

RECEIVED

1:57 pm, Feb 15, 2008

Alameda County
Environmental Health

February 11, 2008

Mr. Steven Plunkett
Hazardous Material Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Workplan for Further Investigation and Interim Remediation Related to Underground Fuel Storage Tank-387 Orange Street, Oakland, California (Fuel Leak Case No. RO0002921)

Dear Mr. Plunkett:

INTRODUCTION AND BACKGROUND

On behalf of the property executor (Ms. Mary Kranz, executor of the Estate of David Ulibarri,), Stellar Environmental Solutions, Inc. (SES), is providing this workplan to the Alameda County Environmental Health Services (ACEH) to address the concerns about the subject property designated Fuel Leak case (No. RO0002921). The ACEH issued a review letter on January 29, 2008 in response to their review of the SES September 2007 UFST removal report, asking for a workplan for additional site investigations be submitted to them in by February 30, 2008 to define the vertical and lateral extent of soil and groundwater contamination downgradient of the site. Prior to the UFST removal, two phases of subsurface investigations were completed with the intention of potentially closing the USFT in place.

In March 2006 Clearwater Group investigation, 15,000 mg/kg of TEHd was found in soil directly beneath the UFST and in April 2007, SES investigation showed significant concentrations (2,400 mg/L TPH-diesel) of hydrocarbons in the groundwater at a depth of about 25 feet below ground surface. The results of these investigations precluded the idea of leaving the UST in place—which would have been possible if there was no significant contamination discovered. The UFST and accessible contaminated soil was removed in August 2007 and is documented in the SES September 2007 report. SES soil and groundwater data collected in the April and August field work event are attached. Groundwater was not encountered and no

contaminants were detected above the regulatory ESLs in soil collected during the UFST removal investigation.

The Responsible Party has also submitted an application for eligibility determination to the California Underground Storage Tank Cleanup Fund (Fund). The proposed work will be conducted at the direction of and under oversight by ACEH to ensure maximum potential for reimbursement by the Fund.

TECHNICAL OBJECTIVES AND PROPOSED SCOPE OF WORK

The general objective of the proposed work is to address two of the generally required regulatory criteria for site closure: 1) complete adequate characterization of the distribution of the groundwater contamination both onsite and offsite; and 2) removal and remediation of the contaminant source (in this case, high residual contaminated groundwater associated with the UFST that will act as a continued impact to downgradient groundwater)

The technical objectives will be accomplished with the implementation of the following scope of work tasks: 1) Field Investigation Preparation; 2) Offsite Exploratory Bores; 3) Groundwater Well Installation; 4) Well Development and Dewatering; 5) ORC Inoculation; and 6) Report of Findings.

Because the site is located in a dense residential area and the actual investigative activities will occur in the public right-of-way, SES will pre-profile drill soils and groundwater in order to dispose of them immediately that working day and eliminate having to store wastes onsite.

Task 1: Field Investigation Preparation

The field preparation will include permitting and notifications as well as general regulatory liaison. SES will conduct the following pre-fieldwork planning and permitting elements for the proposed program:

- Obtain workplan concurrence from Alameda County Environmental Health, or proceed with the proposed investigation if Alameda County Environmental Health does not respond within the 60-day lead agency review period stipulated by California Code of Regulations, Title 23, Division 3, Chapter 16, Underground Tank Regulations.
- Alameda County Public Works drilling and monitoring well permit;
- City of Oakland (Public Works) Excavation Permit required for drilling along Orange Street and Oakland Avenue;

- City of Oakland (Public Works) Encroachment Permit required installation of a monitoring well in the sidewalk medium strip on Orange Street; and
- Regulatory notification and liaison.

SES plans to install the monitoring well in the sidewalk medium strip along Orange Street and advance two borings in the parking lane along Oakland Ave and will not obstruct vehicle or pedestrian traffic and therefore will not need to obtain a traffic control plan or an obstruction permit from the City of Oakland.

Task 2: Offsite Exploratory Bores, Soil and Grab-Groundwater Sampling

The borehole drilling and sampling will be completed using a licensed drilling subcontractor under the direction of SES. The boreholes will be advanced with a Geoprobe™ (direct-push) rig that advances approximately 2-inch-diameter sampling rods into undisturbed soil and collects continuous core samples. Each boring will be logged and a capillary fringe soil samples collected for hydrocarbon analyses (discussed in Task 3). Temporary PVC screen casing will be inserted into the open bore and a grab-groundwater sample will be collected using a new disposable bailer.

Soil Boring, Locations and Sample Selection

This portion of the field investigation will consist of advancing two direct-push exploratory borings offsite in the downgradient direction, and one to the north and northwest, utilizing Geoprobe™ drilling technology. The hilly and densely populated residential neighborhood limits the possible drilling locations such that the nearest downgradient accessible locations from the site are along Oakland Ave, about 275 to 350 feet away and 60 feet less in elevation. The exact locations of the bores may need to be moved due to site constraints or site owner concerns. Figure 1 presents the proposed bore locations.

Continuous soil sampling will be conducted during drilling using new 4-foot-long acetate sleeves provided by the drilling contractor. Soil sleeves will be cut into 1-foot sections with a clean hacksaw for examination, logged, and field screened with a photoionization detector (PID). Assuming no pronounced PID response, one sample will be collected from each of the borings at the capillary fringe zone. Groundwater is expected to be encountered between 10 and 30 feet bgs.

Figure 1 is an aerial view of the site showing location of proposed offsite bores.

Task 3: Laboratory Analyses

All soil and groundwater samples will be analyzed by a California ELAP-certified analytical laboratory. The analytical results will be performed at a standard turnaround (2 weeks). The previous ACEH required analyses, including the fuel oxygenates, lead scavengers, and ethanol have been dropped because they were not detected in the previous analyses.

- Total extractable and volatile hydrocarbons – diesel and gas range (TPH-d, TPH-g) by EPA Method 8015M or 8260; and
- Aromatic hydrocarbons - BTEX and MTBE by EPA Method 8260.

Task 4: Groundwater Well Installation

Technical Rationale of Well Location and Construction Specifications

The drilling and well installation will be completed using a licensed drilling subcontractor under the direction of SES. Drilling refusal was encountered during the April 2007 investigation at 21 to 24 feet bgs, therefore the borehole will be advanced with a 6 to 8-inch diameter auger drill mounted on a Geoprobe rig. SES will install one 2-inch diameter PVC groundwater monitoring well in the sidewalk median strip planter immediately adjacent to the former UFST location and where the highest concentration of TEH-diesel (2,400 mg/L) was detected in groundwater during the April 2007 investigation. The well will be used for the collection of groundwater samples, as a dewatering point and as a conduit to inoculate the contaminated zone with Regenox®, an oxygen reducing compound to breakdown the residual fuel product in groundwater.

Based on the site lithology and water level encountered at 22- 24 feet bgs in the May 2007 site investigation, we anticipate installing a 30 or 35 foot deep well screened from 20 to 30 -35-feet bgs in the target water-bearing zone.

Figure 2 is a site plan view showing location of proposed monitoring well.

Well Completion

The following are key construction specifications:

- Well screen 10-15 foot-long, 2-inch inside diameter (ID) (0.02-inch slotted Schedule 40 PVC screen). The 0.02-inch screen slot will be used to allow for better transfer of Regenox® solution into the underlying aquifer.
- #3 Monterey sand placed from borehole depth to 0.5 to 1 foot above the top of the screen;
- Well riser: 2-inch ID Schedule 40 PVC.

- Pollution seal: 2-foot-thick bentonite chips (hydrated) overlain by Portland cement grout slurry to near ground surface.
- Surface completion: Christy-type flush-mount box and locking well casing.

SES will coordinate with ACPW for inspection of monitoring well grout seal.

Task 4: Well Development and Contaminated Groundwater Purging

Due to the potential for heavy contamination at the base of the well traditional well development by groundwater well casing removals will not be completed but a surge block or similar method will be used to clear the fines from the pack material. The groundwater purging will then be completed as part of the interim corrective actions described in Task 5 below.

Management of Investigation-Derived Waste

Soil. Waste soil from the drilling will be containerized in labeled 55-gallon steel drums that will be removed from the site the same day. We will use previously collected soil analyses to pre-profile the soil for landfill disposal.

Water. Well development and purged groundwater, and equipment decontamination rinseate will be containerized in labeled, 55-gallon drum(s) and removed from the site the same day. A grab-groundwater sample will be collected from the Orange Street boring prior to installing the monitoring well and will be used for profiling and disposal of purgewater at a permitted wastewater treatment facility the same day.

Task 5: Interim Corrective Actions—Groundwater Purging and ORC Inoculation

The Responsible Party proposes to implement interim corrective actions to remove contaminant mass and reduce the overall long-term impact to groundwater and shorten the period to regulatory site closure. The corrective actions described will consist of removal of accessible contaminated groundwater through short-term groundwater pumping followed by ORC™ inoculation. This task will be conducted contingent upon feasibility as determined by the aquifer characteristics noted during dewatering conducted in Task 4.

Purging Contaminated Groundwater

No later than 2 to 3 days following the well installation and development additional development and contaminated groundwater recovery by a limited groundwater dewatering will be completed. The primary goal is to dewater up to 200 gallons of diesel-contaminated groundwater in the hopes that the contaminated “pool” is a limited, stratigraphically trapped zone, that will allow for

rapid cleanup. A post purge groundwater sample will be collected to document effectiveness of dewatering.

Inoculation with Oxygen releasing Compound (ORC)

As discussed in detail in the SES June 2007 Corrective Action Investigation Report, we have identified contaminated groundwater (at approximately 22 feet bgs) around bore B1 in the SES April 2007 investigation, where the groundwater showed a TEHd concentration of 2,400 mg/L suggesting the presence of free-phase petroleum (diesel) product. The extent of the “hotspot” is only defined by nearby bore B2, approximately 20 feet away with 490 µg/L TEHd that is assumed to be downgradient from the UFST source on the basis of topography. The oxygen releasing compound ORC Advanced™ was selected to inoculate the groundwater in the area. This passive remedial technique creates a highly oxygenated zone in the areas where natural attenuation is limited by oxygen availability. The total estimated loading will be calculated after development and sampling of the site source monitoring well. The ORC® product will continue to break down petroleum compounds and associated daughter products for up to 2 years. Future additional groundwater monitoring, pumping (and/or removal of LNAPL) might be appropriate if site conditions or data results warrant it.

Task 6: Technical Reports

We will prepare the following technical documentation reports.

Well Installation and Plume Impact Evaluation Report

- Summary of historical UFST removal and sampling activities, and initial site characterization results;
- Technical objectives of the program;
- Discussion of borehole drilling, offsite grab-groundwater samples, well installation, and sampling protocols/methods;
- Tabular summary of analytical results, including the first groundwater monitoring event and the corrective action results;
- Figure(s) showing site layout, well location, plume geometry in plan and section view;
- Evaluation of site hydrogeologic conditions, including borehole geologic logs for boreholes, and a map showing local groundwater flow direction;
- Department of Water Resources monitoring well completion report;
- Discussion of interim remediation method and dewatering results;
- Discussion of analytical results in the context of estimated contaminant mass removed and residual contaminant concentrations.

- Site conceptual model;
- Regulatory considerations and closure criteria;
- Technical appendices (e.g. lab reports, well elevation data, borehole logs, permits, waste transport documentation, photodocumentation, etc.).

The report will also evaluate the potential for site closure, and the need to conduct any additional site characterization activities to close data gaps (if appropriate).

In accordance with requirements by the State Water Resources Control Board and Santa Clara County Environmental Health, the reports will be uploaded (as electronic files) to the State GeoTracker and ACEH “ftp” systems.

ESTIMATED SCHEDULE

The responsible party (Ms. Mary Kranz, executor of the Estate of David Ulibarri) will proceed with the work as soon as practical following receipt of ACEH’s concurrence with this workplan. We anticipate completing the work in the following sequence:

- Installation of offsite grab groundwater samples to delineate lithology and hydrochemistry to investigate lateral extent of the contamination;
- Completion of boring, sampling and installation of the groundwater well and development;
- Completion of dewatering and sampling of contaminated groundwater from source well;
- Completion of emplacement of ORC® product; and
- Completion of the Technical Documentation Report

SES anticipates that the first technical report (discussing exploratory corrective actions and confirmation sampling of monitoring well) will be submitted within 8 to 10 weeks following ACEH’s directive.

TEAM QUALIFICATIONS

Stellar Environmental Solutions, Inc. has completed dozens of similar projects, including projects under oversight of Santa Clara County Environmental Health. Our team will consist of:

- Stellar Environmental Solutions, Inc. (owner’s consultant responsible for overall project coordination, geologic evaluation, sampling, data evaluation, and report certification by a California Registered Geologist);
- Borehole driller with a current C-57 license;

Mr. Steven Plunkett
February 11, 2008
Page 8 of 8

- California-licensed well surveyor; and
- Analytical laboratory with a current California ELAP certification.

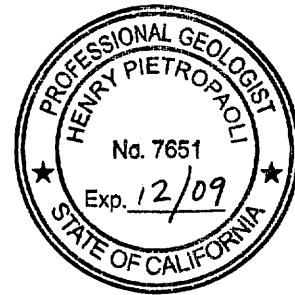
We trust that this submittal meets your agency's needs. We will contact you in the near future to confirm your receipt of this workplan. In the interim, please contact the undersigned directly if you have any questions.

We declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of our knowledge.

Sincerely,



Henry Pietropaoli, R.G., R.E.A.
Project Manager



Richard S. Makdisi, R.G, R.E.A.
Principal

cc: Ms. Mary Kranz (Responsible Party)

Attachments: Tables 1 and 2 showing SES investigation data collected
Figure 1: Aerial photo showing proposed borehole sampling locations
Figure 2: Site plan showing location of proposed monitoring well

TABLES & FIGURES

Table 1
Soil and Groundwater Analytical Results
387 Orange Street, Oakland, California
April 19, 2007

Sample ID	TEHd	BTEX	MTBE	Fuel Oxygenates	Lead Scavengers	Ethanol
<i>Grab-Groundwater Samples ^(a)</i>						
B-1-GW	2,400,000	ND	ND	ND	ND	ND
B-2-GW	460	ND	ND	ND	ND	ND
<i>Borehole Soil Samples ^(b)</i>						
B-1-13	2.5	ND	ND	ND	ND	ND
B-1-18	100	ND	ND	ND	ND	ND
B-2-14.5	3.7	ND	ND	ND	ND	ND
B-2-18	< 1.0	ND	ND	ND	ND	ND
B3-19	4.2	ND	ND	ND	ND	ND
B4-14	22	ND	ND	ND	ND	ND
B4-18	< 1.0	ND	ND	ND	ND	ND
B4-23	1.7	ND	ND	ND	ND	ND
ESLs	100	1.0	40	30	13	5.0

Notes:

^(a) Groundwater concentrations are in micrograms per liter (µg/L).

^(b) Soil concentrations are in milligrams per kilogram (mg/kg).

BTEX = benzene, toluene, ethylbenzene, and total xylenes

MTBE = methyl tertiary-butyl ether

TEHd = total extractable hydrocarbons as diesel

Fuel oxygenates = TBA, DIPE, ETBE, and TAME

Lead scavengers = EDC and EDB

ND = none detected above laboratory reporting limit

ESLs = Water Board Environmental Screening Levels for residential sites where groundwater is a potential drinking water resource

Samples in **bold-face type** equal or exceed the ESL criteria.

Table 2
August 2007 UST Removal Soil Sampling Analytical Results
387 Orange Street, Oakland, California

Sample I.D.	Sample Depth (feet)	TEHd	TVHg	TVHmo	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total Lead
T-15-N (northeast)	15	26	<0.98	<5.0	<0.005	<0.005	<0.005	<0.005	4.2
T-15-S (southwest)	15	85	8.8	110	<0.005	<0.005	<0.005	0.011	2.4
Soil ESLs		100	100	1,000	0.044	2.9	3.3	2.3	150

Notes:

ESLs = Water Board Environmental Screening Levels for residential sites where groundwater *is* a potential drinking water resource

TEHd = total extractable hydrocarbons – diesel range

TVHg = total volatile hydrocarbons – gasoline range

TVHmo = total volatile hydrocarbons – motor oil range (includes oil & grease range)



PROPOSED LOCATION OF OFFSITE BORES

385 Orange St.
Oakland, CA

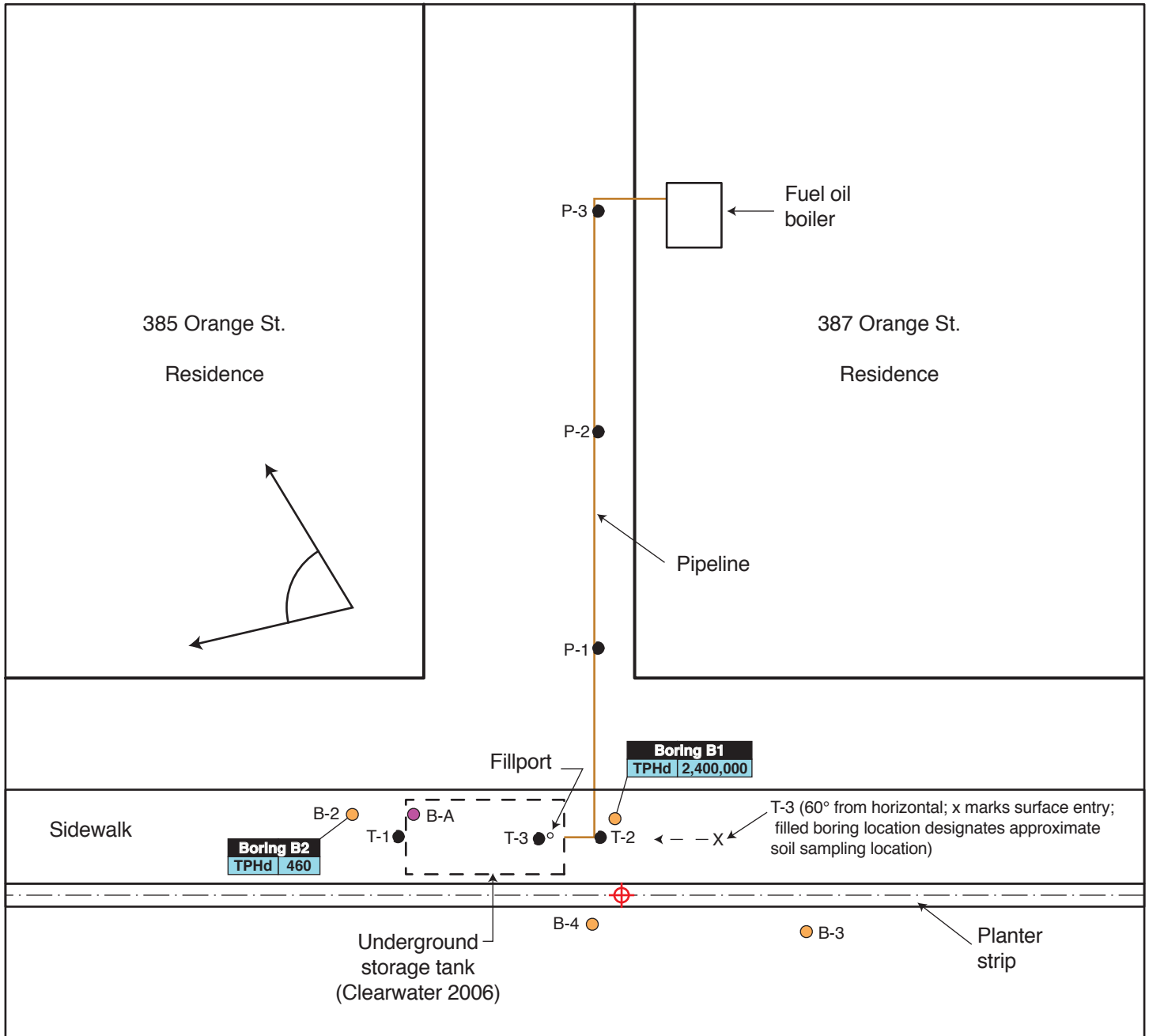
By: MJC

FEBRUARY 2008

Figure 1



2007-09-11



LEGEND

- Proposed location of monitoring well (dewatering point)
 - T-2 Clearwater Group tank sample (2006)
 - P-2 Clearwater Group pipeline sample (2006)
 - B-1 SES boring (2007)
 - B-A Abandoned boring location (SES 2007)
 - Inferred location of UST (CWG, 2006; SES, 2007)
- TPHd=Total petroleum hydrocarbons as diesel concentrations in $\mu\text{g/L}$
- Presumed groundwater flow direction based on topography



Modified from original source: Clearwater Group



PREVIOUS HYDROCHEMICAL DATA AND PROPOSED LOCATION OF PURGE POINT/ DEWATERING MONITORING WELL

**385-387 Orange St.
Oakland, CA**

By: MJC

FEBRUARY 2008

Figure 2



2007-09-10