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**SECOND SEMI-ANNUAL 2006  
GROUNDWATER MONITORING  
REPORT**

**FORMER RUSS ELLIOTT, INC. FACILITY  
2526 WOOD STREET  
OAKLAND, CALIFORNIA**

**ALAMEDA COUNTY HEALTH  
CASE NO. RO000040**

*Prepared for*

**MS. JEANNETTE ELLIOTT  
SAN LEANDRO, CALIFORNIA**

**September 2006**

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**ALAMEDA COUNTY HEALTH  
CASE NO. RO000040**

*Prepared for:*

**MS. JEANNETTE ELLIOTT  
1744 SKYVIEW DRIVE  
SAN LEANDRO, CALIFORNIA 94577**

*Prepared by:*

**STELLAR ENVIRONMENTAL SOLUTIONS, INC.  
2198 SIXTH STREET  
BERKELEY, CALIFORNIA 94710**

**September 27, 2006**

**Project No. 2003-41**

September 22, 2006

Mr. Barney Chan  
Hazardous Materials Specialist  
Alameda County Health Care Services Agency  
Department of Environmental Health, Local Oversight Program  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Subject: Second Semi-Annual 2006 Groundwater Monitoring Report  
Former Russ Elliott, Inc. Facility – 2526 Wood Street, Oakland, California  
Alameda County Health Case No. RO000040

Dear Mr. Chan:

This report documents the tenth consecutive groundwater monitoring event conducted in August 2006 by Stellar Environmental Solutions, Inc. (SES) at the referenced site. This event marks the second semi-annual monitoring event in accordance with the reduced groundwater monitoring schedule, from quarterly to semi-annually, approved by Alameda County Health. Three site groundwater monitoring wells were installed and first sampled in February 2004 to evaluate impacts from two former onsite underground fuel storage tanks. The scope of work was conducted in accordance with the Alameda County Health-approved technical workplan. This report was uploaded to the State Water Resources Control Board's GeoTracker system and Alameda County Health's "ftp" website.

In our professional opinion, continued semi-annual monitoring is no longer warranted, the monitoring completed to date having established plume stability with only low levels of MTBE still being detectable. I 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 my knowledge. Please contact us at (510) 644-3123 if you have any questions.

Sincerely,

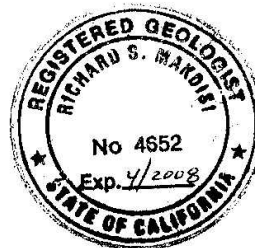


Teal Glass  
Senior Environmental Scientist



Richard S. Makdisi, R.G. (#4652) R.E.A.  
Principal

cc: Ms. Jeannette Elliott – Property Owner



# TABLE OF CONTENTS

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Section	Page
1.0 INTRODUCTION.....	1
Project Background.....	1
Site and Vicinity Description.....	1
Previous Investigations and Corrective Actions .....	4
Objectives and Scope of Work.....	5
Regulatory Oversight .....	5
2.0 PHYSICAL SETTING.....	6
Lithology .....	6
Groundwater Hydrology .....	6
3.0 FIRST SEMI-ANNUAL 2006 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES.....	9
4.0 REGULATORY CONSIDERATIONS .....	11
Regulatory Status .....	11
Residual Contamination Regulatory Considerations .....	11
Site Closure Criteria.....	12
5.0 FIRST SEMI-ANNUAL 2006 MONITORING EVENT ANALYTICAL RESULTS.....	13
6.0 SUMMARY, CONCLUSIONS, OPINION, AND RECOMMENDATIONS .....	18
Summary and Conclusions.....	18
Proposed Actions .....	19
8.0 REFERENCES AND BIBLIOGRAPHY .....	20
9.0 LIMITATIONS .....	22

## Appendices

- Appendix A Well Monitoring and Sampling Field Records
- Appendix B Analytical Laboratory Report and Chain-of-Custody Record
- Appendix C Historical Groundwater Monitoring Well Analytical Results

# TABLES AND FIGURES

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<b>Tables</b>	<b>Page</b>
Table 1 Groundwater Monitoring Well Construction and Groundwater Elevation Data - February 24, 2006 Monitoring Event 2526 Wood Street, Oakland, California.....	9
Table 2 February 24, 2006 Groundwater Analytical Results 2526 Wood Street, Oakland .....	14

<b>Figures</b>	<b>Page</b>
Figure 1 Site Location Map.....	2
Figure 2 Site Plan .....	3
Figure 3 Groundwater Elevation Map – February 24, 2006 .....	8
Figure 4 February 2006 Groundwater Analytical Results.....	15

# 1.0 INTRODUCTION

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## PROJECT BACKGROUND

Stellar Environmental Solutions, Inc. (SES) was retained by Ms. Jeannette Elliott (property owner) to conduct ongoing groundwater monitoring and sampling activities at 2526 Wood Street in Oakland, California. The work is designed to evaluate impacts from former onsite underground fuel storage tanks (UFSTs). Previous site corrective actions and investigations are summarized later in this report. The Alameda County Health Care Services Agency, Department of Environmental Health (Alameda County Health) is the lead regulatory agency for the investigation, and has assigned the site as Fuel Leak Case No. RO000040. The California GeoTracker Global ID for the facility is T0600102110.

## SITE AND VICINITY DESCRIPTION

The project site is a former roofing company (Russ Elliott, Inc.) located at 2526 Wood Street, Oakland, Alameda County, California (site). The business ceased operations at the site in early 2004, and is currently occupied by a construction firm. The property was recently sold; however, the previous property owner (Ms. Jeannette Elliott) remains responsible for the UFST-related site investigation.

The property is approximately 380 feet long (between Wood Street and Willow Street) by approximately 120 feet wide. The long axis of the site (parallel to 26<sup>th</sup> Street) is oriented approximately northeast to southwest. Figure 1 is a site location map. Figure 2 shows the location of the former site UFSTs in relation to the site buildings and adjacent streets.

The former UFSTs and current area of investigation are situated in the largely unpaved service yard near the western border of the subject property (near 26<sup>th</sup> Street). Access to this area is provided either through a chain link gate on 26<sup>th</sup> Street or a gate operated by the current tenant on Willow Street. The area available for exterior drilling is limited by adjacent buildings and an active railroad spur that services an adjacent parcel. Nearby land use is wholly commercial and light industrial (there are no residential or other sensitive land uses in the immediate vicinity).

Downgradient land use (to the west beginning with the closest property) includes streets, undeveloped land with freeway overpasses, and the San Francisco Bay (a total of approximately 3,000 feet from the subject property).

**Figure 1**  
**Site Location Map**



**SITE LOCATION ON U.S.G.S. TOPOGRAPHIC MAP**

2526 Wood Street  
Oakland, CA

By: MJC

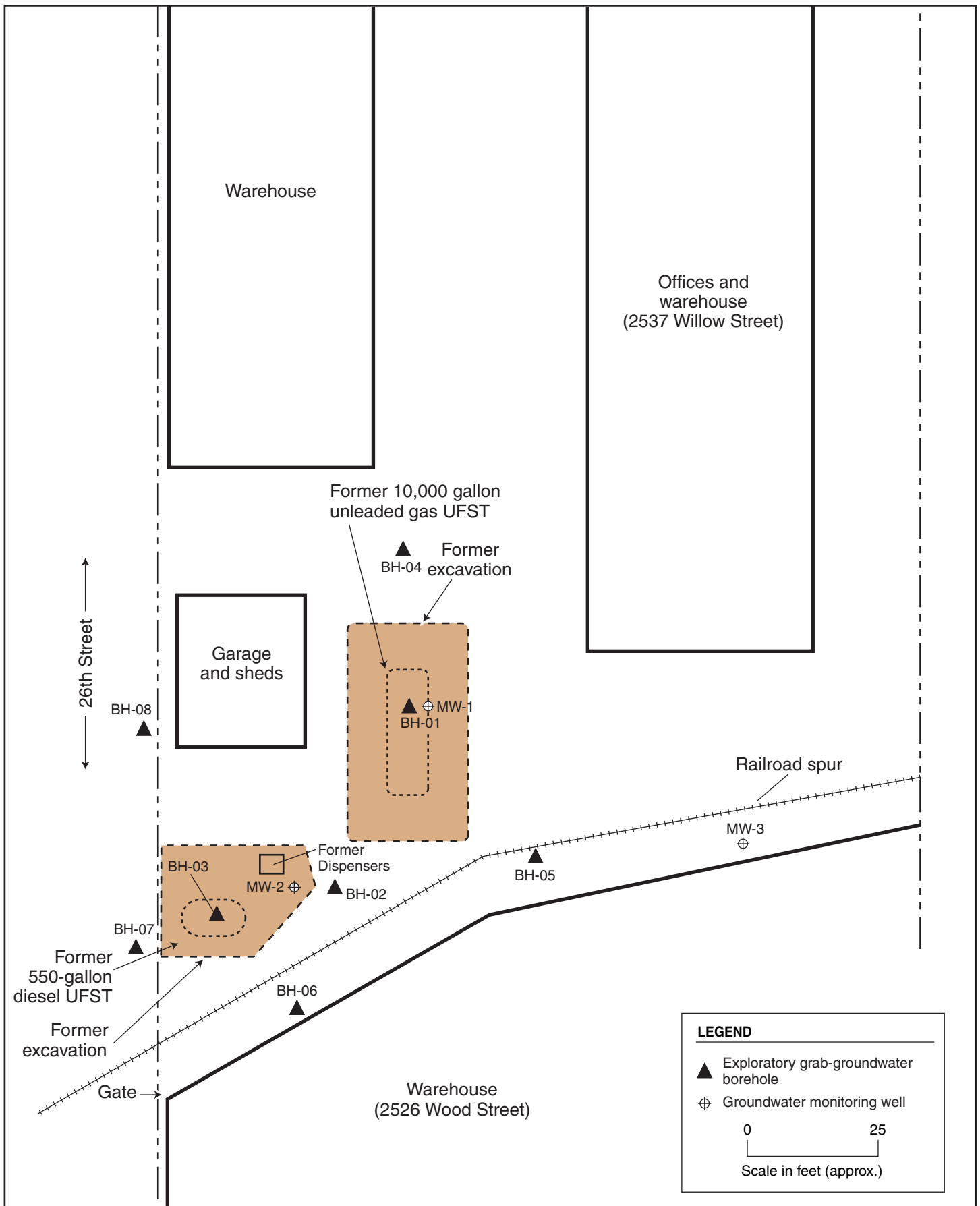
JULY 2003

Figure 1

2003-36-01



**Figure 2**  
**Site Plan**



**SITE PLAN AND HISTORICAL SAMPLING LOCATIONS**

2526 Wood Street  
Oakland, CA

By: MJC

SEPTEMBER 2006

**Figure 2**



2003-41-22



## **PREVIOUS INVESTIGATIONS AND CORRECTIVE ACTIONS**

### **UFST Removals**

Two UFSTs were located near the western border of the subject property (near 26<sup>th</sup> Street), approximately 40 feet from each other. Both UFSTs were utilized for fueling company vehicles, and shared a common dispenser island that was located between them. Both UFSTs were removed under permit and regulatory oversight.

The 550-gallon diesel UFST was removed in 1995, and the 10,000-gallon gasoline UFST was removed in 2002. The confirmation soil and water sampling conducted during the UFST removals suggested a historical leak in the UFST and/or piping. The abatement contractor in charge of the removal did not submit a UFST closure documentation report.

A UFST closure documentation report prepared by SES (SES, 2003a), that discussed both UFST removals, was submitted to both the Oakland Fire Department and Alameda County Health.

### **2003 Preliminary Site Assessment**

Concurrent with the UFST closure documentation report, SES submitted to Alameda County Health a technical workplan for a Preliminary Site Assessment (PSA) (consisting of exploratory borehole drilling and sampling) to evaluate the potential for residual contamination (SES, 2003b). Alameda County Health subsequently approved the technical workplan (Alameda County Health, 2003). The investigation, conducted in 2003, included advancing and sampling (of soil and groundwater) from eight exploratory boreholes. A PSA documentation report was submitted to Alameda County Health (SES, 2003c).

Groundwater contaminants detected above screening-level criteria include diesel, gasoline, benzene, methyl *tertiary*-butyl ether (MTBE), and *tertiary*-butyl alcohol (TBA). The only soil contaminant detected above screening-level criteria was MTBE. The contamination was confined to the immediate vicinity of the former gasoline UFST. No soil contamination was detected beneath the upper water-bearing zone.

### **Groundwater Monitoring Well Installation**

On behalf of the property owner, SES submitted to Alameda County Health a technical workplan for a program of groundwater monitoring well installation, sampling, and reporting (SES, 2004a). Alameda County Health subsequently approved the well installation workplan (Alameda County Health, 2004). Three groundwater monitoring wells were installed, developed, surveyed, and sampled in February 2004 (SES, 2004b).

## **Groundwater Monitoring Well Sampling**

Ten groundwater monitoring well monitoring/sampling events were conducted on a quarterly basis between February 2004 and August 2006. Groundwater monitoring frequency was reduced from quarterly to semi-annual following the February 2006 event, in accordance with the Alameda County Health-approved reduced groundwater monitoring schedule. Appendix C contains historical groundwater well monitoring analytical results.

## **OBJECTIVES AND SCOPE OF WORK**

This report discusses the following activities conducted/coordinated by SES in the semi-annual (6 month) period between April 1 and September 30, 2006:

- Collecting water levels in site wells to determine shallow groundwater flow direction.
- Sampling site wells for contaminant analysis and indicators of natural attenuation.

## **REGULATORY OVERSIGHT**

The lead regulatory agency for the site investigation and remediation is Alameda County Health. All work plans and reports are submitted to this agency. The most recent Alameda County Health directive regarding the site (email dated January 26, 2006) approved the reduction of groundwater monitoring events from quarterly to semi-annually (two events per year), and discontinuing analysis for diesel (which monitoring has shown to not be a site contaminant of concern). The previous Alameda County Health directive regarding the site (letter dated January 6, 2004) approved the well installation and quarterly groundwater monitoring and sampling.

The site is in compliance with the State Water Resources Control Board's GeoTracker requirements for uploading electronic data and reports. In addition, electronic copies of technical documentation reports published since Q3 2005 have been uploaded to Alameda County Health's file transfer protocol (ftp) system. Per Alameda County Health's October 31, 2005 "Miscellaneous Administrative Topics and Procedures" directive, effective January 31, 2006, paper copies of reports will no longer be provided to Alameda County Health.

## **2.0 PHYSICAL SETTING**

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Following is a brief summary of the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since October 2003.

A detailed discussion of site lithology and hydrogeology was provided in the well installation report (SES, 2004a). The following summarizes site conditions. A total of 11 exploratory boreholes at the subject property have been geologically logged by a California Registered Geologist using the visual method of the Unified Soils Classification System. The majority of site boreholes have been advanced to 20 feet below ground surface (bgs). That interval includes the upper water-bearing zone and the underlying low-permeability non-water-bearing zone (aquitarde).

### **LITHOLOGY**

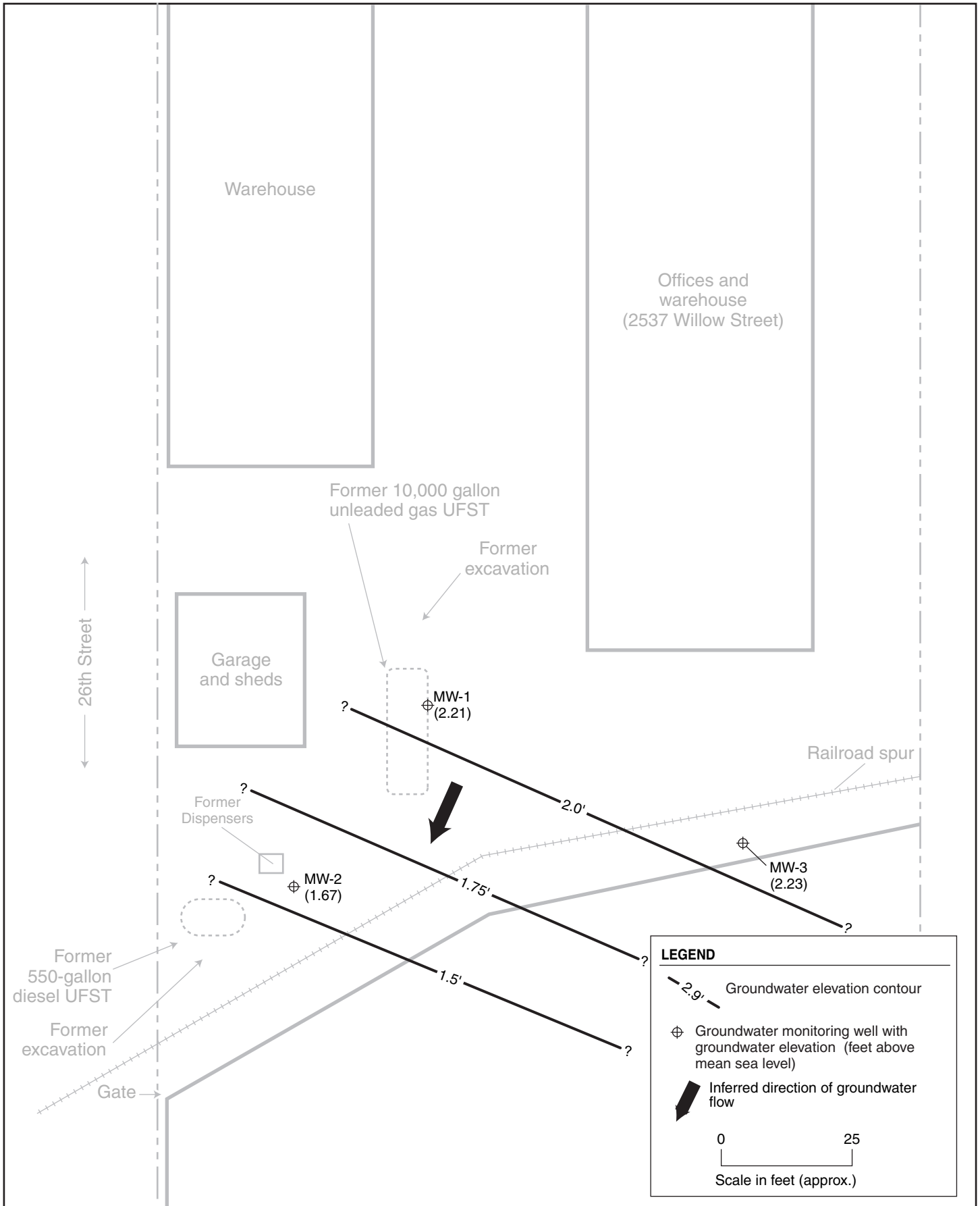
In general, native soil consists primarily of clay (often silty), with interbedded sandy and gravelly zones. The upper 2 to 3 feet is dry, gravelly, sandy fill material. In the majority of the boreholes, this was underlain by a sand (often silty and clayey) varying in thickness from 1 to 6 feet, in which water was encountered (see below). This is underlain by a clay unit, occasionally with interbedded sand stringers. In some of the boreholes, this clay unit extends to total depth. In other boreholes, this clay unit is underlain by a sand unit, which in turn is underlain by a low-permeability clay (often gravelly). The shallow site lithology is typical of alluvial fan and stream depositional environments in this area, with lower-permeability (clay and silt) overbank deposits, and higher-permeability (sand and gravel) channel deposits, with significant lateral and depth variation over short distances.

### **GROUNDWATER HYDROLOGY**

Two shallow water-bearing zones were encountered in native soils in the majority of site boreholes. The top of the upper zone (possibly a perched water zone) was encountered at depths between approximately 4 and 8 feet bgs, in a sandy zone. Water was then encountered again at depths between approximately 13.5 and 17.5 feet bgs. In some of the boreholes, this deeper water was encountered at the top of the sand zone (when present); in other boreholes, it was within the lower clay unit. Water levels in wells MW-1 and MW-2 (installed in the former UFST backfill areas) are likely influenced by direct infiltration during winter recharge events due to the higher permeability of excavation backfill material.

Depth to groundwater (equilibrated in wells) in the current monitoring event ranged from approximately 4.62 to 4.74 feet below grade. Figure 3 is a groundwater elevation and contour map for the current event. Table 1 (in Section 3.0) summarizes current groundwater level data. Groundwater flow direction during the current event was to the west. The groundwater flow direction varies seasonally between west and southeast (SES, 2005e).

**Figure 3**  
**Groundwater Elevation Map – August 23, 2006**



**GROUNDWATER ELEVATION MAP — AUGUST 24, 2006**

2526 Wood Street  
Oakland, CA

By: MJC

SEPTEMBER 2006

**Figure 3**





### 3.0 SECONDD SEMI-ANNUAL 2006 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

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This section presents the groundwater monitoring and sampling methods for the most recent groundwater monitoring/sampling event. Analytical results are discussed in a subsequent section. Activities included:

- Measuring static water levels with an electric water level indicator;
- Purging wells to obtain representative formation water (and collecting aquifer stability parameters between each purging); and
- Collecting post-purge groundwater samples for laboratory analysis.

On August 23, 2006, groundwater monitoring well water level measurements, purging, and sampling activities were conducted by Dysert Environmental, Inc., under the supervision of SES personnel. Table 1 shows the well construction and groundwater elevation data. Appendix A contains the groundwater monitoring field records for the sampling event.

**Table 1**  
**Groundwater Monitoring Well Construction and Groundwater Elevation Data**  
**August 23, 2006 Monitoring Event**  
**2526 Wood Street, Oakland, California**

Well	Well Depth <sup>(a)</sup>	Screened Interval	TOC Elevation <sup>(b)</sup>	Groundwater Depth <sup>(c)</sup>	Groundwater Elevation <sup>(b)</sup>
MW-1	20 <sup>(d)</sup>	5 to 20	6.95	4.74	2.21
MW-2	20	5 to 20	6.29	4.62	1.67
MW-3	20	5 to 20	6.94	4.71	2.23

Notes:

<sup>(a)</sup> Well depths are expressed in feet bgs, and are approximate.

<sup>(b)</sup> All elevations are expressed as feet above mean sea level.

<sup>(c)</sup> Groundwater depths are expressed in feet bgs relative to the top of well casing.

<sup>(d)</sup> Well has approximately 8 feet of gravel in bottom due to a wellbox displacement and gravel entry during construction in January 2004.

TOC = Top of casing.

All wells are 2-inch-diameter.

MW-1 elevation was resurveyed in April 2005 after the well box and casing tops were damaged and replaced.

As the first task of the monitoring event, static water levels were measured using an electric water level indicator. Each well was then purged (with a downhole pump) of three wetted casing volumes. Aquifer stability parameters were measured between each purged casing volume to ensure that representative formation water entered the well before sampling. Neither separate-phase petroleum product nor sheen was observed during well purging/sampling.

The “GeoWell” data for this event (water levels) were uploaded in electronic data file (EDF) format to the State Water Resources Control Board’s GeoTracker on-line database.

In reviewing previous groundwater monitoring data, we have noted that measured well depths (during groundwater monitoring) in MW-2 and MW-3 are less than installed depth (approximately 1.5 feet in MW-3 and approximately 3 feet in MW-2). This is likely due to infiltration of sediment through the well screen, a common occurrence in fine-grained sediments. We have also determined that the measured well depth in MW-1 is approximately 6.5 feet less than the installed depth. This is almost certainly the result of gravel falling in the well in January 2005 when the MW-1 wellbox was damaged/removed during re-paving. In our professional opinion, these conditions do not significantly affect the ability of the well to act as monitoring points for the contaminant plume (either by contaminant concentration or water level).

## 4.0 REGULATORY CONSIDERATIONS

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### REGULATORY STATUS

The lead regulatory agency for petroleum contamination cases in the City of Oakland is Alameda County Health, which is a Local Oversight Program (LOP) for the Regional Water Quality Control Board, San Francisco Bay Region (Water Board). As such, Alameda County Health directly oversees soil and groundwater investigations/remediation on UFST sites (with or without Water Board guidance) until determining that case closure is appropriate, at which time Alameda County Health recommends case closure to the Water Board. Alameda County Health has designated the subject property case as Fuel Leak Case No. RO00040. The site is listed in the Water Board's GeoTracker database of reported releases from petroleum UFSTs (Water Board Case No. 01-2294 and Global ID No. T0600102110).

### RESIDUAL CONTAMINATION REGULATORY CONSIDERATIONS

The most applicable published numerical criteria governing residual soil and groundwater contamination at this site are the Water Board's Environmental Screening Levels (ESLs) (Water Board, 2005). ESLs are screening-level criteria used to evaluate whether additional investigation and/or remediation are warranted. Criteria to be considered in using the ESLs include:

- contamination is limited to surface soil (less than 10 feet deep) or to subsurface soil;
- soil is fine-grained or coarse-grained;
- land use is residential or commercial/industrial; and
- groundwater *is or is not* a known or potential drinking water source.

For the detected site contaminants, the ESL values are the same for surface soil and subsurface soil.

The appropriate ESLs for this site are for coarse-grained soil (a conservative assumption, as grain-size analysis has not been conducted) and commercial/industrial land use (because the owner has no plans to redevelop the property with residential land use). Qualifying for the (usually higher) ESL values for sites where groundwater *is not* a current or potential drinking water source requires obtaining a site-specific variance from the Water Board. The Water Board completed an East Bay Beneficial Use Study (Water Board, 1999) that covers the Richmond-to-Hayward East Bay Basin Area and, based on multiple technical criteria, divides the Basin into three zones:

- Zone A (significant drinking water resource);
- Zone B (groundwater unlikely to be used as drinking water source); and
- Zone C (shallow groundwater proposed for redesignation as Municipal Supply Beneficial Use). This classification indicates that groundwater could not reasonably be expected to serve a public water supply; however, it does not specifically address private water supply wells that might be used for drinking water. In accordance with State Water Resources Control Board Resolution 92-49, pollution sites within this zone must not pose a potential impact to human health or ecologic receptors, and the groundwater contamination plume must be stable or reducing.

The subject site falls within Zone C. The most conservative assumption for the site is that there is a potential for private drinking water wells to be impacted. However, the site location (with no residential downgradient land use) suggests that the less conservative ESLs (“a potential or current drinking water source is not threatened”) may be appropriate when the site is considered for case closure. Until case closure is considered, this report (and future reports) will discuss residual soil and groundwater contamination in the context of the more conservative ESL criteria.

#### **SITE CLOSURE CRITERIA**

Alameda County Health and the Water Board generally require that the following criteria be met before issuing regulatory closure of petroleum release cases:

1. *The contaminant source (UFSTs and obviously-contaminated backfill material) has been removed.* This criterion has been met, and the available soil analytical results indicate that the residual MTBE soil contamination in the immediate vicinity of the former UFSTs will not be an appreciable long-term source of groundwater contamination.
2. *The groundwater contaminant plume is stable or reducing—i.e., groundwater contamination is not increasing in concentration or lateral extent.* This criterion has not yet been met, and will be evaluated based on the ongoing semi-annual groundwater sampling program.
3. *If residual contamination (soil or groundwater) exists, there is no reasonable risk to sensitive receptors (i.e., surface water or water supply wells) or to site occupants.* This criterion is generally met by conducting a sensitive receptor survey and/or a Risk-Based Corrective Action (RBCA) assessment that models the fate and transport of residual contamination in the context of potential impacts to sensitive receptors. This task is generally conducted after the previous two criteria have been met. Based on the apparent absence of benzene (the probable “risk driver” compound for this site) at elevated concentrations and the likely absence of sensitive receptors, if private wells are eliminated as potential receptors, the site would likely pass the RBCA assessment.

## 5.0 SECOND SEMI-ANNUAL 2006 MONITORING EVENT ANALYTICAL RESULTS

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This section discusses the findings of the current sampling event. Historical groundwater monitoring well analytical results are included as Appendix C.

All groundwater samples in the current sampling event were analyzed for:

- Total volatile hydrocarbons – gasoline range (TVHg), by modified EPA Method 8015;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX), by EPA Method 8020;
- MTBE, by EPA Method 8260;
- Fuel oxygenates (*tertiary*-amyl methyl ether [TAME], di-isopropyl ether [DIPE], and TBA), by EPA Method 8260; and
- Lead scavengers (1,2-dichloroethane [EDC] and 1,2-dibromomethane [EDB]), by EPA Method 8260.

All groundwater samples were analyzed by EnTech Analytical Labs, which maintains current ELAP certifications for all of the analytical methods utilized in this investigation. Appendix B contains the certified analytical laboratory report and chain-of-custody record for this event.

Table 2 summarizes the groundwater sample analytical results from the current well sampling event. Figure 4 displays the groundwater analytical results on the site plan.

Only two contaminants were detected in the current event. MTBE was detected at concentrations between 120 µg/L (MW-2) and 240 µg/L (MW-1). The Water Board ESL criterion for MTBE for a commercial/industrial site where the groundwater is not used as drinking water is 1800 µg/L. TPH as gasoline was detected at concentrations between 50 µg/L (MW-3) and 120 µg/L (MW-2); the ESL is 500 µg/L. Contaminants analyzed for and not detected in the current event include diesel, BTEX, lead scavengers, and fuel oxygenates.

The analytical laboratory report was uploaded in EDF format to the GeoTracker on-line database.

**Table 2**  
**August 23, 2006 Groundwater Analytical Results**  
**2526 Wood Street, Oakland <sup>(a)</sup>**

Sample I.D.	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE <sup>(b)</sup>	Fuel Oxygenates and Lead Scavengers <sup>(b)</sup>
MW-1	<b>82</b>	< 0.5	< 0.5	< 0.5	< 1.0	<b>240</b>	ND
MW-2	<b>50</b>	< 0.5	< 0.5	< 0.5	< 1.0	<b>120</b>	ND
MW-3	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	ND
<b>Groundwater ESLs</b>	500	46	130	290	100	1800	<b>TBA = 1800</b>

**Notes:**

<sup>(a)</sup> All concentrations are in micrograms per liter (µg/L).

<sup>(b)</sup> Full list of fuel oxygenates and lead scavengers is included in Appendix B.

MTBE = methyl *tertiary*-butyl ether

TBA = *tertiary*-butyl alcohol

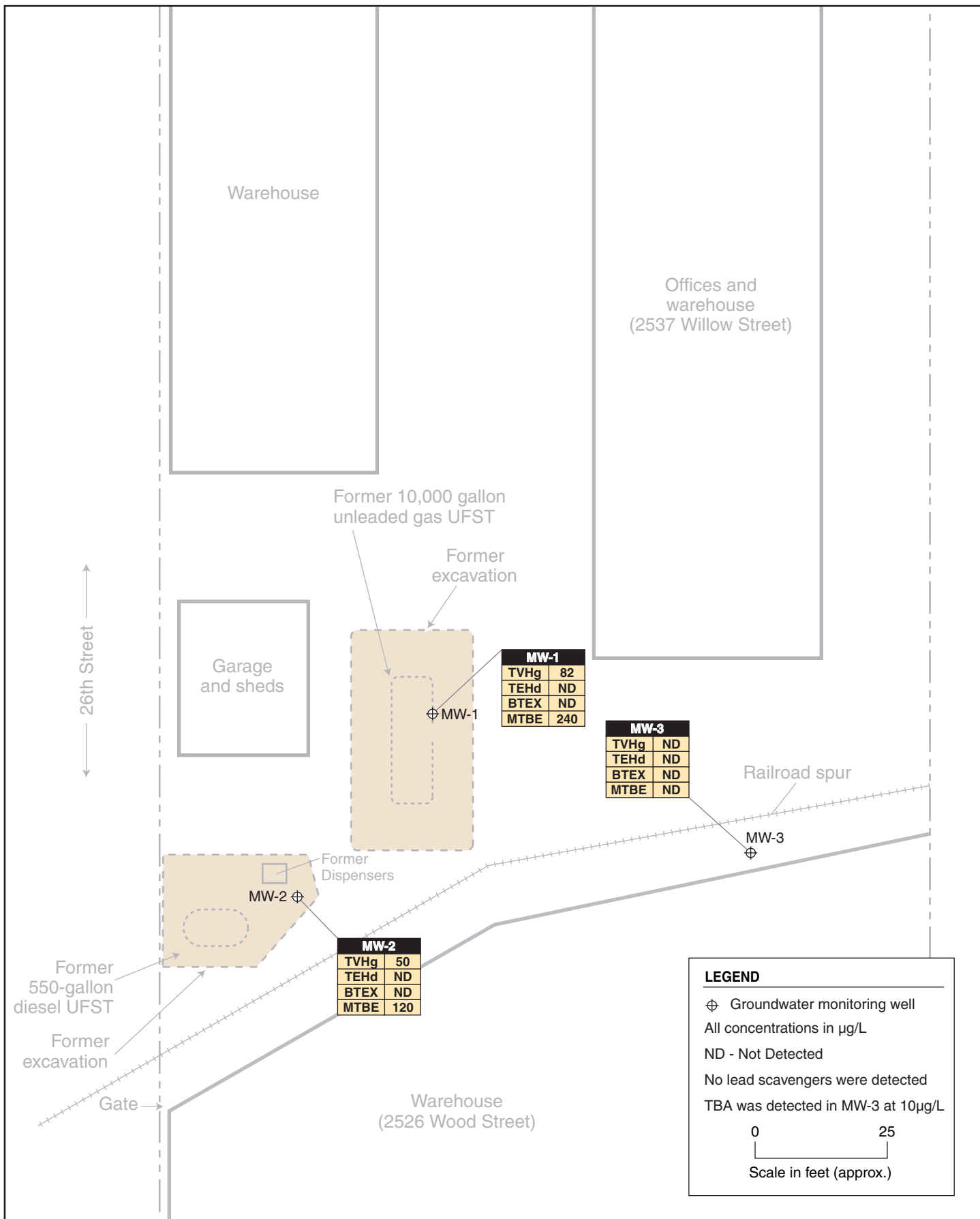
TEHd = total extractable hydrocarbons – diesel range

TVHg = total volatile hydrocarbons – gasoline range

ESLs = Regional Water Quality Control Board, San Francisco Bay Region, Environmental Screening Levels (Water Board, 2005) for commercial/industrial sites where groundwater is not a potential drinking water source.

ND = not detected above method reporting limits

**Figure 4**  
**August 2006 Groundwater Analytical Results**



### AUGUST 2006 GROUNDWATER ANALYTICAL RESULTS

2526 Wood Street  
Oakland, CA

By: MJC

SEPTEMBER 2006

Figure 4





## **6.0 HYDROCHEMICAL TRENDS AND APPLICATION FOR CASE CLOSURE**

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Groundwater elevation and hydrochemical monitoring at the site has occurred since 2004. Early monitoring in the first year established that the fuel oxygenates and lead scavengers were not at issue at site to the regulators satisfaction. Continued quarterly monitoring for TVH, BTEX and MTBE occurred in 2005. Alameda County agreed to move the monitoring to biannual in 2006. This to date there has been 10 groundwater monitoring events.

Figure 5 shows the TVH, BTEX and MTBE trend line over the last 10 monitoring events.

Based on the closure criteria described in Section 4 of this report the site appears to meet the regulatory criteria for site closure and SES is thus petitioning Alameda County to grant case closure for the site.

**Figure 5: TVH, BTEX and MTBE concentration over time plot.**

## **7.0 SUMMARY, CONCLUSIONS, OPINION, AND RECOMMENDATIONS**

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### **SUMMARY AND CONCLUSIONS**

The available data support the following findings and conclusions:

- Two UFSTs containing diesel and gasoline were removed from the site in 1995 and 2002, respectively. Excavation confirmation soil samples indicated that MTBE was the sole contaminant of concern in soil, although pit water samples contained elevated levels of diesel, gasoline, and MTBE. A UFST closure documentation report discussing both UFST removals was submitted to the appropriate regulatory agencies in 2003.
- A Preliminary Site Assessment (exploratory borehole drilling and sampling program) was conducted in October 2003; activities included advancing and sampling eight exploratory boreholes to a maximum depth of 25 feet below grade. Hydrocarbon contamination was most pronounced in samples from the areas of the two former UFSTs and to the south-southwest.
- Three shallow site groundwater monitoring wells were installed, developed, and surveyed in August 2004, and have been sampled on a quarterly basis since that time. In January 2006, Alameda County Health approved a change in the site monitoring schedule from quarterly to semi-annually.
- Site lithology ranges from low-permeability silts and clays to higher-permeability (and water-bearing) sands and gravels. There are two shallow water bearing zones: the top of the upper zone (potentially a seasonally-perched zone), which is encountered at depths between 4 and 8 feet bgs; and the top of the third zone, which is encountered at depths between approximately 13.5 and 17.5 feet bgs. The lower water-bearing zone is underlain by a low-permeability, non-water-bearing zone.
- Local groundwater flow direction varies from south (generally in the rainy season) to west (generally in the dry season). Historical data show the expected seasonal trend of lower groundwater elevations in the dry season, increasing with the onset of rains. The site data suggest that backfill material in one or both of the former UFST excavations may be influencing apparent flow direction.

- The only soil contaminant historically detected above ESL criteria in residual soils (including UFST removal, borehole, and well installation phases) is MTBE, at locations within 15 feet of the former UFST excavations.
- In the current monitoring event, neither diesel, BTEX, fuel oxygenates nor lead scavengers were detected. All contaminants were below the ESL criteria for a non-drinking water source. No contaminants were detected in MW-3.
- The current monitoring wells appear adequate to define local groundwater flow direction and to evaluate site-sourced hydrochemistry, although continued semi-annual groundwater monitoring is warranted to ensure that groundwater contamination above regulatory agency levels of concern is not migrating offsite.
- The property owner is pursuing reimbursement from the State of California Underground Storage Tank Cleanup Fund (Fund) for regulatory agency-directed corrective action and investigation costs. The initial Claim Application was submitted to the Fund in February 2004.
- The site is in compliance with State Water Resources Control Board for electronic uploads of data and technical reports to the GeoTracker on-line database, as well as with Alameda County Health's requirement for electronic upload of technical reports.

## **PROPOSED ACTIONS**

- The property owner petitions Alameda County Health for case closure based on the evidence of plume reduction, stabilization and containment onsite.

## **8.0 REFERENCES AND BIBLIOGRAPHY**

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- SES, 2004c. Second Quarter 2004 Groundwater Monitoring Report – Russ Elliott, Inc. Facility, 2526 Wood Street, Oakland, California. July 1.
- SES, 2004d. Third Quarter 2004 Groundwater Monitoring Report – Russ Elliott, Inc. Facility, 2526 Wood Street, Oakland, California. September 30.
- SES, 2003a. Underground Fuel Storage Tanks Closure Documentation and Assessment Report, Russ Elliott, Inc. – 2526 Wood Street, Oakland, California. August 15.
- SES, 2003b. Workplan for Preliminary Site Assessment – Russ Elliott, Inc. Facility, 2526 Wood Street, Oakland, California. August 20.
- SES, 2003c. Preliminary Site Assessment Report – Russ Elliott, Inc. Facility, 2526 Wood Street, Oakland, California. November 19.

## 9.0 LIMITATIONS

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This report has been prepared for the exclusive use of Ms. Jeannette Elliott, her authorized representatives, and the regulatory agencies. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based on a review of previous investigators' findings at the site, as well as site investigations conducted by SES since 2003. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES personnel who performed this limited remedial investigation are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

The findings of this report are valid as of the date of this report. Site conditions may change with the passage of time, natural processes, or human intervention, which can invalidate the findings and conclusions presented in this report. As such, this report should be considered a reflection of the current site conditions as based on the activities completed.

## **APPENDIX A**

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### **Well Monitoring and Sampling Field Records**





**FLUID-LEVEL MONITORING DATA**

Project Name: RUSS ELLIOT

Date: 8/23/06

Project/Site Location: 2526 WOOD ST., OAKLAND, CA

Technician: SC

Method: ELECTRONIC

Boring/Well	Depth to Water (feet)	Depth to Product (feet)	Product Thickness (feet)	Total Well Depth (feet)	Comments
MW-1	4.74			11.27	@ 1305 H <sub>2</sub> O IN WELL BOX BELOW CASING
MW-2	4.62			15.06	@ 1300
MW-3	4.71			18.18	@ 1255 H <sub>2</sub> O IN WELL BOX BELOW CASING

Measurements referenced to top of well casing.

DYSERT ENVIRONMENTAL, INC.  
WELL PURGING / SAMPLING DATA

Dysert Environmental, Inc.

PROJECT: Russ Elliot  
SITE LOCATION: 2526 Wood St.

DATE: 8-23-06

CITY: OAKLAND

STATE: CA

circle one 12volt submersible pump peristaltic pump bladder pump disposable bailer

SAMPLING DEVICE

circle one bladder pump peristaltic pump disposable bailer other

casing diameter (inches) circle one 0.75 2 4 6

casing volumes (gallons) circle one 0.02 0.2 0.7 1.52

WELL DATA

SAMPLER/S: SC

WELL NUMBER / FIELD POINT ID: MW-1

A. TOTAL WELL DEPTH: 11.27

B. DEPTH TO WATER: 4.74

C. WATER HEIGHT (A-B): 6.53

D. WELL CASING DIAMETER: 2

E. CASING VOLUME: 0.2

F. SINGLE CASE VOLUME (CxE): 1.31

G. CASE VOLUME (s) (CxE x 3 ): 3.93

H: 80% RECHARGE LEVEL (F+B): 6.1

PURGE DATA

START TIME: 1450

PUMP DEPTH: 6

FINISH TIME: 1505

PUMP DEPTH: 7

RECHARGE / SAMPLE TIME

DEPTH TO WATER: 4.76 TIME MEASURED: 1525

GREATER THAN OR EQUAL TO 80% RECHARGE LEVEL (H): circle one YES NO

SAMPLE TIME: 1530 DEPTH TO WATER: 4.76

SAMPLE APPEARANCE / ODOR: YELLOWISH / GAS

TOTAL GALLONS PURGED: 3.95

WELL FLUID PARAMETERS

CASE VOL.	0	0.5	1	1.5	2	2.5	3	POST
Ph	8.39	8.17	8.05	7.99	7.95	7.91	7.92	7.96
TEMP in °C	23.5	23.1	23.1	22.9	23.0	23.1	23.0	22.6
COND / SC	1772	18.25	1822	1830	1851	1865	1871	1934
DTW								
Pump Depth								
Pump Rate								
D.O.								41.4

DYSERT ENVIRONMENTAL, INC.  
WELL PURGING / SAMPLING DATA

Dysert Environmental, Inc.

PROJECT: Russ ELLIOT  
SITE LOCATION: 2526 WOOD ST.

DATE: 8-23-06

CITY: OAKLAND STATE: CA

circle one 12volt submersible pump peristaltic pump bladder pump disposable bailer

circle one bladder pump peristaltic pump circle one disposable bailer other

casing diameter (inches) circle one 0.75 2 4 6  
casing volumes (gallons) circle one 0.02 0.2 0.7 1.52

WELL DATA

SAMPLERS: SC  
WELL NUMBER / FIELD POINT ID: MW-2  
A. TOTAL WELL DEPTH: 15.06  
B. DEPTH TO WATER: 4.62  
C. WATER HEIGHT (A-B): 10.44  
D. WELL CASING DIAMETER: 2  
E. CASING VOLUME: 0.2  
F. SINGLE CASE VOLUME (Cx): 2.1  
G. CASE VOLUME (s) (CxEx 3 ): 6.3  
H. 80% RECHARGE LEVEL (F+B): 6.72

PURGE DATA

START TIME: 1400  
PUMP DEPTH: 6  
FINISH TIME: 1415  
PUMP DEPTH: 7

RECHARGE / SAMPLE TIME

DEPTH TO WATER: 10.76 TIME MEASURED: 1420  
GREATER THAN OR EQUAL TO 80% RECHARGE LEVEL (H): circle one YES (NO)  
SAMPLE TIME: ~~1420~~ 1545 DEPTH TO WATER: 6.72  
SAMPLE APPEARANCE / ODOR: CLEAR / NA  
TOTAL GALLONS PURGED: 6.3

WELL FLUID PARAMETERS

CASE VOL.	0	0.5	1	1.5	2	2.5	3	POST
Ph	7.93	7.20	7.09	7.13	7.15	7.18	7.17	7.15
TEMP in °C	24.8	24.4	24.3	23.7	23.2	22.5	21.9	21.3
COND / SC	1149	1198	1202	1192	1133	1251	1203	1242
DTW								
Pump Depth								
Pump Rate								
D.O.								30.3

DYSERT ENVIRONMENTAL, INC.  
WELL PURGING / SAMPLING DATA

Dysert Environmental, Inc.  
DATE: 8-23-06

PROJECT: RUSS ELLIOT  
SITE LOCATION: 2526 WOOD ST.

CITY: OAKLAND STATE: CA

		PURGE DEVICE		
circle one	12volt submersible pump	peristaltic pump	bladder pump	disposable bailer
		SAMPLING DEVICE		
circle one	bladder pump	peristaltic pump	disposable bailer	other
casing diameter (inches)	circle one	0.75	2	4
casing volumes (gallons)	circle one	0.02	0.2	0.7
				6
				1.52

**WELL DATA**

SAMPLER/S:  
WELL NUMBER / FIELD POINT ID: MW-3  
A. TOTAL WELL DEPTH: 18.18  
B. DEPTH TO WATER: 4.91  
C. WATER HEIGHT (A-B): 13.47  
D. WELL CASING DIAMETER: 2  
E. CASING VOLUME: 0.2  
F. SINGLE CASE VOLUME (CxE): 2.69  
G. CASE VOLUME (s) (CxEx 3 ): 8.07  
H. 80% RECHARGE LEVEL (F+B): 7.4

**PURGE DATA**

START TIME: 1310  
PUMP DEPTH: 5'  
FINISH TIME: 1340  
PUMP DEPTH: 13'

**RECHARGE / SAMPLE TIME**

DEPTH TO WATER: 13.89 TIME MEASURED: 1350  
GREATER THAN OR EQUAL TO 80% RECHARGE LEVEL (H): circle one YES NO  
SAMPLE TIME: 1555 DEPTH TO WATER: 4.76  
SAMPLE APPEARANCE / ODOR: CLEAR / N/A  
TOTAL GALLONS PURGED: 8.10

**WELL FLUID PARAMETERS**

CASE VOL.	0	0.5	1	1.5	2	2.5	3	POST
Ph	6.84	6.92	6.94	6.97	6.99	7.00	7.02	7.04
TEMP in °C	25.6	22.3	22.5	21.8	21.2	20.9	20.7	20.2
COND / SC	304	3.33	3.52	3.59	3.53	3.55	3.52	3.55
DTW								
Pump Depth								
Pump Rate								
D.O.								72.2 *

## **APPENDIX B**

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### **Analytical Laboratory Report and Chain-of-Custody Record**

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Stellar Environmental Sol.  
2198 Sixth Street Suite 201  
Berkeley, CA 94710  
Attn: Bruce Rucker

Project Name: Russ Elliott  
Project Location: 2526 Wood St/Oakland  
GlobalID: T0600102110

## Certificate of Analysis - Data Report

Samples Received: 08/24/2006  
Sample Collected by: Client

Lab #: 51039-001

Sample ID: MW-1

Matrix: Liquid Sample Date: 8/23/2006 3:30 PM

### VOCs: EPA 8260B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Methyl-t-butyl Ether	240		5.0	5.0	µg/L	N/A	N/A	9/1/2006	WM1060901
tert-Butyl Ethyl Ether	ND		5.0	25	µg/L	N/A	N/A	9/1/2006	WM1060901
tert-Butanol (TBA)	ND		5.0	50	µg/L	N/A	N/A	9/1/2006	WM1060901
Diisopropyl Ether	ND		5.0	25	µg/L	N/A	N/A	9/1/2006	WM1060901
tert-Amyl Methyl Ether	ND		5.0	25	µg/L	N/A	N/A	9/1/2006	WM1060901
1,2-Dichloroethane	ND		5.0	2.5	µg/L	N/A	N/A	9/1/2006	WM1060901
1,2-Dibromoethane (EDB)	ND		5.0	2.5	µg/L	N/A	N/A	9/1/2006	WM1060901

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	110	60 - 130
Dibromofluoromethane	100	60 - 130
Toluene-d8	106	60 - 130

Analyzed by: XBian

Reviewed by: dba

### VOCs: EPA 5030C / EPA 8021B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	ND		1.0	0.50	µg/L	N/A	N/A	8/31/2006	WGC060830
Toluene	ND		1.0	0.50	µg/L	N/A	N/A	8/31/2006	WGC060830
Ethyl Benzene	ND		1.0	0.50	µg/L	N/A	N/A	8/31/2006	WGC060830
Xylenes, Total	ND		1.0	0.50	µg/L	N/A	N/A	8/31/2006	WGC060830

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	97.8	65 - 135

Analyzed by: mruan

Reviewed by: MaiChiTu

### TPH-Purgeable: EPA 5030C / EPA 8015B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	82		1.0	50	µg/L	N/A	N/A	8/31/2006	WGC060830

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	95.9	65 - 135

Analyzed by: mruan

Reviewed by: MaiChiTu

### TPH-Extractable: EPA 3510C / EPA 8015B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	ND		1.0	50	µg/L	8/24/2006	WD060824A	8/25/2006	WD060824A

370 ppb Motor Oil range organics. No Diesel pattern present.

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	44.3	22 - 133

Analyzed by: JHsiang

Reviewed by: dba

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

D/P-F = Dilution and/or Prep Factor includes sample volume adjustments.

Qual = Data Qualifier

9/5/2006 9:46:33 PM - dba

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Stellar Environmental Sol.  
2198 Sixth Street Suite 201  
Berkeley, CA 94710  
Attn: Bruce Rucker

Project Name: Russ Elliott  
Project Location: 2526 Wood St/Oakland  
GlobalID: T0600102110

## Certificate of Analysis - Data Report

Samples Received: 08/24/2006

Sample Collected by: Client

Lab #: 51039-002

Sample ID: MW-2

Matrix: Liquid Sample Date: 8/23/2006 3:45 PM

### VOCs: EPA 8260B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Methyl-t-butyl Ether	120		2.0	2.0	µg/L	N/A	N/A	9/1/2006	WM1060901
tert-Butyl Ethyl Ether	ND		2.0	10	µg/L	N/A	N/A	9/1/2006	WM1060901
tert-Butanol (TBA)	ND		2.0	20	µg/L	N/A	N/A	9/1/2006	WM1060901
Diisopropyl Ether	ND		2.0	10	µg/L	N/A	N/A	9/1/2006	WM1060901
tert-Amyl Methyl Ether	ND		2.0	10	µg/L	N/A	N/A	9/1/2006	WM1060901
1,2-Dichloroethane	ND		2.0	1.0	µg/L	N/A	N/A	9/1/2006	WM1060901
1,2-Dibromoethane (EDB)	ND		2.0	1.0	µg/L	N/A	N/A	9/1/2006	WM1060901

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	108	60 - 130
Dibromofluoromethane	100	60 - 130
Toluene-d8	105	60 - 130

Analyzed by: XBian

Reviewed by: dba

### VOCs: EPA 5030C / EPA 8021B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830
Toluene	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830
Ethyl Benzene	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830
Xylenes, Total	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	101	65 - 135

Analyzed by: mruan

Reviewed by: MaiChiTu

### TPH-Purgeable: EPA 5030C / EPA 8015B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	50		1.0	50	µg/L	N/A	N/A	8/30/2006	WGC060830

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	104	65 - 135

Analyzed by: mruan

Reviewed by: MaiChiTu

### TPH-Extractable: EPA 3510C / EPA 8015B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	ND		1.0	50	µg/L	8/24/2006	WD060824A	8/25/2006	WD060824A

230 ppb Motor Oil range organics. No Diesel pattern present.

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	62.8	22 - 133

Analyzed by: JHsiang

Reviewed by: dba

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Stellar Environmental Sol.  
2198 Sixth Street Suite 201  
Berkeley, CA 94710  
Attn: Bruce Rucker

Project Name: Russ Elliott  
Project Location: 2526 Wood St/Oakland  
GlobalID: T0600102110

## Certificate of Analysis - Data Report

Samples Received: 08/24/2006  
Sample Collected by: Client

Lab #: 51039-003    Sample ID: MW-3    Matrix: Liquid    Sample Date: 8/23/2006    3:55 PM

### VOCs: EPA 8260B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Methyl-t-butyl Ether	ND		1.0	1.0	µg/L	N/A	N/A	9/1/2006	WM1060831
tert-Butyl Ethyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	9/1/2006	WM1060831
tert-Butanol (TBA)	ND		1.0	10	µg/L	N/A	N/A	9/1/2006	WM1060831
Diisopropyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	9/1/2006	WM1060831
tert-Amyl Methyl Ether	ND		1.0	5.0	µg/L	N/A	N/A	9/1/2006	WM1060831
1,2-Dichloroethane	ND		1.0	0.50	µg/L	N/A	N/A	9/1/2006	WM1060831
1,2-Dibromoethane (EDB)	ND		1.0	0.50	µg/L	N/A	N/A	9/1/2006	WM1060831

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	112	60 - 130
Dibromofluoromethane	105	60 - 130
Toluene-d8	107	60 - 130

Analyzed by: XBian  
Reviewed by: MaiChiTu

### VOCs: EPA 5030C / EPA 8021B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Benzene	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830
Toluene	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830
Ethyl Benzene	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830
Xylenes, Total	ND		1.0	0.50	µg/L	N/A	N/A	8/30/2006	WGC060830

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	100	65 - 135

Analyzed by: mruan  
Reviewed by: MaiChiTu

### TPH-Purgeable: EPA 5030C / EPA 8015B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Gasoline	ND		1.0	50	µg/L	N/A	N/A	8/30/2006	WGC060830

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	104	65 - 135

Analyzed by: mruan  
Reviewed by: MaiChiTu

### TPH-Extractable: EPA 3510C / EPA 8015B

Parameter	Result	Qual	D/P-F	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
TPH as Diesel	ND		1.0	50	µg/L	8/24/2006	WD060824A	8/25/2006	WD060824A

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	70.9	22 - 133

Analyzed by: JHsiang  
Reviewed by: dba

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

D/P-F = Dilution and/or Prep Factor includes sample volume adjustments.

Qual = Data Qualifier

9/5/2006 9:46:34 PM - dba



# Entech Analytical Labs, Inc.

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3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

Method Blank - Liquid - TPH-Extractable: EPA 3510C / EPA 8015B

QC/Prep Batch ID: WD060824A

Validated by: dba - 08/25/06

QC/Prep Date: 8/24/2006

Parameter	Result	DF	PQLR	Units
TPH as Diesel	ND	1	50	µg/L
<b>Surrogate for Blank</b>	<b>% Recovery</b>	<b>Control Limits</b>		
o-Terphenyl	46.2	22 - 133		

# Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054

Phone: (408) 588-0200

Fax: (408) 588-0201

Bruce Rucker  
Stellar Environmental Sol.  
2198 Sixth Street Suite 201  
Berkeley, CA 94710

Lab Certificate Number: 51039

Issued: 09/05/2006

Global ID: T0600102110

Project Name: Russ Elliott

Project Location: 2526 Wood St/Oakland

## Certificate of Analysis - Final Report

On August 24, 2006, samples were received under chain of custody for analysis.

Entech analyzes samples "as received" unless otherwise noted. The following results are included:

<u>Matrix</u>	<u>Test / Comments</u>
Liquid	Electronic Deliverables for Geotracker TPH-Extractable: EPA 3510C / EPA 8015B TPH-Purgeable: EPA 5030C / EPA 8015B VOCs: EPA 5030C / EPA 8021B VOCs: EPA 8260B

Entech Analytical Labs, Inc. is certified for environmental analyses by the State of California (#2346).  
If you have any questions regarding this report, please call us at 408-588-0200 ext. 225.

Sincerely,



Laurie Glantz-Murphy  
Laboratory Director

## **APPENDIX C**

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### **Historical Groundwater Monitoring Well Analytical Results**

**Table C-1  
Historical Groundwater Monitoring Well Groundwater Analytical Results  
2526 Wood Street, Oakland**

Sample I.D.	TEHd	TVHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	Fuel Oxygenates <sup>(a)</sup>
<b>February 2004 Event</b>								
MW-1	<50	<b>172</b>	<b>1.2</b>	<0.5	<0.5	<1.0	<b>578</b>	<b>TAME = 3   TBA = 19</b>
MW-2	<50	<b>72</b>	<0.5	<0.5	<0.5	<1.0	<b>16.4</b>	<i>ND</i>
MW-3	<50	<b>58</b>	<0.5	<b>0.6</b>	<0.5	<1.0	<0.5	<i>ND</i>
<b>May 2004 Event</b>								
MW-1	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>399</b>	<b>TAME = 2</b>
MW-2	<50	<b>83</b>	<0.5	<0.5	<0.5	<1.0	<b>1,230</b>	<b>TAME = 52   DIPE = 0.6 TBA = 243</b>
MW-3	<50	< 50	<0.5	<0.5	<0.5	<1.0	<0.5	<i>ND</i>
<b>August 2004 Event</b>								
MW-1	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>1,210</b>	<b>TAME = 3   TBA = 78</b>
MW-2	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>769</b>	<b>TAME = 6   TBA = 81</b>
MW-3	<50	< 50	<0.5	<0.5	<0.5	<1.0	<0.5	<i>ND</i>
<b>November 2004 Event</b>								
MW-1	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>83</b>	<i>ND</i>
MW-2	<50	<b>271</b>	<b>102</b>	<0.5	<0.5	<b>1.3</b>	<b>1,820</b>	<b>TAME = 139   TBA = 486</b>
MW-3	<50	< 50	<0.5	<0.5	<0.5	<1.0	<0.5	<i>ND</i>
<b>February 2005 Event</b>								
MW-1	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>12.6</b>	<i>ND</i>
MW-2	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>4.8</b>	<i>ND</i>
MW-3	<50	< 50	<0.5	<0.5	<0.5	<1.0	<0.5	<i>ND</i>

**Table C-1 continued**

Sample I.D.	TEHd	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Fuel Oxygenates <sup>(a)</sup>
<b>May 2005 Event</b>								
MW-1	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>116</b>	ND
MW-2	<50	< 50	<0.5	<0.5	<0.5	<1.0	<b>100</b>	TAME = 4 TBA = 48
MW-3	<50	< 50	<0.5	<0.5	<0.5	<1.0	<0.5	ND
<b>August 2005 Event</b>								
MW-1	<500	<b>220</b>	<0.5	<0.5	<0.5	<1.0	<b>310</b>	ND
MW-2	<50	<b>110</b>	<0.5	<0.5	<0.5	<1.0	<b>100</b>	ND
MW-3	<50	< 50	<0.5	<0.5	<0.5	<1.0	<1.0	ND
<b>November 2005 Event</b>								
MW-1	<50	<50	<4.0	<4.0	<4.0	<4.0	<b>97</b>	ND
MW-2	<50	<50	<0.5	<0.5	<0.5	<0.5	<b>7.7</b>	ND
MW-3	<50	<50	<0.5	<0.5	<0.5	<0.5	<1.0	ND
<b>February 2006 Event</b>								
MW-1	<50	<50	<0.5	<0.5	<0.5	<1.0	<b>36</b>	ND
MW-2	<50	<50	<0.5	<0.5	<0.5	<1.0	<b>27</b>	ND
MW-3	<50	<50	<0.5	<0.5	<0.5	<1.0	<1.0	TBA = 10
<b>August 2006 Event</b>								
MW-1	<50	<b>82</b>	<0.5	<0.5	<0.5	<1.0	<b>240</b>	ND
MW-2	<50	<b>50</b>	<0.5	<0.5	<0.5	<1.0	<b>120</b>	ND
MW-3	<50	<50	<0.5	<0.5	<0.5	<1.0	<1.0	TBA = 10

Notes:

<sup>(a)</sup> Table reports only detected fuel oxygenates and lead scavengers.

DIPE = di-isopropyl ether  
MTBE = methyl *tertiary*-butyl ether  
TAME = *tertiary*-amyl methyl ether

TBA = *tertiary*-butyl alcohol  
TEHd = total extractable hydrocarbons – diesel range  
TVHg = total volatile hydrocarbons – gasoline range

ND = not detected above method reporting limits

All results are in micrograms per liter ( $\mu\text{g/L}$ ).