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PORT OF OAKLAND

May 27, 2005

Barney M. Chan
Hazardous Materials Specialist
Alameda County Health Care Services,
Environmental Protection
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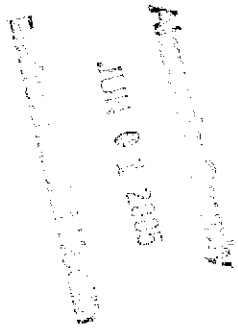
Alameda, California 94502-9335



Subject: **UST Sites Located at 1395 Middle Harbor Road**
Oakland, California
Fuel Leak Case RO-0000470
STID No. 2485

Dear Mr. Chan:

The Port of Oakland through Treadwell & Rollo, Inc. has implemented an approved work plan for site closure consideration by completing additional site characterization work at three underground storage tank sites located at the APL Terminal, 1395 Middle Harbor Road, Oakland, California. The final characterization field work report submitted herein is enclosed for your review and comment. As you review the report, please contact the undersigned at 627-1373 or at jprall@portoakland.com regarding any questions or clarifications.

Sincerely,

John Prall

John Prall, P.G.
Associate Environmental Scientist

Enclosure Noted:

Treadwell & Rollo, Inc., 2005, Underground Storage Tank Assessment, Berths 60-63, 1395 Middle Harbor Terminal, Oakland, California, May 2.

CC: Michael McGuire, Treadwell & Rollo, Inc.

Treadwell&Rollo

May 2, 2005
Project No. 4000.04

John R. Prall, R.G.
Associate Environmental Scientist
Environmental Health & Safety Compliance
Port of Oakland
530 Water Street
Oakland, California 94607

Subject: Underground Storage Tank Assessment
Berths 60-63
1395 Middle Harbor Road
Oakland, California

Dear Mr. Prall:

Treadwell & Rollo, Inc. is pleased to submit the subject report of our assessment to support possible case closure of former underground storage tanks at Berths 60-63. This assessment was authorized by Port of Oakland Technical Service Order No. 6 and subsequent amendments.

Thank you for the opportunity to be of service to the Port. Please contact me if you have any questions or requests.

Sincerely,
TREADWELL & ROLLO, INC.

Michael P. McGuire, P.E.
Principal Engineer

40000405.LTR

Attachment: Underground Storage Tank Assessment Report

Treadwell & Rollo, Inc. *Environmental & Geotechnical Consultants*
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Telephone (510) 874-4500 Facsimile (510) 874-4507

UNDERGROUND STORAGE TANK ASSESSMENT
BERTHS 60 - 63
1395 Middle Harbor Road
Oakland, California

Prepared for
Port of Oakland
EH&SC Dept.
Oakland, California

2 May 2005
Project No. 4000.04

Treadwell&Rollo
Environmental and Geotechnical Consultants

Treadwell&Rollo

On CD ROM:

APPENDIX A
ACDEH Letter dated September 10, 2002

APPENDIX B
ITSI Workplan dated November 2002

APPENDIX C
Field Investigation Related Documents

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APPENDICES (CD ROM)

LIST OF ACRONYMS

ACDEH	Alameda County Department of Environmental Health
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
COPCs	chemicals of potential concern
1,2-DCE	1,2-dichloroethene
ESL	Environmental Screening Level
Gregg	Gregg Drilling & Testing, Inc.
HSP	Health and Safety Plan
IDWs	investigation-derived wastes
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTBE	methyl tertiary-butyl ether
ORP	oxidation-reduction potential
PAH	polynuclear aromatic hydrocarbon
PID	photo-ionization detector
Port	Port of Oakland
RACC	Remedial Action Completion Certificate
RWQCB	Regional Water Quality Control Board, San Francisco Bay Region
the Site	Berths 60-63 Terminal
SMP	Site Management Plan
STID	Site Identification
SVOCs	semivolatile organic compounds
T&R	Treadwell & Rollo, Inc.
TCE	trichloroethene
TDS	total dissolved solid concentrations
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHho	total petroleum hydrocarbons as hydraulic oil
TPHmo	total petroleum hydrocarbons as motor oil
µg/L	micrograms per Liter
USA	Underground Service Alert
USTs	underground storage tanks
VOCs	volatile organic compounds

UNDERGROUND STORAGE TANK ASSESSMENT
Berths 60 - 63
1395 Middle Harbor Road
Oakland, California

1.0 INTRODUCTION

On behalf of the Port of Oakland (the Port), Treadwell & Rollo, Inc. (T&R) has prepared this assessment of chemicals of potential concern (COPCs) in soil and groundwater related to several former underground storage tanks (USTs) at the Berths 60-63 Terminal (the Site), 1395 Middle Harbor Road in Oakland, California (Figure 1). The former USTs are under case management by the Alameda County Department of Environmental Health (ACDEH) Local Oversight Program under Site Identification (STID) No. 2485. The purpose of this assessment is to provide information requested by ACDEH to consider case closure of these former USTs.

2.0 BACKGROUND

The size and configuration of the current Site is shown on Figure 2. The Site, located in a heavily industrial district, covers approximately 79 acres next to the Oakland Inner Harbor Channel. Now in active operation by a Port maritime tenant for container cargo loading and handling, the Site has been used for industrial and shipping purposes for nearly 100 years. The ground surface of the property lies at an elevation of approximately 10 to 13 feet above mean sea level and was extensively built up over time with successive phases of fill placement.

The majority of the Site consists of open areas for cargo storage and transport, and also includes several buildings for support operations. With very minor exceptions, the Site is completely covered with heavy-duty asphalt and concrete pavements necessary for cargo handling operations. Existing subsurface utilities at the Site include storm drains and sanitary sewers; and electrical, water, and telecommunications service lines.

The Site will continue to be operated as a heavily-paved container cargo terminal for the foreseeable future. Redevelopment of the Site for more efficient cargo operations is currently in the planning and design stage, with construction scheduled to begin in 2006.

This assessment addressed eight former USTs, grouped in three areas (Figure 2) of the Site related to terminal support operations:

- The Tanks EF6-9 group, including Port-designated EF6 - a 10,000-gallon diesel tank; EF7 - 5,000-gallon diesel tank, EF8 - 1,000-gallon gasoline tank; and EF9 - 550-gallon waste oil tank. USTs EF6-9 were all formerly located in a single tank hold near Port-designated Building E-221, which is used for terminal vehicle maintenance and repair.
- The Tanks EF11-13 group, including EF11 – a 2,000-gallon gasoline tank; EF12 - 10,000-gallon diesel tank; and EF13 - 550-gallon waste oil tank. USTs EF11-13 were aligned along the southern side of Building E-124, used for terminal maintenance and repair operations.
- Tank EF14 – a 10,000-gallon diesel tank. EF14 and a related hose and reel pit were located in southwest portion of the Site near the wharf.

Tank EF10, a 4,000-gallon diesel UST once located near the wharf in the southeastern area of the Site, was not included in the assessment because a Remedial Action Completion Certificate has already been issued for this UST case.

The Port previously requested ACDEH for case closure of Tanks EF6-9, EF11-13, and EF14. In response, Mr. Barney Chan of ACDEH required additional information (ACDEH 2002, included in Appendix A of this report), including information on soil types, a broader suite of chemical analyses than previously performed, delineation of groundwater contamination from the USTs, and a screening of the UST-investigation findings for potential human and ecological risks.

In turn, ITSI on behalf of the Port submitted a workplan to ACDEH for performing the requested tasks (ITSI 2002, as Appendix B to this report). In May 2004, T&R implemented the ITSI

workplan while conducting a broader environmental subsurface assessment for the Port in support of the Berths 60 - 63 Yard and Gate Redevelopment Project. The results of T&R's implementation of the ITSI workplan, with minor and appropriate modifications, are presented and evaluated in this UST assessment report.

2.1 Regulatory History and Previous Actions

USTs EF6-9, EF11-13, EF14, and EF10 were installed in the 1970s and used into the 1990s until they were removed by the Port. The following is a summary of the previous regulatory and remedial activities for each group of USTs. Summary tables and figures from select reports of previous investigations, remedial actions, and monitoring programs were included as appendices to the ITSI workplan, presented as Appendix B of this report.

2.1.1 Tank Area EF6-9

The ACDEH case file for the EF6-9 USTs was originally under STID 3777, with a reference address of 1579 Middle Harbor Road, before being consolidated with the other USTs under STID 2485 in 1997 (ACDEH 1997).

During the removal of the USTs in January 1992, the EF9 waste oil tank reportedly had two visible holes with nearby stained soil (Geomatrix 1992). Approximately 2,600 gallons of water and petroleum product were pumped from the waste oil tank pit for off-site disposal prior to tank removal. Rainfall over the next few days while the pit was open resulted in the excavation filling rapidly with groundwater. Approximately 20,000 gallons of this groundwater was pumped from the pit and disposed off-site.

Analysis of a grab groundwater sample collected from the pit detected vinyl chloride (300 micrograms per liter [µg/L]), xylenes (180 µg/L), 1,2-dichloroethene (1,2-DCE) (79 µg/L), benzene (41 µg/L), and trichloroethene (TCE) (15 µg/L). Perimeter excavation samples from south and west sides of the EF9 pit contained a maximum concentration of 11,000 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as diesel (TPHd).

Further excavation to remove the impacted soil was prevented by physical obstructions, including the adjacent Building E-221on the west, a buried slab to the south, and a security zone fence to the north. The excavation pit was backfilled with compacted pea gravel and covered with asphalt pavement.

Two trenches, near the former waste oil tank where the most severe impacts were expected, were then excavated a short distance north and south from the east end of the tank removal excavation for a preliminary assessment of the lateral extent of remaining COPCs in soil. Soil samples from these two trenches contained only trace amounts of benzene, toluene, ethylbenzene, and xylenes (BTEX).

Afterwards, Geomatrix installed additional borings to further assess the lateral extent of impacted soil and groundwater (Geomatrix 1993). A total of eight borings were advanced to maximum depths of 15.5 feet below ground surface (bgs), with three of the borings converted into monitoring wells MW-l, MW-2, and MW-3. Petroleum hydrocarbons were detected in soil in the borings west of the former excavation and appeared to extend under the adjacent building. Of the three wells installed, the well north of the tank excavation, MW-l, contained the highest groundwater concentrations of TPH as gasoline (TPHg) (1,800 µg/L), TPHd (4,700 µg/L), and BTEX (9.2, 1.6, 8.9, and 2.7 µg/L, respectively). Contrary to the results from groundwater sampled in the tank removal pit, vinyl chloride, TCE, and 1,2-DCE were not detected in any of the monitoring wells at the time of their initial sampling (Geomatrix 1993).

The three wells were periodically sampled 12 times between 1993 and 1996 (Alisto Engineering Group [Alisto] 1995a, and ITSI 1996a and 1996b). Compared to the initial sampling round, BTEX and TPHd were detected in decreasing concentrations over the duration of the monitoring. Trace amounts of the several halogenated volatile organic compounds (VOCs) were occasionally detected in the wells, including vinyl chloride (maximum 4 µg/L) in MW-1.

A Site Management Plan (SMP; Uribe 1997) for the EF6-9 area was submitted in 1997 on behalf of the Port at the request of ACDEH (ACDEH 1997). One of the purposes of the SMP was to

present an evaluation of health and safety risks to longshoremen and construction workers from potential exposure to residual halogenated VOCs in soil and groundwater. The risk assessment aspects of the SMP have since been superseded by a Site-wide construction-phase risk assessment (ETIC 2005) for the Redevelopment Project and by the screening-level risk evaluation presented in this report.

The SMP also presented a summary of the 12 groundwater monitoring events performed at monitoring wells MW-1, MW-2, and MW-3 between 1993 and 1996. The groundwater elevation measurements indicated that groundwater flow direction was highly variable--in seven out of twelve events, the calculated flow was to the southwest; three times it was to the northwest; and twice it was to the southeast. Concentrations of COPCs in groundwater were also highest in MW-1, to the north of the former USTs, although located in the expected, and most frequently measured, upgradient direction.

2.1.2 Tank Area EF11-13

Tanks EF11, 12, and 13 were located near the E-124 Building (Figure 2). The ACDEH case file for these USTs was initially under STID 3777, with a reference address of 1579 Middle Harbor Road, then transferred to STID 2485 in 1997.

Tanks EF11-13 were installed in 1975, inactivated in 1987, and removed in 1990. During removal activities, the USTs were observed to be strapped to concrete pads with no evidence of holes or corrosion in the tanks (Baseline 1990). Petroleum hydrocarbons were detected in groundwater samples near EF12 and soil samples in the EF11 and EF13 excavations. Soil containing petroleum hydrocarbons were excavated to approximately 10 feet bgs at EFl1, 12 feet bgs at EFI2, and 8 feet bgs at EF13. The soil samples from EF11 contained low TPHg concentrations ranging from 1.7 to 8.3 mg/kg in the ground, and TPHd was not detected near EF12. One groundwater sample was collected at EF12, containing a TPHd concentration of 5.8 milligrams per liter (mg/L).

2.1.3 Tank Area EF14

Tank EF14 was located near the wharf in the southwest portion of the Site (Figure 2). The STID Number was initially STID 3777, with a reference address of 1579 Middle Harbor Road, and later transferred in 1997 to STID 2485.

During removal of EF14, a number of cracks were observed along the seams of the fiberglass tank (Baseline 1990). The four excavation soil samples collected at 10 feet bgs within the soil material beneath the tank revealed no detectable levels of TPHd or BTEX. Due to insufficient groundwater accumulation in the excavation pit for the required sample volume, groundwater analysis was limited to BTEX, which was not detected. The hose and reel pit associated with EF14 consisted of a concrete vault (7 feet long by 7 feet wide and 4 feet deep) that housed a pump and fuel dispensing equipment. Of the three sidewall soil samples from the concrete vault excavation, two contained very low TPHd concentrations of approximately 2 mg/kg, and the third contained moderate levels of TPHd at 200 mg/kg and trace amounts of xylenes. Benzene, ethylbenzene, and toluene were not detected in these samples.

2.1.4 Tank Area EF10

Tank EF10 was assigned STID No. 2485 with the reference address of 1395 Middle Harbor Road. The UST and related equipment were removed in July 1995 with no holes or leaks detected during the visual inspection and leak test (Alisto 1995b). Based on the results of samples collected from over-excavation of the tank pit, ACDEH issued a Remedial Action Completion Certificate (RACC) in May of 1996 requiring no further action related to the UST (ACDEH 1996). The closure status for EF10 was modified in 1997 when the case files for EF6-9, EF11-13, and EF14 were consolidated with the EF10 case file under STID 2485, technically resulting in a reopening of the EF10 case pending issuance of a RACC for the other USTs.

3.0 FIELD ACTIVITIES

From May 11 through 28, 2004, Gregg Drilling & Testing, Inc. (Gregg) of Martinez, California, (C-57 drilling contractor license # 485165), advanced 27 soil borings for the UST assessment program[1] and collected soil and groundwater samples using a Geoprobe™ direct push drill rig, under the observation of a T&R field geologist.

The locations of soil borings and monitoring wells sampled for T&R's UST assessment program are shown on Figure 3 (for clarity of presentation, the sampling locations for T&R's concurrent redevelopment-related site investigation are not indicated).

The rationale for soil boring placement at each of the four former tank areas were:

Tank Area EF6-9. For the former EF6-9 tanks, ACDEH identified gaps in soil and groundwater data collected at the time of the EF6-9 tank removals and a lack of plume definition north, east, and west of the tank excavation. To address those concerns, T&R installed and sampled a total of seven primary borings (B31 through B37), and six step-out borings (B38, B39, B50, B51, B52, and B85) around the tank removal excavation area[2]. The T&R borings installed for the EF6-9 assessment are plotted on Figures 3 and 4, along with select borings from T&R's concurrent redevelopment-related evaluation and the Geomatrix 1993 investigation. Step-out borings were installed and sampled because elevated photo-ionization detector (PID) measurements and odors were noted during drilling of boring B32, B35, and B38 at depths of 8, 6, and 6 feet bgs, respectively.

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1 A total of 65 soil borings were advanced for T&R's combined UST and Redevelopment Project-related site investigation programs.

2 Borings through the compacted gravel backfill in the former tank hold would have been problematic, as would borings immediately to south where the tank removals encountered an obstructing buried slab.

Tank Area EF11-13. ACDEH also identified gaps in the previous EF11-13 soil and groundwater data, specifically in samples from native soil (i.e., soil outside the original tank holds, which actually includes imported fill materials related to site development, as well as underlying "native" Bay Mud soil) and groundwater. To fill the data gaps, T&R borings B45 through B49 (Figures 5 and 6) were installed to a minimum depth of 15 feet bgs and within 10 to 20 feet of the EF11-13 excavation[3]. Step-out boring B49 was installed and sampled because field PID measurements and odors were noted at a depth of 6 feet bgs during drilling of boring B45.

Tank Area EF14. To address ACDEH's concerns regarding EF14, borings B62 through B66 (Figures 6 and 7) were installed to a depth of 15 feet bgs and within 10 to 20 feet of the EF14 excavation area[4]. No step-out borings were needed for this area.

Tank Area EF10. Since ACDEH did not identify data gaps in the EF10 area, no further investigation there was conducted.

T&R's field activities were conducted in accordance with standard T&R protocols and a project-specific Health and Safety Plan (HSP). The HSP and other field-related documents are included in Appendix C. Some final boring locations were adjusted slightly from planned locations based on field conditions, and additional step-out borings were installed based on conditions observed and/or preliminary analytical results at the originally planned borings.

Preparations for the field investigation included contacting Underground Service Alert (USA Ticket No. 169302) to notify subscribing utility companies of the planned borings so they would mark their nearby utility lines and contracting with two private utility locating services (California Underground Surveys of San Ramon, California, and Precision Locating LLC of Brentwood, California) to clear the boring locations of detectable obstructions. A boring permit

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3 The figures indicate the approximate locations of the former USTs and not the footprints of the larger UST excavation areas. The proximity of the borings to the former UST excavations was established in the field from visible patches in the asphalt pavement over the excavations.

4 The EF14 excavation limits, not shown on the figures, included the former reel pit.

(No. WO4-0406) was obtained from the Alameda County Public Works Agency (copies included in Appendix C).

The T&R field geologist logged conditions observed in the borings, including field classification of soils in accordance with United Soil Classification System and field screening measurements of soil samples with an organic vapor meter. Boring logs for T&R's combined UST and redevelopment investigation programs are presented in Appendix C. Relatively undisturbed soil samples were retrieved from the direct-push borings in 2-inch-diameter, 4-foot-long butyrate tubes. Six-inch-long sections selected by the T&R field geologist for laboratory analysis were cut, capped with Teflon™ sheeting and plastic caps, labeled, and placed in a chilled, secure container.

In borings where groundwater grab samples were to be collected, 0.75-inch, dedicated PVC temporary wells were inserted in the completed borings. Sufficient groundwater was then allowed to recharge into the well casing to allow sample collection which, due to slow groundwater recharge, required collecting the groundwater sample the next day at some locations. Groundwater samples were collected from the temporary wells with dedicated disposable bailers and decanted into appropriate containers supplied by the analytical laboratory. All groundwater samples for laboratory analysis were sealed, labeled, and placed in chilled, secure containers.

On May 26, 2004 Gregg redeveloped the existing groundwater monitoring well MW-2 at the EF6-9 area (in addition to two other non-UST related wells at the Site) for subsequent sampling. The well was redeveloped with a truck-mounted development rig, by a combination of surging, bailing, and pumping until a minimum of 10 casing volumes of groundwater was extracted and groundwater quality parameters were relatively stable. Well redevelopment logs are included in Appendix C.

On June 8, 2004, T&R purged and sampled MW-2. In accordance with standard T&R protocols, the well was purged by bailing at least three casing volumes and until groundwater quality

parameters stabilized. The water quality parameters measured in the field include pH, conductivity, oxidation-reduction potential (ORP), temperature, and turbidity. Groundwater samples were then collected with dedicated disposable bailers for VOC analyses and with peristaltic pumps for other analyses and poured into appropriate containers supplied by the analytical laboratory. All groundwater samples for laboratory analysis were sealed, labeled, and placed in chilled, secure containers. Well sampling logs are presented in Appendix C.

All down-hole drilling equipment was decontaminated by steam-cleaning between each boring, and all purging and sampling equipment was either decontaminated by hand washing or replaced between each sampling event.

Completion of the field investigation activities included grouting all borings in accordance with permit requirements. Drill cuttings, rinsate, and other investigation-derived wastes (IDWs) were drummed, labeled, and stored near the Berths 60-63 guard station at the Port's direction pending disposal by other Port contractors. On June 10, 2004, all boring locations were surveyed by a California licensed surveyor, Virgil Chavez Land Surveyors of Vallejo, California, (PLS 6323) to the Port of Oakland datum (a copy of the survey report is provided in Appendix C).

All samples for laboratory analysis were handled under standard chain-of-custody protocols and method preservation requirements. All soil and groundwater samples collected under the UST assessment program for laboratory analysis were transported in ice-chilled containers via courier to the Port's contract laboratory Curtis & Tompkins, Ltd., NELAP # 01107CA, a California-certified analytical laboratory in Berkeley, California.

4.0 LABORATORY ANALYSES

The analyses performed for the UST assessment are listed below and were conducted for both soil and groundwater samples. These analyses are based on the following three criteria: 1) the contaminants of concern for the USTs at the time of closure, based primarily on the type of fuel stored in them; 2) ACDEH requirements for analyses of methyl tertiary-butyl ether (MTBE) and

other oxygenates at the locations of former gasoline tanks (ACDEH 2002); and 3) the need to supplement the previous data set to conduct a current Environmental Screening Levels (ESLs) assessment.

- For samples collected from Tank Area EF6-9: VOCs by EPA Method 8260[5], semivolatile organic compounds (SVOCs) by EPA Method 8270 with gel permeation cleanup; TPHg by Method 8015M; TPHd and total petroleum hydrocarbons as motor oil (TPHmo) by Method 8015M with silica gel cleanup; and "LUFT 5" metals (cadmium, chromium, lead, nickel, and zinc) by EPA Method 6010B.[6]
- From Tank Area EF11-13: VOCs by EPA Method 8260; SVOCs by EPA Method 8270; TPHg by Method 8015M ; TPHd, TPHmo, and TPHho (hydraulic oil) by Method 8015M with silica gel cleanup; and LUFT 5 Metals by EPA Method 6010B.
- From Tank Area EF14: TPHg by Method 8015M; TPHd and TPHmo by Method 8015M with silica gel cleanup; and LUFT 5 Metals by EPA Method 6010B[7].

5.0 SUMMARY OF ASSESSMENT DATA

To avoid dated and potentially no longer representative data, this assessment relies mainly on the most recent findings from T&R's 2004 field investigation program to characterize the three UST areas. Select data from T&R's concurrent redevelopment-related field investigation and data previous investigations is used to provide context when assessing geologic conditions and the current nature and extent of COPCs related to the former USTs at the Site. However, the ESL evaluation of potential ecological and human health risks contained in this assessment (Section 6) is based exclusively on the 2004 UST-related investigation results to maximize the currency of the evaluation and its focus on UST-related conditions rather than other sources.

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5 The Method 8260 analytes include BTEX , MTBE; and the other fuel oxygenates specified in the ITSI workplan.

6 While additional metals were analyzed from certain samples collected within the UST areas for Redevelopment-related concerns, they are not included in this UST-related assessment.

7 Analysis for gasoline-related BTEX was unnecessary given the high degree of confidence, based on terminal work practices and the Port's facility control, that tank EF14 only held diesel fuel.

5.1 Shallow Geology and Hydrogeology

5.1.1 Soil

The subsurface soils at the Site are composed of terrestrial and marine fill materials under the existing asphalt or concrete pavements (and supporting aggregate base materials) to a depth of approximately 10 to 15 feet bgs. The terrestrial fill is derived from various materials imported from upland sources, consisting generally of silty to gravelly, poorly-graded sands with variable amounts of debris (brick, asphalt, wood, etc.). In some areas of the Site, particular types of debris, either from imported sources or entrained material from previous site occupations, appear to be more present than others.

The marine fill consists of dredged sediments from the adjacent Inner Harbor channel, typically composed of brown to gray, poorly-graded sands and silty sands, with little or no debris except shells and shell fragments. Even where present, the marine fill is overlain by some thickness of terrestrial fill. Underlying the fill material is Young Bay Mud, consisting of gray, thinly-bedded to massive silty clay to silty sands with locally abundant shells and organic matter.

5.1.2 Hydrogeology

The top of groundwater is encountered in borings at depths ranging from less than 4 feet to approximately 13 feet bgs. The groundwater occurs in silty to gravelly sands and is unconfined to semi-confined. The depths to groundwater are shallowest in the vicinity of the Tanks EF6-9 Area, with depths to the top of groundwater ranging from 3.4 to 4.9 feet in this area. Elsewhere, groundwater generally occurs below 7 to 8 feet bgs. The possible causes for the variation in depth to groundwater across the Site were not evaluated.

Across the Site, groundwater appears to flow from the north to the south, i.e., toward the Oakland Inner Harbor shipping channel. In contrast, groundwater in the vicinity of Tanks EF6-9 Area, in addition to being particularly shallow, appears to occasionally flow to the northwest,

associated with a drop in water level in the northern monitoring well MW-1. The nature and possible causes of this anomalous groundwater flow near EF6-9 was not further evaluated.

The shallow groundwater beneath the Site is brackish, with measured total dissolved solid (TDS) concentrations in the 2004 investigation ranging from 800 to 5,580 mg/L.

5.2 Chemicals in Soil and Groundwater

Assessment of the nature and extent of UST-related COPCs is presented below for each of the former tank areas. As explained earlier, this assessment relies mainly, but not exclusively, on the results of T&R's May 2004 field investigation. The chemical analysis results from the 2004 UST-related field investigation are summarized on Tables 1 through 8. Specifically, Tables 1 through 4 present laboratory data for TPH, VOCs, SVOCs, and LUFT metals, respectively, in soil samples. Similarly, Tables 5 through 8 present laboratory data for TPH, VOCs, SVOCs, and LUFT metals, respectively, in groundwater samples.

TPH and select other analytical results from the 2004 UST investigation are graphically summarized on Figure 3 through 8. To avoid possible confusion, the historical and redevelopment-related chemical data considered in the assessment for reasons of context do not appear in the summary data tables but are posted on the figures, where applicable.

Identification and delineation of the UST-related impacts at the Site are complicated by the presence of other, non-UST potential sources. These potential sources include elevated concentrations of COPCs within the fill materials used to develop the site and previous industrial activities. For example, the asphalt debris in the Site fill soils have been shown to be associated with elevated TPHmo concentrations in surrounding soil. Other potential non-UST sources include fuel releases to groundwater from upgradient former railyard operations.

Considering that most of the groundwater analytical data was generated from grab samples collected from borings, the TPH and related organic analytical results are probably biased high

compared to results from developed monitoring wells. Experience at similar sites has shown that the difference in extractable TPH concentrations due to suspended sediments in grab samples can be as much as an order of magnitude or more (Foote 1997). Therefore, the TPH and organic analytic results discussed below for groundwater samples collected from borings should be considered to be upper-bound estimates.

5.2.1 Tank Area EF6-9

The concern to distinguish UST-related soil and groundwater impacts from other potential sources was especially acute in the EF6-9 area because the redevelopment-related investigation detected a significant petroleum hydrocarbon release, unrelated to the former tanks, upgradient to the north. Also, asphalt debris in the fill soils, which was associated with elevated TPH in soil, had been observed in the borings nearby to the east of the EF6-9 area.

As indicated on Figure 3, the extent of UST-related soil impacts (using TPH results as an indicator) appears to extend approximately 150 feet north and northwest of the former tank excavation (including under the nearby Building E-221) but is much more limited to the south and east. Only borings B31, B32, and B38 located to the north/northwest within 40 feet the excavation, respectively, encountered apparent UST-related COPCs in soil exceeding ESLs.

Figure 4 summarizing TPH and BTEX groundwater chemical data also presents select groundwater results from other, redevelopment-related borings by T&R to help delineate the maximum extent of apparent impacts specifically due to the former tanks (also indicated on Figure 4). Using TPH as an indicator to distinguish from the TPH groundwater source farther to the north, e.g., at Boring B75, the UST-related groundwater impacts appear to extend in a similar pattern as the soil impacts, and are limited to approximately 650 feet or more from the nearest surface water body, the Oakland Inner Harbor channel. The groundwater sample at B85, approximately 220 feet south and downgradient of the former tanks (and 500 feet upgradient of the channel), did not contain detectable TPH or BTEX.

The relative distribution of the mobile compounds suggests migration to the north and west of the tanks; this northward direction is consistent with the historic monitoring well detections at MW-1, which is north of the former tanks. Some of the key data include the following:

- Petroleum hydrocarbons – Elevated concentrations of TPHg, TPHd, TPHmo, and/or total petroleum hydrocarbons as hydraulic oil (TPHho) above ESLs were found in groundwater at B32 and B38. Petroleum hydrocarbons were not detected at MW-2, and less than the concentrations detected in the most recent previous monitoring event of June 1996 (see Figure 4).
- VOCs - The detections of VOCs appear to indicate migration limited to approximately 100 feet northwest of the former tanks, as reflected in the most mobile compounds. MTBE was detected only in groundwater at a concentration of 8.1 µg/L at B35, approximately 100 feet northwest of the former tanks. Benzene was only detected in groundwater at B31, B32, and B38, and at concentrations of 15, 73, and 65 µg/L, respectively. PCE and TCE were detected in soil at B31 at 6 feet bgs at 110 µg/kg and 67 µg/kg, respectively; vinyl chloride was not detected in soil or groundwater. Xylenes, ethylbenzene, and naphthalene were found in soil and/or groundwater at B31 and B32.
- Polynuclear aromatic hydrocarbons (PAHs) and other SVOCs were found mostly east of the former tanks, and considering that the highest concentrations were located away from the former waste oil tank, are possibly related to fill material or other non-UST sources.
- LUFT Metals – Nickel was found in soil at boring B39. Lead, nickel and zinc were detected at B39 in groundwater, northeast of the former tanks.

5.2.2 Tank Area EF11-13

In the area of Tanks EF11-13, petroleum hydrocarbon impacts appear to be limited to soil and groundwater immediately adjacent to the former location of the tanks. The highest concentrations occur primarily at B45 and B49, southwest of the former tanks. As shown on the tables and in Figures 5 and 6 for TPH, the detections include the following compounds:

- Petroleum hydrocarbons – Elevated concentrations of TPHd and TPHmo above soil ESLs were found only at B45 and B49 at 6 feet bgs.
- VOCs – The detections of VOCs appear to be limited to one low MTBE concentration of 5.2 µg/L in groundwater at B46. This is immediately adjacent to one of the former tanks (Figure 5) and indicates limited migration.
- PAHs/SVOCs – The detections appear to be limited to one benzo(a)pyrene exceedance concentration of 2.1 µg/L in groundwater at B47. This is immediately adjacent to one of the former tanks (Figure 5).
- LUFT Metals – Lead and nickel concentrations of 4.8 and 50 µg/L, respectively, were detected in groundwater at B46.

5.2.3 Tank Area EF14

In the Tank EF14 area, all results were well below ESLs, indicating that impacts were not significant.

6.0 ESL EVALUATION

6.1 Risk Screening Evaluation

The risk screening evaluation identified maximum concentrations exceeding current Environmental Screening Levels (ESLs) developed by the Regional Water Quality Control Board, San Francisco Bay Region [RWQCB 2005]. The ESLs are conservative screening values below which concentrations of a chemical can be assumed to not pose a significant long-term (chronic) threat to human health and the environment.

6.1.1 Methodology

This section describes the methodology used to conduct the two-tiered (i.e., preliminary and secondary) risk screening evaluation of soil and groundwater data from each of the three former

UST areas[8,9]. Exposures to potential receptors from chemicals in soil were evaluated separately from groundwater.

6.1.1.1 Preliminary Risk Screening

The preliminary risk screening evaluation included comparing maximum concentrations of detected chemicals in soil and groundwater at each UST area with ESLs listed in the RWQCB's Tier 1 Lookup Tables. The ESLs presented in the Tier 1 Lookup Tables (Tables A through F) are organized based on the following:

- Media of concern;
- Soil sample collection depth;
- Groundwater use; and
- Land use.

For this risk screening evaluation, the media of concern are soil and groundwater; soil samples were collected from shallow depths (i.e., less than 3 meters bgs); groundwater at the Site is assumed to not be a current or potential source of drinking water due to high total dissolved solids content; and land use is limited to industrial use. Accordingly, soil and groundwater ESLs used in the preliminary risk screening were obtained from Tier 1 Lookup Table B, *Shallow Soil (<3 m bgs), Groundwater is not a Current or Potential Source of Drinking Water* for Commercial/Industrial Land Use.

---

[8] Soil data from a depth of 2 feet bgs, collected from some of the borings within the UST areas to support the Redevelopment Project assessment, were not included in the UST ESL evaluation as being too shallow to be representative of possible releases from buried tanks and related piping.

[9] In several instances, soil and groundwater samples were analyzed for overlapping suites of analytes by different analytical test methods, e.g., PAHs by both EPA Methods 8270 and 8310. In these cases, where more than one detected concentration was reported for a particular chemical, the maximum concentration between the two analytic methods was used in the risk screening.

One of the following two actions was taken for this risk screening evaluation based on the preliminary risk screening: (1) no further evaluation if the detected maximum concentration of COPCs did not exceed applicable ESLs (i.e., in Tier 1 Lookup Table B); or (2) conducting a secondary risk screening of detected maximum concentrations that exceeded the applicable Tier 1 ESLs.

6.1.1.2 Secondary Risk Screening

In the secondary risk screening evaluation, COPCs with maximum concentrations exceeding the ESLs presented in Tier 1 Lookup Table B were examined in more detail based on relevant Site-specific exposure pathways and receptors. For selecting the exposure pathways and receptors for evaluation, a conceptual site model was developed and is illustrated on Figure 9. As indicated in the conceptual site model for this secondary risk screening evaluation, the potential exposure pathways and receptors that are relevant to the Site were determined to be:

- indoor air inhalation of volatile COPCs in soil and groundwater by indoor commercial/industrial worker receptors[10] ;
- outdoor air inhalation of volatile COPCs in soil and groundwater by outdoor commercial/industrial worker and construction worker receptors;
- direct exposure to soil by construction worker receptors via incidental ingestion, dermal absorption, and inhalation of vapors and particulate matter[11].

---

[10] Although the buildings adjacent to the EF6-9 and EF11-13 areas will be demolished for the Redevelopment Project and not replaced, they were assumed to be present for performing a conservative risk screen of potential indoor air exposures.

[11] The Site is entirely paved with asphalt and concrete pavements and will remain so except for occasional construction work (e.g., the upcoming Redevelopment Project). Accordingly, the commercial/industrial worker receptor at the Site is reliably prevented from direct contact with COPCs in soil, but the construction worker receptor could be exposed during intrusive construction activities.

In addition, soil screening levels for groundwater protection were used to address potential leaching of chemicals from vadose-zone soils and subsequent impact on groundwater.

Consistent with the conceptual site model, the following tables of ESLs from Appendix 1(RWQCB 2005) were used for the secondary risk screening:

- Table E-1A, *Groundwater Screening Levels for Evaluation of Potential Indoor-Air Impacts (Volatile Chemicals Only)*
- Table E-1B, *Soil Screening Levels for Evaluation of Potential Indoor-Air Impacts (Volatile Chemicals Only)*
- Table F-1b, *Groundwater Screening Levels (groundwater IS NOT a current or potential drinking water source)*
- Table K-3, *Direct-Exposure Screening Levels, Construction/Trench Worker Exposure Scenario*
- Table G, *Soil Screening Levels For Leaching Concerns*

One of the following two actions for the risk evaluation was then taken based on the secondary risk screening: (1) no further evaluation if the maximum concentrations of the COPCs did not exceed applicable ESLs in Appendix 1; or (2) consideration of other relevant Site-specific factors if the maximum concentrations of COPCs exceeded applicable Appendix 1 ESLs.

6.1.2 Results of Risk Screening Evaluation

This section presents the results of the preliminary and secondary risk screening evaluations for each of the three former UST areas.

6.1.2.1 Preliminary Risk Screening

COPCs at the UST areas include TPH, VOCs, PAHs, SVOCs, and the LUFT metals cadmium, chromium, lead, nickel, and zinc. The maximum concentrations of COPCs in soil and

groundwater are presented in Tables 9 and 10, respectively, for each UST area. The applicable ESLs obtained from Tier 1 Lookup Table B are also included for comparison.

Soil

For soil, the maximum concentrations of the following chemicals exceeded their respective ESLs in the preliminary risk screening. As a result, these chemicals were retained for further evaluation in the secondary risk screening (see Table 9).

- Tank Area EF6-9 – gasoline, diesel, motor oil, naphthalene, xylenes, 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3 cd)pyrene, and nickel
- Tank Area EF11-13 – diesel and motor oil
- Tank Area EF14 – none

Groundwater

For groundwater, the maximum concentrations of the following chemicals exceeded their respective ESLs in the preliminary risk screening. As a result, these chemicals were retained for further evaluation in the secondary risk screening (see Table 10).

- Tank Area EF6-9 – gasoline, diesel, motor oil, benzene, naphthalene, xylenes, benzo(a)pyrene, pyrene, lead, nickel, and zinc
- Tank Area EF11-13 – benzo(a)pyrene, lead, and nickel
- Tank Area EF14 – none

6.2.1.2 Secondary Risk Screening

The maximum concentrations of COPCs in soil and groundwater retained after the preliminary risk screening are presented in Tables 11 and 12, respectively, for each UST area. Consistent with the conceptual site model, the applicable exposure pathway- and receptor-specific ESLs

obtained from Appendix 1 (Tables E-1A, E-1B, and K-3) are also included on Tables 11 and 12 for comparison.

Soil

For soil, the pathways evaluated included indoor air impacts, direct exposure to construction workers, and potential leaching to groundwater. Listed below are the COPCs at each of the UST areas with maximum detected concentrations that exceeded at least one of their respective ESLs in the secondary risk screening, along with the applicable sample locations and exposure pathways of concern.

- Tank Area EF6-9
  - gasoline (B32-4.0'; leaching concerns)
  - diesel (B31-6.0'; leaching concerns)
  - motor oil (B31-6.0'; leaching concerns)
  - naphthalene (B32-4.0'; indoor air inhalation for commercial/industrial worker; leaching concerns)
  - xylenes (B32-4.0'; leaching concerns)
  - 2-methylnaphthalene (B31-6.0'; leaching concerns)
  - benzo(a)pyrene (B33-4.0' and B39-6.0'; direct exposure to construction workers)
- Tank Area EF11-13
  - diesel (B45-6.0'; leaching concerns)
  - motor oil (B49-6.0'; leaching concerns)

Groundwater

For groundwater, Appendix 1 ESLs were used to evaluate indoor air impacts from inhalation of VOCs and for protection of aquatic habitats (i.e., the Oakland Inner Harbor channel). None of the maximum detected concentrations of VOCs in groundwater that were evaluated in the

secondary screening (i.e., benzene, naphthalene, and xylenes) exceeded their respective indoor air ESLs. However, the maximum detected concentrations of the following COPCs (and their sample locations) exceeded the groundwater ESLs for protection of aquatic habitat:

- Tank Area EF6-9 – gasoline (B32), diesel (B32), motor oil (B32), benzene (B32), naphthalene (B32), xylenes (B32), benzo(a)pyrene (B52), pyrene (B34), lead (B38), nickel (B38), and zinc (B38)
- Tank Area EF11-13 – benzo(a)pyrene (B47), lead (B46), and nickel (B46)

6.2.1.3 Evaluation of Other Site-Specific Factors

The secondary risk screening indicated that the maximum detected concentrations of certain COPCs in soil at the Tanks EF 6-9 area exceeded ESLs for potential leaching to groundwater; indoor air inhalation for the commercial/industrial worker receptor; and direct exposure to the construction worker receptor. Maximum concentrations of COPCs in soil at the Tanks EF11-13 area exceeded ESLs for potential leaching. However, certain Site-specific factors are noted that mitigate these soil ESL exceedances:

- Regarding leaching potential, the site is (and will continue to be) completely paved with low-permeability asphalt and concrete, with engineered surface water drainage. These features serve to control and limit surface water infiltration into the underlying soils and subsequent leaching of COPCs to groundwater.
- Considering potential indoor air exposures, the current building near the former Tanks EF6-9 is slated for demolition. Also, this building houses a facility for motor vehicle maintenance, with several potential sources within the building itself for VOC emissions to indoor air (e.g., from vehicle fuel tanks, cleaning products, etc.). Compared to these other sources, contributions from underlying soil would be difficult to confirm and would likely be minimal.

- Considering exposures to construction workers, the comprehensive Construction Worker Risk Assessment (ETIC 2005) prepared in support of the Site-wide Redevelopment Project concluded that risks to construction workers at the Site were less than or within the target range of acceptable levels identified by USEPA.

The secondary risk screening also found that maximum detected concentrations of COPCs in groundwater exceeded ESLs for protection of aquatic habitats. However, the following factors are noted indicating that groundwater risks are probably minimal:

- The grab sampling results used as the basis of the risk screening probably represent upper-bound estimates of dissolved concentrations due to positive interferences from entrained sediments in the samples.
- Also, the detected UST-related groundwater impacts are located relatively far from the nearest surface water body, the Oakland Inner Harbor channel (approximately 650 feet away in the case of impacts in the EF6-9 area, and 550 feet for the EF11-13 impacts). These impacts are unlikely to migrate at significant concentrations to the channel.

6.2 Potential Preferential Pathways Along Subsurface Utility Corridors

Figure 10 indicates the existing underground utilities and groundwater wells in the vicinity of each of the former tank areas. Only the EF6-9 area contains wells (MW-1, MW-2, and MW-3) or underground utilities able to act as preferential pathways for groundwater flow.

At the Tanks EF6-9 area , the nearby underground utilities include a storm drain, telephone, and electrical lines south of the former USTs. Although the telephone and electric lines are likely too shallow to intercept groundwater, Port topographic survey and monitoring well data indicate that the bottom of the storm drain line south EF6-9, with an invert elevation ranging from approximately 3.6 to 4.5 feet bgs, lies slightly below the water table. However, data from monitoring wells MW-2 and MW-3 immediately upgradient of the storm drain indicate only

relatively low COPC concentrations. Thus, while the storm drain can intercept and collect groundwater, it is unlikely to act as a significant preferential pathway for COPC migration.

7.0 CONCLUSIONS AND RECOMMENDATIONS

This UST assessment evaluated the distribution, potential exposure and risks, and pathways related to chemicals detected in soil and groundwater at the Site. Based on the data, T&R reaches the following conclusions:

1. Shallow soils at the Site consist of terrestrial fill materials imported from various sources, which may also contain elevated concentrations of COPCs not related to the USTs.
2. Identification and delineation of UST impacts at the Site needs to take into account the presence of other sources of COPCs, particularly for the EF6-9 area.
3. Shallow groundwater under the Site generally flows from north to south toward the Oakland Inner Harbor. Conversely, the groundwater flow direction in the EF6-9 area appears to vary at times to the north/northwest for reasons that were not identified. The groundwater quality is too brackish to be considered a potential drinking water supply.
4. The subsurface utilities have low potential to act as preferential conduits for significant contamination.
5. The area around former USTs EF6-9 and, to a much lesser extent, the area EF11-13, show impacts from UST-related petroleum releases. In both areas, the impacts to soil and groundwater are limited in extent. The EF14 area appears to exhibit little or no impact. EF10 has previously been issued a Remedial Action Completion Certificate.
6. Considering that most of the groundwater results evaluated were from grab groundwater samples in borings subject to relatively high amounts of suspended sediments, the detected petroleum hydrocarbon concentrations are probably overestimates of actual dissolved-phase concentrations.
7. Although UST-related chemicals in soil at select locations within the EF6-9 area exceed ESLs for direct contact by the construction worker receptor, assessment of construction-

phase risks is superseded by the Construction Worker Risk Assessment (ETIC 2005) that was prepared in support of the impending Site-wide Redevelopment Project. That risk assessment, which considered both direct and indirect exposures, concluded that risks to construction workers at the Site were less than or within the target range of acceptable levels identified by USEPA.

8. Soil ESLs for indoor air exposure were exceeded at a single boring within the EF6-9 area. However, the nearby building is a vehicle repair facility with other and more significant potential VOC emissions sources within the building. Furthermore, T&R understands that this building is slated for demolition and will not be replaced.

9. Soil ESLs for leaching to groundwater were also exceeded at several locations at EF6-9 and EF11-13. However, leaching concerns are mitigated by the extensive asphalt pavement and surface drainage controls that currently, and for the foreseeable future, overlie the Site. Furthermore, no significant groundwater impact was detected at EF11-13 despite the soil ESL exceedances.

10. Groundwater ESL exceedances were limited to protection of aquatic habitat at EF6-9 and EF11-13. However, the extent of groundwater impact is limited and significant concentrations of UST-related COPCs do not approach the nearest surface water body, the Oakland Inner Harbor Channel[12].

In accordance with the above conclusions, T&R recommends immediate case closure of all former USTs except Tanks EF6-9. For EF6-9, T&R recommends another monitoring round of all three existing monitoring wells to compare to historical results and the 2004 groundwater grab sampling results (probably biased high) from nearby borings. Based on the results, continued monitoring or closure may then be recommended

[12] The distance of EF6-9 impacts to the shoreline is approximately 650 feet, and approximately 550 feet for EF11-13.

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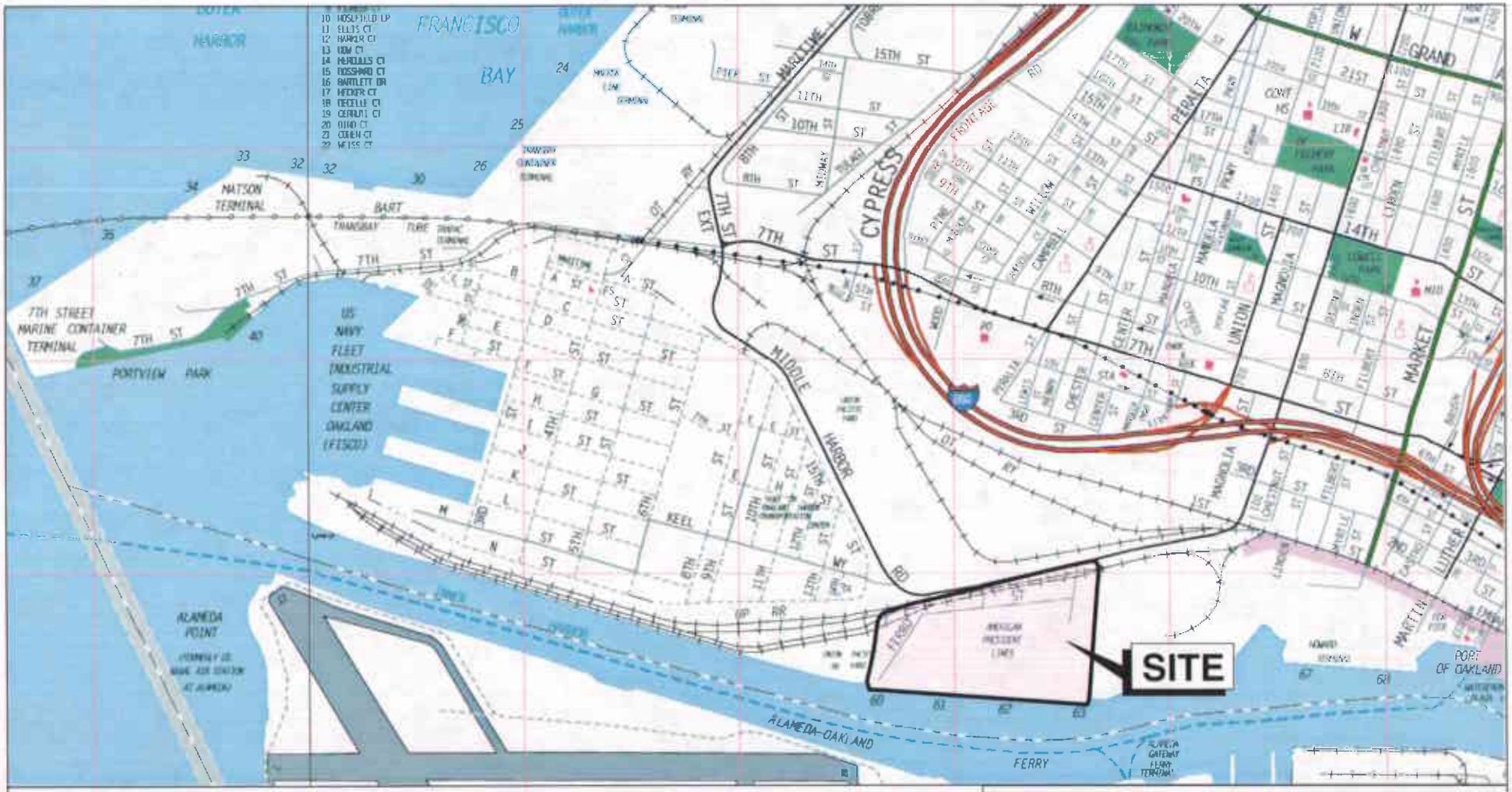


Base map: The Thomas Guide
Alameda County
1999

0 1/4 1/2 Mile

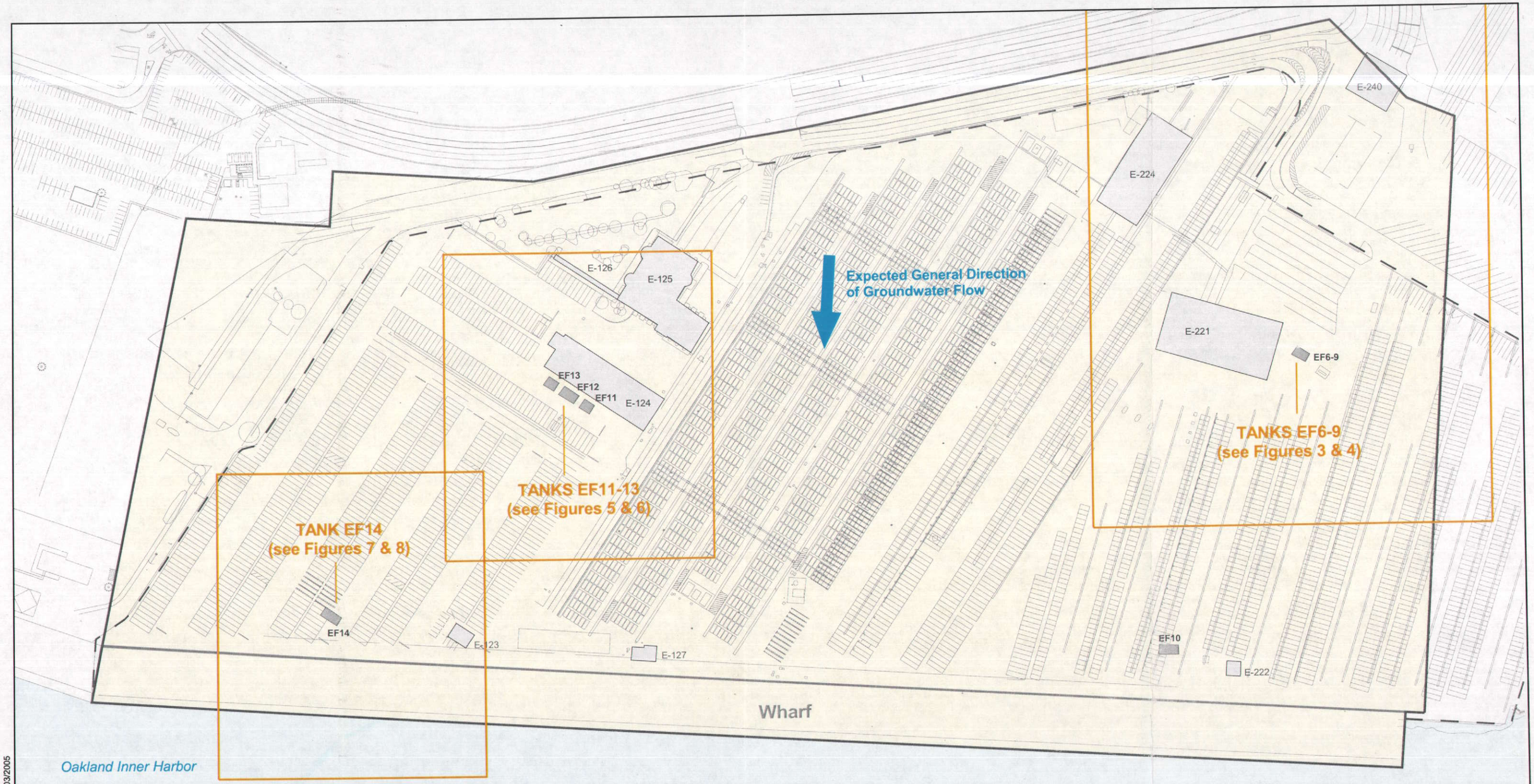
Approximate scale

ENVIRONMENTAL SUBSURFACE ASSESSMENT
Berths 60-63 Yard and Gate Redevelopment
Port of Oakland

SITE LOCATION MAP

Date 03/30/05	Project No. 4000.04	Figure 1

Treadwell&Rollo



LEGEND

- Current Property Boundary
- Redevelopment Site Outline
- EF14 — Former Underground Storage Tanks (Excavation limits not shown)
- E-124 — Existing Building

N

200 0 200 Feet

Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

SITE PLAN

Date 05/02/05	Project No. 4000.04	Figure 2

Treadwell&Rollo

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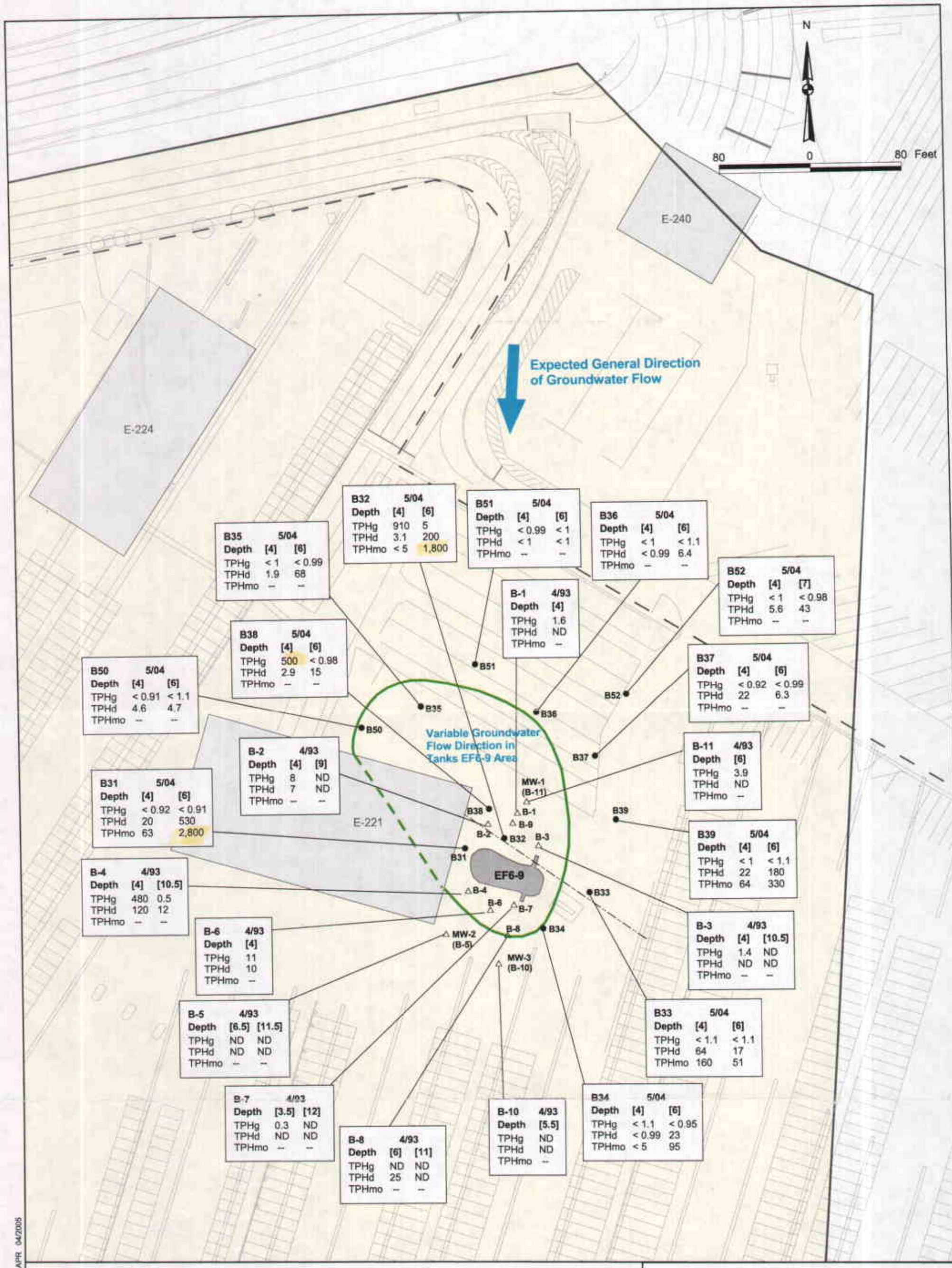


LEGEND

- ● **B31** T&R
- △ **B-6** Geomatrix, 1993
- Apparent Maximum Extent of UST-Related Soil Impacts
- Former Fence
- Current Property Boundary
- **EF6-9** Former Underground Storage Tanks Excavation Area (Geomatrix, 1993)
- E-221 Existing Building (to be demolished)
- Redevelopment Site Boundary

Notes:

Excavation sidewall sampling results (Geomatrix, 1992) not shown due to space constraints on figure.

Results reported in milligrams/kilogram (mg/kg).

TPH - Total Petroleum Hydrocarbons
g - as Gasoline
d - as Diesel
mo - as Motor Oil

[4] : Sample depth in feet

ND : Not Detected

-- : Not analyzed

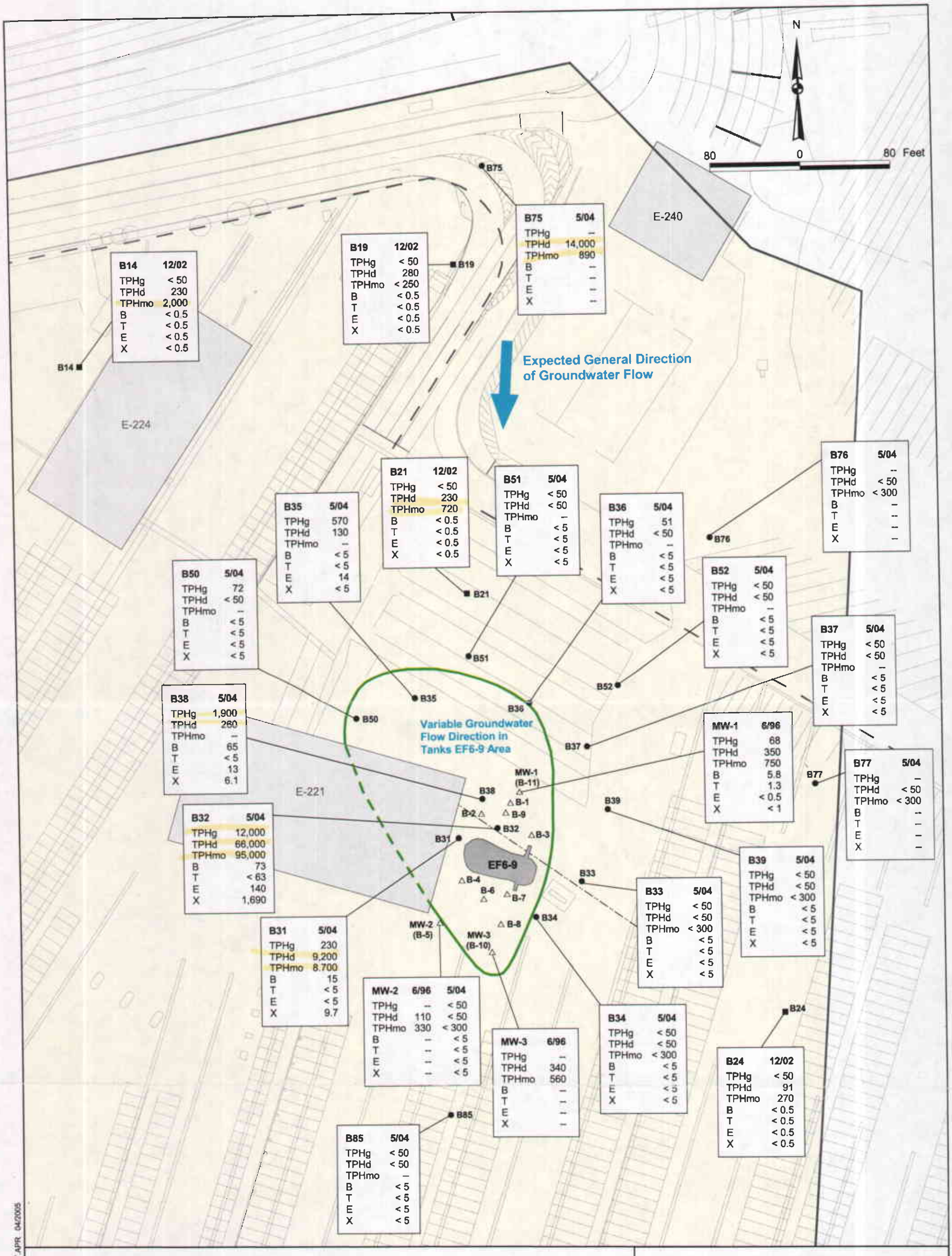
Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

TANKS EF6-9 AREA
SOIL ANALYTICAL RESULTS

Date 05/02/05	Project No. 4000.04	Figure 3

Treadwell & Rollo

Treadwell & Rollo C:\GIS\4000_04\UST_REPORT.APR 04/2005



LEGEND

- B31 T&R
- B1 GAIA, 2003
- B-6 Geomatrix, 1993

Apparent Maximum Extent of UST-Related Groundwater Impacts

Former Fence

Current Property Boundary

EF6-9 Former Underground Storage Tanks Excavation Area (Geomatrix, 1993)

E-221 Existing Building (to be demolished)

Redevelopment Site Boundary

Notes:
Results reported in micrograms/liter (µg/L).

TPH - Total Petroleum Hydrocarbons
g - as Gasoline
d - as Diesel
mo - as Motor Oil

B - Benzene
T - Toluene
E - Ethylbenzene
X - Xylenes

-- : Not analyzed

Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

TANKS EF6-9 AREA
GROUNDWATER ANALYTICAL RESULTS

Date 05/02/05 | Project No. 4000.04 | Figure 4

Treadwell&Rollo

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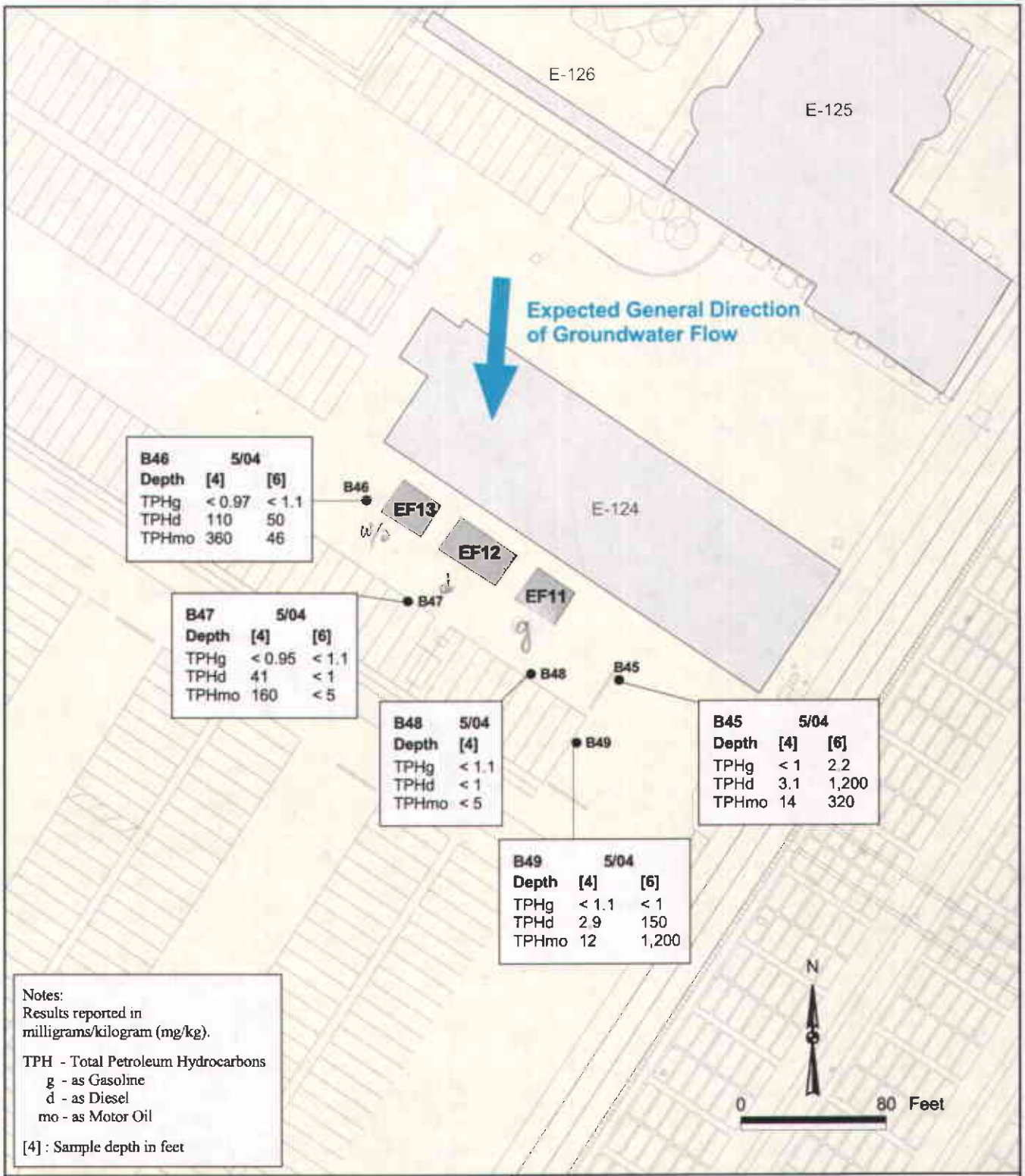

Notes:
Results reported in milligrams/kilogram (mg/kg).

TPH - Total Petroleum Hydrocarbons
g - as Gasoline
d - as Diesel
mo - as Motor Oil

[4] : Sample depth in feet

LEGEND

- ● B45 T&R
- EF13 Former Underground Storage Tanks (Excavation limits not shown)
- E-124 Existing Building

Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

TANKS EF11-13 AREA
SOIL ANALYTICAL RESULTS

Date 05/02/05	Project No. 4000.04	Figure 5

Treadwell & Rollo

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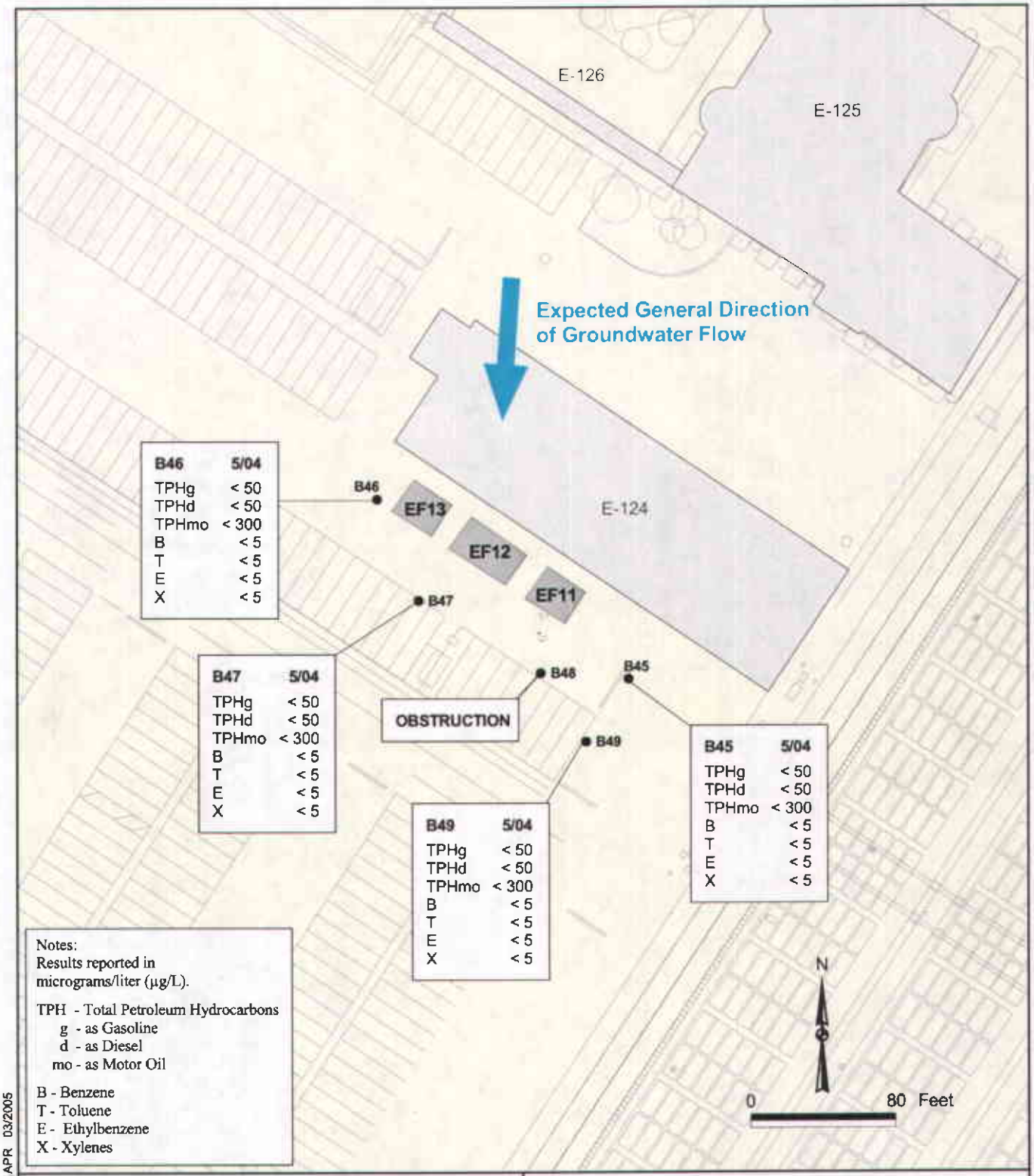

Notes:
Results reported in micrograms/liter (µg/L).

TPH - Total Petroleum Hydrocarbons
g - as Gasoline
d - as Diesel
mo - as Motor Oil

B - Benzene
T - Toluene
E - Ethylbenzene
X - Xylenes

LEGEND

- ● B45 T&R
- EF13 Former Underground Storage Tanks (Excavation limits not shown)
- E-124 Existing Building

Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

TANKS EF11-13 AREA
GROUNDWATER ANALYTICAL RESULTS

Date 05/02/05	Project No. 4000.04	Figure 6

Treadwell & Rollo

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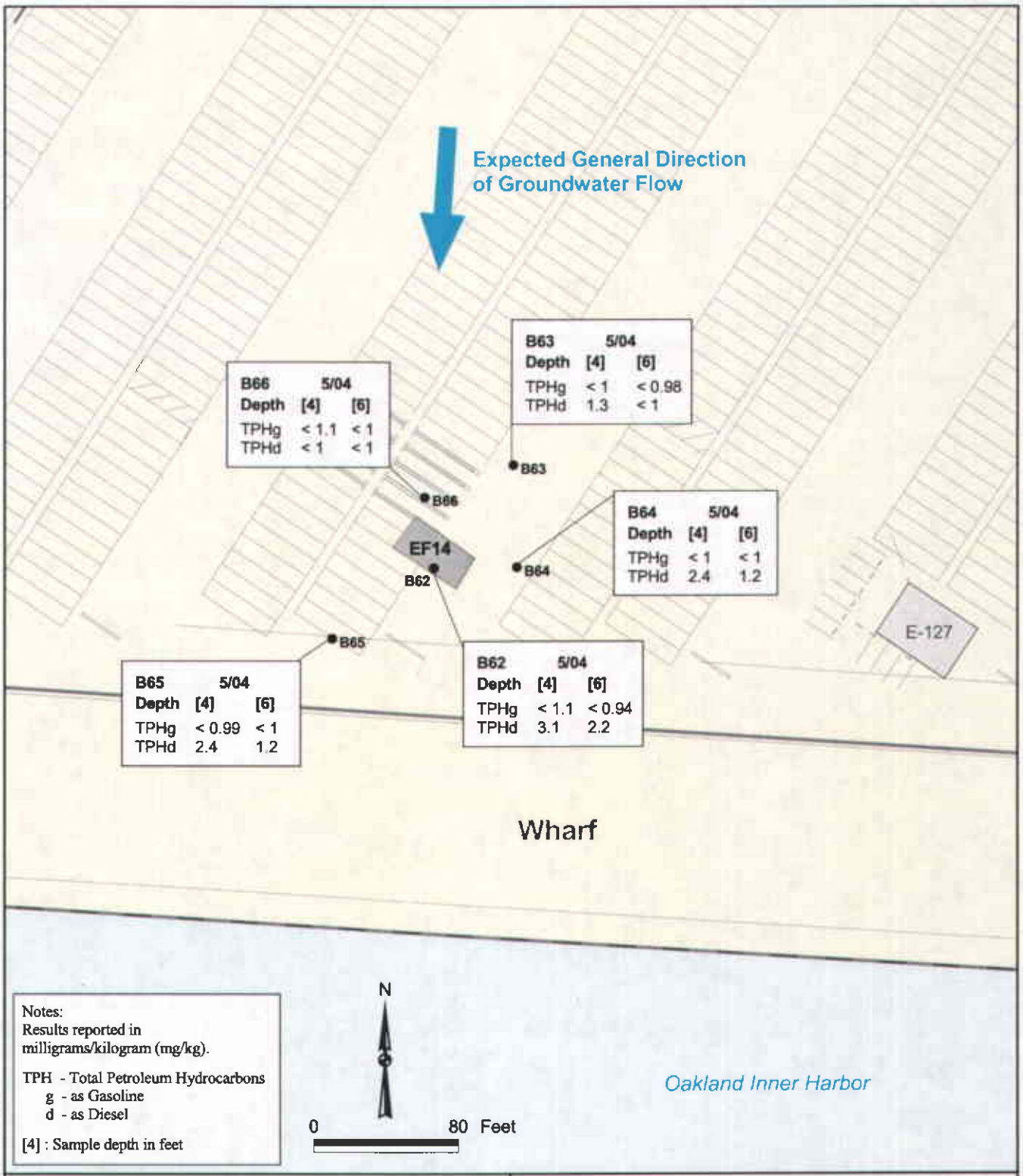

Notes:
Results reported in milligrams/kilogram (mg/kg).

TPH - Total Petroleum Hydrocarbons
g - as Gasoline
d - as Diesel

[4] : Sample depth in feet

LEGEND

- ● B65 T&R
- EF13 Former Underground Storage Tanks (Excavation limits not shown)
- E-124 Existing Building

Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

TANK EF14 AREA
SOIL ANALYTICAL RESULTS

Date 05/02/05	Project No. 4000.04	Figure 7

Treadwell&Rollo

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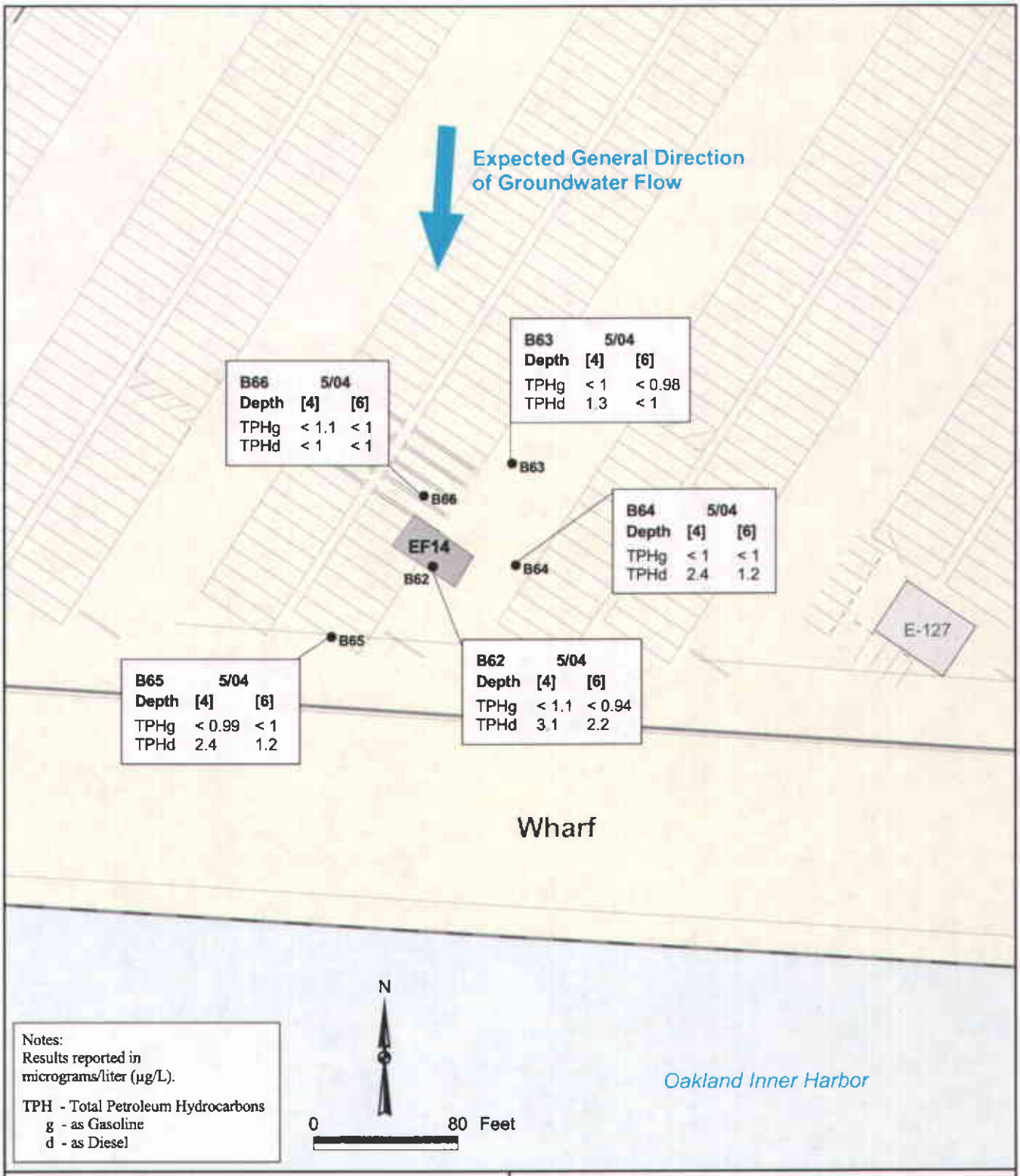

Notes:
Results reported in micrograms/liter (µg/L).

TPH - Total Petroleum Hydrocarbons
g - as Gasoline
d - as Diesel

LEGEND

- B65 T&R
- EF13 Former Underground Storage Tanks (Excavation limits not shown)
- E-124 Existing Building

Underground Storage Tank Assessment
Berths 60-63
Port of Oakland

TANK EF14 AREA
GROUNDWATER ANALYTICAL RESULTS

Date 05/02/05	Project No. 4000.04	Figure 8

Treadwell & Rollo

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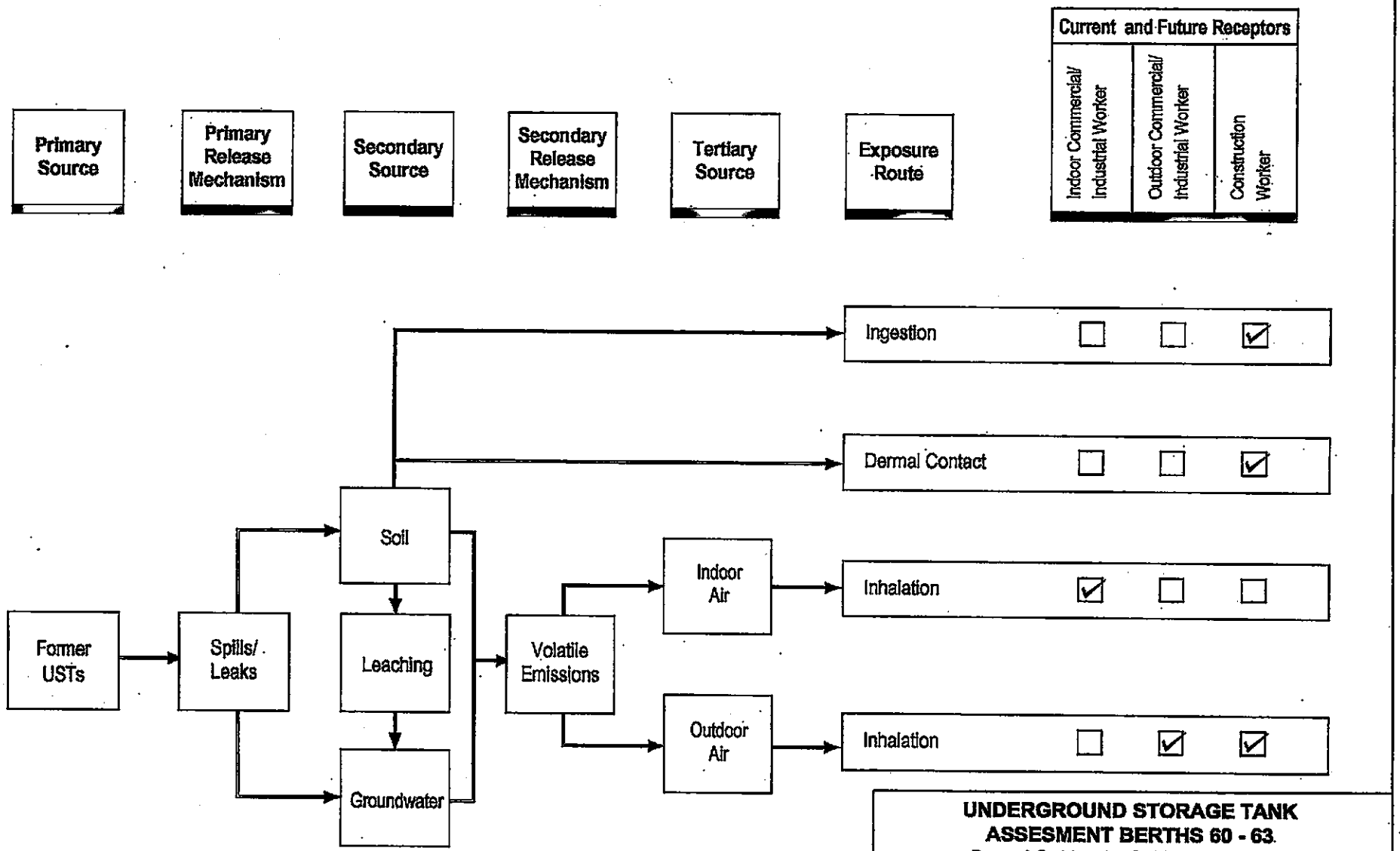

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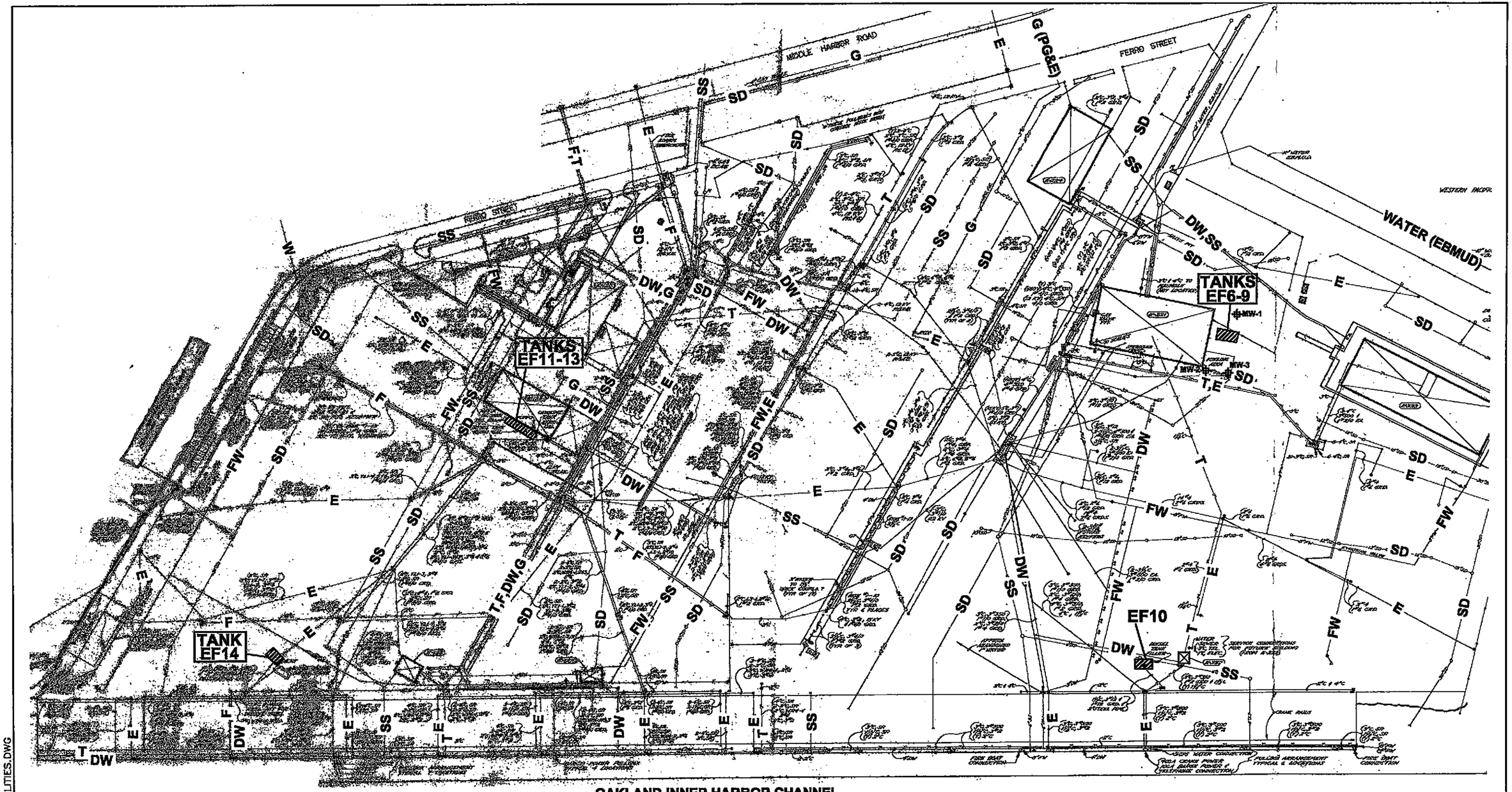
UNDERGROUND STORAGE TANK ASSESMENT BERTHS 60 - 63
Port of Oakland - Oakland California

RISK ASSESMENT CONCEPTUAL SITE MODEL

Date 3/11/05	Project No. 4000.04	Figure 9

Treadwell&Rollo



EXPLANATION

- E — ELECTRICAL
- DW — DOMESTIC WATER
- FW — FIRE WATER
- T — TELEPHONE AND ELECTRICAL
- T — TELEPHONE
- F — FIRE ALARM
- G — NATURAL GAS
- SD — STORM DRAIN WITH OUTFALL
- SS — SANITARY SEWER
- SECURITY LIGHTING POLE
- FLOODLIGHTING POLE
- POWER POLE
- ELECTRICAL PULLBOXES
- TELEPHONE PULLBOX
- TELEPHONE PULLBOX
- FIRE ALARM PULLBOX
- FIRE ALARM STATION
- VALVE PIT
- VALVE
- M METER
- FIRE HYDRANT
- FLUSH FIRE HYDRANT
- MANHOLE
- CATCH BASIN
- CLEAN OUT
- REEFER
- QUICK COUPLER
- TRANSFORMER
- TRANSFORMER
- GT GREASE TRAP
- CAPPED CONDUIT OR PIPE
- ROE REEFER OUTLET ENCLOSE
- SP SPARE
- GRD GROUND
- FUT. FUTURE
- 4"C 4" CONDUIT
- MW-1 MONITORING WELL

N

200 0 200 Feet

Reference: Port of Oakland, Middle Harbor Terminal Utilities, File 270-9.

400004_EXISTINGUNDERGROUNDUTILITIES.DWG

UNDERGROUND STORAGE TANK
ASSESMENT BERTHS 60 - 63
Port of Oakland - Oakland, California

EXISTING UNDERGROUND UTILITIES

Date 03/11/05	Project No. 4000.04	Figure 10

Treadwell&Rollo

Table 1
TPH Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	Gasoline (mg/kg)	Diesel* (mg/kg)	Motor Oil* (mg/kg)
ESL Criteria (Tier 1 Lookup Table B)			400	500	1,000
EF6-9					
B31-4.0'	4	5/11/2004	< 0.92	20	63
B31-6.0'	6	5/11/2004	< 0.91	**530**	**2,800**
B32-2.0'	2	5/11/2004	--	1.1	< 5
B32-4.0'	4	5/11/2004	**910**	3.1	< 5
B32-6.0'	6	5/11/2004	5	200	**1,800**
B33-4.0'	4	5/11/2004	< 1.1	64	160
B33-6.0'	6	5/11/2004	< 1.1	17	51
B34-4.0'	4	5/11/2004	< 1.1	< 0.99	< 5
B34-6.0'	6	5/11/2004	< 0.95	23	95
B35-4.0'	4	5/12/2004	< 1	1.9	--
B35-6.0'	6	5/12/2004	< 0.99	68	--
B36-4.0'	4	5/12/2004	< 1	< 0.99	--
B36-6.0'	6	5/12/2004	< 1.1	6.4	--
B37-4.0'	4	5/12/2004	< 0.92	22	--
B37-6.0'	6	5/12/2004	< 0.99	6.3	--
B38-4.0'	4	5/12/2004	500	2.9	--
B38-6.0'	6	5/12/2004	< 0.98	15	--
B39-4.0'	4	5/13/2004	< 1	22	64
B39-6.0'	6	5/13/2004	< 1.1	180	330
B50-4.0'	4	5/17/2004	< 0.91	4.6	--
B50-6.0'	6	5/17/2004	< 1.1	4.7	--
B51-4.0'	4	5/17/2004	< 0.99	< 1	--
B51-6.0'	6	5/17/2004	< 1	< 1	--
B52-4.0'	4	5/17/2004	< 1	5.6	--
B52-7.0'	7	5/17/2004	< 0.98	43	--
EF11-13					
B45-4.0'	4	5/14/2004	< 1	3.1	14
B45-6.0'	6	5/14/2004	2.2	**1,200**	320
B46-4.0'	4	5/14/2004	< 0.97	110	360
B46-6.0'	6	5/14/2004	< 1.1	50	46
B47-2.0'	2	5/14/2004	--	8	28
B47-4.0'	4	5/14/2004	< 0.95	41	160
B47-6.0'	6	5/14/2004	< 1.1	< 1	< 5
B48-4.0'	4	5/14/2004	< 1.1	< 1	< 5
B49-4.0'	4	5/14/2004	< 1.1	2.9	12
B49-6.0'	6	5/14/2004	< 1	150	**1,200**

Table 1
TPH Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	Gasoline (mg/kg)	Diesel* (mg/kg)	Motor Oil* (mg/kg)
ESL Criteria (Tier 1 Lookup Table B)			400	500	1,000
EF14					
B62-4.0'	4	5/19/2004	< 1.1	3.1	--
B62-6.0'	6	5/19/2004	< 0.94	2.2	--
B63-4.0'	4	5/19/2004	< 1	1.3	--
B63-6.0'	6	5/19/2004	< 0.98	< 1	--
B64-2.0'	2	5/19/2004	< 1.1	1	< 5
B64-4.0'	4	5/19/2004	< 1	2.4	--
B64-6.0'	6	5/19/2004	< 1	1.2	--
B65-4.0'	4	5/19/2004	< 1.1	< 0.99	--
B65-6.0'	6	5/19/2004	< 1.1	< 1	--
B66-4.0'	4	5/19/2004	< 1.1	< 1	--
B66-6.0'	6	5/19/2004	< 1	< 1	--

Notes
mg/kg - milligrams per kilogram
"–" - Not Analyzed
Although soil data associated with samples collected from depths of 2 feet bgs are presented, only data from depths of greater than 2 feet bgs were evaluated to assess potential releases from USTs.

< 1 Analyte not detected; reporting limit below the ESL Criteria.
6.9 Analyte detected; result value below the ESL Criteria.
1,900 Analyte detected; result value above the ESL Criteria.

*TPH-diesel and TPH-motor oil results with silica gel cleanup.

Table 2
VOC Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethylene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Chloroethyl Vinyl Ether	2-Chlorotoluene	2-Phenylbutane	4-Chlorotoluene	Acetone	Benzene	Bromobenzene	Bromo-dichloromethane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	CFC-11	CFC-12
			(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
ESL Criteria (Tier 1 Lookup Table B)			6,900	7,800	25	89	880	4,300	--	--	--	1,000	--	1.1	21	1,600	69	150	--	7,400	--	130	--	--	--	--	--	500	380	--	39	69,000	510	--	34	--	--
EF6-9																																						
B31-4.0'	4	5/11/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B31-6.0'	6	5/11/2004	< 5	8.7	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10
B32-4.0'	4	5/11/2004	< 500	< 500	**< 500**	**< 500**	< 500	< 500	< 500	< 500	< 500	< 500	44,000	**< 500**	**< 500**	< 500	**< 500**	**< 500**	13,000	< 500	< 500	**< 500**	< 500	--	< 500	1200	< 500	**< 2,000**	**< 500**	< 500	**< 500**	< 500	**< 1,000**	< 500	**< 500**	< 500	< 1,000
B32-6.0'	6	5/11/2004	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	610	**< 25**	**< 25**	< 25	< 25	< 25	150	< 25	< 25	< 25	< 25	--	< 25	< 25	< 25	< 100	< 25	< 25	< 25	< 25	< 50	< 25	< 25	< 25	< 50
B33-4.0'	4	5/11/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	39	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B33-6.0'	6	5/11/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	44	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B34-4.0'	4	5/11/2004	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	**< 4.9**	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	--	< 4.9	< 4.9	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 9.8
B34-6.0'	6	5/11/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B35-4.0'	4	5/12/2004	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	**< 4.9**	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	--	< 4.9	< 4.9	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 9.8
B35-6.0'	6	5/12/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B36-4.0'	4	5/12/2004	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	**< 4.6**	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	--	< 4.6	< 4.6	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 9.3
B36-6.0'	6	5/12/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B37-4.0'	4	5/12/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10
B37-6.0'	6	5/12/2004	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	**< 4.9**	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	--	< 4.9	< 4.9	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 9.8
B38-4.0'	4	5/12/2004	< 23	< 23	< 23	< 23	< 23	< 23	< 23	< 23	< 23	< 23	< 23	**< 23**	**< 23**	< 23	< 23	< 23	< 23	< 23	< 23	< 23	< 23	--	< 23	**550**	< 23	< 91	< 23	< 23	< 23	< 23	< 45	< 23	< 23	< 23	< 45
B38-6.0'	6	5/12/2004	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	**< 4.6**	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	--	< 4.6	< 4.6	< 4.6	**21**	**5.2**	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 9.3
B39-4.0'	4	5/13/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B39-6.0'	6	5/13/2004	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	**< 4.9**	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	--	< 4.9	< 4.9	< 4.9	**23**	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 9.8
B50-4.0'	4	5/17/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B50-6.0'	6	5/17/2004	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	**< 4.5**	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	--	< 4.5	< 4.5	< 4.5	< 18	< 4.5	< 4.5	< 4.5	< 4.5	< 9.1	< 4.5	< 4.5	< 4.5	< 9.1
B51-4.0'	4	5/17/2004	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	**< 4.6**	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	--	< 4.6	< 4.6	< 4.6	21	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 9.3
B51-6.0'	6	5/17/2004	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	**< 4.6**	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	--	< 4.6	< 4.6	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 9.3
B52-4.0'	4	5/17/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B52-7.0'	7	5/17/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
EF11-13																																						
B45-4.0'	4	5/14/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B45-6.0'	6	5/14/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	**28**	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B46-4.0'	4	5/14/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B46-6.0'	6	5/14/2004	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	**< 4.9**	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	--	< 4.9	< 4.9	< 4.9	**25**	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 9.8
B47-4.0'	4	5/14/2004	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	**< 4.7**	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	--	< 4.7	< 4.7	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 9.4
B47-6.0'	6	5/14/2004	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	**< 4.9**	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	--	< 4.9	< 4.9	< 4.9	**22**	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 9.8
B48-4.0'	4	5/14/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B49-4.0'	4	5/14/2004	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	**< 4.8**	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	--	< 4.8	< 4.8	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 9.6
B49-6.0'	6	5/14/2004	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	**< 4.6**	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	--	< 4.6	< 4.6	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 9.3
EF14*																																						

Table 2
VOC Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	Chlorobenzene	Chlorobromomethane	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Cymene	Dibromomethane	Diisopropyl Ether	ETBE	Ethylbenzene	Freon 113	Hexachlorobutadiene	Isopropylbenzene	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl n-Butyl Ketone	Methyl Tert-Amyl Ether (TAME)	Methylene Chloride	MTBE	Naphthalene	n-Butylbenzene	PCE	Propylbenzene	Styrene	Tert-Butyl Alcohol	Tert-Butylbenzene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	TCE	Vinyl Acetate	Vinyl Chloride	Xylenes (total)
			(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
ESL Criteria (Tier 1 Lookup Table B)			**1,500**				**850**	**1900**	**200**	**1,600**	**93**				**32,000**		**22,000**		**13,000**	**5,900**			**1,500**	**5,600**	**1,500**		**240**		**15,000**	**130,000**		**9,300**	**7,300**				**730**		**19**	**11,000**
EF6-9																																							
B31-4.0'	4	5/11/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B31-6.0'	6	5/11/2004	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 5	67	< 5	< 5	< 5	110	< 5	< 5	< 100	< 5	< 5	< 5	< 5	13	< 50	< 10	< 5
B32-4.0'	4	5/11/2004	< 500	< 500	< 500	**< 1,000**	**< 500**	**< 1,000**	< 500	< 500	980	< 500	< 500	< 500	10,000	< 500	< 500	1,800	< 1,000	< 1,000	< 1,000	< 500	**< 2,000**	< 500	**8,900**	**4,900**	**< 500**	**6,700**	< 500	< 10,000	< 500	< 500	< 500	< 500	< 500	< 5,000	**< 1,000**	**27,800**
B32-6.0'	6	5/11/2004	< 25	< 25	< 25	< 50	< 25	< 50	< 25	< 25	< 25	< 25	< 25	< 25	70	< 25	< 25	< 25	< 50	< 50	< 50	< 25	< 100	< 25	260	79	< 25	63	< 25	< 500	< 25	< 25	< 25	< 25	< 25	< 250	**< 50**	186
B33-4.0'	4	5/11/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	35	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B33-6.0'	6	5/11/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	34	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B34-4.0'	4	5/11/2004	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 9.8	< 9.8	< 4.9	59	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 98	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 49	< 9.8	< 4.9
B34-6.0'	6	5/11/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	20	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B35-4.0'	4	5/12/2004	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 9.8	< 9.8	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 98	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 49	< 9.8	< 4.9
B35-6.0'	6	5/12/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B36-4.0'	4	5/12/2004	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 9.3	< 9.3	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 93	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 46	< 9.3	< 4.6
B36-6.0'	6	5/12/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B37-4.0'	4	5/12/2004	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 10	< 10	< 10	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 5	< 100	< 5	< 5	< 5	< 5	< 5	< 50	< 10	< 5
B37-6.0'	6	5/12/2004	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 9.8	< 9.8	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 98	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 49	< 9.8	< 4.9
B38-4.0'	4	5/12/2004	44	< 23	< 23	< 45	< 23	< 45	< 23	< 23	38	< 23	< 23	< 23	< 23	< 23	< 23	350	< 45	< 45	< 45	< 23	< 91	< 23	< 23	1,300	< 23	930	< 23	< 450	240	< 23	< 23	< 23	< 23	< 230	**< 45**	< 23
B38-6.0'	6	5/12/2004	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	11	< 4.6	< 4.6	< 4.6	< 9.3	< 9.3	< 9.3	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	13	< 4.6	< 93	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 46	< 9.3	< 4.6
B39-4.0'	4	5/13/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B39-6.0'	6	5/13/2004	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 9.8	< 9.8	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 98	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 49	< 9.8	< 4.9
B50-4.0'	4	5/17/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B50-6.0'	6	5/17/2004	< 4.5	< 4.5	< 4.5	< 9.1	< 4.5	< 9.1	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 9.1	< 9.1	< 9.1	< 4.5	< 18	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 91	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 45	< 9.1	< 4.5
B51-4.0'	4	5/17/2004	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 9.3	< 9.3	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 93	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 46	< 9.3	< 4.6
B51-6.0'	6	5/17/2004	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 9.3	< 9.3	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 93	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 46	< 9.3	< 4.6
B52-4.0'	4	5/17/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B52-7.0'	7	5/17/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
EF11-13																																						
B45-4.0'	4	5/14/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B45-6.0'	6	5/14/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	53	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B46-4.0'	4	5/14/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	36	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B46-6.0'	6	5/14/2004	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 9.8	< 9.8	< 4.9	33	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 98	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 49	< 9.8	< 4.9
B47-4.0'	4	5/14/2004	< 4.7	< 4.7	< 4.7	< 9.4	< 4.7	< 9.4	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 9.4	< 9.4	< 9.4	< 4.7	< 19	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 94	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 47	< 9.4	< 4.7
B47-6.0'	6	5/14/2004	< 4.9	< 4.9	< 4.9	< 9.8	< 4.9	< 9.8	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 9.8	< 9.8	< 9.8	< 4.9	< 20	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 98	< 4.9	< 4.9	< 4.9	< 4.9	< 4.9	< 49	< 9.8	< 4.9
B48-4.0'	4	5/14/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B49-4.0'	4	5/14/2004	< 4.8	< 4.8	< 4.8	< 9.6	< 4.8	< 9.6	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 9.6	< 9.6	< 9.6	< 4.8	< 19	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 96	< 4.8	< 4.8	< 4.8	< 4.8	< 4.8	< 48	< 9.6	< 4.8
B49-6.0'	6	5/14/2004	< 4.6	< 4.6	< 4.6	< 9.3	< 4.6	< 9.3	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 9.3	< 9.3	< 9.3	< 4.6	< 19	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 93	< 4.6	< 4.6	< 4.6	< 4.6	< 4.6	< 46	< 9.3	< 4.6
EF14*																																						

Notes
µg/kg - micrograms per kilogram
"–" - Not Analyzed
* - No Analyses
< 4.6 Analyte not detected; reporting limit below the ESL Criteria.
< 4.5 Analyte not detected; reporting limit above the ESL Criteria.
20 Analyte detected; result value below the ESL Criteria.
8,900 Analyte detected; result value above the ESL Criteria.

Table 3
SVOC Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	1,2,4-Trichlorobenzene (µg/kg)	1,2-Dichlorobenzene (µg/kg)	1,3-Dichlorobenzene (µg/kg)	1,4-Dichlorobenzene (µg/kg)	2,4,5-Trichlorophenol (µg/kg)	2,4,6-Trichlorophenol (µg/kg)	2,4-Dichlorophenol (µg/kg)	2,4-Dimethylphenol (µg/kg)	2,4-Dinitrophenol (µg/kg)	2,4-Dinitrotoluene (µg/kg)	2,6-Dinitrotoluene (µg/kg)	2-Chloronaphthalene (µg/kg)	2-Chlorophenol (µg/kg)	2-Methylnaphthalene (µg/kg)	2-Methylphenol (µg/kg)	2-Nitroaniline (µg/kg)	2-Nitrophenol (µg/kg)	3,3'-Dichlorobenzidine (µg/kg)	3,5,5-Trimethyl-2-Cyclohexene-1-One (µg/kg)	3-Nitroaniline (µg/kg)	4,6-Dinitro-2-Methylphenol (µg/kg)	4-Bromophenyl Phenyl Ether (µg/kg)	4-Chloro-3-Methylphenol (µg/kg)	4-Chlorophenyl Phenyl Ether (µg/kg)
ESL Criteria (Tier 1 Lookup Table B)			1,000	1,600	7,400	130	180	10,000	3,000	740	210	860			120	250				1,400							
EF6-9																											
B31-4.0'	4	5/11/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	84	< 1,700	**< 330**	< 66	< 330	**< 330**	< 330	< 660	120	< 66	< 330	**< 330**	**< 330**	< 330
B31-6.0'	6	5/11/2004	< 3,300	**< 3,300**	< 3,300	**< 3,300**	**< 3,300**	< 3,300	**< 3,300**	**< 3,300**	**< 17,000**	**< 3,300**	< 3,300	< 3,300	**< 3,300**	**1,000**	< 3,300	< 6,700	< 6,700	**< 6,700**	< 3,300	< 6,700	< 17,000	< 3,300	< 3,300	< 3,300
B32-2.0'	2	5/11/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 66	< 1,700	**< 330**	< 66	< 330	**< 330**	< 330	< 660	< 66	< 66	< 330	**< 330**	**< 330**	< 330
B32-4.0'	4	5/11/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 67	< 1,700	**< 340**	110	< 340	**< 340**	< 340	< 670	< 67	< 67	< 340	**< 340**	**< 340**	< 340
B32-6.0'	6	5/11/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,600**	< 330	< 330	< 330	**< 330**	150	< 330	< 660	< 660	< 660	< 330	< 660	< 1,600	< 330	< 330	< 330
B33-4.0'	4	5/11/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	580	< 1,700	**< 340**	< 67	< 340	**< 340**	< 340	< 670	980	< 67	< 340	**< 340**	**< 340**	< 340
B33-6.0'	6	5/11/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 67	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B34-4.0'	4	5/11/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,600**	< 330	< 66	< 1,600	**< 330**	< 66	< 330	**< 330**	< 330	< 660	< 66	< 66	< 330	**< 330**	**< 330**	< 330
B34-6.0'	6	5/11/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	95	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B35-4.0'	4	5/12/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 67	< 1,700	**< 340**	< 67	< 340	**< 340**	< 340	< 670	68	< 67	< 340	**< 340**	**< 340**	< 340
B35-6.0'	6	5/12/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 68	< 340	< 680	< 680	< 680	< 340	< 680	< 1,700	< 340	< 340	< 340
B36-4.0'	4	5/12/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 67	< 1,700	**< 340**	< 67	< 340	**< 340**	< 340	< 670	< 67	< 67	< 340	**< 340**	**< 340**	< 340
B36-6.0'	6	5/12/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B37-4.0'	4	5/12/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 66	< 1,700	**< 330**	< 66	< 330	**< 330**	< 330	< 660	< 66	< 66	< 330	**< 330**	**< 330**	< 330
B37-6.0'	6	5/12/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B38-4.0'	4	5/12/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 67	< 1,700	**< 330**	< 67	< 330	**< 330**	< 330	< 670	< 67	< 67	< 330	**< 330**	**< 330**	< 330
B38-6.0'	6	5/12/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	220	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B39-4.0'	4	5/13/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	350	< 1,700	**< 330**	< 66	< 330	**< 330**	< 330	< 660	440	< 66	< 330	**< 330**	**< 330**	< 330
B39-6.0'	6	5/13/2004	< 830	< 830	< 830	**< 830**	**< 830**	< 830	< 830	**< 830**	**< 4,100**	< 830	< 830	< 830	**< 830**	< 170	< 830	< 1,700	< 1,700	**< 1,700**	< 830	< 1,700	< 4,100	< 830	< 830	< 830
B50-4.0'	4	5/17/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	97	< 330	< 660	< 660	< 660	< 330	< 660	< 1,700	< 330	< 330	< 330
B50-6.0'	6	5/17/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B51-4.0'	4	5/17/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 67	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B51-6.0'	6	5/17/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 66	< 330	< 660	< 660	< 660	< 330	< 660	< 1,700	< 330	< 330	< 330
B52-4.0'	4	5/17/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B52-7.0'	7	5/17/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 67	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
EF11-13																										
B45-4.0'	4	5/14/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B45-6.0'	6	5/14/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 67	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B46-4.0'	4	5/14/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 67	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B46-6.0'	6	5/14/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,600**	< 330	< 330	< 330	**< 330**	< 66	< 330	< 660	< 660	< 660	< 330	< 660	< 1,600	< 330	< 330	< 330
B47-2.0'	2	5/14/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,600**	< 330	< 330	< 330	**< 330**	< 66	< 330	< 660	< 660	< 660	< 330	< 660	< 1,600	< 330	< 330	< 330
B47-4.0'	4	5/14/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B47-6.0'	6	5/14/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B48-4.0'	4	5/14/2004	< 330	< 330	< 330	**< 330**	**< 330**	< 330	< 330	< 330	**< 1,700**	< 330	< 330	< 330	**< 330**	< 67	< 330	< 670	< 670	< 670	< 330	< 670	< 1,700	< 330	< 330	< 330
B49-4.0'	4	5/14/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
B49-6.0'	6	5/14/2004	< 340	< 340	< 340	**< 340**	**< 340**	< 340	< 340	< 340	**< 1,700**	< 340	< 340	< 340	**< 340**	< 67	< 340	< 670	< 670	< 670	< 340	< 670	< 1,700	< 340	< 340	< 340
EF14*																										

Table 3
SVOC Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	4-Methylphenol	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Azobenzene	Benzo(a) Anthracene	Benzo(a) Pyrene	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Benzoic Acid	Benzyl Alcohol	Benzyl Butyl Phthalate	Bis(2-Chloro-ethoxy)Methane	Bis(2-Chloro-ethyl)Ether	Bis(2-Chloro-isopropyl)Ether	Bis(2-Ethyl-hexyl)Phthalate	Chrysene	Dibenz(a,h) Anthracene	Dibenzofuran	Diethyl Phthalate	Dimethyl Phthalate
			(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
ESL Criteria (Tier 1 Lookup Table B)			-	-	19,000	13,000	2,800		1,300	130	1,300	27,000	1,300					12	660	530,000	15,000	380	-	25	25
EF6-9																									
B31-4.0'	4	5/11/2004	< 330	120	< 66	< 66	< 66	< 1,700	< 66	110	110	91	84	< 330	< 330	**< 330**	< 660	**< 330**	< 330	< 330	120	< 66	< 330	**< 330**	**< 330**
B31-6.0'	6	5/11/2004	< 3,300	< 6,700	740	< 670	860	< 3,300	< 670	**< 670**	< 670	< 670	690	< 17,000	< 3,300	< 3,300	< 3,300	**< 3,300**	**< 3,300**	< 3,300	1,300	**< 670**	< 3,300	**< 3,300**	**< 3,300**
B32-2.0'	2	5/11/2004	< 330	< 66	< 66	< 66	< 66	< 1,700	< 66	< 66	< 66	< 66	< 66	< 330	< 330	**< 330**	< 660	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B32-4.0'	4	5/11/2004	< 340	< 67	< 67	< 67	< 67	< 1,700	< 67	< 67	< 67	< 67	< 67	< 340	< 340	**< 340**	< 670	**< 340**	< 340	< 340	< 67	< 67	< 340	**< 340**	**< 340**
B32-6.0'	6	5/11/2004	< 330	< 660	< 66	< 66	< 66	< 330	< 66	< 66	< 66	< 66	< 66	< 1,600	< 330	< 330	< 330	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B33-4.0'	4	5/11/2004	< 340	1,800	180	< 67	210	< 1,700	540	**1,000**	1,200	680	580	< 340	< 340	**< 340**	< 670	**< 340**	< 340	< 340	980	< 67	< 340	**< 340**	**< 340**
B33-6.0'	6	5/11/2004	< 330	< 670	< 67	< 67	< 67	< 330	< 67	24	< 67	< 67	< 67	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	110	< 67	< 330	**< 330**	**< 330**
B34-4.0'	4	5/11/2004	< 330	< 66	< 66	< 66	< 66	< 1,600	< 66	< 66	< 66	< 66	< 66	< 330	< 330	**< 330**	< 660	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B34-6.0'	6	5/11/2004	< 330	< 670	79	120	100	< 330	130	100	170	< 67	100	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	170	< 67	< 330	**< 330**	**< 330**
B35-4.0'	4	5/12/2004	< 340	76	< 67	< 67	< 67	< 1,700	< 67	46	140	< 67	< 67	< 340	< 340	**< 340**	< 670	**< 340**	< 340	< 340	68	< 67	< 340	**< 340**	**< 340**
B35-6.0'	6	5/12/2004	< 340	< 680	< 68	< 68	< 68	< 340	< 68	< 68	98	< 68	< 68	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	< 68	< 68	< 340	**< 340**	**< 340**
B36-4.0'	4	5/12/2004	< 340	< 67	< 67	< 67	< 67	< 1,700	< 67	< 67	< 67	< 67	< 67	< 340	< 340	**< 340**	< 670	**< 340**	< 340	< 340	< 67	< 67	< 340	**< 340**	**< 340**
B36-6.0'	6	5/12/2004	< 340	< 670	< 67	< 67	< 67	< 340	< 67	< 67	99	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	< 67	< 67	< 340	**< 340**	**< 340**
B37-4.0'	4	5/12/2004	< 330	68	< 66	< 66	< 66	< 1,700	< 66	51	120	< 66	< 66	< 330	< 330	**< 330**	< 660	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B37-6.0'	6	5/12/2004	< 340	< 670	< 67	< 67	74	< 340	84	190	270	140	77	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	140	< 67	< 340	**< 340**	**< 340**
B38-4.0'	4	5/12/2004	< 330	< 67	< 67	< 67	< 67	< 1,700	< 67	< 67	< 67	< 67	< 67	< 330	< 330	**< 330**	< 670	**< 330**	< 330	< 330	< 67	< 67	< 330	**< 330**	**< 330**
B38-6.0'	6	5/12/2004	< 330	< 670	< 67	< 67	< 67	< 330	< 67	< 67	< 67	< 67	< 67	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	< 67	< 67	< 330	**< 330**	**< 330**
B39-4.0'	4	5/13/2004	< 330	740	96	< 66	100	< 1,700	250	500	540	590	350	< 330	< 330	**< 330**	< 660	**< 330**	< 330	< 330	440	< 66	< 330	**< 330**	**< 330**
B39-6.0'	6	5/13/2004	< 830	< 1,700	< 170	< 170	370	< 830	2,100	3,200	4,500	3,200	3,000	< 4,100	< 830	< 830	< 830	**< 830**	**< 830**	< 830	3,800	< 170	< 830	**< 830**	**< 830**
B50-4.0'	4	5/17/2004	< 330	< 660	< 66	< 66	< 66	< 330	< 66	< 66	< 66	< 66	< 66	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	100	< 66	< 330	**< 330**	**< 330**
B50-6.0'	6	5/17/2004	< 340	< 670	< 67	< 67	< 67	< 340	< 67	28	< 67	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	100	< 67	< 340	**< 340**	**< 340**
B51-4.0'	4	5/17/2004	< 330	< 670	< 67	< 67	< 67	< 330	< 67	< 67	< 67	< 67	< 67	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	< 67	< 67	< 330	**< 330**	**< 330**
B51-6.0'	6	5/17/2004	< 330	< 660	< 66	< 66	< 66	< 330	< 66	< 66	< 66	< 66	< 66	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B52-4.0'	4	5/17/2004	< 340	< 670	< 67	< 67	79	< 340	140	340	410	220	230	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	230	< 67	< 340	**< 340**	**< 340**
B52-7.0'	7	5/17/2004	< 330	< 670	< 67	< 67	84	< 330	160	450	520	290	260	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	280	< 67	< 330	**< 330**	**< 330**
EF11-13																									
B45-4.0'	4	5/14/2004	< 340	< 670	< 67	< 67	< 67	< 340	< 67	< 67	< 67	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	< 67	< 67	< 340	**< 340**	**< 340**
B45-6.0'	6	5/14/2004	< 330	< 670	< 67	< 67	< 67	< 330	< 67	< 67	< 67	< 67	< 67	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	81	< 67	< 330	**< 330**	**< 330**
B46-4.0'	4	5/14/2004	< 330	< 670	< 67	< 67	< 67	< 330	< 67	< 67	< 67	< 67	< 67	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	< 67	< 67	< 330	**< 330**	**< 330**
B46-6.0'	6	5/14/2004	< 330	< 660	< 66	< 66	< 66	< 330	< 66	13	< 66	< 66	< 66	< 1,600	< 330	< 330	< 330	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B47-2.0'	2	5/14/2004	< 330	< 660	< 66	< 66	< 66	< 330	< 66	15	100	< 66	< 66	< 1,600	< 330	< 330	< 330	**< 330**	< 330	< 330	< 66	< 66	< 330	**< 330**	**< 330**
B47-4.0'	4	5/14/2004	< 340	< 670	< 67	< 67	< 67	< 340	< 67	< 67	120	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	69	< 67	< 340	**< 340**	**< 340**
B47-6.0'	6	5/14/2004	< 340	< 670	73	< 67	< 67	< 340	< 67	< 67	< 67	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	590	98	< 67	< 340	**< 340**	**< 340**
B48-4.0'	4	5/14/2004	< 330	< 670	< 67	< 67	< 67	< 330	< 67	< 67	< 67	< 67	< 67	< 1,700	< 330	< 330	< 330	**< 330**	< 330	< 330	< 67	< 67	< 330	**< 330**	**< 330**
B49-4.0'	4	5/14/2004	< 340	< 670	< 67	< 67	< 67	< 340	< 67	< 67	< 67	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	< 67	< 67	< 340	**< 340**	**< 340**
B49-6.0'	6	5/14/2004	< 340	< 670	< 67	< 67	< 67	< 340	< 67	< 67	110	< 67	< 67	< 1,700	< 340	< 340	< 340	**< 340**	< 340	< 340	97	< 67	< 340	**< 340**	**< 340**
EF14*																									

Table 3
SVOC Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	Di-n-Butylphthalate	Di-n-Octylphthalate	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Indeno (1,2,3-cd) Pyrene	Methanamine, n-Methyl-n-Nitroso	Naphthalene	Nitrobenzene	n-Nitroso-Di-n-Propylamine	n-Nitrosodiphenylamine	p-Chloroaniline	Pentachlorophenol	Phenanthrene	Phenol	p-Nitroaniline	Pyrene
			(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)	(µg/kg)
ESL Criteria (Tier 1 Lookup Table B)			--	--	40,000	8,900	960	22,000		41,000	1,300	--	1,500	--	--	--	53	5,000	11,000	19,000	--	85,000
EF6-9																						
B31-4.0'	4	5/11/2004	< 330	< 330	120	< 66	< 330	< 330	< 1,700	< 330	86	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	67	< 330	< 660	170
B31-6.0'	6	5/11/2004	< 3,300	< 3,300	680	710	**< 3,300**	< 3,300	< 17,000	< 3,300	< 670	< 3,300	1,600	< 3,300	< 3,300	< 3,300	**< 3,300**	**< 6,700**	1,100	< 3,300	< 6,700	1,000
B32-2.0'	2	5/11/2004	< 330	< 330	< 66	< 66	< 330	< 330	< 1,700	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	< 66
B32-4.0'	4	5/11/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	160	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B32-6.0'	6	5/11/2004	< 330	< 330	78	< 66	< 330	< 330	< 1,600	< 330	< 66	< 330	88	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	< 66
B33-4.0'	4	5/11/2004	< 340	< 340	1,800	150	< 340	< 340	< 1,700	< 340	760	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	270	< 340	< 670	2,700
B33-6.0'	6	5/11/2004	< 330	< 330	< 67	< 67	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	< 67	< 330	< 670	84
B34-4.0'	4	5/11/2004	< 330	< 330	< 66	< 66	< 330	< 330	< 1,600	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	< 66
B34-6.0'	6	5/11/2004	< 330	< 330	250	73	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	180	< 330	< 670	250
B35-4.0'	4	5/12/2004	< 340	< 340	76	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B35-6.0'	6	5/12/2004	< 340	< 340	< 68	< 68	< 340	< 340	< 1,700	< 340	< 68	< 340	< 68	< 340	< 340	< 340	**< 340**	< 680	< 68	< 340	< 680	< 68
B36-4.0'	4	5/12/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B36-6.0'	6	5/12/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B37-4.0'	4	5/12/2004	< 330	< 330	68	< 66	< 330	< 330	< 1,700	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	160
B37-6.0'	6	5/12/2004	< 340	< 340	220	< 67	< 340	< 340	< 1,700	< 340	120	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	330
B38-4.0'	4	5/12/2004	< 330	< 330	< 67	< 67	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	< 67	< 330	< 670	< 67
B38-6.0'	6	5/12/2004	< 330	< 330	< 67	67	< 330	< 330	< 1,700	< 330	< 67	< 330	170	< 330	< 330	< 330	**< 330**	< 670	< 67	< 330	< 670	< 67
B39-4.0'	4	5/13/2004	< 330	< 330	740	95	< 330	< 330	< 1,700	< 330	440	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	180	< 330	< 660	1,000
B39-6.0'	6	5/13/2004	< 830	< 830	5,200	< 170	< 830	< 830	< 4,100	< 830	3,000	< 830	< 170	< 830	< 830	< 830	**< 830**	< 1,700	350	< 830	< 1,700	9,200
B50-4.0'	4	5/17/2004	< 330	< 330	< 66	< 66	< 330	< 330	< 1,700	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	69
B50-6.0'	6	5/17/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	150
B51-4.0'	4	5/17/2004	< 330	< 330	< 67	< 67	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	< 67	< 330	< 670	< 67
B51-6.0'	6	5/17/2004	< 330	< 330	< 66	< 66	< 330	< 330	< 1,700	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	< 66
B52-4.0'	4	5/17/2004	< 340	< 340	360	< 67	< 340	< 340	< 1,700	< 340	240	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	580
B52-7.0'	7	5/17/2004	< 330	< 330	440	< 67	< 330	< 330	< 1,700	< 330	330	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	81	< 330	< 670	740
EF11-13																						
B45-4.0'	4	5/14/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B45-6.0'	6	5/14/2004	< 330	< 330	< 67	< 67	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	77	< 330	< 670	< 67
B46-4.0'	4	5/14/2004	< 330	< 330	< 67	< 67	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	< 67	< 330	< 670	< 67
B46-6.0'	6	5/14/2004	< 330	< 330	< 66	< 66	< 330	< 330	< 1,600	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	73
B47-2.0'	2	5/14/2004	< 330	< 330	< 66	< 66	< 330	< 330	< 1,600	< 330	< 66	< 330	< 66	< 330	< 330	< 330	**< 330**	< 660	< 66	< 330	< 660	< 66
B47-4.0'	4	5/14/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	80
B47-6.0'	6	5/14/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B48-4.0'	4	5/14/2004	< 330	< 330	< 67	< 67	< 330	< 330	< 1,700	< 330	< 67	< 330	< 67	< 330	< 330	< 330	**< 330**	< 670	< 67	< 330	< 670	< 67
B49-4.0'	4	5/14/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
B49-6.0'	6	5/14/2004	< 340	< 340	< 67	< 67	< 340	< 340	< 1,700	< 340	< 67	< 340	< 67	< 340	< 340	< 340	**< 340**	< 670	< 67	< 340	< 670	< 67
EF14*																						

Notes
µg/kg - micrograms per kilogram
"--" - Not Analyzed
* - No Analyses
Although soil data associated with samples collected from depths of 2 feet bgs are presented, only data from depths of greater than 2 feet bgs were evaluated because the primary potential sources of detected chemicals were USTs.

< 66 Analyte not detected; reporting limit below the ESL Criteria.
< 330 Analyte not detected; reporting limit above the ESL Criteria.
410 Analyte detected; result value below the ESL Criteria.
3000 Analyte detected; result value above the ESL Criteria.

Table 4
LUFT Metals Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	Cadmium	Chromium	Lead	Nickel	Zinc
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
ESL Criteria (Tier 1 Lookup Table B)			**7.4**	**58**	**750**	**150**	**600**
EF6-9							
B31-4.0'	4	5/11/2004	0.36	27	32	43	68
B31-6.0'	6	5/11/2004	0.24	25	5.7	32	31
B32-2.0'	2	5/11/2004	< 0.25	13	7	14	29
B32-4.0'	4	5/11/2004	< 0.19	10	5.9	13	25
B32-6.0'	6	5/11/2004	0.82	25	12	28	130
B33-4.0'	4	5/11/2004	< 0.18	31	41	26	38
B33-6.0'	6	5/11/2004	< 0.26	34	17	30	52
B34-4.0'	4	5/11/2004	< 0.24	20	2.7	9.7	65
B34-6.0'	6	5/11/2004	< 0.22	14	5.8	12	61
B35-4.0'	4	5/12/2004	< 0.25	24	20	14	35
B35-6.0'	6	5/12/2004	1.3	40	22	53	410
B36-4.0'	4	5/12/2004	0.24	13	6.7	12	25
B36-6.0'	6	5/12/2004	0.31	22	6.9	17	26
B37-4.0'	4	5/12/2004	< 0.23	25	5	15	130
B37-6.0'	6	5/12/2004	0.3	47	12	25	35
B38-4.0'	4	5/12/2004	0.28	13	7.5	14	31
B38-6.0'	6	5/12/2004	< 0.27	13	7.5	13	33
B39-4.0'	4	5/13/2004	0.23	23	12	18	53
B39-6.0'	6	5/13/2004	1.5	51	150	**280**	330
B50-4.0'	4	5/17/2004	< 0.25	54	6.2	35	19
B50-6.0'	6	5/17/2004	< 0.22	25	2.7	22	15
B51-4.0'	4	5/17/2004	< 0.25	21	1.1	14	7.4
B51-6.0'	6	5/17/2004	< 0.26	20	1.2	13	8.3
B52-4.0'	4	5/17/2004	0.29	22	16	19	53
B52-7.0'	7	5/17/2004	0.49	48	59	39	100
EF11-13							
B45-4.0'	4	5/14/2004	0.38	15	9.7	18	43
B45-6.0'	6	5/14/2004	0.67	18	31	13	380
B46-4.0'	4	5/14/2004	0.35	40	16	30	59
B46-6.0'	6	5/14/2004	< 0.23	37	31	31	36
B47-2.0'	2	5/14/2004	0.26	24	9.1	26	23
B47-4.0'	4	5/14/2004	0.3	27	51	26	31
B47-6.0'	6	5/14/2004	< 0.21	21	3.9	17	16
B48-4.0'	4	5/14/2004	0.22	24	3.7	25	20
B49-4.0'	4	5/14/2004	0.31	15	10	19	44
B49-6.0'	6	5/14/2004	1.1	20	110	22	200
EF14							
B62-4.0'	4	5/19/2004	0.25	25	3.2	22	17
B62-6.0'	6	5/19/2004	< 0.23	24	4.7	22	18
B63-4.0'	4	5/19/2004	0.26	21	3.1	20	18
B63-6.0'	6	5/19/2004	< 0.21	27	0.94	22	15
B64-2.0'	2	5/19/2004	0.24	8.4	5.8	14	26
B64-4.0'	4	5/19/2004	0.27	27	3.8	25	22
B64-6.0'	6	5/19/2004	0.27	24	4.6	28	30
B65-4.0'	4	5/19/2004	< 0.19	27	3.1	23	16
B65-6.0'	6	5/19/2004	< 0.21	22	3.2	25	17

Table 4
LUFT Metals Results in Soil
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Depth (ft bgs)	Sample Date	Cadmium	Chromium	Lead	Nickel	Zinc
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
ESL Criteria (Tier 1 Lookup Table B)			7.4	58	750	150	600
B66-4.0'	4	5/19/2004	0.19	22	2.3	24	15
B66-6.0'	6	5/19/2004	< 0.23	21	3.7	20	18

Notes
mg/kg - milligrams per kilogram
"--" - Not Analyzed
Although soil data associated with samples collected from depths of 2 feet bgs are presented, only data from depths of greater than 2 feet bgs were evaluated to assess potential releases from USTs.

< 0.5	Analyte not detected; reporting limit below the ESL Criteria.
76	Analyte detected; result value below the ESL Criteria.
450	Analyte detected; result value above the ESL Criteria.

Table 5
TPH Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	Gasoline (µg/L)	Diesel* (µg/L)	Motor Oil* (µg/L)	Hydraulic Oil* (µg/L)
ESL Criteria (Tier 1 Lookup Table B)		**500**	**640**	**640**	--
EF6-9					
B31(GW)	5/11/2004	230	**9,200**	**8,700**	17,000
B32(GW)	5/11/2004	**12,000**	**66,000**	**95,000**	140,000
B33(GW)	5/11/2004	< 50	< 50	< 300	< 300
B34(GW)	5/11/2004	< 50	< 50	< 300	< 300
B35(GW)	5/12/2004	**570**	130	--	--
B36(GW)	5/12/2004	51	< 50	--	--
B37(GW)	5/12/2004	< 50	< 50	--	--
B38(GW)	5/12/2004	**1,900**	260	--	--
B39(GW)	5/13/2004	< 50	< 50	< 300	< 300
B50(GW)	5/17/2004	72	< 50	--	--
B51(GW)	5/17/2004	< 50	< 50	--	--
B52(GW)	5/17/2004	< 50	< 50	--	--
MW2(GW)	6/8/2004	<50	<50	<300	--
EF11-13					
B45(GW)	5/14/2004	< 50	< 50	< 300	< 300
B46(GW)	5/14/2004	< 50	< 50	< 300	< 300
B47(GW)	5/14/2004	< 50	< 50	< 300	< 300
B49(GW)	5/14/2004	< 50	< 50	< 300	< 300
EF14					
B62(GW)	5/19/2004	< 50	< 50	--	--
B63(GW)	5/19/2004	< 50	< 50	--	--
B64(GW)	5/19/2004	< 50	54	--	--
B65(GW)	5/19/2004	< 50	< 50	--	--
B66(GW)	5/19/2004	< 50	< 50	--	--

Notes
µg/L - micrograms per liter
"--" - Not Analyzed

< 300	Analyte not detected; reporting limit below the ESL Criteria.
< 2,500	Analyte not detected; reporting limit above the ESL Criteria.
6,500	Analyte detected; result value below the ESL Criteria.
9,200	Analyte detected; result value above the ESL Criteria.

*TPH-diesel, TPH-motor oil, and TPH-hydraulic oil results with silica gel cleanup.

Table 6
VOC Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	1,1,1,2-Tetrachloroethane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1,2,2-Tetrachloroethane (µg/L)	1,1,2-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	1,1-Dichloroethylene (µg/L)	1,1-Dichloropropene (µg/L)	1,2,3-Trichlorobenzene (µg/L)	1,2,3-Trichloropropane (µg/L)	1,2,4-Trichlorobenzene (µg/L)	1,2,4-Trimethylbenzene (µg/L)	1,2-Dibromo-3-Chloropropane (µg/L)	1,2-Dibromoethane (µg/L)	1,2-Dichlorobenzene (µg/L)	1,2-Dichloroethane (µg/L)	1,2-Dichloropropane (µg/L)	1,3,5-Trimethylbenzene (µg/L)	1,3-Dichlorobenzene (µg/L)	1,3-Dichloropropane (µg/L)	1,4-Dichlorobenzene (µg/L)	2,2-Dichloropropane (µg/L)	2-Chloroethyl Vinyl Ether (µg/L)	2-Chlorotoluene (µg/L)	2-Phenylbutane (µg/L)	4-Chlorotoluene (µg/L)	Acetone (µg/L)
ESL Criteria (Tier 1 Lookup Table B)		930	62	190	350	47	25	--	--	--	25	--	0.2	150	14	200	100	--	65	--	15	--	--	--	--	--	1,500
EF6-9																												
B31(GW)	5/11/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	9.9	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B32(GW)	5/11/2004	< 63	**< 63**	< 63	< 63	**< 63**	**< 63**	< 63	< 63	< 63	**< 63**	1,100	**< 63**	< 6.3	**< 63**	< 6.3	< 63	290	< 63	< 63	< 63	**< 63**	< 63	--	< 63	< 63	< 63	< 250
B33(GW)	5/11/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B34(GW)	5/11/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B35(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B36(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B37(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B38(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6.6	**< 5**	< 0.5	< 5	1.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	5.9	< 5	< 20
B39(GW)	5/13/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B50(GW)	5/17/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B51(GW)	5/17/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B52(GW)	5/17/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
MW2(GW)	6/8/2004	<5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	<20
EF11-13																												
B46(GW)	5/14/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B47(GW)	5/14/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
B49(GW)	5/14/2004	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**< 5**	< 0.5	< 5	< 0.5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 20
EF14*																												

Table 6
VOC Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	Benzene	Bromobenzene	Bromo-dichloro-methane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	CFC-11	CFC-12	Chlorobenzene	Chloro-bromomethane	Chloro-dibromo-methane	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Cymene	Dibromomethane	Diisopropyl Ether	ETBE	Ethylbenzene	Freon 113	Hexachloro-butadiene	Isopropyl-benzene
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
ESL Criteria (Tier 1 Lookup Table B)		46	--	170	3,200	160	--	9.3	--	--	25	--	--	12	330	41	590	53	--	--	--	--	290	--	4.7	--
EF6-9																										
B31(GW)	5/11/2004	15	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B32(GW)	5/11/2004	73	< 63	< 63	< 63	< 130	< 63	**< 63**	< 63	< 130	**< 63**	< 130	< 63	**< 130**	< 63	< 130	< 63	< 63	< 63	< 63	< 6.3	< 6.3	140	< 63	**< 63**	< 63
B33(GW)	5/11/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B34(GW)	5/11/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B35(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	14	< 5	**< 5**	17
B36(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B37(GW)	5/12/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B38(GW)	5/12/2004	65	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	13	< 5	**< 5**	40
B39(GW)	5/13/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B50(GW)	5/17/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B51(GW)	5/17/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B52(GW)	5/17/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
MW2(GW)	6/8/2004	< 5	< 5	< 5	< 5	<10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	<10	< 5	< 10	< 5	< 5	< 5	< 5	--	--	< 5	< 5	< 5	< 5
EF11-13																										
B46(GW)	5/14/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B47(GW)	5/14/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
B49(GW)	5/14/2004	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 10	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 5	< 5	**< 5**	< 5
EF14*																										

Table 6
VOC Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	Methyl Ethyl Ketone	Methyl Isobutyl Ketone	Methyl n-Butyl Ketone	Methyl Tert-Amyl Ether	Methylene Chloride	Methyl-tert-butyl-ether	Naphthalene	n-Butylbenzene	Tetrachloroethene	Propylbenzene	Styrene	Tert-Butyl Alcohol	Tert-Butyl-benzene	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene	Vinyl Acetate	Vinyl Chloride	Xylenes (Total)
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
ESL Criteria (Tier 1 Lookup Table B)		**14,000**	**170**	--	--	**2,200**	**1,800**	**24**	--	**120**	--	**100**	**18,000**	--	**130**	**590**	--	**360**	--	**3.8**	**100**
EF6-9																					
B31(GW)	5/11/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	9.7
B32(GW)	5/11/2004	< 130	< 130	< 130	< 6.3	< 250	< 6.3	**210**	< 63	< 63	140	< 63	< 130	< 63	< 63	< 63	< 63	< 63	< 630	**< 130**	**1,690**
B33(GW)	5/11/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B34(GW)	5/11/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B35(GW)	5/12/2004	< 10	< 10	< 10	< 0.5	< 20	8.1	< 5	< 5	< 5	15	< 5	< 10	**6.8**	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B36(GW)	5/12/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B37(GW)	5/12/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B38(GW)	5/12/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	6.9	7	< 5	91	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	6.1
B39(GW)	5/13/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B50(GW)	5/17/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B51(GW)	5/17/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B52(GW)	5/17/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
MW2(GW)	6/8/2004	--	--	< 10	--	< 20	< 5	< 5	< 5	< 5	< 5	< 5	--	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
EF11-13																					
B46(GW)	5/14/2004	< 10	< 10	< 10	< 0.5	< 20	5.2	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B47(GW)	5/14/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
B49(GW)	5/14/2004	< 10	< 10	< 10	< 0.5	< 20	< 0.5	< 5	< 5	< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5	< 5	< 50	**< 10**	< 5
EF14*																					

Notes
µg/L - micrograms per liter
"--" - Not Analyzed
* - No Analyses
< 5 Analyte not detected; reporting limit below the ESL Criteria.
< 130 Analyte not detected; reporting limit above the ESL Criteria.
1.5 Analyte detected; result value below the ESL Criteria.
280 Analyte detected; result value above the ESL Criteria.

Table 7
SVOC Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	1,2,4-Trichlorobenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloro-naphthalene	2-Chlorophenol	2-Methyl-naphthalene	2-Methylphenol	2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3,5,5-Trimethyl-2-Cyclohexene-1-One	3-Nitroaniline	4,6-Dinitro-2-Methylphenol	4-Bromophenyl Phenyl Ether	4-Chloro-3-Methylphenol	4-Chlorophenyl Phenyl Ether	4-Methylphenol	4-Nitrophenol	Acenaphthene	Acenaphthylene
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
ESL Criteria (Tier 1 Lookup Table B)		**25**	**14**	**65**	**15**	**11**	**490**	**3**	**110**	**75**	**120**	--	--	**1.8**	--	--	--	--	**250**	--	--	--	--	--	--	--	--	**23**	**30**
EF6-9																													
B31(GW)	5/11/2004	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 56	< 11	< 11	< 11	< 11	< 11	< 11	< 22	< 22	< 22	< 11	< 22	< 56	< 11	< 11	< 11	< 11	< 22	< 11	< 11
B32(GW)	5/11/2004	**< 63**	**< 63**	< 63	**< 63**	**< 63**	< 63	< 63	< 63	**< 310**	< 63	< 63	< 63	< 63	120	< 63	< 130	< 130	< 130	< 63	< 130	< 310	< 63	< 63	< 63	< 63	< 130	**< 63**	**< 63**
B33(GW)	5/11/2004	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 53	< 11	< 11	< 11	< 11	< 11	< 11	< 21	< 21	< 21	< 11	< 21	< 53	< 11	< 11	< 11	< 11	< 21	< 11	< 11
B34(GW)	5/11/2004	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 11	< 56	< 11	< 11	< 11	< 11	< 11	< 11	< 22	< 22	< 22	< 11	< 22	< 56	< 11	< 11	< 11	< 11	< 22	< 11	< 11
B35(GW)	5/12/2004	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 20	< 10	< 20	< 50	< 10	< 10	< 10	< 10	< 20	< 10	< 10
B36(GW)	5/12/2004	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 20	< 10	< 20	< 50	< 10	< 10	< 10	< 10	< 20	< 10	< 10
B37(GW)	5/12/2004	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 20	< 10	< 20	< 50	< 10	< 10	< 10	< 10	< 20	< 10	< 10
B38(GW)	5/12/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 47	< 9.4	< 9.4	< 9.4	< 9.4	19	< 9.4	< 19	< 19	< 19	< 9.4	< 19	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 9.4	< 9.4
B39(GW)	5/13/2004	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 45	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 18	< 18	< 18	< 9.1	< 18	< 45	< 9.1	< 9.1	< 9.1	< 9.1	< 18	< 9.1	< 9.1
B50(GW)	5/17/2004	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 47	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 19	< 19	< 19	< 9.5	< 19	< 47	< 9.5	< 9.5	< 9.5	< 9.5	< 19	< 9.5	< 9.5
B51(GW)	5/17/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 19	< 19	< 9.4	< 19	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 9.4	< 9.4
B52(GW)	5/17/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 19	< 19	< 9.4	< 19	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 9.4	< 9.4
MW2(GW)	6/8/2004	<9.6	<9.6	<9.6	<9.6	<9.6	<9.6	<9.6	<9.6	< 48	<9.6	< 9.6	< 9.6	<9.6	< 9.6	< 9.6	< 19	< 19	< 19	< 9.6	< 19	< 48	< 9.6	< 9.6	< 9.6	< 9.6	< 19	<9.6	<9.6
EF11-13																													
B45(GW)	5/14/2004	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 47	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 19	< 19	< 19	< 9.5	< 19	< 47	< 9.5	< 9.5	< 9.5	< 9.5	< 19	< 9.5	< 9.5
B46(GW)	5/14/2004	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 20	< 10	< 20	< 50	< 10	< 10	< 10	< 10	< 20	< 10	< 10
B47(GW)	5/14/2004	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 20	< 20	< 10	< 20	< 50	< 10	< 10	< 10	< 10	< 20	< 10	< 10
B49(GW)	5/14/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 19	< 19	< 9.4	< 19	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 19	< 9.4	< 9.4
EF14*																													

Table 7
SVOC Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	Anthracene	Azobenzene	Benzo(a) Anthracene	Benzo(a) Pyrene	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Benzoic Acid	Benzyl Alcohol	Benzyl Butyl Phthalate	Bis(2-Chloro-ethoxy)Methane	Bis(2-Chloro-ethyl)Ether	Bis(2-Chloro-isopropyl)Ether	Bis(2-Ethyl-hexyl)Phthalate	Chrysene	Dibenz(a,h) Anthracene	Dibenzofuran	Diethyl Phthalate	Dimethyl Phthalate	Di-n-Butyl-phthalate	Di-n-Octyl-phthalate	Fluoranthene	Fluorene	Hexachloro-benzene	Hexachloro-butadiene	Hexachloro-cyclopentadiene	Hexachloro-ethane	Indeno (1,2,3-cd) Pyrene
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
ESL Criteria (Tier 1 Lookup Table B)		**0.73**	–	**0.027**	**0.014**	**0.029**	**0.1**	**4.0**	–	–	–	–	**61**	**61**	**32**	**0.35**	**0.25**	–	**1.5**	**1.5**	–	–	**8**	**3.9**	**3.7**	**4.7**	–	**12**	**0.029**
EF6-9																													
B31(GW)	5/11/2004	**< 11**	< 11	**< 11**	**1.4**	**< 11**	**< 11**	**< 11**	< 56	< 11	< 11	< 11	< 11	< 11	< 11	**< 11**	**< 11**	< 11	**< 11**	**< 11**	< 11	< 11	**< 11**	**< 11**	**< 11**	**< 11**	< 56	< 11	**< 11**
B32(GW)	5/11/2004	**< 63**	< 63	**< 63**	**< 63**	**< 63**	**< 63**	**< 63**	< 310	< 63	< 63	< 63	**< 63**	**< 63**	**< 63**	**< 63**	**< 63**	< 63	**< 63**	**< 63**	< 63	< 63	**< 63**	**< 63**	**< 63**	**< 63**	< 310	**< 63**	**< 63**
B33(GW)	5/11/2004	**< 11**	< 11	**< 11**	**1.6**	**< 11**	**< 11**	**< 11**	< 53	< 11	< 11	< 11	< 11	< 11	< 11	**< 11**	**< 11**	< 11	**< 11**	**< 11**	< 11	< 11	**< 11**	**< 11**	**< 11**	**< 11**	< 53	< 11	**< 11**
B34(GW)	5/11/2004	**< 11**	< 11	**< 11**	**4.2**	**< 11**	**< 11**	**< 11**	< 56	< 11	< 11	< 11	< 11	< 11	< 11	**< 11**	**< 11**	< 11	**< 11**	**< 11**	< 11	< 11	**< 11**	**< 11**	**< 11**	**< 11**	< 56	< 11	**< 11**
B35(GW)	5/12/2004	**< 10**	< 10	**< 10**	**1.3**	**< 10**	**< 10**	**< 10**	< 50	< 10	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 10**	< 10	**< 10**	**< 10**	< 10	< 10	**< 10**	**< 10**	**< 10**	**< 10**	< 50	< 10	**< 10**
B36(GW)	5/12/2004	**< 10**	< 10	**< 10**	**2.5**	**< 10**	**< 10**	**< 10**	< 50	< 10	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 10**	< 10	**< 10**	**< 10**	< 10	< 10	**< 10**	**< 10**	**< 10**	**< 10**	< 50	< 10	**< 10**
B37(GW)	5/12/2004	**< 10**	< 10	**< 10**	**2.7**	**< 10**	**< 10**	**< 10**	< 50	< 10	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 10**	< 10	**< 10**	**< 10**	< 10	< 10	**< 10**	**< 10**	**< 10**	**< 10**	< 50	< 10	**< 10**
B38(GW)	5/12/2004	**< 9.4**	< 9.4	**< 9.4**	**0.88**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 9.4**	< 9.4	**< 9.4**	**< 9.4**	< 9.4	< 9.4	**< 9.4**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	**< 9.4**
B39(GW)	5/13/2004	**< 9.1**	< 9.1	**< 9.1**	**3**	**< 9.1**	**< 9.1**	**< 9.1**	< 45	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	**< 9.1**	**< 9.1**	< 9.1	**< 9.1**	**< 9.1**	< 9.1	< 9.1	**< 9.1**	**< 9.1**	**< 9.1**	**< 9.1**	< 45	< 9.1	**< 9.1**
B50(GW)	5/17/2004	**< 9.5**	< 9.5	**< 9.5**	**< 9.5**	**< 9.5**	**< 9.5**	**< 9.5**	< 47	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	**< 9.5**	**< 9.5**	< 9.5	**< 9.5**	**< 9.5**	< 9.5	< 9.5	**< 9.5**	**< 9.5**	**< 9.5**	**< 9.5**	< 47	< 9.5	**< 9.5**
B51(GW)	5/17/2004	**< 9.4**	< 9.4	**< 9.4**	**1.6**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	26	**< 9.4**	**< 9.4**	< 9.4	**< 9.4**	**< 9.4**	< 9.4	< 9.4	**< 9.4**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	**< 9.4**
B52(GW)	5/17/2004	**< 9.4**	< 9.4	**< 9.4**	**4.4**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 9.4**	< 9.4	**< 9.4**	**< 9.4**	< 9.4	< 9.4	**< 9.4**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	**< 9.4**
MW2(GW)	6/8/2004	<9.6	< 9.6	<9.6	<9.6	<9.6	<9.6	<9.6	< 48	< 9.6	< 9.6	< 9.6	<9.6	<9.6	<9.6	<9.6	<9.6	< 9.6	<9.6	<9.6	< 9.6	< 9.6	<9.6	<9.6	<9.6	<9.6	< 48	<9.6	<9.6
EF11-13																													
B45(GW)	5/14/2004	**< 9.5**	< 9.5	**< 9.5**	**< 9.5**	**< 9.5**	**< 9.5**	**< 9.5**	< 47	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	**< 9.5**	**< 9.5**	< 9.5	**< 9.5**	**< 9.5**	< 9.5	< 9.5	**< 9.5**	**< 9.5**	**< 9.5**	**< 9.5**	< 47	< 9.5	**< 9.5**
B46(GW)	5/14/2004	**< 10**	< 10	**< 10**	**< 10**	**< 10**	**< 10**	**< 10**	< 50	< 10	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 10**	< 10	**< 10**	**< 10**	< 10	< 10	**< 10**	**< 10**	**< 10**	**< 10**	< 50	< 10	**< 10**
B47(GW)	5/14/2004	**< 10**	< 10	**< 10**	**2.1**	**< 10**	**< 10**	**< 10**	< 50	< 10	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 10**	< 10	**< 10**	**< 10**	< 10	< 10	**< 10**	**< 10**	**< 10**	**< 10**	< 50	< 10	**< 10**
B49(GW)	5/14/2004	**< 9.4**	< 9.4	**< 9.4**	**< 9.4**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 9.4**	< 9.4	**< 9.4**	**< 9.4**	< 9.4	< 9.4	**< 9.4**	**< 9.4**	**< 9.4**	**< 9.4**	< 47	< 9.4	**< 9.4**
EF14*																													

Table 7
SVOC Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	Methanamine, n-Methyl-n-Nitroso	Naphthalene	Nitrobenzene	n-Nitroso-Di-n-Propylamine	n-Nitroso-diphenylamine	p-Chloroaniline	Pentachloro-phenol	Phenanthrene	Phenol	p-Nitroaniline	Pyrene
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
ESL Criteria (Tier 1 Lookup Table B)			24				5	7.9	4.6	1,300		2
EF6-9												
B31(GW)	5/11/2004	< 11	< 11	< 11	< 11	< 11	**< 11**	**< 22**	**< 11**	< 11	< 22	**< 11**
B32(GW)	5/11/2004	< 63	**170**	< 63	< 63	< 63	**< 63**	**< 130**	**< 63**	< 63	< 130	**< 63**
B33(GW)	5/11/2004	< 11	< 11	< 11	< 11	< 11	**< 11**	**< 21**	**< 11**	< 11	< 21	**< 11**
B34(GW)	5/11/2004	< 11	< 11	< 11	< 11	< 11	**< 11**	**< 22**	**< 11**	< 11	< 22	**12**
B35(GW)	5/12/2004	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 20**	**< 10**	< 10	< 20	**< 10**
B36(GW)	5/12/2004	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 20**	**< 10**	< 10	< 20	**< 10**
B37(GW)	5/12/2004	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 20**	**< 10**	< 10	< 20	**< 10**
B38(GW)	5/12/2004	< 9.4	10	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 19**	**< 9.4**	< 9.4	< 19	**< 9.4**
B39(GW)	5/13/2004	< 9.1	< 9.1	< 9.1	< 9.1	< 9.1	**< 9.1**	**< 18**	**< 9.1**	< 9.1	< 18	**< 9.1**
B50(GW)	5/17/2004	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	**< 9.5**	**< 19**	**< 9.5**	< 9.5	< 19	**< 9.5**
B51(GW)	5/17/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 19**	**< 9.4**	< 9.4	< 19	**< 9.4**
B52(GW)	5/17/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 19**	**< 9.4**	< 9.4	< 19	**< 9.4**
MW2(GW)	6/8/2004	< 9.6	<9.6	< 9.6	< 9.6	< 9.6	<9.6	**< 19**	<9.6	<9.6	< 19	<9.6
EF11-13												
B45(GW)	5/14/2004	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	**< 9.5**	**< 19**	**< 9.5**	< 9.5	< 19	**< 9.5**
B46(GW)	5/14/2004	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 20**	**< 10**	< 10	< 20	**< 10**
B47(GW)	5/14/2004	< 10	< 10	< 10	< 10	< 10	**< 10**	**< 20**	**< 10**	< 10	< 20	**< 10**
B49(GW)	5/14/2004	< 9.4	< 9.4	< 9.4	< 9.4	< 9.4	**< 9.4**	**< 19**	**< 9.4**	< 9.4	< 19	**< 9.4**
EF14*												

Notes
µg/L - micrograms per liter
"–" - Not Analyzed
* - No Analyses
< 10 Analyte not detected; reporting limit below the ESL Criteria.
< 63 Analyte not detected; reporting limit above the ESL Criteria.
26 Analyte detected; result value below the ESL Criteria.
170 Analyte detected; result value above the ESL Criteria.

Table 8
Dissolved LUFT Metals Results in Groundwater
Screened Against Tier 1 ESL Criteria
UST Assessment
Berths 60-63
Port of Oakland, California

Sample ID	Sample Date	Cadmium	Chromium	Lead	Nickel	Zinc
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
ESL Criteria (Tier 1 Lookup Table B)		**1.1**	**180**	**2.5**	**8.2**	**81**
EF6-9						
B31(GW)	5/11/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B32(GW)	5/11/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B33(GW)	5/11/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B34(GW)	5/11/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B35(GW)	5/12/2004	**< 5**	< 10	**< 3**	**< 20**	50
B36(GW)	5/12/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B37(GW)	5/12/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B38(GW)	5/12/2004	**< 5**	29	**10**	**49**	**180**
B39(GW)	5/13/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B50(GW)	5/17/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B51(GW)	5/17/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B52(GW)	5/17/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
MW2(GW)	68/04	**<5**	<10	**<3**	**<20**	25
EF11-13						
B45(GW)	5/14/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B46(GW)	5/14/2004	**< 5**	< 10	**4.8**	**50**	65
B47(GW)	5/14/2004	**< 5**	< 10	**< 3**	**< 20**	27
B49(GW)	5/14/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
EF14						
B62(GW)	5/19/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B63(GW)	5/19/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B64(GW)	5/19/2004	**< 5**	< 10	**< 3**	**< 20**	**21**
B65(GW)	5/19/2004	**< 5**	< 10	**< 3**	**< 20**	< 20
B66(GW)	5/19/2004	**< 5**	< 10	**< 3**	**< 20**	< 20

Notes
µg/L - micrograms per liter
"--" - Not Analyzed

< 5	Analyte not detected; reporting limit below the ESL Criteria.
< 50	Analyte not detected; reporting limit above the ESL Criteria.
63	Analyte detected; result value below the ESL Criteria.
1,100	Analyte detected; result value above the ESL Criteria.

Table 9
Preliminary Screening Evaluation for Soil - Comparison of Maximum Concentrations with Tier 1 ESLs
UST Assessment
Berths 60-63
Port of Oakland, California

Chemical	Maximum Detected Soil Concentration			Preliminary (Tier 1) ESL
	EF6-9	EF11-13	EF14	
Total Petroleum Hydrocarbons (mg/kg)				
Gasoline	**910**	2.2	--	400
Diesel	**530**	**1,200**	3.1	500
Motor Oil	**2,800**	**1,200**	--	1,000
Volatile Organic Compounds (µg/kg)				
1,1,1-Trichloroethane	8.7	--	--	7,800
Acetone	44	28	--	500
Benzene	5.2	--	--	380
Chlorobenzene	44	--	--	1500
Ethylbenzene	10,000	--	--	32,000
Methylene Chloride	67	53	--	1,500
Naphthalene	**8,900**	--	--	1,500
PCE	110	--	--	240
TCE	13	--	--	730
Xylenes (total)	**27,800**	--	--	11,000
Polynuclear Aromatic Hydrocarbons and Semivolatile Organic Compounds (µg/kg)				
2-Methylnaphthalene *	**1,000**	--	--	250
Acenaphthene	740	73	--	19,000
Acenaphthylene	120	--	--	13,000
Anthracene	860	--	--	2,800
Benzo(a)anthracene	**2,100**	--	--	1,300
Benzo(a)pyrene	**3,200**	15	--	130
Benzo(b)fluoranthene	**4,500**	120	--	1,300
Benzo(g,h,i)perylene	3,200	--	--	27,000
Benzo(k)fluoranthene	**3,000**	--	--	1,300
Bis(2-Ethyl-hexyl)Phthalate	--	590	--	530,000
Chrysene	3,800	98	--	13,000
Fluoranthene	5,200	--	--	40,000
Fluorene	710	--	--	8,900
Indeno(1,2,3-cd)pyrene	**3,000**	--	--	1,300
Phenanthrene	1,100	77	--	11,000
Pyrene	9,200	80	--	85,000
Metals (mg/kg)				
Cadmium	1.5	1.1	0.27	7.4
Chromium	54	40	27	58
Lead	150	110	5.8	750
Nickel	**280**	31	28	150
Zinc	410	380	30	600

Notes:

Bolded cells indicate that the maximum detected concentration of the chemical exceeds the Preliminary Screening (Tier 1) Environmental Screening Level. The chemical was retained for further evaluation in the Secondary Screening Evaluation.

-- = Chemical was not detected or not analyzed in samples collected from this UST group.

ESL = Environmental Screening Level, obtained from Tier 1 Lookup Table B, *Shallow Soil (<3m bgs), Groundwater is not a Current or Potential Source of Drinking Water,* in the San Francisco Bay Regional Water Quality document, *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* (RWQCB 2005).

Table 10
Preliminary Screening Evaluation for Groundwater -- Comparison of Maximum Concentrations with Tier 1 ESLs
UST Assessment
Berths 60-63
Port of Oakland, California

Chemical	Maximum Detected Groundwater Concentration (µg/L)			Preliminary (Tier 1) ESL
	EF6-9	EF11-13	EF14	
Total Petroleum Hydrocarbons				
Gasoline	**12,000**	--	--	500
Diesel	**66,000**	--	54	640
Motor Oil	**95,000**	--	--	640
Volatile Organic Compounds				
1,2-Dichloroethane	1.5	--	--	200
Benzene	**73**	--	--	46
Ethylbenzene	**140**	--	--	290
MTBE	8.1	5.2	--	1,800
Naphthalene	**210**	--	--	24
Xylenes (Total)	**1,690**	--	--	100
Polynuclear Aromatic Hydrocarbons and Semivolatile Organic Compounds				
Benzo(a)pyrene	**4.4**	**2.1**	--	0.014
Benzo(g,h,i)perylene	--	--	--	0.1
Bis(2-Ethyl-hexyl)Phthalate	26	--	--	32
Chrysene	--	--	--	0.35
Fluoranthene	--	--	--	8
Indeno(1,2,3-cd)pyrene	--	--	--	0.029
Phenanthrene	--	--	--	4.6
Pyrene	**12**	--	--	2
Metals				
Chromium	29	--	--	180
Lead	**10**	**4.8**	--	2.5
Nickel	**49**	**50**	--	8.2
Zinc	**180**	65	21	81

Notes:

Bolded cells indicate that the maximum detected concentration of the chemical exceeds the Preliminary Screening (Tier 1) Environmental Screening Level. The chemical was retained for further evaluation in the Secondary Screening Evaluation.

-- = Chemical was not detected or not analyzed in samples collected from this UST group.

ESL = Environmental Screening Level, obtained from Tier 1 Lookup Table B, *Shallow Soil (<3m bgs), Groundwater is not a Current or Potential Source of Drinking Water,* in the San Francisco Bay Regional Water Quality document, *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* (RWQCB 2005).

Table 11
Secondary Screening Evaluation for Soil -- Comparison of Maximum Concentrations with Appendix 1 ESLs
UST Assessment
Berths 60-63
Port of Oakland, California

Chemical	EF6-9		EF11-13		Secondary (Appendix 1) ESL		
	Maximum Detected Soil Concentration	Sampling Location	Maximum Detected Soil Concentration	Sampling Location	Indoor Air Inhalation (Commercial/ Industrial)	Direct Contact (Construction)	Leaching Concerns
Total Petroleum Hydrocarbons (mg/kg)							
Gasoline	**910**	B32-4.0'	--	--	NC	23,000	400
Diesel	**530**	B31-6.0'	**1,200**	B45-6.0'	NC	23,000	500
Motor Oil	**2,800**	B31-6.0'	**1,200**	B49-6.0'	NC	23,000	1,000
Volatile Organic Compounds (ug/kg)							
Naphthalene	**8,900**	B32-4.0'	--	--	1,500	97,000	4,800
Xylenes (total)	**27,800**	B32-4.0'	--	--	420,000	420,000	11,000
Polynuclear Aromatic Hydrocarbons and Semivolatile Organic Compounds (ug/kg)							
2-Methylnaphthalene	**1,000**	B31-6.0'	--	--	110,000	13,000,000	250
Benzo(a)anthracene	2,100	B39-6.0'	--	--	NC	15,000	12,000
Benzo(a)pyrene	**3,200**	B33-4.0'	--	--	NC	1,500	130,000
	3,200	B39-6.0'					
Benzo(b)fluoranthene	4,500	B39-6.0'	--	--	NC	15,000	46,000
Benzo(k)fluoranthene	3,000	B39-6.0'	--	--	NC	15,000	37,000
Indeno(1,2,3-cd)pyrene	3,000	B39-6.0'	--	--	NC	15,000	7,700
Metals (mg/kg)							
Nickel	280	B39-6.0'	--	--	NC	1,000	NC

Notes:

Bolded cells indicate that the maximum detected concentration of the chemical exceeds at least one of the Secondary Screening (Appendix 1) Environmental Screening Levels.

-- = Chemical was not detected or not analyzed in samples collected from this UST group, or maximum concentration did not exceed Preliminary Screening ESLs.

NC = No criterion available

ESL = Environmental Screening Level, obtained from Appendix 1 in the San Francisco Bay Regional Water Quality document, *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* (RWQCB 2005). Specifically, the following ESLs from the following tables in Appendix 1 were used:

- Table E-1B, Soil Screening Levels for Evaluation of Potential Indoor-Air Impacts (Volatile Chemicals Only)
- Table K-3, Direct-Exposure Screening Levels, Construction/Trench Worker Exposure Scenario
- Table G, Soil Screening Levels For Leaching Concerns

Table 12
Secondary Screening Evaluation for Groundwater -- Comparison of Maximum Concentrations with Appendix 1 ESLs
UST Assessment
Berths 60-63
Port of Oakland, California

Chemical	EF6-9		EF11-13		EF14		Secondary ESL: Indoor Air Inhalation (Commercial/ Industrial) (µg/L)	Secondary ESL: Groundwater Screening Level (µg/L)
	Maximum Detected Groundwater Concentration (µg/L)	Sampling Location	Maximum Detected Groundwater Concentration (µg/L)	Sampling Location	Maximum Detected Groundwater Concentration (µg/L)	Sampling Location		
Total Petroleum Hydrocarbons								
Gasoline	**12,000**	B32(GW)	--	--	--	--	NC	500
Diesel	**66,000**	B32(GW)	--	--	--	--	NC	640
Motor Oil	**95,000**	B32(GW)	--	--	--	--	NC	640
Volatile Organic Compounds								
Benzene	**73**	B32(GW)	--	--	--	--	1800	46
Naphthalene	**210**	B32(GW)	--	--	--	--	11000	24
Xylenes (Total)	**1,690**	B32(GW)	--	--	--	--	1.60E+05	13
Polynuclear Aromatic Hydrocarbons and Semivolatile Organic Compounds								
Benzo(a)pyrene	**4.4**	B52(GW)	**2.1**	B47(GW)	--	--	NC	0.014
Pyrene	**12**	B34(GW)	--	--	--	--	140	2
Metals								
Lead	**10**	B38(GW)	**4.8**	B46(GW)	--	--	NC	2.5
Nickel	**49**	B38(GW)	**50**	B46(GW)	--	--	NC	8.2
Zinc	**180**	B38(GW)	--	--	--	--	NC	81

Notes:

Bolded cells indicate that the maximum detected concentration of the chemical exceeds the Secondary Screening (Appendix 1) Environmental Screening Level.

-- = Chemical was not detected or not analyzed in samples collected from this UST group, or maximum concentration did not exceed Preliminary Screening ESLs.

NC = No criterion available

ESL = Environmental Screening Levels, obtained from Appendix 1 in the San Francisco Bay Regional Water Quality document, *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* (RWQCB 2005). Specifically, ESLs were obtained from Tables E-1A and F-1b, Groundwater Screening Levels for Evaluation of Potential Indoor-Air Impacts (Volatile Chemicals Only) and Groundwater Screening Levels (groundwater IS NOT a current potential drinking water source), respectively.