

**RECEIVED**

*By dehloptoxic at 8:03 am, Mar 09, 2007*

March 8, 2007

**SITE CHARACTERIZATION  
WORKPLAN**

325 Martin Luther King Jr. Way  
Oakland, California

Project No. 270308  
ACHCSA Fuel Leak # RO0002930

Prepared On Behalf Of

Kimball and Jane Allen  
2 Lone Tree Avenue  
Mill Valley, CA 94941-1741

Prepared By

**AEI Consultants**  
2500 Camino Diablo, Suite 200  
Walnut Creek, CA 94597  
(925) 283-6000

**AEI**



March 8, 2007

Mr. Jerry Wickham  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

**Subject: Site Characterization Work Plan**  
325 Martin Luther King Way  
Oakland, California  
AEI Project # 270308  
ACHCSA Fuel Leak No. RO0002930

Dear Mr. Wickham:

The following work plan has been prepared on behalf of Kimball and Jane Allen for the property located at 325 Martin Luther King Way, City of Oakland, Alameda County, California (Figure 1). AEI Consultants (AEI) has been retained by Mr. and Mrs. Allen to provide environmental engineering and consulting services associated with a release of fuel petroleum hydrocarbons from the abandoned underground storage tank (UST) located on the property. The release at the property is currently receiving regulatory oversight from the Alameda County Health Care Services Agency (ACHCSA).

This plan includes a summary of existing data and previously proposed work relating to the release, a review of existing data gaps and requests made by ACHCSA, and proposes an approach to effectively characterize the release.

## **SITE DESCRIPTION AND BACKGROUND**

The subject property is located on the western corner of the intersection of Martin Luther King Jr. Way and 4<sup>th</sup> Street in a mixed commercial and industrial area of Oakland. The property measures approximately 100 feet along Martin Luther King and approximately 150 feet along 4<sup>th</sup> Street with the property building covering essentially 100% of the land area. The northwestern portion of the building along 4<sup>th</sup> Street has also had the address 671 4<sup>th</sup> Street. The building is currently vacant, but was previously occupied by Pucci Enterprises as warehouse space and cold storage freezers.

Touchstone Developments completed a Phase I Environmental Site Assessment (ESA) of the property dated November 1, 1993 and identified a 10,000-gallon former fuel UST that currently exists below the north side of the building. The fuel UST was used to provide fuel for the Pucci Enterprises truck fleet. Marvin Busby Company, Inc. decommissioned the tank on October 20, 1993 by steam cleaning the tank, pumping remaining sludge out of the tank, and filling the tank

with concrete slurry. At the time of the UST closure, the eastern section of the building had not yet been built. The tank could not be removed because of its proximity to the footing of the 671 4<sup>th</sup> Street building. After tank closure, the eastern portion of the building (325 Martin Luther King) was constructed. Although records show that the UST was abandoned following proper procedures, no documentation was available of sampling around the tank prior to abandonment.

A number of site investigations have been performed by several environmental consultants since May 2005. A summary of each project is presented below. Approximately soil boring locations are presented on Figure 2 and analytical data available to AEI is presented in Tables 1 and 2. A copy of the AEI report not previously provided to ACHCSA is included in Appendix A.

### **Phase II Investigation – AEI, May 2005**

AEI performed a Phase II Subsurface Investigation in May 2005 as part of environmental due diligence for a potential real estate transaction. A total two borings (SB-2 and SB-4) were completed with soil and groundwater samples collected (SB-1 and SB-3 encountered refusal at 4 feet bgs, possibly the top of the concrete filled UST). A release was discovered during the investigation, which indicated an impact to groundwater. Total petroleum hydrocarbon (TPH) as gasoline (TPH-g), TPH as diesel (TPH-d), and benzene were detected in groundwater up to 780 micrograms per liter ( $\mu\text{g/l}$ ), 420  $\mu\text{g/l}$ , and 53  $\mu\text{g/l}$ , respectively. AEI recommended further investigation and, due to the discovery of a release, that the report be forwarded to ACHCSA.

### **Environmental Investigation – Terra Firma, September 2005**

In September 2005, an additional investigation was performed, presumably relating to another potential real estate transaction. Groundwater samples were reportedly collected from four (4) soil borings (labeled 50901-1 to 50901-4). Details on the methods, field observations (including soil conditions), or analytical reports were not made available to AEI. Based on the information provided, groundwater sample analyses revealed the highest concentrations of TPH-g, TPH-d, and benzene at 20,000  $\mu\text{g/l}$ , 3600  $\mu\text{g/l}$ , and 990  $\mu\text{g/l}$ , from the two borings to the south of the UST. Two borings southwest of the UST contained lower, but still detectable, concentrations fuel contaminants.

### **Soil and Groundwater Investigation – Ceres Associates, June 2006**

In June 2006, Ceres Associated performed another subsurface investigation, apparently for another possible transaction. The project included the analyses of soil and groundwater from an additional five soil borings (labeled SB-5 to SB-9). Significant concentrations of fuel contaminants were detected in both soil and groundwater, particularly in SB-7, located southeast of the UST. Logs of the borings were not made available to AEI.

### **Supplemental Investigation Workplan – LRM Consulting, August 2006**

A fourth consultant, LRM Consulting prepared release notification documentation and a workplan for the ACHCSA in August 2006. The workplan included additional research into possible additional source locations (dispenser, piping, offsite releases, etc) and the installation of three (3) monitoring wells. The wells were proposed as 2" PVC wells with a screen interval of approximately 5 to 20 feet bgs.

## **Letter – ACHCSA, December 22, 2006**

This letter provides a summary of ACHCSA review of the previous three investigations and workplan and provides technical comments and questions on the site specific studies. While calling into question the adequacy of the two more recent investigations, the well installation was approved with the caveat that well construction be modified and that additional site characterization would be required. Along with specific requirements for modifications to wells construction, sampling and analytical requirements, and emphasizing the need for quality geology and hydrologic data, the letter also presents additional requirements as part of overall site characterization. These requirements are summarized as follows:

- Preferential pathway evaluation
- Additional assessment of the vertical and lateral extent of impact, in addition to the monitoring activities
- Investigation of other possible sources, specifically mentioned are possible other USTs and/or former dispenser and piping system locations
- Receptor well survey
- Electronic (GeoTracker) submittals

## **ENVIRONMENTAL SETTING**

The site is located in a highly urbanized, primarily light industrial and commercial, area of Oakland. The site is situated at an elevation of approximately 12 feet above mean sea level (msl). Based on a review of the United States Geological Survey (USGS) Oakland West, California Quadrangle topographic map the topography of the site is generally flat; however, the area slopes very gently to the southwest toward the Oakland Inner Harbor. The nearest surface water body is the harbor located approximately ¼ mile (1300 feet) to the southwest.

### **Geology and Hydrology**

The site is located on the San Francisco Bay margin. According to the map Quaternary Geology of Alameda County and Surrounding Areas, California derived from OFR 97-97 (Helley, et al, 1997), the site is underlain by the Holocene and Pleistocene Merritt Sand deposits. The unconsolidated deposits of the area are generally characterized by sequences of alluvial fan and bay margin organic rich clay deposits with interfingered lake, river channel, swamp, and flood plain deposits, and the aeolian Merritt Sands. Depths to the bedrock basement in the vicinity of the site are mapped at approximately 700 feet (Norfleet, 1998).

AEI has drilled and logged two successful soil borings (SB-2 and SB-4) at the site which were continuously cored to a total depth of 20 feet below ground surface (bgs). Copies of these logs are included in Appendix A. The building floor consisted of two layers of concrete with an approximately 1 foot thick layer of foam insulation, with a total thickness to soil of approximately 2 feet. Soils encountered below the concrete generally consisted of relatively homogeneous clayey silt to total depth explored.

Groundwater samples were collected from SB-2 and SB-4 through temporary wells installed to a total depth of 20 feet. At the time of sample collection groundwater was present at a depth of 18

feet bgs, however these water levels were not necessarily static water level measurements. The Terra Firma report did not state depth to saturated sediments or groundwater levels. Ceres reported that groundwater was first encountered at 18 to 20 feet bgs but rose to between approximately 8 to 10 feet bgs. Neither report included boring logs nor a description of soils encountered.

Borings drilled by AEI did not encounter any well developed saturated sand, gravel, or other significantly permeable deposits. Based on the observations in SB-2 of petroleum noted and higher organic vapor meter readings at approximately 12 feet and the vertical distribution of petroleum detected in the Ceres boring SB-7, it is believed that first groundwater is present under water table (unconfined) conditions within the silty soils. This conclusion is based on the principal that lighter than water petroleum product and dissolved phase contaminants will travel laterally with groundwater movement and vertically with fluctuations in the water table. Under this hypothesis, the water table is expected at a depth of approximately 8 to 12 feet bgs. The difference in water levels is likely due to not allowing water levels to equilibrate in the temporary well casings of the borings prior to measurement. In AEI's experience, this is a common occurrence in low transmissivity fine grained sediments of the area. Appropriately screened groundwater monitoring wells will be necessary to determine the water table elevation accurately and calculate groundwater flow direction. Based on topography and distribution of petroleum in sample data, groundwater is estimated to flow in a southwesterly to southeasterly direction.

## APPARENT PROBLEM

Subsurface investigation work has identified a release of petroleum hydrocarbon product from the abandoned UST. Soil and groundwater samples have been collected from 11 soil borings in a relatively localized area around the abandoned UST. The primary contaminants detected in the soil and groundwater consist of gasoline, diesel, and BTEX. Maximum concentrations of these contaminants are summarized in the following table.

*Exhibit 1: Identified Contaminant of Concern*

Contaminant	Maximum Concentration (Sample ID)	
	Soil in mg/kg	Groundwater in µg/l
TPH-g	20,000 (SB-7-10)	100,000 (SB7-GW)
TPH-d	3,300 (SB-7-10)	110,000 (SB7-GW)
Benzene	200 (SB-7-10)	3,300 (SB7-GW)
Toluene	980 (SB-7-10)	11,000 (SB7-GW)
Ethylbenzene	320 (SB-7-10)	2,100 (SB7-GW)
Total Xylenes	1,400 (SB-7-10)	20,000 (SB7-GW)

MTBE has not been detected exceeding reporting limits in any of the previous investigations in soil or groundwater. Qualitative notes in the laboratory analytical report including in the Ceres report suggests that although TPH-d was detected that these detections were indicative of significant gasoline range compounds. The presence of high concentrations of benzene, not typically a component of diesel fuel, suggests that the UST was historically utilized for gasoline.

## **SITE CHARACTERIZATION APPROACH**

AEI proposes a phased approach to characterizing the extent of the release's impact. Prior to installation of groundwater monitoring wells, AEI recommends that an additional set of soil borings be performed, stepped out from the localized area of the previous investigations, along with the requested research tasks. The goal of this phase is as follows:

- More adequately log sediments beneath the site, including depth to and type of saturated sediments.
- Determine the general dimensions of the plume prior to installing groundwater monitoring wells, including in the expected up-gradient direction (along 4<sup>th</sup> Street), the expected down-gradient direction (along Martin Luther King), and to assess whether contaminants have spread beneath the adjacent building at 301 Martin Luther King (to the southwest of the release area).
- Define the thickness of impacted soils through the analyses of multiple soil samples per boring.
- Gather additional records and data necessary to begin the development of a site conceptual model (receptor well records review, conduit evaluation, geophysical survey, historical records).

While AEI generally agrees with the need for and location of wells proposed by LRM, it is expected that the data gathered above will allow for more appropriate well construction and to cost effectively scope the number and locations for wells. Three tentative well locations and construction details are presented below, however it is intended that these specification will be reviewed upon completion of the above tasks prior to installation.

Upon completion of these additional characterization tasks, depending on the results, evaluation of possible interim corrective action (excavation, free phase hydrocarbon extraction, or other treatment) may be considered.

## **PART I**

AEI proposes eleven (11) soil borings at the site to delineate the extent of the plume around the abandoned UST. Proposed soil boring locations (labeled SB-10 through SB-20) are shown on Figure 2. In addition, the following additional activities will be performed:

- Review of City of Oakland permit records for indication of piping locations or other onsite sources and GeoTracker database for nearby documented fuel release sites.
- Alameda County Public Work (ACPW) and Department of Water Resources (DWR) well records request and review.
- Geophysical survey of the UST area for possible abandoned fuel system piping.
- Mapping of onsite and surrounding utilities, through notification of Underground Service Alert, review of City records, and geophysical survey results.

### Permits and Clearances

Prior to mobilization, Underground Service Alert will be notified to identify public underground utilities in the area. A geophysical surveyor will be contracted to perform utility survey of the drilling locations and surrounding areas. A drilling permit from ACPW and a City of Oakland excavation permit for drilling in 4<sup>th</sup> Street will be obtained.

### Drilling

Borings will be advanced with a truck-mounted Geoprobe™ direct-push drilling rig to maximum expected depth of approximately 15 to 20 feet bgs. The selected drilling contractor will hold a valid California C57 driller's license. Push rods and sampling equipment will be decontaminated between samples and between boreholes as appropriate to minimize the occurrence of cross-contamination.

### Soil Sample Collection

Soil will be continuously collected in 1¾ inch diameter acrylic liners within the sampling barrel and logged by the onsite geologist. A 6 inch sample will be taken at appropriate depths. Samples will be selected and cut from the liners. The sample will be sealed with Teflon tape and plastic end caps. A photo-ionization device (PID) will be used to screen soil samples in the field, and PID readings for each sample will be included on boring logs. Soil samples will be collected at approximately 3 to 5 foot intervals and at changes in soil types, depths of suspected impact, and within the capillary fringe, if apparent.

### Groundwater Sample Collection

The water table is expected to exist at approximately 8 to 12 feet bgs. Borings will be tentatively drilled to a depth of approximately 12 to 16 feet, depending on field observations, such that the borehole is several feet into the water table. If necessary, the boring may be left open for a period of time to allow for groundwater to enter. Given the expected low transmissivity of the soils, temporary ¾" diameter slotted PVC casing will be temporarily inserted into the borehole to facilitate groundwater collection. If during drilling, discrete water bearing sediments are observed, a Hydropunch discrete groundwater sampling tool may be utilized.

Groundwater samples will be collected with a peristaltic pump into 1-liter amber bottles and 40 ml volatile organic analysis (VOA) vials. The containers will be sealed so that no head-space or air bubbles are visible within the containers.

### Sample Storage

All samples will be sealed and labeled immediately upon collection. Samples will be placed in a cooler with water ice. Chain of custody documentation will be initiated prior to leaving the site. All samples will be delivered to a state certified laboratory on the day of collection.

### Sample Analyses

It is expected that at least one groundwater sample and three soil samples will be analyzed from each boring. Samples will be analyzed for TPH-g (EPA method 8015), TPH-d (EPA method 8015 with silica gel cleanup), BTEX and MTBE by EPA Method 8021, and fuel oxygenates

(including EDB and 1,2-DCA) (EPA method 8260). Soil samples will also be analyzed for (lead EPA method 6010).

## **PART II - MONITORING WELL INSTALLATION**

AEI proposes to install three groundwater monitoring wells (MW-1 through MW-3). The purpose of groundwater monitoring is to determine flow direction and gradient and monitor stability of dissolved phase contaminant plume. The tentative locations of the wells are presented on Figure 2, based on the existing data. At least one well will be placed in the apparent source area. If the findings of Part I indicate a need for additional wells, proposed changes to the scope of work will be discussed with the Allen family and ACHCSA. A summary of the proposed wells is presented below, along with completion details and an explanation of the purpose of each.

### *Exhibit 1: Proposed Wells*

<i>Well ID</i>	<i>Location / Purpose</i>	<i>Casing Diameter (inches)</i>	<i>Screen interval (ft bgs)</i>
MW-1	Near abandoned tank area to assess source area	2	7 – 17
MW-2	Southwest of source area to assess southwest (possibly down-gradient) extent of plume	2	7 – 17
MW-3	Southeast of source area to assess southeast (possibly down-gradient) extent of plume	2	7 – 17

### Well Installation

Well installation work will be performed under ACPW permit by a C57 licensed drilling contractor. The wells will be installed in borings drilled with a limited-access rotary drilling rig, running 8¼ diameter hollow stem augers. If feasible given the access limitation, a drill rig capable of collecting continuous samples will be utilized. The boreholes will be advanced to a tentative target depth of 17 feet bgs. The wells will be constructed with 2” diameter well casing, planned with 10’ of factory slotted 0.010 inch well screen set from 7 to 17 feet. Assuming water table conditions, this screen interval is expected to be appropriate. If the findings of Part 1 suggest that ground is confined or multiple distinct permeable zones are apparent, ACHCSA will be consulted prior to mobilization, and alternative well construction discussed.

The well casings will be installed through the augers. The casing will be flush threaded PVC and fitted with a bottom sump. An annular sand pack will be installed through the augers, to approximately 1 foot above the top of slotted casing, in 1-foot lifts. A bentonite seal will be placed above the sand and the remainder of the boring will be sealed with cement grout. Each well will be finished with an expanding, lockable inner cap and a flush-mounted well box.

The wells will be developed no sooner than 3 days after setting the well seals by surging, bailing, and purging to stabilize the sand pack and remove accumulated fines from the casing and sand pack.

Each well will be surveyed relative to each other and mean sea level by a California licensed land surveyor, with accuracy appropriate for Geotracker uploads.

#### Quarterly Monitoring Activities

Monitoring and sampling of the resulting network of wells will occur on a quarterly basis tentatively for a period of one year under this work plan, with the first episode to occur within approximately one week of well development.

During each monitoring event, water levels will be measured in each well. Wells will be purged of at least 3 well volumes of water prior to sample collection. During purging the following water quality measurements will be collected: temperature, pH, specific conductivity, dissolved oxygen (DO) and oxidation-reduction potential (ORP).

Groundwater samples will be collected with new, unused disposable bailers into appropriate laboratory-supplied containers. During the first monitoring event, the groundwater samples will be analyzed for the following:

- TPH-g and TPH-d (with silica gel cleanup) by EPA Method 8015
- BTEX and MTBE by EPA Method 8021B
- Fuel oxygenates, EDB, and 1,2-DCA by EPA method 8260
- Dissolved lead (if high lead concentrations are detected in the soil)

Recommendations for the subsequent groundwater monitoring analytical suite will be presented in the forthcoming report, based on the findings of the initial groundwater monitoring samples.

#### Waste Storage

Drill cuttings and other investigation-derived waste (IDW) will be stored onsite in sealed 55-gallon drums, pending the results of sample analyses. Equipment rinse water and well purge water will be stored in 55-gallon drums. Upon receipt of necessary analytical results, the waste will be profiled for disposal and transported from the site under appropriate manifest to approved disposal or recycling facility(s).

### **REPORTING**

Following completion of Part 1 drilling work, the findings will be reviewed with the Allen family and, if modifications to the monitoring well installation phase prudent, with ACHCSA. Following installation and sampling of the groundwater monitoring wells, a detailed report will be prepared of the methods and findings of the project. The final report will include a Site Conceptual Model, figures, data tables, logs of borings and well construction details, and results of the other research. Quarterly monitoring reports will be submitted within approximately one month of monitoring and sample collection activities. The entire project will be overseen by and all reports will be reviewed and stamped by a State of California Registered Geologist or Professional Civil Engineer. Following completion of the reports, relevant site data will be

uploaded to the State of California's Geotracker database and reports submitted to the ACHCSA FTP site.

## **SITE SAFETY**

Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting, including an explanation of the hazards of the known or suspected chemicals of interest. All site personnel will be in Level D personal protection equipment, which is the anticipated maximum amount of protection needed. A working area will be established with barricades and warning tape to delineate the zone where hard hats and steel-toed shoes must be worn, and where unauthorized personnel will not be allowed. A site safety plan conforming to Part 1910.120 (i) (2) of 29 CFR will be on site at all times during the project.

## **ESTIMATED SCHEDULE**

The permitting process will begin upon review and concurrence with the scope of work by the ACHCSA. It is expected that Part 1 drilling and sample analyses will be completed within approximately 1 month. Well installation, monitoring, and the final report are expected to require an additional 1 to 2 months. Once approvals are received, a more detailed timeline will be established and involved parties notified of field work dates.

## **REFERENCES**

AEI Consultants, *Phase II Subsurface Investigation Report*, May 18, 2005

Alameda County Health Care Services Agency, *Fuel Leak Case No. RO0002930, 325 Martin Luther King Jr. Way, Oakland, CA 94607*, December 22, 2006

Ceres Associates, *Soil and Groundwater Investigation Report*, June 8, 2006

Helley, E.J., et al, *Quaternary Geology of Alameda County and Surrounding Areas, California*, 1997

LRM Consulting, Inc., *Notice of Unauthorized Release and Supplemental Investigation Workplan*, August 29, 2006

Norfleet Consultants, *Groundwater Study and Water Supply History of the East Bay Plain, Alameda and Contra Costa Counties, CA*, June 19, 1998

Terra Firma, *Findings of Environmental Subsurface Investigation*, September 16, 2005

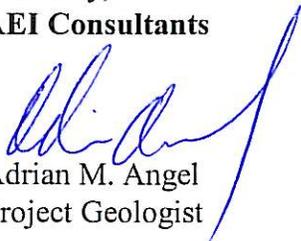
Touchstone Developments, *Phase I Investigation*, November 1, 1993

## LIMITATIONS AND SIGNATURES

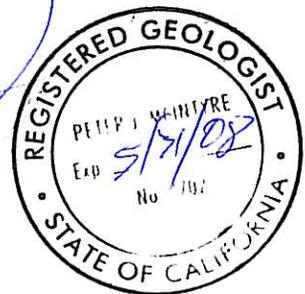
This plan has been prepared by AEI Consultants on behalf of the Kimball and Jane Allen which outlines proposed activities relating to the environmental release at the property located at 325 Martin Luther King Jr. Way, City of Oakland, Alameda County, California. The plan outlined in this report has been based on previous field investigations, laboratory testing of material samples, and evaluations performed by AEI and others. AEI is not responsible for the accuracy or quality of work performed by others, information not available or provided to AEI, and other data or information gaps. This report does not reflect subsurface variations that may exist between sampling points. These variations cannot be anticipated, nor could they be entirely accounted for, in spite of exhaustive additional testing. This document should not be regarded as a guarantee that no further contamination, beyond that which could have been detected within the scope of past investigations is present beneath the property or that all contamination present at the site will be identified, treated, or removed. Undocumented, unauthorized releases of hazardous material(s) and petroleum products, the remains of which are not readily identifiable by visual inspection and/or are of different chemical constituents, are difficult and often impossible to detect within the scope of a chemical specific investigation and may or may not become apparent at a later time. All specified work will be performed in accordance with generally accepted practices in environmental engineering, geology, and hydrogeology and will be performed under the direction of appropriate California registered professional(s).

We look forward to comment and concurrence with the scope of work outlined herein. Should you have any questions or need additional information, please contact us at 925/944-2899.

Sincerely,  
AEI Consultants

  
Adrian M. Angel  
Project Geologist

  
Peter McIntyre, PG, REA  
Senior Project Manager



## FIGURES

Figure 1 – Site Map

Figure 2 – Site Plan – Proposed Boring and Well Locations

## TABLES

Table 1 – Soil Sample Analytical Data

Table 2 – Groundwater Sample Analytical Data

## APPENDICES

Appendix A – Phase II Subsurface Investigation Report (AEI, May 2005)

**Distribution :**

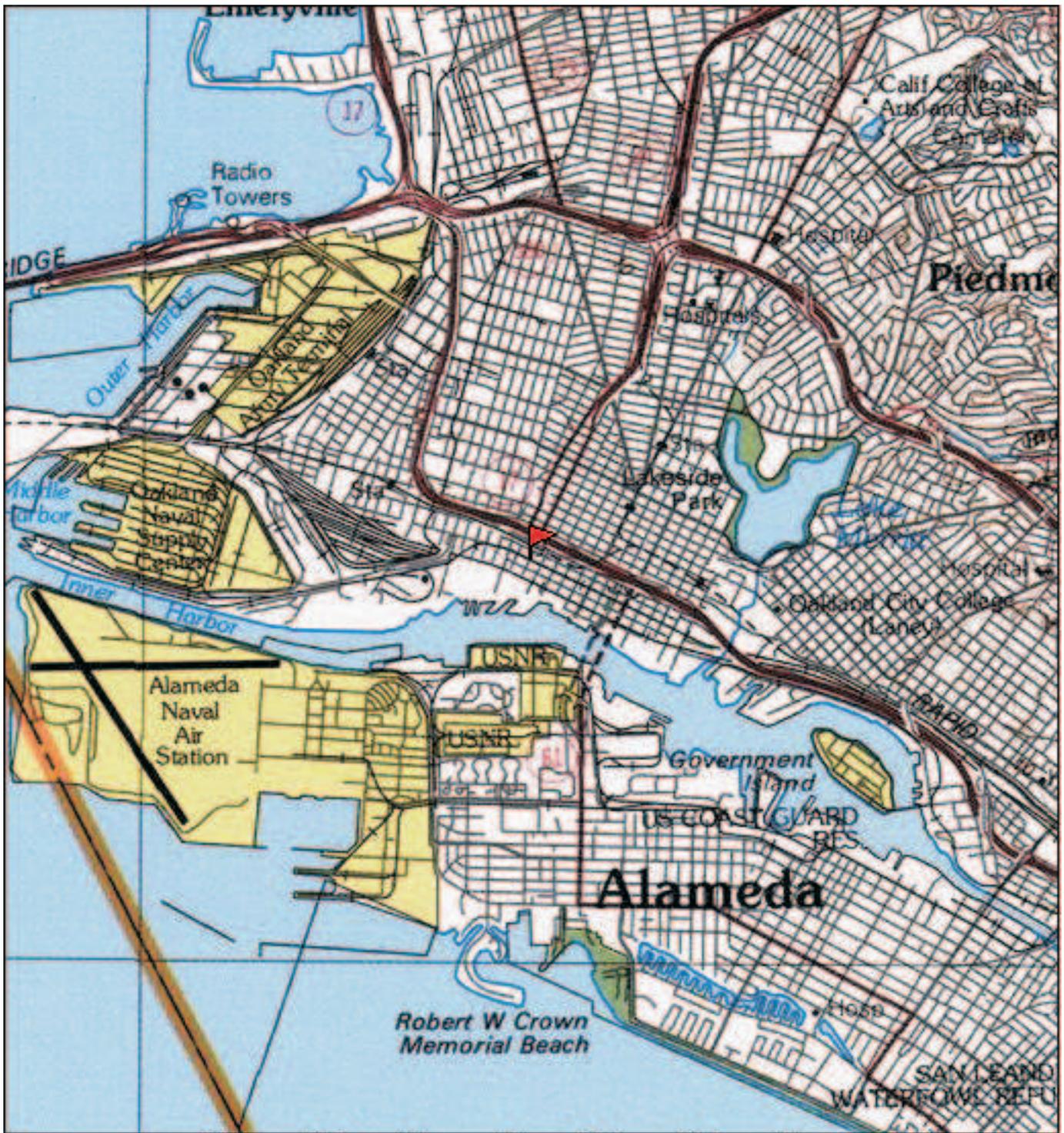
Mr. Jerry Wickham (FTP Upload)  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

Jane and Kimball Allen  
2 Lone Tree Avenue  
Mill Valley, CA 94941

Mr. Michael Notaro  
Law Offices of Michael Notaro  
2411 Santa Clara Avenue, Suite 33  
Alameda, CA 94501

GeoTracker database  
(pending access approval)

## **FIGURES**



TN  $\star$  /MN  
15°

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 miles  
0 1 2 3 4 5 km

Map created with TOPO!© ©2003 National Geographic ([www.nationalgeographic.com/topo](http://www.nationalgeographic.com/topo))

## AEI CONSULTANTS

2500 Camino Diablo, Suite 200, Walnut Creek, CA 94597

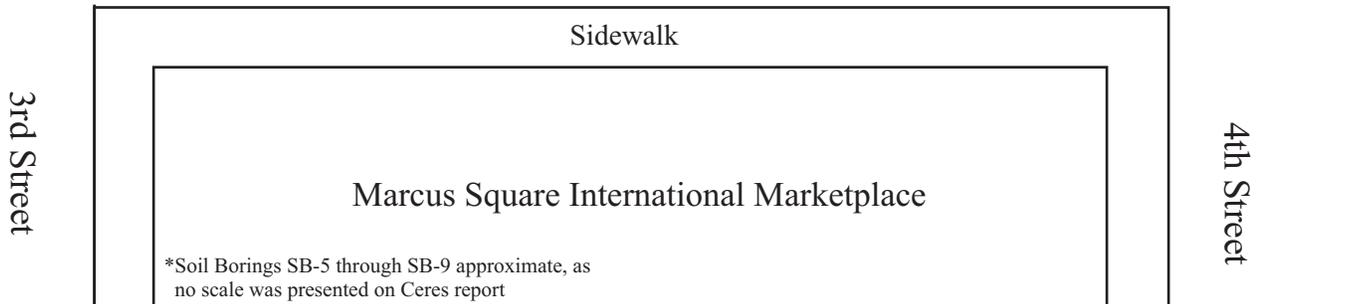
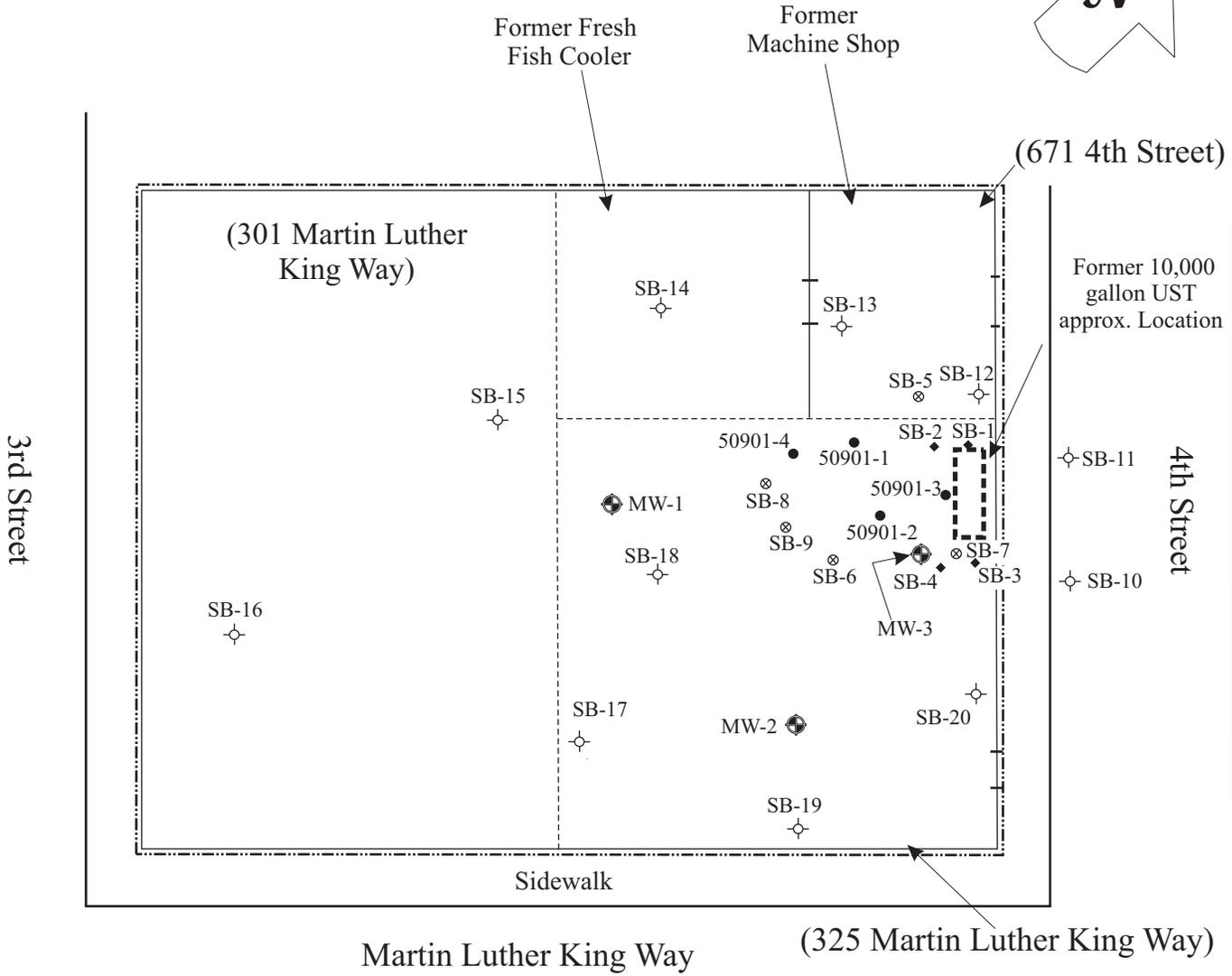
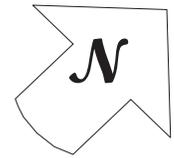
## SITE LOCATION PLAN

325 Martin Luther King Jr. Way  
San Jose, CA

**FIGURE 1**  
Job No: 270308

0' 20' 40'

Scale: 1" = 40'



\*Soil Borings SB-5 through SB-9 approximate, as no scale was presented on Ceres report

- Designates Building Boundary
  - ◆ Soil Boring Location (AEI - 5/11/05)
  - Soil Boring Location (TFC - 9/8/05)
  - ⊗ Soil Boring Location (Ceres - 6/6/06)
  - ⊕ Proposed Soil Boring Location
  - ◆ Proposed Monitoring Well Location  
(Locations will be based on sampling results of borings)
- \*Soil Borings SB-1 and SB-3 aborted due to refusal

<p><b>AEI CONSULTANTS</b> 2500 CAMINO DIABLO, SUITE 200 WALNUT CREEK, CA</p>	
<p><b>SITE PLAN</b></p>	
<p>325 Martin Luther King Jr. Way Oakland, California</p>	<p><b>FIGURE 2</b> PROJECT No. 270308</p>

## **TABLES**

**Table 1**  
**Soil Sample Analytical Data**

Sample ID	Consultant	Date Collected	TPH-g mg/Kg	TPH-d mg/Kg	MTBE mg/Kg	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	Xylenes mg/Kg
SB-2 12'	AEI	5/11/2005	10	5.6	<0.05	0.25	0.071	0.33	1.6
SB-4 12'	AEI	5/11/2005	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005
SB-5-10	Ceres	6/6/2006	<1.0	<1.0	<0.05	<0.005	<0.005	<0.005	<0.005
SB-6-10	Ceres	6/6/2006	5.0	3.1	<0.05	0.023	0.025	0.027	0.64
SB-7-10	Ceres	6/6/2006	20,000	3,300	<45	200	980	320	1,400
SB-7-17	Ceres	6/6/2006	9.2	3.4	<0.1	0.74	0.64	0.16	0.70
SB-8-10	Ceres	6/6/2006	4.7	3.0	<0.05	0.058	0.030	0.083	0.48
SB-9-10	Ceres	6/6/2006	7.5	4.2	<0.05	0.068	0.22	0.21	1.1
RL	-	-	1.0	1.0	0.05	0.005	0.005	0.005	0.005

Notes:

mg/Kg - milligrams per kilogram

TPH - g - Total Petroleum Hydrocarbons as gasoline

TPH - d - Total Petroleum Hydrocarbons as diesel

RL - Reporting Limit

AEI - AEI Consultants

Ceres - Ceres Associates

No known soil data for Terra Firma Consulting report

**Table 2**  
**Groundwater Sample Analytical Data**

Sample ID	Consultant	Date Collected	TPH-g ug/L	TPH-d ug/L	MTBE ug/L	Benzene ug/L <i>EPA Method SW8021B/8015Cm</i>	Toluene ug/L	Ethylbenzene ug/L	Xylenes ug/L
SB-2W	AEI	5/11/2005	780	420	<5.0	53	9.0	35	100
SB-4W	AEI	5/11/2005	<50	<50	<5.0	<0.5	<0.005	<0.005	0.76
50901-1	TFC	9/8/2005	860	740	-	6.0	7.5	22	100
50901-2	TFC	9/8/2005	13,000	3,600	-	410	1,200	390	1,700
50901-3	TFC	9/8/2005	20,000	2,000	-	990	3,100	590	2,300
50901-4	TFC	9/8/2005	550	230	-	20	17	19	56
SB5-GW	Ceres	6/6/2006	<50	170	<5.0	<0.5	<0.5	<0.5	1.8
SB6-GW	Ceres	6/6/2006	380	290	<5.0	3.4	1.8	3.8	51
SB7-GW	Ceres	6/6/2006	100,000	110,000	<100	3,300	11,000	2,100	20,000
SB8-GW	Ceres	6/6/2006	580	550	<5.0	8.4	3.6	18	47
SB9-GW	Ceres	6/6/2006	610	360	<5.0	10	15	21	70
RL	-	-	50	50	5.0	0.5	0.5	0.5	0.5

Notes:

ug/L - milligrams per kilogram

TPH-g - Total Petroleum Hydrocarbons as gasoline

TPH-d - Total Petroleum Hydrocarbons as diesel

RL - reporting limit

AEI - AEI Consultants

TFC - Terra Firma Consulting

Ceres - Ceres Associates

**APPENDIX A**

**Phase II Subsurface Investigation Report  
AEI Consultants, May 2005**

May 18, 2005

**PHASE II SUBSURFACE  
INVESTIGATION REPORT**

301-325 Martin Luther King Jr. Way  
Oakland, California

Project No. 11237

Prepared For:

Chris Wavrin  
LCB Associates  
388 17<sup>th</sup> Street  
Oakland, CA 94612

Prepared By

**AEI Consultants**  
2500 Camino Diablo, Suite 200  
Walnut Creek, CA 94597  
(925) 283-6000

**AEI**



May 18, 2005

Chris Wavrin  
LCB Associates  
388 17<sup>th</sup> Street  
Oakland, CA 94612

**Subject: Phase II Subsurface Investigation**  
325 Martin Luther King Jr. Way  
Oakland, CA  
AEI Project No. 11237

Dear Mr. Wavrin:

The following report describes the activities and results of the subsurface investigation performed by AEI Consultants at the above referenced property (Figure 1: Site Location Map). The investigation included the analyses of soil and groundwater samples from two soil borings advanced on the property. The investigation was designed to assess whether a release of petroleum hydrocarbons had occurred in the vicinity of the former underground storage tank (UST) on the property.

## **I Site Description and Background**

The subject property is located on the west side of Martin Luther King Jr. Way in a mixed commercial and industrial area of Oakland. The property totals approximately 10,000 square feet and is improved with a single-story building covering the entire property. The building is currently vacant, but was previously occupied by Pucci Enterprises as warehouse space and cold storage freezers. The building is adjacent to 301 Martin Luther King Jr. Way and 671 4<sup>th</sup> Street, which were used by Pucci Enterprises as well. The property was developed with the building in 1971/1972 and was occupied Pucci Enterprises since 1977.

Touchstone Developments completed a Phase I Environmental Site Assessment (ESA) of the property dated November 1, 1993 and identified a 10,000-gallon former fuel UST that currently exists below the north side of the building. The fuel UST was used to provide fuel for the Pucci Enterprises truck fleet. Marvin Busby Company, Inc., decommissioned the tank on October 20, 1993 by steam cleaning the tank, pumping remaining sludge out of the tank, and filling the tank with concrete slurry. The tank could not be removed because of its proximity to the building's footings. After tank closure, the southern portion of the building was constructed. Although records show that the UST was abandoned following proper procedures, no documentation was available of sampling around the tank prior to abandonment. Touchstone did not provide information concerning historical site uses and tenants.

## **II Investigative Efforts**

Prior to mobilization, Underground Service Alert (USA) North was notified to identify public utilities in the work area and a soil boring permit was obtained from the Alameda County Public Works (#W05-0521). AEI performed the subsurface investigation at the property on May 11, 2005. Two (2) soil borings (SB-2 and SB-4) were advanced to depths of 20 feet below ground surface (bgs). Drilling work was performed by Vironex, Inc., California C57 license # 705927. Soil borings SB-1 and SB-3 were aborted due to refusal at around 4 feet bgs. Locations of the soil borings are shown on Figure 2.

### ***Soil Sample Collection***

The borings were advanced with a Geoprobe 5410 truck-mounted direct push drilling rig. Soil samples were field screened using a photo ionization detector (PID). Moderate petroleum hydrocarbon odor was observed in boring SB-2. Field screening data is presented on the borings logs found in Appendix A.

The soil borings were continuously cored using a drive sampler that contained 4-foot long, 1.5-inch diameter acrylic liners. A 6-inch sample was cut from the liners at approximately four-foot intervals. The ends of the selected sample was sealed with Teflon film and plastic end-caps, labeled with unique identifiers, and placed in a cooler with water ice pending transportation to a state-certified laboratory. The remainder of the core was examined and described by an AEI geologist. The descriptions of the cores are included on the boring logs in Appendix A.

### ***Groundwater Sample Collection***

Groundwater was encountered in both borings at a depth of approximately 18 feet below ground surface (bgs). Upon completion of the borings, a temporary casing was installed to maintain an open hole and facilitate collection of groundwater. The temporary casing consisted of one 5-foot slotted section of 0.010 inch and three 5-foot sections of blank 3/4-inch PVC casing. Groundwater samples were collected using disposable 3/8-inch bailers.

Groundwater was collected into 40 ml volatile organic analysis (VOA) vials and 1-liter amber bottles. The groundwater samples were capped so that there was no headspace or visible air bubbles, labeled with unique identifiers, and then placed in a zipper locking bag. The sample was then placed in a cooler with wet ice to await transportation to the laboratory.

### ***Boring Destruction***

Upon completion of sampling, each boring was sealed to the surface with neat cement per applicable Alameda County Public Works and State of California guidelines.

### **Laboratory Analysis**

Samples were transported the same day collected, May 11, 2005, to McCampbell Analytical Inc. (Department of Health Services Certification #1644) for analysis under chain of custody protocol.

Two soil and two groundwater samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g), BTEX, and MTBE by EPA Method 8021/8015 and Total Petroleum Hydrocarbons as diesel (TPH-d) by EPA Method 8015. Remaining soil samples were placed on hold at the laboratory. Analytical reports and chain of custody documents are included as Appendix B.

### **III Findings**

The near surface native soil encountered in the borings typically consisted of brown clayey silt deposits. Groundwater was encountered at approximately 18 feet bgs. Refer to Attachment A for detailed logs of the borings.

TPH-g and TPH-d were detected in soil sample SB-2 12' at concentrations of 10 mg/kg and 5.6 mg/kg, respectively. Benzene, toluene, ethylbenzene, and xylenes were detected in the same sample at concentrations of 0.25 mg/kg, 0.071 mg/kg, 0.33 mg/kg, and 1.6 mg/kg, respectively. No petroleum hydrocarbons were detected above laboratory reporting limits in the other soil sample analyzed (SB-4 12'). MTBE was not detected above laboratory reporting limits in any of the soil samples analyzed.

TPH-g and TPH-d were detected in groundwater sample SB-2W at concentrations of 780 µg/L and 420 µg/L, respectively. Benzene, toluene, ethylbenzene, and xylenes were detected in the same groundwater sample at concentrations of 53 µg/L, 9.0 µg/L, 35 µg/L, and 100 µg/L. Xylenes was detected in groundwater sample SB-4W at a concentration of 0.76 µg/L. No other petroleum hydrocarbons were detected above laboratory reporting limits in sample SB-4W. MTBE was not detected above laboratory reporting limits in any of the groundwater samples analyzed.

Soil sample analytical data is presented in Table 1 and groundwater sample analytical data in Table 2.

### **IV Summary and Conclusions**

This investigation was designed to investigate whether a release of petroleum hydrocarbons had occurred on the property with respect to the former fuel UST.

The detection of petroleum hydrocarbons in the soil and groundwater samples from SB-2 and SB-4 collected from the property indicates that a release has occurred. The concentrations

detected are significant and may not be representative of the maximum concentrations present at the site. The source of the contamination appears to be the UST.

Based on the results of this investigation, evidence of a release on the subject property was identified. AEI recommends further investigation to delineate the extent of the release, and to confirm that an up gradient source is not contributing to the onsite release. Because a significant release has been identified, a copy of this report should be forwarded to the Alameda County Division of Environmental Health.

## **V Report Limitation**

This report presents a summary of work completed by AEI Consultants. The completed work includes observations and descriptions of site conditions encountered. Where appropriate, it includes analytical results for samples taken during the course of the work. The number and location of samples are chosen to provide the required information, but it cannot be assumed that they are representative of areas not sampled. All conclusions and/or recommendations are based on these analyses and observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document.

These services were performed in accordance with generally accepted practices, in the environmental engineering and construction field, which existed at the time and location of the work.

If you have any questions regarding our investigation, please do not hesitate to contact either of the undersigned at (925) 283-6000.

Sincerely,  
**AEI Consultants**

Adrian Angel  
Staff Geologist

Peter McIntyre, P.G.  
Project Manager

**Figures**

Figure 1: Site Location Map

Figure 2: Site Plan with Soil Borings

**Tables**

Table 1: Soil Analytical Data

Table 2: Groundwater Analytical Data

**Appendix A**

Soil Boring Logs

**Appendix B**

Sample Analytical Documentation

## **FIGURES**



TN  $\star$  /MN  
15°

0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 miles  
0 1 2 3 4 5 km

Map created with TOPO!© ©2003 National Geographic ([www.nationalgeographic.com/topo](http://www.nationalgeographic.com/topo))

## AEI CONSULTANTS

2500 Camino Diablo, Suite 200, Walnut Creek, CA 94597

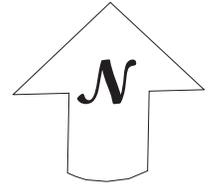
## SITE LOCATION PLAN

325 Martin Luther King Jr. Way  
San Jose, CA

**FIGURE 1**  
Job No: 11237

0' 20' 40'

Scale: 1" = 40'

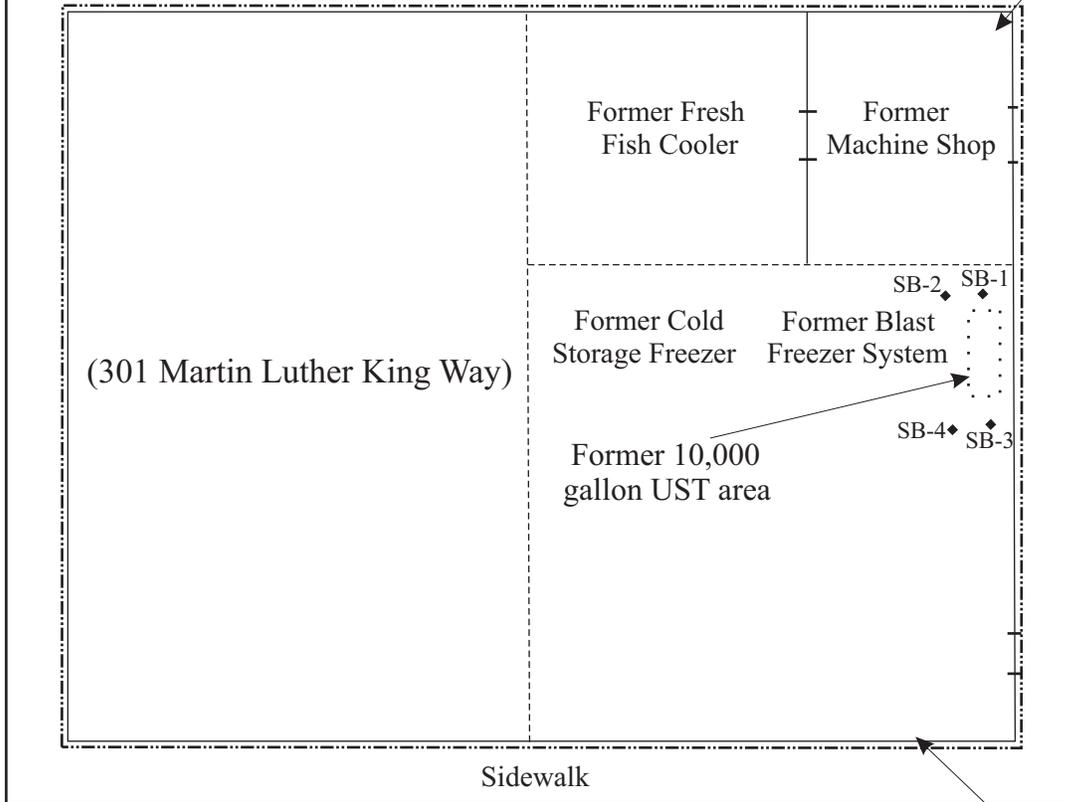


Mr. Espresso  
Coffee and Machines

Guarantee  
Forklift

(671 4th Street)

3rd Street



4th Street

(301 Martin Luther King Way)

Former Fresh  
Fish Cooler

Former  
Machine Shop

Former Cold  
Storage Freezer

Former Blast  
Freezer System

Former 10,000  
gallon UST area

SB-2 SB-1

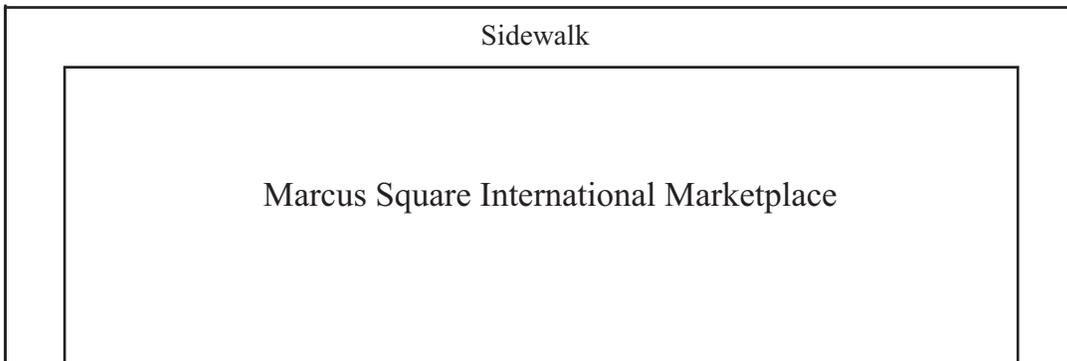
SB-4 SB-3

Sidewalk

Martin Luther King Way

(325 Martin Luther King Way)

3rd Street



4th Street

Marcus Square International Marketplace

Sidewalk

----- Designates Property Boundary

----- Designates Building Boundary

◆ Soil Boring Location(5/1105)

\*Soil Borings SB-1 and SB-3 aborted due to refusal

**AEI CONSULTANTS**  
2500 CAMINO DIABLO, SUITE 200 WALNUT CREEK, CA

## SITE PLAN

310-325 Martin Luther King Jr. Way  
Oakland, California

**FIGURE 2**  
PROJECT No. 11237

## **TABLES**

**Table 1**  
**Soil Sample Analytical Data**

Sample ID	TPH-g mg/Kg	TPH-d mg/Kg	MTBE mg/Kg	Benzene mg/Kg <i>EPA Method 8021B/8015C</i>	Toluene mg/Kg	Ethylbenzene mg/Kg	Xylenes mg/Kg
SB-2 12'	10	5.6	ND<0.05	0.25	0.071	0.33	1.6
SB-4 12'	ND<1.0	ND<1.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
RL	1.0	1.0	0.05	0.005	0.005	0.005	0.005

Notes:

mg/Kg - milligrams per kilogram

ND - Not detectable above laboratory reporting limit

TPH - g - Total Petroleum Hydrocarbons as gasoline

TPH - d - Total Petroleum Hydrocarbons as diesel

RL - Reporting Limit

**Table 2**  
**Groundwater Sample Analytical Data**

Sample ID	TPH-g ug/L	TPH-d ug/L	MTBE ug/L	benzene ug/L	toluene ug/L <i>EPA Method 8260</i>	ethylbenzene	xylenes ug/L
SB-2W	780	420	ND<5.0	53	9.0	35	100
SB-4W	ND<50	ND<50	ND<5.0	ND<0.5	ND<0.005	ND<0.005	0.76
RL	50	50	5.0	0.5	0.5	0.5	0.5

Notes:

ug/L - milligrams per kilogram

ND - Not detectable above laboratory reporting limit

TPH-g - Total Petroleum Hydrocarbons as gasoline

TPH-d - Total Petroleum Hydrocarbons as diesel

RL - reporting limit

**APPENDIX A**  
**Soil Boring Logs**

**Project: LCB Associates**  
**Project Location: 310-325 Martin Luther King Jr. Way**  
**Project Number: 11237**

**Log of Boring SB-2**  
 Sheet 1 of 1

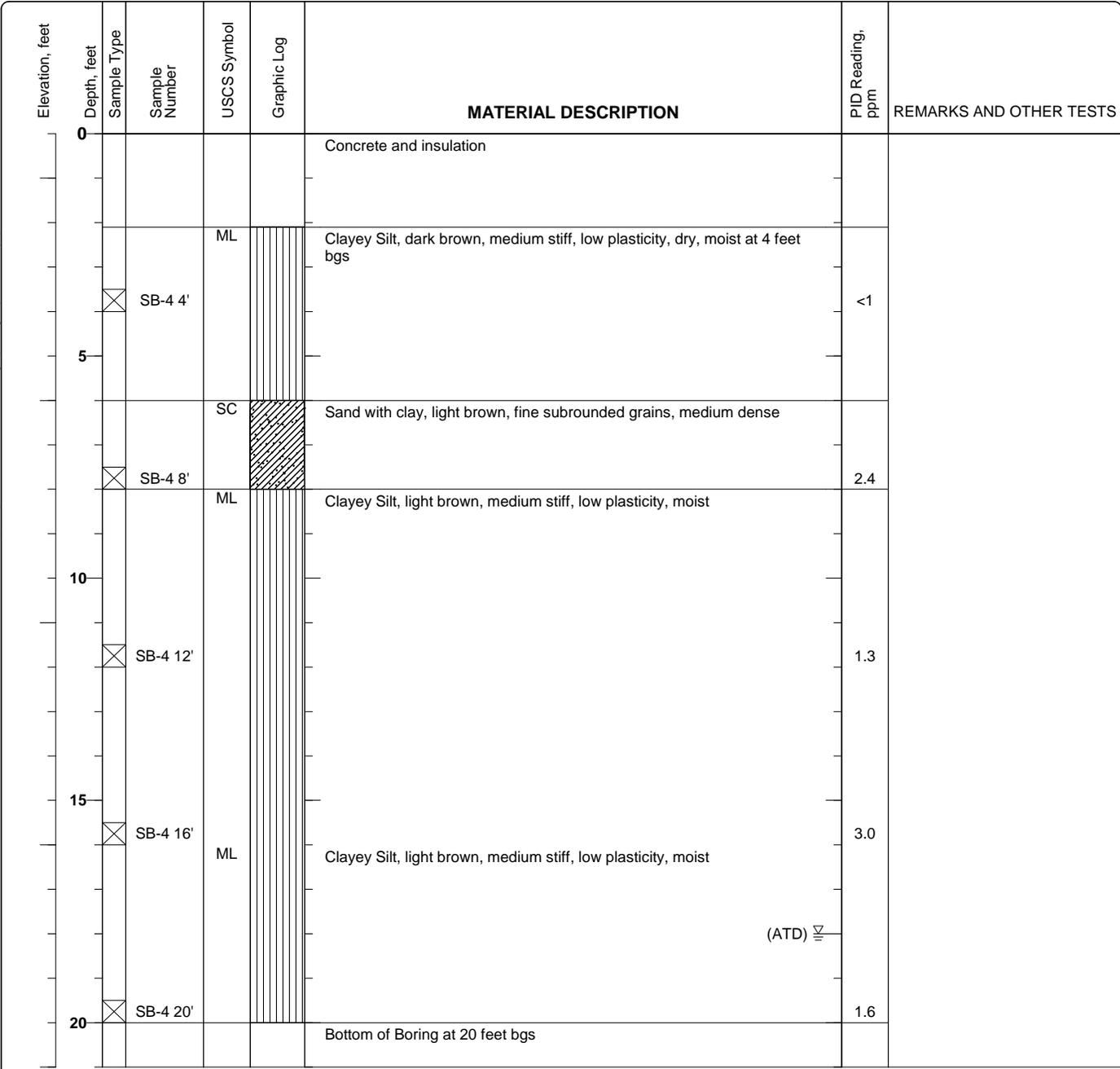
Date(s) Drilled <b>May 11, 2005</b>	Logged By <b>Adrian Angel</b>	Checked By <b>Peter McIntyre</b>
Drilling Method <b>Direct Push</b>	Drill Bit Size/Type	Total Depth of Borehole <b>20 feet bgs</b>
Drill Rig Type <b>Geoprobe 5410</b>	Drilling Contractor <b>Vironex</b>	Approximate Surface Elevation
Groundwater Level and Date Measured <b>18 feet ATD</b>	Sampling Method(s) <b>Tube</b>	Well Permit.
Borehole Backfill	Location	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0						Concrete and insulation		
				ML		Clayey Silt, dark brown, medium stiff, low plasticity, dry	2.1	
	4'		SB-2 4'					
				ML		Clayey Silt, light brown, medium stiff, low plasticity, moist	2.3	
	8'		SB-2 8'					
				ML		Clayey Silt, light brown, medium stiff, low plasticity, moist, moderate petroleum hydrocarbon odor	25.3	
	12'		SB-2 12'					
				ML		Clayey Silt, light brown, medium stiff, low plasticity, moist	5.3	
	16'		SB-2 16'					
						(ATD) 		
	20'		SB-2 20'			Bottom of Boring at 20 feet bgs	1.4	

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\ARCHIVE-READY\11000-11999\11237-PH II (LCB) Oakland - AA11237.bgs [AE] [geoprobe 20.tpl]

Date(s) Drilled <b>May 11, 2005</b>	Logged By <b>Adrian Angel</b>	Checked By <b>Peter McIntyre</b>
Drilling Method <b>Direct Push</b>	Drill Bit Size/Type <b>2 3/4 inch</b>	Total Depth of Borehole <b>20 feet bgs</b>
Drill Rig Type <b>Geoprobe 5410</b>	Drilling Contractor <b>Vironex</b>	Approximate Surface Elevation
Groundwater Level and Date Measured <b>18 feet ATD</b>	Sampling Method(s) <b>Tube</b>	Well Permit.
Borehole Backfill	Location	



X:\PROJECTS\CHARACTERIZATION & REMEDIATION\ARCHIVE-READY\11000-11999\11237-PH II (LCB)\_Oakland - AA\11237.bgs [AE] [geoprobe 20.tpl]

Figure

## **APPENDIX B**

### **Sample Analytical Data With Chain of Custody Documentation**









**QC SUMMARY REPORT FOR SW8021B/8015Cm**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0505160

EPA Method: SW8021B/8015Cm		Extraction: SW5030B			BatchID: 16176			Spiked Sample ID 0505135-003A		
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD
TPH(btex) <sup>f</sup>	ND	60	92	95.7	3.96	103	102	0.592	70 - 130	70 - 130
MTBE	ND	10	89.6	90.7	1.20	83.8	83.8	0	70 - 130	70 - 130
Benzene	ND	10	95	102	6.99	94.4	97	2.73	70 - 130	70 - 130
Toluene	ND	10	95	101	5.81	99.5	101	1.31	70 - 130	70 - 130
Ethylbenzene	ND	10	95.9	99.8	4.05	110	111	1.08	70 - 130	70 - 130
Xylenes	ND	30	86	91	5.65	103	100	3.28	70 - 130	70 - 130
%SS:	102	10	103	105	2.45	102	103	0.723	70 - 130	70 - 130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

BATCH 16176 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0505160-011	5/11/05	5/12/05	5/12/05 5:59 AM	0505160-012	5/11/05	5/12/05	5/12/05 6:29 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not applicable or not enough sample to perform matrix spike and matrix spike duplicate.



**QC SUMMARY REPORT FOR SW8015C**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0505160

EPA Method: SW8015C		Extraction: SW3510C			BatchID: 16161			Spiked Sample ID N/A		
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD
TPH(d)	N/A	1000	N/A	N/A	N/A	109	106	2.28	N/A	70 - 130
%SS:	N/A	2500	N/A	N/A	N/A	101	101	0	N/A	70 - 130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:  
NONE

BATCH 16161 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0505160-011	5/11/05	5/11/05	5/11/05 6:25 PM	0505160-012	5/11/05	5/11/05	5/12/05 12:28 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 \* (MS-Sample) / (Amount Spiked); RPD = 100 \* (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.