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Alameda County  
Environmental Health

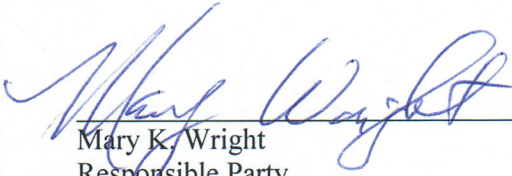
September 2, 2011

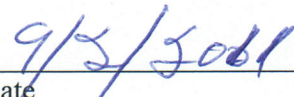
Reference: Work Plan for Preliminary Soil and Groundwater Investigation  
Former F&M Auto Service UST Site  
1839 Foothill Boulevard  
Oakland, Alameda County, California 94606

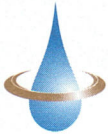
Alameda County, Case #: RO 3077

**PERJURY STATEMENT**

As the Responsible Party (RP) for this Site, I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

  
\_\_\_\_\_  
Mary K. Wright  
Responsible Party

  
\_\_\_\_\_  
Date



September 2, 2011

Ms. Karel Detterman  
Alameda County Health Care Services Agency  
Department of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Re: ***Work Plan for Preliminary Soil and Groundwater Investigation  
Former F&M Auto Service UST Site***  
1839 Foothill Boulevard, Oakland, California  
Orphan Site Cleanup Account (OSCA) Cleanup Grant No. 10-701-550

Dear Ms. Detterman:

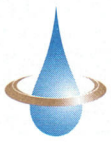
On behalf of Ms. Mary Wright, current property owner, and Mr. James Balsley, prospective property owner, Sierra West Consultants, Inc. (Sierra West) is pleased to provide this *Work Plan for Preliminary Site Assessment* for the Former F&M Auto Service Underground Storage Tank (UST) Site located at 1839 Foothill Boulevard, Oakland, California (Site). The Site is located at the northwest corner of the intersection of Foothill Boulevard and 19th Avenue, in Oakland, California. A Site Location Map is included as **Figure 1**.

Sierra West submitted the UST Removal Report on June 3, 2011, that documented the excavation and removal of four USTs. On August 15, 2011 Alameda County Environmental Health (ACEH) requested that a work plan be prepared to investigate the extent of soil contamination and determine whether groundwater contamination is present beneath the Site. This Work Plan is submitted in response to the ACEH directive, and describes proposed soil and groundwater sampling activities to investigate the lateral and vertical extent of hydrocarbon impacts to soil, and determine whether groundwater was impacted by the leaking USTs.

### **Site Background**

The Site is identified by Alameda County Assessors Parcel Number 20-164-6, and is a rectangular lot surrounded by a chain link fence with approximate dimensions of 100 feet long by 40 feet wide. The Site is a former gasoline service station that is estimated to have been constructed sometime during the 1950's. The service station ceased operation in 1995 and an auto detailing service operated at the property from 1997 through 2001. The property has been unoccupied since 2001. The southern section of the Site consisted of a small metal-framed retail building with an overhead canopy that covered a concrete pad and a dispenser island containing three gasoline pumps. The northern section of the Site consisted of a metal-framed structure that included a storage shed, an auto service garage, and a canopy that covered waste oil containers and other equipment.

There were a total of four USTs at the Site. UST#1 and UST#2 each had a capacity of 1,000-gallons, likely contained unleaded gasoline during operation of the service station, and were located at the



southern end of the Site. UST#3 had a capacity of 550-gallons, and was located in the central portion of the Site. UST#3 likely contained leaded gasoline during operation of the service station. UST#4 had a capacity of 100-gallons, and was located at the northern end of the Site. UST#4 likely contained oil during operation of the service station. Locations of former Site features, including structures and USTs, are shown on the Site Plan included as **Figure 2**.

From March 29 to April 8, 2011, the four USTs and surrounding soils were removed. Soil samples were collected from beneath the USTs, product piping, and dispenser island, and from the sidewalls of each excavation. Petroleum hydrocarbon impacts to soil were observed under each UST, and confirmed by laboratory analytical results. Constituent concentrations exceeding applicable environmental screening limits (ESLs) were detected in three of six soil samples collected from the excavation of UST#1 and UST#2, and in one of four soil samples collected from the excavation of UST#3. Constituent concentrations did not exceed their respective ESLs in soil samples collected from the excavations of UST#4, the product piping, or dispenser islands. Laboratory analytical results from soil samples collected during the removal of the USTs are shown on **Figure 3**, and are summarized in **Table 1**.

It is evident that impacts are present in the soils and constituents may have leaked to groundwater. As such, this Work Plan proposes soil borings to further define the extent of soil contamination, and groundwater monitoring wells to evaluate constituent impacts in groundwater. This Work Plan presents the following:

- Pre-Field Activities;
- Advancement of Soil Borings;
- Groundwater Monitoring Well Installation;
- Soil and Groundwater Laboratory Analysis;
- Monitoring Well Development and Sampling;
- Monitoring Well Survey;
- Waste Characterization and Disposal; and,
- Reporting

### **Pre-Field Activities**

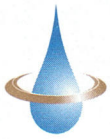
Sierra West will obtain well drilling permits from the Alameda County Public Works Agency, for the advancement of three soil borings and the installation of four groundwater monitoring wells. At least 48 hours prior to conducting field work, Sierra West will contact ACEH and Underground Service Alert to schedule regulatory and utility inspections.

The existing Site Health and Safety Plan will be modified to include the proposed scope of work. The selected drilling contractor will be required to have a California C-57 drilling license, and have prepared an independent health and safety plan prior to performing the work.

### **Advancement of Soil Borings**

Seven soil borings (B-1 through B-3 and MW-1 through MW-4) will be advanced using direct-push technology to assess constituent concentrations in soil and groundwater. Proposed locations of the soil borings are shown on **Figure 4**. The upper five feet of each boring will be advanced using either hand auger or air knife to clear for subsurface obstructions or utilities. Continuous core samples will be collected from each boring, and soils encountered will be logged using the Unified Soils Classification System visual and manual methods, and using Munsell soil color charts.

Each soil boring will be advanced to five feet below the first encountered groundwater. A hydropunch sampler will be affixed to the interior of the direct-push core barrel, and when total depth is achieved, the



outer drive casing will be raised approximately five feet to allow groundwater to infiltrate the direct-push casing. Groundwater grab samples will be collected from the hydropunch sampler using a new disposable bailer, or a cleaned stainless steel bailer. Following collection of soil and groundwater samples, the direct push equipment will be removed from each boring. Borings B-1 through B-3 will be backfilled with neat cement using a tremmie pipe, and borings MW-1 through MW-4 will be converted to monitoring wells.

### **Groundwater Monitoring Well Installation**

Following completion of the soil borings, four groundwater monitoring wells will be installed. The proposed well locations and rationale is as follows:

- MW-1 will be used to assess hydrocarbon impacts to groundwater at the former location of UST#1 and UST#2, where the highest detected constituent concentrations were observed during UST removal activities.
- MW-2 will be used to assess impacts to groundwater near the former location of UST#3.
- MW-3 will be used to assess impacts to groundwater near the former location of UST#4.
- MW-4 will be used to assess impacts to groundwater in the anticipated upgradient direction from the former locations of UST#1 and UST#2.

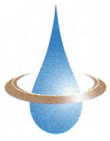
Each monitoring well will be installed using 8-inch diameter hollow stem augers to an anticipated depth of 30 feet below ground surface (bgs). The monitoring wells will be constructed using 2-inch diameter schedule 40 poly-vinyl chloride casing, with a 0.020-inch machine-slotted screened interval situated such that a portion of the screen extends above static groundwater. Depth to groundwater is anticipated to be approximately 15 to 20 feet bgs, and the anticipated screened interval will be from 10 to 30 feet bgs. The remainder of each well will be constructed with blank PVC riser casing. A filter pack of #3 Lonestar sand will be emplaced around the screened interval and will extend approximately two feet above the top of the screen. A two foot thick bentonite transition seal will be placed above the filter pack, followed by cement grout in the remaining annular space to approximately one foot bgs. Each well will be completed at the surface with a locking well cap, and a traffic-rated well box set in concrete.

Well construction details such as total depth and placement of the screened interval will be determined during well installation, and will be based on site specific conditions.

### **Soil and Groundwater Laboratory Analysis**

Soil samples will be collected in 6-inch brass sleeves, and sealed on each end with Teflon sheets and plastic end caps. Groundwater samples will be collected in bottle ware supplied by the analytical laboratory. Once collected, soil and groundwater samples will be labeled and immediately placed in an ice-cooled, insulated chest. A chain-of-custody record will be completed for the samples and will accompany the samples until receipt by the laboratory.

Soil samples will be delivered to a California state-certified laboratory, and analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethyl benzene, total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by Environmental Protection Agency (EPA) Method 8260B. Groundwater grab samples will be analyzed for TPHG, BTEX, and MTBE by EPA Method 8260B. Soil and groundwater samples collected from the MW-3 boring, near the former location of UST#4, will also be analyzed for total petroleum hydrocarbons as motor oil (TPHmo) by EPA Method 8015, for volatile organic compounds by EPA Method 8260, and for semi-volatile organic compounds by EPA Method 8270.



### **Monitoring Well Development and Sampling**

At least 72 hours following installation, MW-1 through MW-4 will be developed by surging over the length of the screened interval and purging approximately 10 casing volumes of water. The wells will be developed until pH, electrical conductivity, temperature, and turbidity have stabilized. After the parameters stabilize, groundwater samples will be collected from each well and analyzed for TPHg, BTEX and MTBE by EPA Method 8260B.

### **Monitoring Well Survey**

Following installation of MW-1 through MW-4, the top-of-casing elevations will be surveyed relative to mean sea level within 0.01-foot accuracy by a California licensed surveyor. Horizontal coordinates by global positioning system (GPS) to sub-meter accuracy will also be obtained by the surveyor. Surveying will be conducted consistent with GeoTracker requirements.

### **Waste Characterization and Disposal**

Soil cuttings generated will be stored on Site in Department of Transportation rated 55-gallon drums. Groundwater displaced during well installation, and generated during well development will be stored in separate 55-gallon drums. Composite soil and groundwater samples will be collected from the drums for waste characterization, and will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B, and for total lead by EPA Method 6010. Upon receipt of analytical results, the drums will be removed from the Site and transported to the appropriate facility for disposal according to applicable protocols.

### **Reporting**

Following completion of the scope of work contained in this Work Plan, Sierra West will prepare and submit a report to ACEH documenting the above tasks. This report will include copies of the applicable permits, boring logs, certified laboratory analytical reports, COC documentation, data tables, figures, and a comparison of soil and groundwater analytical data to applicable environmental screening limits (ESLs). ESLs used for comparison are defined by the San Francisco Bay Regional Water Quality Control Board in *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater – Table B* (May 2008) for shallow soils where groundwater is not a current or potential source of drinking water. The report will also include monitoring well survey data, field sheets from monitoring well development and sampling activities, documentation of waste characterization and disposal, and copies of the Department of Water Resources Well Completion Reports.




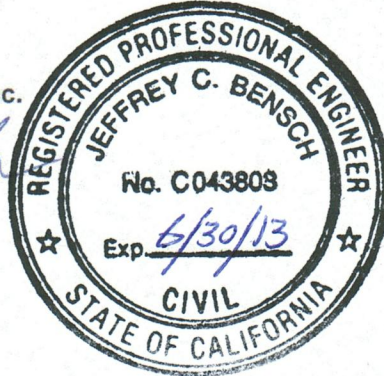
**Conclusion / Remarks**

Sierra West appreciates this opportunity to provide environmental consulting services at the Former F&M Auto Service UST Site. If you have any questions, please contact Jeff Bensch or Brian Whalen at (916) 863-3220.

Sincerely,  
Sierra West Consultants, Inc.



Jeffrey C. Bensch, P.E.  
Principal Engineer



Brian Whalen  
Project Geologist

Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Site Plan
- Figure 3 – Soil Sample Concentration Map
- Figure 4 – Proposed Soil Boring and Well Locations

Table 1 – Summary of Soil Analytical Results

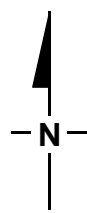
CC: Ms. Mary Wright, Property Owner  
Mr. James Balsley, Prospective Property Owner  
Ms. Marisa Rodarte, Orphan Site Cleanup Fund

# Figures



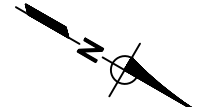
**SITE**

REFERENCE: GOOGLE MAPS

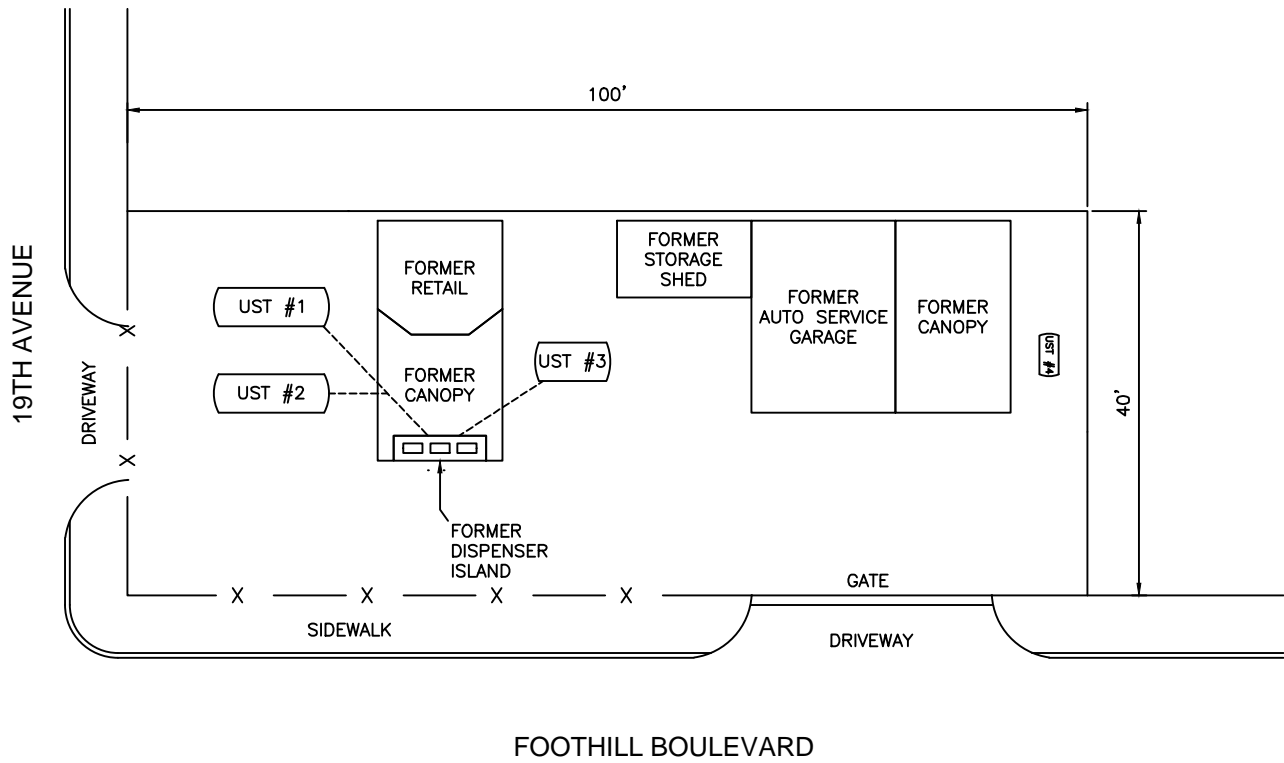


TITLE: <b>SITE LOCATION MAP</b>	
LOCATION: 1839 Foothill Blvd., Oakland, CA 94606	
 <b>SIERRA WEST</b> CONSULTANTS, INC.	FIGURE: <b>1</b>





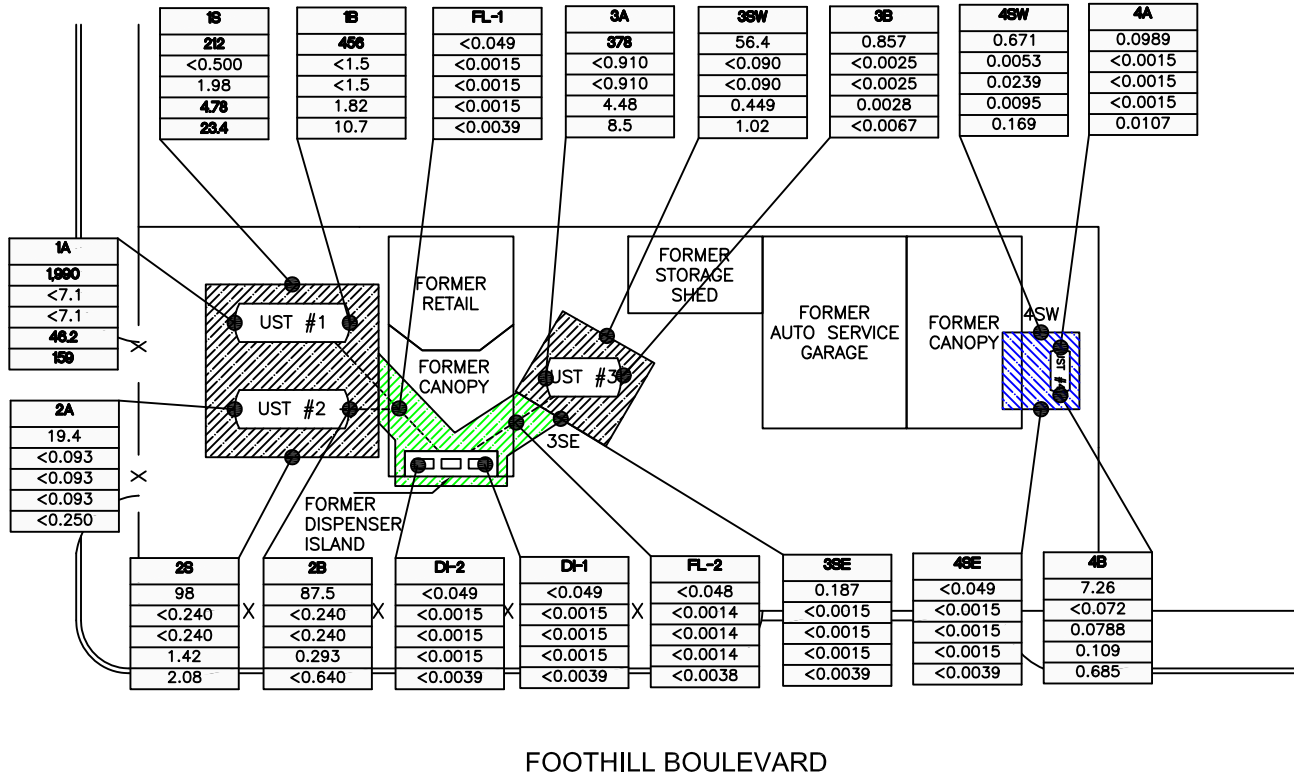
SCALE: 1"=20'



TITLE:	SITE PLAN	
LOCATION:	1839 Foothill Blvd., Oakland, CA 94606	
	 <b>SIERRA WEST</b> CONSULTANTS, INC.	FIGURE: 2



SCALE: 1"=20'



LEGEND:

- SOIL SAMPLE
- EXCAVATION TO 13' BGS
- EXCAVATION TO 5' BGS
- EXCAVATION TO 6.5' BGS

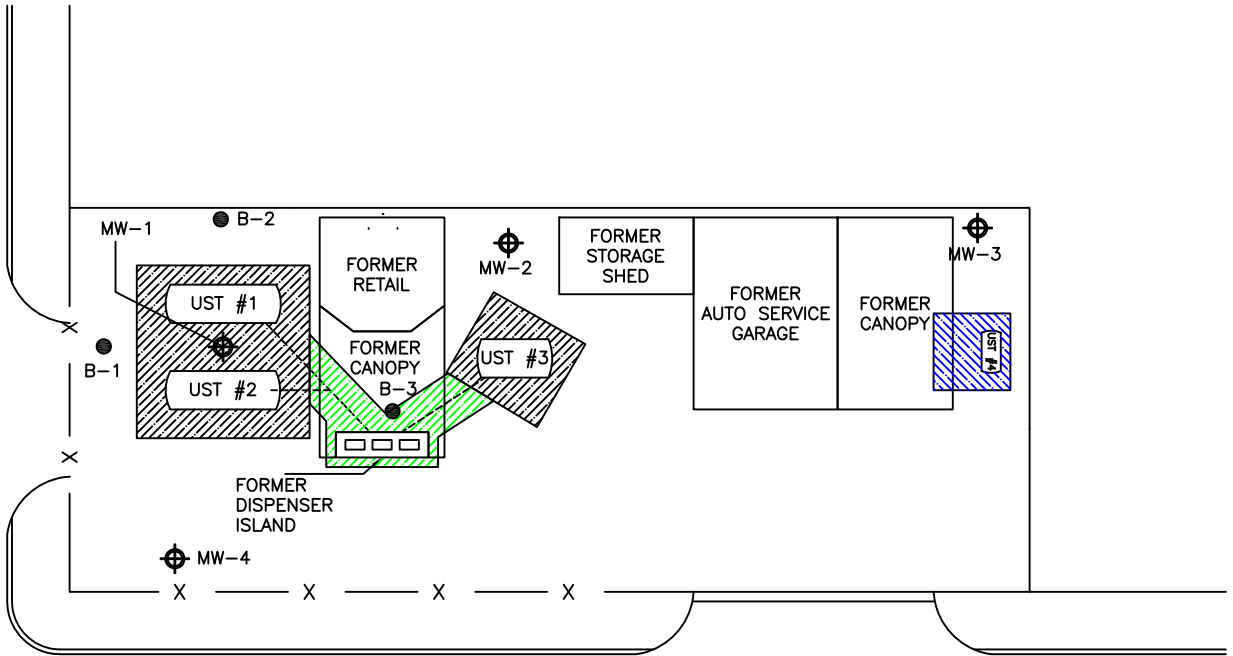
Sample ID
TPHg
Benzene
Toluene
EthylBenzene
Xylenes

Notes:  
 -Concentrations in milligrams per kilogram  
 -Concentrations exceeding Environmental screening Limits presented in **bold**

TITLE: Soil Sample Concentration Map	
LOCATION: 1839 Foothill Boulevard, Oakland, CA	
<b>SIERRA WEST</b> CONSULTANTS, INC.	FIGURE: 3



SCALE: 1"=20'



FOOTHILL BOULEVARD

LEGEND:

- PROPOSED SOIL BORING LOCATION
- ⊕ PROPOSED MONITORING WELL LOCATION
- ▨ EXCAVATION TO 13' BGS
- ▨ EXCAVATION TO 5' BGS
- ▨ EXCAVATION TO 6.5' BGS

TITLE: Proposed Soil Sample and Well Locations	
LOCATION: 1839 Foothill Boulevard, Oakland, CA	
 SIERRA WEST CONSULTANTS, INC.	FIGURE: 4

# Tables

**Table 1**  
**Summary of Soil Analytical Results**

Former F&M Auto Service Station  
1839 Foothill Boulevard  
Oakland, California

Sample ID	Date Collected	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	Total Lead (mg/kg)
<b>Samples from UST#1 and UST#2 excavation</b>								
1A	4/6/2011	<b>1,990</b>	<7.1	<7.1	<b>46.2</b>	<b>159</b>	<4.8	71.2
1B	4/6/2011	<b>456</b>	<1.5	<1.5	1.82 <sup>(1)</sup>	10.7	<0.970	28.8
1S	4/7/2011	<b>212</b>	<0.500	1.98	<b>4.78</b>	<b>23.4</b>	<0.330	7.1
2A	4/6/2011	19.4	<0.093	<0.093	<0.093	<0.250	<0.062	4.5
2B	4/6/2011	87.5	<0.240	<0.240	0.293 <sup>(1)</sup>	<0.640	<0.160	12.0
2S	4/7/2011	98	<0.240	<0.240	1.42	2.08	<0.160	6.9
<b>Samples from UST#3 excavation</b>								
3A	4/7/2011	<b>378</b>	<0.910	<0.910	4.48	8.5	<0.610	9.3
3B	4/7/2011	0.857	<0.0025	<0.0025	0.0028 <sup>(1)</sup>	<0.0067	0.0154	6.3
3SE	4/7/2011	0.187	<0.0015	<0.0015	<0.0015	<0.0039	0.0156	3.7
3SW	4/7/2011	56.4	<0.090	<0.090	0.449	1.02	<0.060	6.4
<b>Samples from UST#4 excavation</b>								
4A	4/6/2011	0.0989 <sup>(1)</sup>	<0.0015	<0.0015	<0.0015	0.0107	<0.00099	8.2
4B	4/6/2011	7.26	<0.072	0.0788 <sup>(1)</sup>	0.109 <sup>(1)</sup>	0.685	<0.048	37.5
4SE	4/6/2011	<0.049	<0.0015	<0.0015	<0.0015	<0.0039	<0.00097	13.7
4SW	4/6/2011	0.671	0.0053	0.0239	0.0095	0.169	<0.00097	40.1
<b>Samples from bottom of fuel line excavation</b>								
FL-1	4/7/2011	<0.049	<0.0015	<0.0015	<0.0015	<0.0039	<0.00098	17.0
FL-2	4/7/2011	<0.048	<0.0014	<0.0014	<0.0014	<0.0038	<0.00096	5.0
<b>Soil samples from bottom of dispenser island excavation</b>								
DI-1	4/7/2011	<0.049	<0.0015	<0.0015	<0.0015	<0.0039	<0.00098	18.1
DI-2	4/7/2011	<0.049	<0.0015	<0.0015	<0.0015	<0.0039	<0.00099	7.6
Environmental Screening Limits <sup>(2)</sup>		<b>180</b>	<b>0.27</b>	<b>9.3</b>	<b>4.7</b>	<b>11</b>	<b>8.4</b>	<b>750</b>

Notes and Definitions:

<sup>(1)</sup> = Laboratory J-Flag below reporting limit/Estimated Value

<sup>(2)</sup> = Environmental Screening Limits referenced from *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Table B* (California Regional Water Quality Control Board San Francisco Bay Region, May 2008), for shallow soils on commercial land use sites where groundwater is not a current or potential source of drinking water

TPHg = Total petroleum hydrocarbons as gasoline

MTBE = Methyl tert-butyl ether

(mg/kg) = milligrams per kilogram

\*Values Presented in bold letters are above pertinent Environmental Screening Limits