4-DDT = 34 4,4-DDD = 6.2 Endrin Aldehyde = 5.3	A1260=169
	1.1	<1.0	<1.0	4	<1.0	ND	ND
	2.3	<1.0	<1.0	3	<1.0	---	---
	3.5	<1.0	<1.0	2	<1.0	---	---
B10	0.0	<1.0	230	195	<1.0	4,4-DDT = 48 4,4-DDD = 4.1 Endrin Aldehyde = 4.4	A1260=118
	1.1	<1.0	103	94	<1.0	ND	ND
	2.3	<1.0	6	10	<1.0	---	---
	3.5	<1.0	<1.0	5	<1.0	---	---

< Analyte was not detected above the stated laboratory reporting limit
 --- Not Analyzed
 VOCs Volatile Organic Compounds
 PCBs Polychlorinated Biphenyls
 ND No analytes were reported above the laboratory reporting limit
 TPH Total Petroleum Hydrocarbons as g=gasoline, d=diesel, mo=motor oil
 mg/kg milligram per kilogram
 µg/kg microgram per kilogram
 A1254 PCB Aroclor number

TABLE 3
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
<i>EB Detour</i>																			
MD01	0.0	0.28	8.0	36	<0.15	<0.15	24	7.5	30	130	<0.10	<0.25	22	<0.25	<0.15	0.49	21	87	
	0.3	<0.25	5.5	84	<0.15	<0.15	20	6.0	36	120	<0.10	<0.25	24	<0.25	<0.15	0.50	18	47	
MD03	0.0	<0.25	9.5	64	<0.15	<0.15	22	6.0	26	70	<0.10	<0.25	26	<0.25	<0.15	0.50	21	78	
	0.3	<0.25	11.0	72	<0.15	<0.15	26	6.5	28	110	0.10	<0.25	30	<0.25	<0.15	0.50	23	80	
	0.9	0.26	8.5	86	<0.15	<0.15	20	7.0	78	120	0.11	0.31	26	<0.25	<0.15	0.50	24	88	
MD05	0.0	<0.25	43	130	<0.15	<0.15	10	6.0	24	66	0.40	0.50	8.5	<0.25	1.5	2.0	20	230	
	0.3	<0.25	23	76	<0.15	<0.15	22	5.5	20	45	0.21	<0.25	18	<0.25	<0.15	1.0	20	110	
MD07	0.0	<0.25	8.0	62	<0.15	<0.15	28	7.0	40	230	0.14	<0.25	33	<0.25	<0.15	0.50	24	150	
	0.3	<0.25	9.5	88	<0.15	<0.15	34	7.5	48	320	0.36	0.31	40	<0.25	<0.15	0.50	30	190	
	0.6	<0.25	7.0	54	<0.15	<0.15	21	6.0	34	150	0.23	<0.25	26	<0.25	<0.15	0.50	22	100	
MD09	0.0	0.39	6.5	57	<0.15	<0.15	34	5.5	32	130	0.23	<0.25	34	<0.25	<0.15	0.50	21	74	
	0.3	0.5	8.0	72	<0.15	<0.15	54/<1.0	6.0	33	120	0.26	<0.25	48	<0.25	<0.15	0.50	23	100	
	0.9	<0.25	7.0	72	<0.15	<0.15	24	6.5	56	130	<0.10	<0.25	27	<0.25	<0.15	0.34	20	110	
MD11	0.0	0.50	6.0	57	<0.15	<0.15	22	4.5	25	200	0.27	<0.25	24	<0.25	<0.15	0.47	17	90	
	0.3	0.35	7.0	54	<0.15	<0.15	21	5.0	25	180	0.17	<0.25	24	<0.25	<0.15	0.50	20	82	
MD13	0.0	0.50	9.5	86	<0.15	<0.15	46	12	46	130	0.15	0.5	48	<0.25	<0.15	0.50	25	110	
	0.3	0.36	6.5	42	<0.15	<0.15	26	5.0	21	84	0.29	<0.25	27	<0.25	<0.15	0.34	19	60	
MD15	0.0	<0.25	7.5	82	<0.15	<0.15	30	9.0	35	230	<0.10	0.46	34	<0.25	<0.15	0.50	24	120	
	0.3	0.27	12	57	<0.15	<0.15	23	6.0	31	81	<0.10	<0.25	24	<0.25	<0.15	0.50	18	92	
	0.9	0.43	40/<1.0	92	<0.15	<0.15	34	9.0	75	110	0.19	0.35	37	<0.25	<0.15	0.50	22	140	
MD17	0.0	0.46	8.5	60	<0.15	<0.15	32	8.0	40	200	<0.10	1.0	38	<0.25	<0.15	0.50	27	100	
	0.3	0.50	11	97	<0.15	<0.15	20	24	66	9.5	0.49	<0.25	24	<0.25	<0.15	2.0	140	90	
ED2	0.0	<0.25	6.0	49	<0.15	<0.15	24	5.5	26	67	0.15	<0.25	27	<0.25	<0.15	0.44	20	74	
	0.3	<0.25	5.5	36	<0.15	<0.15	22	4.5	36	50	<0.10	<0.25	24	<0.25	<0.15	0.50	18	66	
ED4	0.0	<0.25	7.0	55	<0.15	<0.15	24	7.0	38	96	0.24	<0.25	30	<0.25	<0.15	0.50	23	94	
	0.3	<0.25	8.0	48	<0.15	<0.15	29	6.5	29	54	0.15	<0.25	32	<0.25	<0.15	0.46	24	68	
	0.6	<0.25	6.5	48	<0.15	<0.15	26	6.0	26	72	0.11	<0.25	30	<0.25	<0.15	0.50	21	72	

TABLE 3
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
ED6	0.0	0.50	4.5	44	<0.15	<0.15	15	4.0	30	450	0.37	<0.25	18	<0.25	<0.15	<0.25	14	66
	0.3	0.50	5.5	17	<0.15	<0.15	21	5.0	13	19	0.11	<0.25	22	<0.25	<0.15	<0.25	15	28
	0.6	0.50	6.5	27	<0.15	<0.15	22	5.5	20	57	0.11	<0.25	28	<0.25	<0.15	<0.25	16	42
<i>Structure</i> E23AL	0.0	<0.25	6.0	94	<0.15	<0.15	18	7.0	34	170	<0.10	<0.25	23	<0.25	<0.15	0.50	22	110
	0.0	<0.25	6.0	69	<0.15	<0.15	17	5.5	34	300	<0.10	<0.25	20	<0.25	<0.15	0.50	20	170
<i>Substation</i> AR2	0.0	<0.25	4.5	57	<0.15	<0.15	13	4.5	23	36	<0.10	<0.25	15	<0.25	<0.15	0.50	17	42
	0.3	0.31	8.0	200	<0.15	<0.15	31	7.0	200	280	0.23	0.50	38	<0.25	<0.15	0.50	22	320
	0.9	<0.25	6.5	170	<0.15	<0.15	25	6.0	100	140	0.98	<0.25	30	<0.25	<0.15	0.50	20	230
AR4	0.0	<0.25	7.5	230	<0.15	<0.15	25	6.0	96	330	<0.10	0.37	28	<0.25	<0.15	0.50	22	170
	0.3	1.00	16	620	<0.15	16/ND	60/<1.0	12	1700/32	3500	0.22	15	92	<0.25	7.5	1.5	23	1500
	0.9	<0.25	6.5	52	<0.15	<0.15	22	6.5	20	18	<0.10	<0.25	25	<0.25	<0.15	0.35	20	38
SS2	0.0	<0.25	6.0	50	<0.15	<0.15	12	6.0	31	260	0.12	<0.25	16	<0.25	<0.15	0.50	26	180
	0.3	0.25	7.0	73	<0.15	<0.15	12	12	86	260	0.19	0.410	18	<0.25	<0.15	1.0	49	120
	0.9	0.31	7.0	58	<0.15	<0.15	14	7.5	61	180	0.18	0.480	15	<0.25	<0.15	0.50	41	98
SS4	0.0	9.0	29	410	<0.15	<0.15	460/<1.0	20	88	6400	<0.10	120	820/ND	<0.25	1.0	3.5	28	2000
	0.3	1.5	15	560	<0.15	0.50	78/2.5	8.5	1800/160	2400	0.13	14	120	<0.25	0.50	1.0	27	1100
	0.9	0.49	34	130	<0.15	<0.15	26	12	250	1100	<0.10	4.5	54	<0.25	<0.15	1.0	36	1600
	1.5	<0.25	4.5	24	<0.15	<0.15	23	4.5	24/3.0	48	<0.10	0.50	28	<0.25	<0.15	0.31	13	110
UT02	0.0	<0.25	14	47	<0.15	<0.15	6.5	5.0	24	130	0.17	0.36	6.0	<0.25	<0.15	1.0	22	130
	0.3	0.25	9.5	54	<0.15	<0.15	16	7.0	43	210	0.19	<0.25	14	<0.25	<0.15	0.50	21	76
	0.9	0.36	10	82	<0.15	<0.15	20	9.0	68	400	0.12	0.500	17	<0.25	<0.15	0.50	29	170
UT04	0.0	<0.25	1.0	29	<0.15	<0.15	3.0	0.17	9.5	46	<0.10	<0.25	2.5	<0.25	<0.15	<0.25	1.5	54
	0.3	<0.25	10	50	<0.15	<0.15	25	9.5	50	180	0.18	<0.25	20	<0.25	<0.15	0.48	26	61
	0.9	0.25	8.5	60	<0.15	<0.15	18	7.5	45	160	0.12	<0.25	18	<0.25	<0.15	0.50	22	70
UT06	0.0	<0.25	9.0	95	<0.15	<0.15	21	6.5	52	110	0.16	<0.25	26	<0.25	<0.15	0.50	32	78
	0.3	0.50	7.0	83	<0.15	<0.15	29	7.0	42	420	0.11	0.50	32	<0.25	<0.15	0.50	24	150

TABLE 3
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
UT14	0.0	0.50	10	140	<0.15	<0.15	57/<1.0	13	32	22	0.49	0.39	88	<0.25	<0.15	1.0	38	110	
	0.3	0.50	9.0	110	<0.15	<0.15	40	10	29	28	0.50	<0.25	62	<0.25	<0.15	1.0	34	90	
	0.9	<0.25	4.5	32	<0.15	<0.15	10	4.5	9.0	5.5	0.14	<0.25	12	<0.25	<0.15	0.50	21	45	
	1.5	<0.25	2.5	15	<0.15	<0.15	16	3.0	3.5	1.0	<0.10	<0.25	19	<0.25	<0.15	0.31	10	12	
UT16	0.0	0.50	12	140	<0.15	<0.15	62/<1.0	13	30	23	0.63	<0.25	94	<0.25	<0.15	0.50	38	73	
	0.3	0.50	12	160	<0.15	<0.15	62/<1.0	13	29	18	0.55	0.25	93	<0.25	<0.15	1.0	37	76	
	0.9	<0.25	7.0	46	<0.15	<0.15	18	6.0	29	120	0.21	<0.25	15	<0.25	<0.15	0.34	28	69	
UT18	0.0	<0.25	10	60	<0.15	<0.15	16	8.0	40	200	<0.10	<0.25	18	<0.25	<0.15	0.50	22	140	
	0.3	<0.25	7.5	30	<0.15	<0.15	8.5	5.0	17	62	<0.10	<0.25	7.0	<0.25	<0.15	0.50	21	96	
	0.9	<0.25	3.0	18	<0.15	<0.15	19	3.0	9.0	7.0	<0.10	<0.25	19	<0.25	<0.15	<0.25	11	14	
	1.5	0.26	8.5	150	<0.15	<0.15	38	7.5	58	180	<0.10	<0.25	34	<0.25	<0.15	0.50	23	90	
PL1	0.0	<0.25	5.5	42	<0.15	<0.15	4.0	5.0	12	11	<0.10	<0.25	4.0	<0.25	<0.15	0.50	24	58	
	0.3	<0.25	5.0	50	<0.15	<0.15	2.5	3.5	6.0	7.0	<0.10	<0.25	3.5	<0.25	<0.15	1.0	7.0	71	
	0.9	<0.25	5.5	30	<0.15	<0.15	4.0	4.5	13	8.0	<0.10	<0.25	3.0	<0.25	<0.15	0.50	22	66	
PL3	0.0	0.27	13	28	<0.15	<0.15	38	7.0	5.0	2.5	<0.10	<0.25	38	<0.25	<0.15	0.50	24	22	
	0.3	<0.25	5.5	54	<0.15	<0.15	14	5.0	29	68	<0.10	<0.25	15	<0.25	<0.15	0.50	20	40	
	0.9	<0.25	4.0	10	<0.15	<0.15	1.0	2.0	8.0	3.5	<0.10	<0.25	0.50	<0.25	<0.15	0.50	8.0	98	
Structure Demolition																			
E24C	0.0	<0.25	6.0	100	<0.15	<0.15	24	5.5	24	160	<0.10	<0.25	28	<0.25	<0.15	0.50	20	86	
E24L	0.0	<0.25	5.0	84	<0.15	<0.15	16	5.5	36	120	<0.10	<0.25	19	<0.25	<0.15	0.50	20	84	
E24R	0.0	<0.25	4.0	58	<0.15	<0.15	16	4.5	21	110	<0.10	<0.25	19	<0.25	<0.15	0.49	15	62	
E25AL	0.0	<0.25	4.0	42	<0.15	<0.15	20	4.0	12	66	<0.10	<0.25	21	<0.25	<0.15	0.40	14	63	
E25AR	0.0	<0.25	4.5	72	<0.15	<0.15	23	5.0	26	100	<0.10	<0.25	22	<0.25	<0.15	0.50	20	78	
E26C	0.0	<0.25	4.0	36	<0.15	<0.15	20	3.5	11	57	<0.10	<0.25	20	<0.25	<0.15	<0.25	12	42	
E26L	0.0	<0.25	4.0	34	<0.15	<0.15	26	3.5	20	62	<0.10	<0.25	20	<0.25	<0.15	0.34	14	54	
E26R	0.0	<0.25	4.0	48	<0.15	<0.15	23	4.0	21	70	<0.10	<0.25	24	<0.25	<0.15	0.28	15	87	

TABLE 3
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	
E27AL	0.0	<0.25	7.0	85	<0.15	<0.15	32	7.5	34	210	<0.10	0.28	26	<0.25	<0.15	0.50	28	110	
E27AR	0.0	<0.25	5.5	47	<0.15	<0.15	22	4.0	16	84	<0.10	<0.25	30	<0.25	<0.15	0.50	16	40	
E28C	0.0	<0.25	3.5	29	<0.15	<0.15	18	3.5	8.5	46	<0.10	<0.25	18	<0.25	<0.15	0.39	14	27	
E28L	0.0	<0.25	3.5	39	<0.15	<0.15	16	3.5	9.0	39	<0.10	<0.25	18	<0.25	<0.15	<0.25	12	33	
E28R	0.0	<0.25	6.5	50	<0.15	<0.15	16	6.5	30	260	0.22	<0.25	16	<0.25	<0.15	0.50	26	130	
E30C	0.0	0.50	5.0	54	<0.15	<0.15	20	5.0	80	160	<0.10	0.5	20	<0.25	<0.15	0.50	17	560	
E30L	0.0	0.48	4.5	50	<0.15	<0.15	24	5.0	84	180	<0.10	3.0	24	<0.25	<0.15	0.34	15	640	
E32C	0.0	<0.25	3.5	31	<0.15	<0.15	20	4.0	10	39	<0.10	<0.25	24	<0.25	<0.15	<0.25	12	44	
E32L	0.0	0.36	5.5	62	<0.15	<0.15	20	5.5	130	130	<0.10	1.5	20	<0.25	<0.15	0.49	17	590	
E34C	0.0	0.31	3.5	44	<0.15	<0.15	18	4.0	18	170	<0.10	<0.25	20	<0.25	3.5	0.32	12	96	
E34L	0.0	0.34	7.0	47	<0.15	<0.15	20	4.5	21	100	<0.10	<0.25	21	<0.25	<0.15	0.50	16	93	
E36C	0.0	<0.25	3.5	52	<0.15	<0.15	19	4.0	20	74	<0.10	<0.25	20	<0.25	<0.15	0.37	14	72	
E36L	0.0	<0.25	3.0	53	<0.15	<0.15	12	2.5	20	67	<0.10	<0.25	15	<0.25	<0.15	<0.25	10	64	
E38C	0.0	<0.25	3.5	34	<0.15	<0.15	18	3.5	22	66	<0.10	<0.25	18	<0.25	<0.15	<0.25	12	40	
E38L	0.0	1.00	5.0	200	<0.15	<0.15	24	3.5	80	120	0.11	2.5	20	<0.25	<0.15	0.50	16	320	
<i>Detention Basin</i>																			
	0.0	0.33	7.0	83	<0.15	<0.15	29	3.0	57	360	0.20	1.5	29	<0.25	<0.15	0.27	12	260	
	0.3	0.38	7.5	290	<0.15	<0.15	45	5.0	100	1500	<0.10	1.5	32	<0.25	<0.15	0.50	18	230	
	0.9	<0.25	4.5	71	<0.15	<0.15	21	4.5	19	380	<0.10	<0.25	20	<0.25	<0.15	0.37	15	54	
	0.0	<0.25	7.5	150	<0.15	<0.15	30	6.5	20	15	<0.10	<0.25	38	<0.25	<0.15	0.50	26	46	
	0.3	<0.25	5.0	50	<0.15	<0.15	22	4.5	12	66	<0.10	<0.25	22	<0.25	<0.15	0.40	16	46	
	0.9	<0.25	3.5	62	<0.15	<0.15	28	4.5	8.0	63	<0.10	<0.25	26	<0.25	<0.15	<0.25	15	31	

TABLE 3
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Bent's	0.0	0.44	1.8	79	<0.15	<0.15	7.2	7.3	15	139	<0.10	1.1	12	0.88	<0.15	0.74	16	28
	1.1	<0.25	0.93	25	<0.15	<0.15	3.5	1.5	4.4	10	<0.10	0.53	7.4	0.69	<0.15	<0.25	3	7.7
	2.3	<0.25	1.4	93	<0.15	<0.15	4.4	5.3	21	57	<0.10	0.5	13	0.76	<0.15	<0.25	4.5	27
	3.5	<0.25	1.1	20	<0.15	<0.15	8	2.8	14	17	<0.10	0.29	15	0.81	<0.15	<0.25	6.1	17
B1	0.0	<0.25	1.4	18	<0.15	<0.15	3.8	0.62	8.1	9.1	<0.10	0.31	4.9	<0.25	<0.15	<0.25	1.8	40
	1.1	0.29	4.1	46	<0.15	<0.15	24	5.2	12	133	<0.10	1.6	23	<0.25	<0.15	<0.25	18	38
	2.3	0.31	7	194	<0.15	<0.15	28	11	51	91	<0.10	3.9	34	0.56	<0.15	0.86	48	108
	3.5	<0.25	3	26	<0.15	<0.15	24	3.8	4.8	6.2	<0.10	0.95	25	0.3	<0.15	<0.25	12	22
B2	0.0	<0.25	1.4	19	<0.15	<0.15	5	0.95	5.3	11	<0.10	0.43	4.7	0.32	0.056	<0.25	3.9	21
	1.1	0.5	4.1	35	<0.15	<0.15	24	5	7.9	40	<0.10	1.1	24	<0.25	<0.15	<0.25	16	28
	2.3	0.37	4.4	51	<0.15	<0.15	30	6.6	11	56	<0.10	1.8	28	<0.25	<0.15	<0.25	16	28
	3.5	<0.25	2	20	<0.15	<0.15	16	3	2.8	1	<0.10	0.49	16	<0.25	<0.15	<0.25	9.7	10
B3	0.0	0.63	6.7	95	<0.15	<0.15	17	5.6	18	20	0.16	2.5	32	0.7	<0.15	0.69	20	56
	1.1	0.48	3	23	<0.15	<0.15	25	3.6	4.7	1.8	<0.10	0.94	22	0.49	<0.15	<0.25	16	15
	2.3	0.29	2.6	65	<0.15	<0.15	19	3.3	3.7	1.5	<0.10	0.7	19	0.44	<0.15	0.39	12	13
	3.5	<0.25	2.2	18	<0.15	<0.15	40	2.8	2.7	125	<0.10	0.75	16	<0.25	<0.15	0.28	11	11
B4	0.0	0.54	4.7	78	0.057	<0.15	21	6.5	47	83	0.37	1.8	31	0.79	0.34	<0.25	16	100
	1.1	0.95	6.1	140	0.069	<0.15	21	5.4	50	362	1.4/<0.004	1.7	22	0.85	0.37	<0.25	20	164
	2.3	0.28	3.6	50	0.14	<0.15	13	4	21	58	1.6/<0.004	1.6	16	0.87	0.11	<0.25	10	47
	3.5	0.41	5.5	84	0.066	<0.15	18	5.3	44	128	1.0/<0.004	1.4	21	0.89	0.29	<0.25	18	108
B5	0.0	<0.25	1.8	35	<0.15	0.27	3.1	0.58	6.8	6.2	<0.10	0.44	3.8	0.92	<0.15	<0.25	2.8	47
	1.1	0.34	2.7	20	<0.15	<0.15	22	3.4	3.7	1.7	<0.10	0.65	20	<0.25	0.078	<0.25	14	13
	2.3	0.44	3.7	47	<0.15	<0.15	29	5.7	8.3	2.2	<0.10	1.4	32	0.36	0.14	0.69	18	22
	3.5	0.35	5.4	139	0.25	<0.15	11	7.9	13	6.7	0.22	1.9	21	0.93	ND	0.52	13	37
B6	0.0	1.5	4.4	110	<0.15	<0.15	28	4.3	61	144	0.1	5.9	21	0.78	<0.15	<0.25	19	0.5
	1.1	0.34	2.4	49	<0.15	<0.15	22	3.2	4.1	0.94	<0.10	0.66	19	0.51	<0.15	<0.25	13	13
	2.3	0.54	3	26	<0.15	<0.15	29	4.3	4.7	1.2	<0.10	1.1	31	0.36	<0.15	<0.25	17	18
	3.5	0.3	2.1	20	<0.15	<0.15	20	3.1	2.9	1.2	<0.10	0.98	21	0.56	<0.15	0.32	12	15

TABLE 3
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
B8	0.0	1.7	4.6	86	<0.15	0.43	14	5.3	48	377	0.14	2.6	16	1.2	0.22	<0.25	13	129
	1.1	0.33	2.9	24	0.41	<0.15	1.6	0.9	3.4	7.2	<0.10	0.77	1.1	0.59	0.13	<0.25	3.9	16
	2.3	<0.25	1.6	14	ND	<0.15	13	2.5	3.6	1.8	<0.10	0.44	14	0.42	0.09	<0.25	6.3	11
	3.5	<0.25	2.4	54	0.12	<0.15	9.4	6.2	5.2	4.7	<0.10	0.86	15	<0.25	ND	<0.25	8.9	19
B9	0.0	2.1	4.2	117	<0.15	1.8	39	4	204	1440	<0.10	4.9	62	0.57	0.19	0.43	14	603
	1.1	0.55	2.5	26	<0.15	<0.15	23	3.5	4.5	1.5	<0.10	0.85	21	<0.25	<0.15	0.49	13	16
	2.3	<0.25	2.3	31	<0.15	<0.15	22	3.5	4.4	1.1	<0.10	0.75	22	<0.25	<0.15	0.52	13	15
	3.5	0.39	1.7	10	<0.15	<0.15	20	2.6	3.2	1.2	<0.10	0.8	15	<0.25	<0.15	<0.25	11	11
B10	0.0	1.0	9.1	45	<0.15	<0.15	10	3.1	26	518	0.17	3.6	9	0.71	0.095	0.68	11	160
	1.1	<0.25	4.1	61	<0.15	<0.15	23	4.7	11	24	0.35	1.4	23	0.46	0.06	<0.25	17	27
	2.3	0.38	5.1	29	<0.15	<0.15	18	3.7	9.2	17	<0.10	2	19	0.63	0.12	<0.25	15	66
	3.5	0.52	3.2	45	<0.15	<0.15	16	4.6	5.1	3.3	<0.10	1.1	16	0.33	0.17	0.46	14	21

Note: 2.5/3.2 = Italics equal Waste Extraction Test (WET) data reported in milligrams per Liter (mg/L).

< Analyte was not detected above the stated laboratory reporting limit

-- Not Analyzed

All total metal data is reported in milligrams per kilogram (mg/kg)

TABLE 4
SUMMARY OF PAH ANALYTICAL RESULTS - SOIL
THE OAKLAND TOUCHDOWN IN ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(ghi) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
<i>EB Detour</i> MD01	0.3	0.014	<0.010	0.023	<0.010	0.026	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.032	<0.010	<0.010	0.055	0.029
MD03	0.3	0.024	0.069	0.104	0.029	0.075	<0.010	0.071	0.026	<0.010	0.016	0.084	0.144	0.018	0.038	0.169	0.099
	0.9	<0.010	<0.010	0.034	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	<0.010	<0.010	0.021
MD05	0.3	<0.010	0.022	0.054	<0.010	0.065	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.034	<0.010	<0.010	0.045	0.032
MD07	0.0	0.043	0.069	0.094	0.033	0.083	<0.010	0.052	0.076	<0.010	0.03	0.045	0.0232	0.061	0.039	0.339	0.172
	0.6	0.079	0.119	0.154	0.054	0.123	<0.010	0.0115	0.099	<0.010	0.053	0.098	0.347	0.078	0.046	0.485	0.307
	0.3	0.126	0.233	0.259	0.101	0.165	0.165	0.228	0.202	<0.010	0.096	0.221	0.592	0.162	0.119	0.81	0.523
MD09	0.0	<0.020	0.027	0.050	<0.020	0.046	<0.020	0.024	<0.020	<0.020	<0.020	<0.020	0.071	<0.020	<0.020	0.105	0.073
	0.3	<0.020	0.026	0.045	<0.020	0.036	<0.020	0.032	<0.020	<0.020	<0.020	<0.020	0.057	<0.020	<0.020	0.087	0.067
	0.9	<0.020	<0.020	0.027	<0.020	0.029	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.056	<0.020	<0.020	0.021	0.053
MD11	0.0	<0.020	0.121	0.148	0.044	0.073	<0.020	0.096	0.026	<0.020	<0.020	0.064	0.269	<0.020	0.037	0.306	0.264
	0.3	<0.020	0.046	0.105	0.024	0.080	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.128	<0.020	0.035	0.152	0.130
MD13	0.0	<0.020	0.054	0.078	0.023	<0.020	<0.020	0.045	<0.020	<0.020	<0.020	0.05	0.132	<0.020	0.023	0.155	0.143
	0.3	1.96	1.46	2.20	0.827	2.25	0.380	0.491	0.081	<0.020	5.60	0.628	13.9	0.403	0.060	1.16	10.5
MD15	0.3	<0.020	0.039	0.065	<0.020	0.066	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.061	<0.020	<0.020	0.081	0.070
	0.9	<0.020	0.036	0.070	<0.020	0.073	<0.020	<0.020	<0.020	<0.020	0.038	<0.020	0.086	0.025	<0.020	0.097	0.100
ED2	0.0	0.034	0.063	0.098	0.032	0.078	<0.010	0.053	0.011	<0.010	0.017	0.086	0.090	0.012	<0.010	0.079	0.103
	0.3	<0.010	0.030	0.041	<0.010	0.033	<0.010	0.047	<0.010	<0.010	<0.010	0.056	0.019	<0.010	<0.010	0.026	0.040
ED4	0.0	0.024	0.036	0.062	0.018	0.051	<0.010	0.041	<0.010	<0.010	<0.010	0.047	0.061	<0.010	0.042	0.056	0.071
	0.6	0.025	0.051	0.070	0.022	0.046	<0.010	0.049	<0.010	<0.010	0.014	0.055	0.080	<0.010	<0.010	0.06	0.089
	0.3	<0.010	0.025	0.234	<0.010	0.092	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.035	<0.010	<0.010	0.043	0.045
ED6	0.0	0.151	0.210	0.426	0.210	0.680	<0.020	0.102	<0.020	<0.020	0.387	0.116	1.49	0.049	0.024	0.705	1.36
	0.3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.280	<0.020	<0.020	0.033	0.035
	0.6	0.088	0.140	0.133	0.048	0.078	<0.020	0.101	<0.020	<0.020	0.052	0.094	0.316	<0.020	<0.020	0.287	0.350

TABLE 4
SUMMARY OF PAH ANALYTICAL RESULTS - SOIL
THE OAKLAND TOUCHDOWN IN ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd) pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(ghi) perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
<i>Substation</i>																	
AR2	0.0	<0.020	<0.020	0.021	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.02	<0.020
	0.3	<0.020	0.02	0.058	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.024	<0.020	<0.020	0.025	0.029
	0.9	0.03	0.131	0.140	0.040	0.057	<0.020	0.131	<0.020	<0.020	<0.020	0.125	0.128	<0.020	<0.020	0.062	0.183
AR4	0.0	0.02	0.041	0.061	0.026	0.036	<0.020	0.034	0.052	<0.020	0.029	0.034	0.206	0.044	<0.020	0.282	0.154
	0.3	<0.020	<0.020	0.049	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
	0.9	<0.020	<0.020	0.035	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS2	0.0	0.154	0.144	0.195	0.088	0.119	<0.020	0.090	0.304	<0.020	0.114	0.95	0.740	0.239	0.195	1.26	0.53
	0.3	0.061	0.067	0.124	0.038	0.153	<0.020	0.049	0.168	<0.020	0.063	0.053	0.364	0.141	0.110	0.623	0.252
	0.9	0.164	0.201	0.294	0.122	0.270	<0.050	0.146	0.433	<0.050	0.156	0.170	1.06	0.335	0.270	1.80	0.752
SS4	0.0	<0.010	<0.010	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.019	<0.010
	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	0.3	<0.020	0.02	0.042	<0.020	0.100	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.028	0.144	0.084
	0.9	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
UT02	0.0	0.134	0.148	0.198	0.09	0.155	0.077	0.126	0.295	<0.050	0.135	0.111	0.708	0.226	0.152	1.18	0.469
	0.9	0.695	0.861	1.07	0.503	0.830	<0.050	0.586	1.79	<0.050	0.592	0.626	4.16	1.47	1.17	6.84	2.96
	0.3	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.01	0.040	<0.010	<0.010	0.060	0.029
UT04	0.0	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	0.019	<0.010	0.025	0.013	0.019
	0.3	<0.010	<0.010	0.011	<0.010	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.023	<0.010	<0.010	0.022	0.02
	0.9	0.209	0.233	0.296	0.140	0.242	<0.050	0.198	0.498	<0.050	0.155	0.168	1.12	0.379	0.363	1.89	0.776
UT06	0.3	0.033	0.069	0.120	0.038	0.168	<0.020	0.03	0.229	<0.020	0.096	0.032	0.426	0.201	0.194	0.818	0.287
UT14	0.0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	0.018
	0.3	<0.010	<0.010	0.01	<0.010	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.012
	0.9	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
PL1	0.0	<0.010	<0.010	0.011	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.044	<0.010
	0.3	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	0.9	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

TABLE 4
SUMMARY OF PAH ANALYTICAL RESULTS - SOIL
THE OAKLAND TOUCHDOWN IN ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Benzo(a)anthracene	Benzo(a)pyrene	Fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(ghi)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
PL3	0.0	<0.080	<0.080	0.229	<0.080	0.33	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
	0.3	0.066	0.188	0.144	0.06	0.09	<0.010	0.071	0.127	<0.010	0.081	0.069	0.477	0.087	0.032	0.694	0.319
	0.9	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
<i>Structure Demolition</i>																	
E23AL	0.0	0.164	0.218	0.241	0.106	0.185	<0.010	0.132	0.265	<0.010	0.184	0.117	0.795	0.227	0.199	1.17	0.646
E23AR	0.0	0.088	0.131	0.175	0.064	0.123	<0.010	0.1	0.207	<0.010	0.093	0.114	0.465	0.164	0.091	0.718	0.348
E24C	0.0	0.028	0.044	0.062	0.024	0.036	<0.010	0.04	0.039	<0.010	0.024	0.057	0.149	0.027	0.026	0.205	0.115
E24L	0.0	0.033	0.046	0.103	0.025	0.103	<0.010	0.047	0.077	<0.010	0.033	0.033	0.197	0.070	0.077	0.336	0.153
E24R	0.0	0.129	0.133	0.175	0.071	0.127	<0.010	0.102	0.286	<0.010	0.266	0.101	0.659	0.270	0.176	1.13	0.448
E25AL	0.0	0.020	0.029	0.037	0.016	0.022	<0.010	0.025	0.029	<0.010	0.013	0.032	0.099	0.024	0.025	0.148	0.069
E25AR	0.0	0.011	0.016	0.030	<0.010	0.020	<0.010	<0.010	0.017	<0.010	0.018	<0.010	0.059	0.012	<0.010	0.089	0.042
E26C	0.0	0.013	0.014	0.020	<0.010	0.021	<0.010	0.014	0.016	<0.010	<0.010	0.014	0.053	0.01	<0.010	0.072	0.039
E26L	0.0	<0.010	0.01	0.013	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.034	<0.010	<0.010	0.048	0.027
E26R	0.0	0.041	0.059	0.066	0.028	0.058	<0.010	0.039	0.082	<0.010	0.029	0.046	0.205	0.062	0.058	0.314	0.153
E27AL	0.0	<0.010	0.029	0.043	0.014	<0.010	<0.010	0.019	0.035	<0.010	0.011	<0.010	0.097	0.025	0.035	0.141	0.076
E27AR	0.0	0.403	0.552	0.599	0.282	0.416	<0.010	0.402	1.17	<0.010	0.546	0.355	2.50	1.01	0.603	4.33	1.69
E28C	0.0	<0.010	0.018	0.018	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.033	<0.010	<0.010	0.042	0.028
E28L	0.0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	<0.010	0.012	0.011
E28R	0.0	0.496	0.595	0.672	0.311	0.434	<0.010	0.366	1.55	<0.010	0.715	0.388	2.77	1.29	1.36	5.00	1.80
E30L	0.0	<0.020	<0.020	0.026	<0.020	0.024	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.054	<0.020	<0.020	0.067	0.048

TABLE 4
SUMMARY OF PAH ANALYTICAL RESULTS - SOIL
THE OAKLAND TOUCHDOWN IN ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(ghi)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
E32C	0.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.012	<0.10	<0.10	0.020	<0.10
E32L	0.0	<0.10	0.018	0.024	0.01	0.016	<0.10	<0.10	0.015	<0.10	<0.10	<0.10	0.059	0.012	0.028	0.086	0.045
E34L	0.0	<0.020	0.055	0.133	0.024	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.135	<0.020	0.139	0.183	0.113
E36C	0.0	<0.020	0.024	0.035	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0101	<0.020	<0.020	0.104	0.077
E36L	0.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023	<0.020	<0.020	0.040	<0.020
E38L	0.0	<0.020	0.036	0.089	0.021	<0.020	<0.020	0.042	<0.020	<0.020	<0.020	0.080	0.099	<0.020	0.026	0.088	0.144
<i>Detention Basin</i>																	
DB4	0.0	0.077	0.220	0.272	0.094	0.122	<0.020	0.166	<0.020	<0.020	0.076	0.182	0.372	<0.020	0.03	0.321	0.333
	0.3	0.014	0.031	0.042	0.016	0.028	<0.020	0.025	0.013	<0.020	<0.020	0.022	0.081	0.01	0.012	0.099	0.065
<i>Bents</i>																	
B1	0.0	0.226	0.163	0.202	0.085	0.23	0.083	0.097	0.426	ND	0.178	0.083	1.04	0.298	0.346	1.86	0.704
	1.1	ND	ND	ND	ND	ND	0.049	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2.3	ND	ND	0.021	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2	0.0	ND	ND	0.037	ND	ND	0.041	ND	0.02	ND	ND	ND	0.054	ND	ND	0.081	0.042
	1.1	ND	ND	0.023	ND	ND	ND	ND	0.036	ND	0.02	ND	0.087	0.024	ND	0.127	0.062
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B3	0.0	0.024	0.03	0.046	ND	0.04	0.02	0.033	ND	ND	0.02	ND	0.137	ND	ND	0.16	0.122
	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2.3	ND	ND	0.022	ND	ND	ND	ND	0.026	ND	ND	ND	0.072	0.021	ND	0.104	0.053
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B4	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
SUMMARY OF PAH ANALYTICAL RESULTS - SOIL
THE OAKLAND TOUCHDOWN IN ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(ghi)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
B5	0.0	ND	ND	0.031	ND	ND	ND	ND	ND	ND	ND	ND	0.043	ND	ND	0.096	0.041
	1.1	0.057	0.057	0.082	0.027	0.069	0.046	0.047	ND	ND	ND	0.036	0.082	ND	ND	0.048	0.101
	2.3	0.033	0.037	0.041	ND	0.023	0.03	0.03	ND	ND	0.041	0.026	0.106	0.026	ND	0.151	0.098
	3.5	0.027	0.046	0.054	ND	0.037	0.028	0.043	ND	ND	ND	0.039	0.073	ND	ND	0.057	0.086
B6	0.0	0.02	0.041	0.081	0.021	0.063	0.137	0.04	0.105	ND	0.06	ND	0.258	0.081	0.085	0.419	0.185
	1.1	ND	0.02	0.029	ND	ND	0.036	0.027	ND	ND	ND	0.02	0.033	ND	ND	0.029	0.041
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B7	0.0	0.28	0.26	0.872	0.138	0.207	1.33	0.313	0.362	ND	0.206	0.204	1.34	0.264	0.302	1.95	1.02
	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8	0.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B9	0.0	0.314	0.386	0.596	0.162	0.17	1.08	0.408	0.177	ND	0.099	0.823	0.74	0.083	0.153	0.922	0.799
	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B10	0.0	ND	ND	ND	ND	ND	0.658	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	1.1	ND	ND	ND	ND	ND	0.087	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.023
	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.022
	3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Note:

All data is reported in micrograms per kilogram (ug/kg)

< Analyte was not detected above the stated laboratory reporting limit

ND Not detected above the laboratory reporting limit stated on the laboratory analytical data sheet

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
<i>EB Detour</i>				
MD01	0.0	130	9.2	---
	0.3	120	4.3	---
MD02	0.0	76	7.8	---
	0.3	30	---	---
MD03	0.0	70	5.4	---
	0.3	110	4.8	---
	0.9	120	17	---
MD04	0.0	57	5.7	---
	0.3	55	6.2	---
MD05	0.0	66	3.2	---
	0.3	45	---	---
MD06	0.0	52	3.1	---
	0.3	45	---	---
	0.6	130	9.3	---
MD07	0.0	230	20	---
	0.3	320	26	---
	0.6	150	10	---
MD08	0.0	95	12	---
	0.3	40	---	---
MD09	0.0	130	13	---
	0.3	120	7	---
	0.9	130	10	---
MD10	0.0	190	27	---
	0.3	150	16	---
MD11	0.0	200	26	---
	0.3	180	19	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
MD12	0.0	160	19	---
	0.3	180	39	---
MD13	0.0	130	13	---
	0.3	84	8.2	---
MD14	0.0	71	11	---
	0.3	70	5.5	---
	0.6	130	5.0	---
MD15	0.0	230	5.9	---
	0.3	81	6.2	---
	0.9	110	6.6	---
MD16	0.0	67	4.5	---
	0.0	30	---	---
MD17	0.0	200	19	---
	0.3	9.5	---	---
MD18	0.0	150	16	---
	0.3	120	6.8	---
ED1	0.0	120	8.8	---
	0.3	120	11	---
	0.6	73	5.2	---
ED2	0.0	67	6.9	---
	0.3	50	2.7	---
ED3	0.0	62	5.1	---
	0.3	57	6.1	---
ED4	0.0	96	8.2	---
	0.3	54	4.2	---
	0.6	72	3.4	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
ED5	0.0	32	---	---
	0.3	42	---	---
	0.6	42	---	---
ED6	0.0	450	2.9	---
	0.3	19	---	---
	0.6	57	5.1	---
<i>Structure</i>				
E23AL	0.0	170	19	---
E23AR	0.0	300	14	---
E23C	0.0	91	10	---
E23L	0.0	230	23	---
E23R	0.0	280	34	---
<i>Substation</i>				
AR1	0.0	290	33	---
	0.3	170	17	---
	0.9	250	27	---
AR2	0.0	36	---	---
	0.3	280	1.5	---
	0.9	140	55	---
AR3	0.0	1700	---	6.8
	0.3	390	55	---
	0.6	<5.0	---	---
AR4	0.0	330	22	---
	0.3	3500	---	1.6
	0.9	18	---	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
SS1	0.0	74	8.2	---
	0.3	160	13	---
	0.9	47	3.2	---
SS2	0.0	260	21	---
	0.3	260	26	---
	0.9	180	13	---
SS3	0.0	140	3.4	---
	0.3	460	41	---
	0.9	14	---	---
	1.5	5.1	---	---
SS4	0.0	6400	---	2.9
	0.3	2400	---	28
	0.9	1100	---	2.3
	1.5	48	---	---
UT01	0.0	110	14	---
	0.3	670	95	---
	0.9	900	74	---
UT02	0.0	130	12	---
	0.3	210	45	---
	0.9	400	20	---
UT03	0.0	94	6.3	---
	0.3	52	9.6	---
	0.9	46	---	---
	1.5	29	---	---
UT04	0.0	46	---	---
	0.3	180	43	---
	0.9	160	2.3	---
UT05	0.0	12	---	---
	0.3	350	39	---
	0.9	110	11	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
UT06	0.0	110	13	---
	0.3	420	28	---
UT07	0.0	28	---	---
	0.3	13	---	---
UT13	0.0	16	---	---
	0.3	12	---	---
	0.9	<5.0	---	---
UT14	0.0	22	---	---
	0.3	28	---	---
	0.9	5.5	---	---
	1.5	1.0	---	---
UT15	0.0	12	---	---
	0.3	62	4.4	---
	0.9	<5.0	---	---
UT16	0.0	23	---	---
	0.3	18	---	---
	0.9	120	6	---
UT17	0.0	62	36	---
	0.3	26	---	---
	0.6	<5.0	---	---
	1.5	<5.0	---	---
UT18	0.0	200	7.1	---
	0.3	62	5.4	---
	0.9	7.0	---	---
	1.5	180	0.9	---
PL1	0.0	11	---	---
	0.3	7.0	---	---
	0.9	8.0	---	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
PL2	0.0	5.6	---	---
	0.3	6.3	---	---
	0.9	7.9	---	---
PL3	0.0	2.5	---	---
	0.3	68	0.23	---
	0.9	3.5	---	---
PL4	0.0	29	---	---
	0.3	50	18	---
	0.9	60	1.7	---
<i>Structure Demolition</i>				
E24AL	0.0	78	11	---
E24AR	0.0	140	31	---
E24C	0.0	160	14	---
E24L	0.0	120	10	---
E24R	0.0	110	10	---
E25AL	0.0	66	6.2	---
E25AR	0.0	100	7.9	---
E25C	0.0	66	6.6	---
E25L	0.0	55	7.7	---
E25R	0.0	80	11	---
E26AL	0.0	51	4.4	---
E26AR	0.0	160	12	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
E26C	0.0	57	6.1	---
E26L	0.0	62	7.1	---
E26R	0.0	70	13	---
E27AL	0.0	210	16	---
E27AR	0.0	84	14	---
E27C	0.0	50	4.4	---
E27L	0.0	87	6.2	---
E27R	0.0	110	16	---
E28C	0.0	46	---	---
E28L	0.0	39	---	---
E28R	0.0	260	27	---
E29C	0.0	94	13	---
E29L	0.0	120	20	---
E30C	0.0	160	29	---
E30L	0.0	180	22	---
E31C	0.0	68	12	---
E31L	0.0	99	11	---
E32C	0.0	39	---	---
E32L	0.0	130	16	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
E33C	0.0	280	51	---
E33L	0.0	68	11	---
E34C	0.0	170	12	---
E34L	0.0	100	12	---
E35C	0.0	39	---	---
E35L	0.0	70	13	---
E36C	0.0	74	7	---
E36L	0.0	67	7.1	---
E37C	0.0	68	8.4	---
E37L	0.0	39	---	---
E38C	0.0	66	8.1	---
E38L	0.0	120	8.9	---
E39C	0.0	59	8.7	---
E39L	0.0	45	---	---
<i>Detention Basin</i>				
	0.0	690	170	---
DB1	0.3	1500	---	3.4
	0.6	38	---	---
	0.0	360	38	---
DB2	0.3	1500	---	1.8
	0.9	380	20	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
DB3	0.0	15	---	---
	0.3	<5.0	---	---
	0.9	31	---	---
DB4	0.0	15	---	---
	0.3	66	2.6	---
	0.9	63	4.5	---
<i>Bents</i>				
B1	0.0	139	7.2	---
	1.0	10	---	---
	2.3	57	5	---
	3.4	17	---	---
B2	0.0	9.1	---	---
	1.0	133	9.7	---
	2.3	91	9	---
	3.4	6.2	---	---
B3	0.0	11	---	---
	1.0	40	---	---
	2.3	56	12	---
	3.4	1.0	---	---
B4	0.0	20	---	---
	1.0	1.8	---	---
	2.3	1.5	---	---
	3.4	125	5.1	---
B5	0.0	83	3.6	---
	1.0	362	14	---
	2.3	58	7.1	---
	3.4	128	9	---
B6	0.0	6.2	---	---
	1.0	1.7	---	---
	2.3	2.2	---	---
	3.4	6.7	---	---

TABLE 5
SUMMARY OF LEAD: TOTAL, WET, and TCLP
ANALYTICAL RESULTS - SOIL
OAKLAND MOLE, ALAMEDA COUNTY

Boring ID	Sample Depth (meters)	Total Lead (mg/kg)	WET (mg/L)	TCLP (mg/L)
B7	0.0	144	0.45	---
	1.0	0.94	---	---
	2.3	1.2	---	---
	3.4	1.2	---	---
B8	0.0	377	14	---
	1.0	7.2	---	---
	2.3	1.8	---	---
	3.4	4.7	---	---
B9	0.0	1440	---	1.9
	1.0	1.5	---	---
	2.3	1.1	---	---
	3.4	1.2	---	---
B10	0.0	518	13	---
	1.0	24	---	---
	2.3	17	---	---
	3.4	3.3	---	---

WET Waste Extraction Test
TCLP Toxic Characteristic Leaching Procedure
--- Not Analyzed
mg/kg milligram per kilogram
mg/L milligram per Liter

TABLE 6
SUMMARY of TPHg, TPHd, TPHmo, VOC, and SVOC ANALYTICAL RESULTS - WATER
OAKLAND MOLE, ALAMEDA COUNTY

Sample ID	TPHg (mg/L)	TPHd (mg/L)	TPHmo (mg/L)	VOCs (µg/L)	SVOCs (µg/L)	BTEX (µg/L)
<i>EB Detour</i>						
MD9	<0.050	0.14	0.24	<5.0	ND	Xylene = 1.1 Toluene = 1.2
<i>Bents</i>						
B1 U	<0.05	0.5	0.5	<5.0	ND	<5.0
L	<0.05	0.07	0.05	<5.0	ND	<5.0
B5 U	<0.05	0.6	0.4	<5.0	naphthalene = 61 2-methylnaphthalene = 24 acenaphthene = 21 dibenzofuran = 16 fluorene = 20 phenanthrene = 29	<5.0
L	<0.05	0.3	0.3	<5.0	ND	<5.0
B8 U	<0.05	0.06	0.1	<5.0	ND	<5.0
L	<0.05	0.2	0.2	<5.0	ND	<5.0

TPH Total Petroleum Hydrocarbons as g=gasoline, d=diesel, mo=motor oil
VOCs Volatile Organic Compounds - Only those analytes detected are reported.
SVOCs Semi-Volatile Organic Compounds - Only those compounds detected are reported
BTEX Benzene, Toluene, Ethylbenzene, and Xylene - Only those compounds detected are reported
mg/L milligrams per Liter
µg/L micrograms per Liter
ND No analytes were reported above laboratory reporting limit.
< Analyte was not detected above the stated laboratory reporting limit
U Grab groundwater sample was collected from the upper portion of the saturated zone
L Grab groundwater sample was collected from the lower portion of the saturated zone

TABLE 7
SUMMARY OF TITLE 22 METALS ANALYTICAL RESULTS
ANALYTICAL RESULTS - GROUNDWATER
OAKLAND MOLE, ALAMEDA COUNTY

Sample ID	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Total Metals																	
B1	0.015	0.15	7.9	0.0030	0.011	0.71	0.44	2.8	17	0.006	0.083	0.97	0.011	0.040	0.017	0.67	4.7
	0.011	0.25	4.7	<0.001	<0.003	1.1	0.29	0.66	0.16	<0.004	0.086	1.4	0.69	0.018	ND	0.88	1.1
B5	0.010	0.072	0.62	<0.001	<0.003	0.18	0.034	0.28	2.0	<0.004	0.039	0.16	<0.005	0.019	<0.005	0.13	0.73
	0.013	0.16	0.95	<0.001	<0.003	0.66	0.17	0.30	0.10	<0.004	0.081	0.47	<0.005	0.0090	<0.005	0.44	0.45
B8	0.021	0.36	8.9	0.016	<0.003	1.5	0.79	0.83	0.72	0.018	0.13	2.1	<0.005	0.0050	<0.005	1.1	2.2
	0.016	0.58	3.1	0.0020	<0.003	1.2	0.23	1.0	0.25	<0.004	0.097	1.4	<0.005	0.010	<0.005	0.57	1.2
Dissolved Metals																	
B1	0.0060	<0.005	0.12	<0.001	<0.003	<0.003	<0.003	0.010	<0.005	<0.004	0.023	0.0060	0.008	0.025	<0.005	0.004	<0.010
	<0.005	<0.005	2.7	<0.001	<0.003	<0.003	<0.003	0.017	<0.005	<0.004	ND	0.0030	0.0050	0.015	<0.005	<0.003	<0.010
B5	<0.005	0.011	0.11	<0.001	<0.003	0.0040	<0.003	<0.003	<0.005	<0.004	0.015	0.0040	<0.005	0.016	<0.005	<0.003	<0.010
	<0.005	0.0050	0.4	<0.001	<0.003	0.0090	0.0070	0.0030	<0.005	<0.004	0.015	0.018	<0.005	0.0090	<0.005	0.015	0.45
B8	<0.005	0.010	0.18	<0.001	<0.003	0.0040	0.014	<0.003	<0.005	<0.004	0.015	0.037	<0.005	0.0090	<0.005	<0.003	<0.010
	0.0070	0.015	0.28	<0.001	<0.003	0.0040	<0.003	<0.003	<0.005	<0.004	0.013	0.011	0.0060	0.011	<0.005	<0.003	<0.010

Note: All data is reported in milligrams per Liter
 < Analyte was not detected above the stated laboratory reporting limit

APPENDIX

A

ENCROACHMENT PERMIT RIDER

TR-0122

Collected by	Permit No. (Original) 0498-NSV-2229
Rider Fee Paid	Dist/Co/Rte/PM 04-Ala-80-2.03
Date June 19, 2001	Rider Number 0401-NRT-1580

*E8000-06-13
Oakland Boulevard*

TO: GEOCON ENVIRONMENTAL CONSULTANTS
2356 Research Drive
Livermore, CA 94550-3848

Attn: Richard Day
 Phone: (925) 371-5900 x 209 , PERMITTEE

In compliance with your request of June 14, 2001, we are hereby amending the above numbered encroachment permit as follows:

Date of completion extended to: December 31, 2001

Reference your project to: perform 110 soil borings, for soil investigation in conjunction with State Contract No.43Y097 and Task Order No. 04-002971-DU, at Toll Plaza of San Francisco-Oakland Bay Bridge on State Highways 04-Ala-80, Post Mile 2.03, in the City of Oakland.

Except as amended, all other terms and provisions of the original permit shall remain in effect.

APPROVED:

HARRY Y. YAHATA, District Director

BY:

S. S. Nozzari
S. S. NOZZARI, District Permit Engineer

APPENDIX

B