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SECOND SEMIANNUAL 2009 GROUNDWATER MONITORING REPORT

**2836 UNION STREET
OAKLAND, CALIFORNIA**

Prepared for:

**ESTATE OF LARRY M. WADLER
2525 MANDELA PARKWAY
OAKLAND, CA 94607**

November 2009

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Prepared for:

**ESTATE OF LARRY M. WADLER
2525 MANDELA PARKWAY
OAKLAND, CA 94607**

Prepared by:

**STELLAR ENVIRONMENTAL SOLUTIONS, INC.
2198 SIXTH STREET, SUITE 201
BERKELEY, CALIFORNIA 94710**

November 5, 2009

November 5, 2009

Ms. Barbara Jakub
Alameda County Environmental Health Care Services Agency
Department of Environmental Health – Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Second Semiannual 2009 Groundwater Monitoring Report: Former Modern Mail Service,
2836 Union Street, Oakland, California, Alameda County Environmental Health Department
Fuel Leak Case No. RO2901

Dear Ms. Jakub:

On behalf of the property owner and “Responsible Party” (Estate of Lawrence M. Wadler), Stellar Environmental Solutions, Inc. (SES) is submitting this Second Semiannual 2009 Groundwater Monitoring Report for the former Modern Mail Service Facility at 2836 Union Street, Oakland, California. This report documents the Second Semiannual 2009 groundwater monitoring event related to petroleum contamination from a former underground fuel storage tank.

This is the 12th consecutive groundwater monitoring event conducted at this site and the first event conducted since the monitoring was reduced to a semiannual basis. This report has been uploaded to ACEH and to the State Water Resources Control Board’s GeoTracker system.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report are true and correct to the best of my knowledge. If you have any questions regarding this report, please contact us at (510) 644-3123.

Sincerely,



Teal Glass, R.E.A.
Environmental Scientist
Trustee



Elana Aabas
Property Estate



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



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1.0 INTRODUCTION

PROJECT BACKGROUND

Stellar Environmental Solutions, Inc. (SES) was contracted by Mr. Lawrence Wadler (property owner currently referred to as the Estate of Lawrence Wadler) to conduct corrective actions related to soil and groundwater contamination associated with a 10,000-gallon underground fuel storage tank (UFST) at 2836 Union Street in Oakland, California. A list of all known environmental reports is included in Section 6.0.

This report discusses the second Semiannual 2009 activities conducted on October 22, 2009. Figure 1 shows the site location. Figure 2 shows the site plan with the locations of groundwater wells, borings, and the former UFST.

SITE DESCRIPTION AND HISTORY

The approximately 7,200-square foot rectangular subject property is developed with one approximately 1,500-square foot two-story building. A narrow driveway borders the building to the north, and the rear of the property is undeveloped (paved). Adjacent uses include:

- A residence (to the north);
- A paved parking area (to the east);
- A residence (to the south); and
- A sidewalk, then Union Street, then a moving company (to the west).

The property operated as an express courier facility (Modern Mail Services, Inc.) between 1951 and 2003. One 10,000-gallon gasoline UFST was installed in the late 1970s. The UFST operated under an Alameda County Environmental Health permit (permit No. STID 4065) until it was removed in 1998. The tank closure report was submitted to the Oakland Fire Department (Golden Gate Tank Removal, 1998).

An initial site characterization conducted by SES in November 2005, which included the advancement of four borings, revealed gasoline and associated aromatic hydrocarbons at elevated levels in both soil and groundwater. That investigation was summarized in a technical report (SES, 2005b).



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

**2836 Union Street
Oakland, CA**

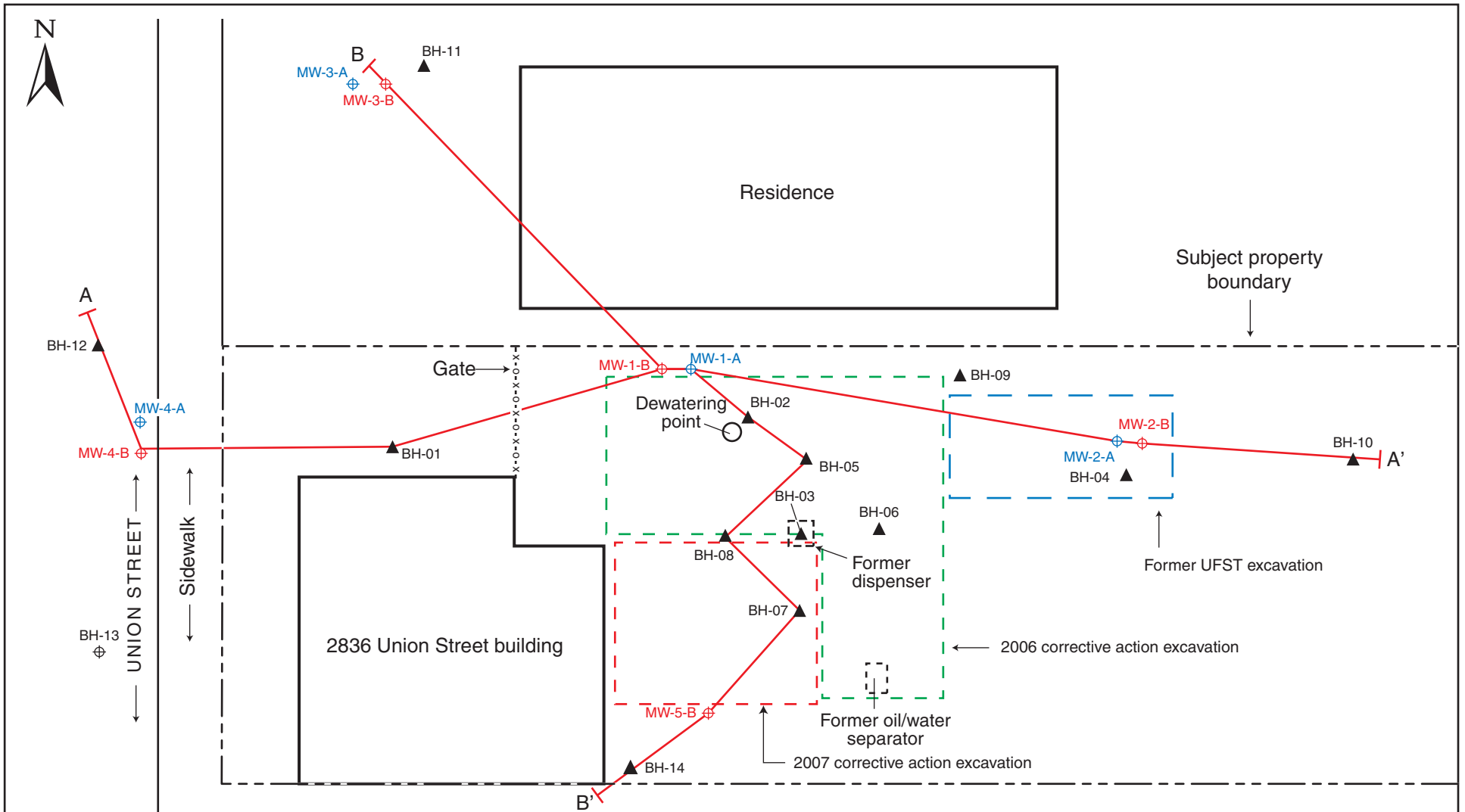
By: MJC

NOVEMBER 2005

Figure 1



2005-65-01



LEGEND

- MW-1-A Groundwater monitoring well; 10'-13' deep screened interval
- MW-1-B Groundwater monitoring well; 19'-25' deep screened interval
- BH-01 Previous exploratory borehole
- Cross-section A-A'
- ND = TPH-gas not detected, concentration of TPH-gas in mg/kg

0 10
SCALE IN FEET (approx.)

SITE PLAN SHOWING LOCATIONS OF SOIL BORINGS AND MONITORING WELLS
2836 Union Street, Oakland, CA

Figure 2

by: MJC NOVEMBER 2008

2005-65-72



Additional site investigations in April 2006 involved the advancement of nine exploratory boreholes to determine the areal and vertical extent of soil and groundwater contamination. Site data indicated the presence of petroleum hydrocarbons in soil and groundwater. Actions such as groundwater monitoring, and the removal of any remaining (accessible) contaminated soils by excavation, were recommended as an interim corrective action. The April 2006 investigation is summarized in a technical report (SES, 2006b).

A corrective action which implemented the April 2006 recommendations was conducted between September and December 2006. This involved the installation of ten monitoring wells, the advancement of one soil boring, the removal of 398 tons of contaminated soil, and the pumping of 5,100 gallons of contaminated groundwater from the backfilled excavation. Some residual contaminated soil was inaccessible for removal, and remained beneath the onsite building. Removal of this portion of the building and the previously inaccessible soil was conducted in November 2007. This corrective action was effective in removing 212 tons of contaminated soil; and included purging contaminated groundwater and applying Oxygen Reducing Compound (ORC) Advanced™ product into the open excavation. Monitoring well MW-5A was destroyed by excavation during the November 2007 activity. These investigations are summarized in SES technical reports (SES, 2006d and 2007f). The site wells have been monitored quarterly since October 2006. At the request of ACEH, a “Preferential Pathway Utility and Well Survey” was conducted during the fourth quarter of 2008, the results of which are discussed in another technical report (SES 2008e). The frequency of groundwater monitoring was reduced in 2009 from a quarterly to semiannual basis as per the ACEH directive letter, dated July 24, 2009.

REGULATORY STATUS

The Alameda County Environmental Health Care Services Agency, Department of Environmental Health Services (ACEH) is the lead regulatory agency for the case, acting as a Local Oversight Program (LOP) for the Regional Water Quality Control Board – San Francisco Bay Region (Water Board). There are no ACEH or Water Board cleanup orders for the site; however, all site work has been conducted under the oversight of ACEH. ACEH assigned the site to its fuel leak case system (RO#2901), and the case officer assigned was Mr. Barney Chan. Mr. Chan transferred to another ACEH department in 2007 and the current case officer, Ms. Barbara Jakub was assigned to the case in the summer of 2008.

The case has been assigned No. T0600105641 in the Water Board’s GeoTracker system. Electronic uploads of required data/reports are submitted to both agencies. The site has been granted a Letter of Commitment, and has been receiving financial reimbursement from the California Underground Storage Tank Cleanup Fund.

2.0 PHYSICAL SETTING

TOPOGRAPHY AND DRAINAGE

The mean elevation of the property is approximately 18 feet above mean sea level (amsl), and the general topographic gradient in the site vicinity is slight and to the west-southwest (toward San Francisco Bay). The site itself has no discernible slope. The nearest downgradient (to the west) permanent surface water body is the Airport Channel of San Leandro Bay (which is connected to San Francisco Bay), approximately 2 miles west of the subject property. According to the commercially available database, the site is not located within a flood zone or wetland.

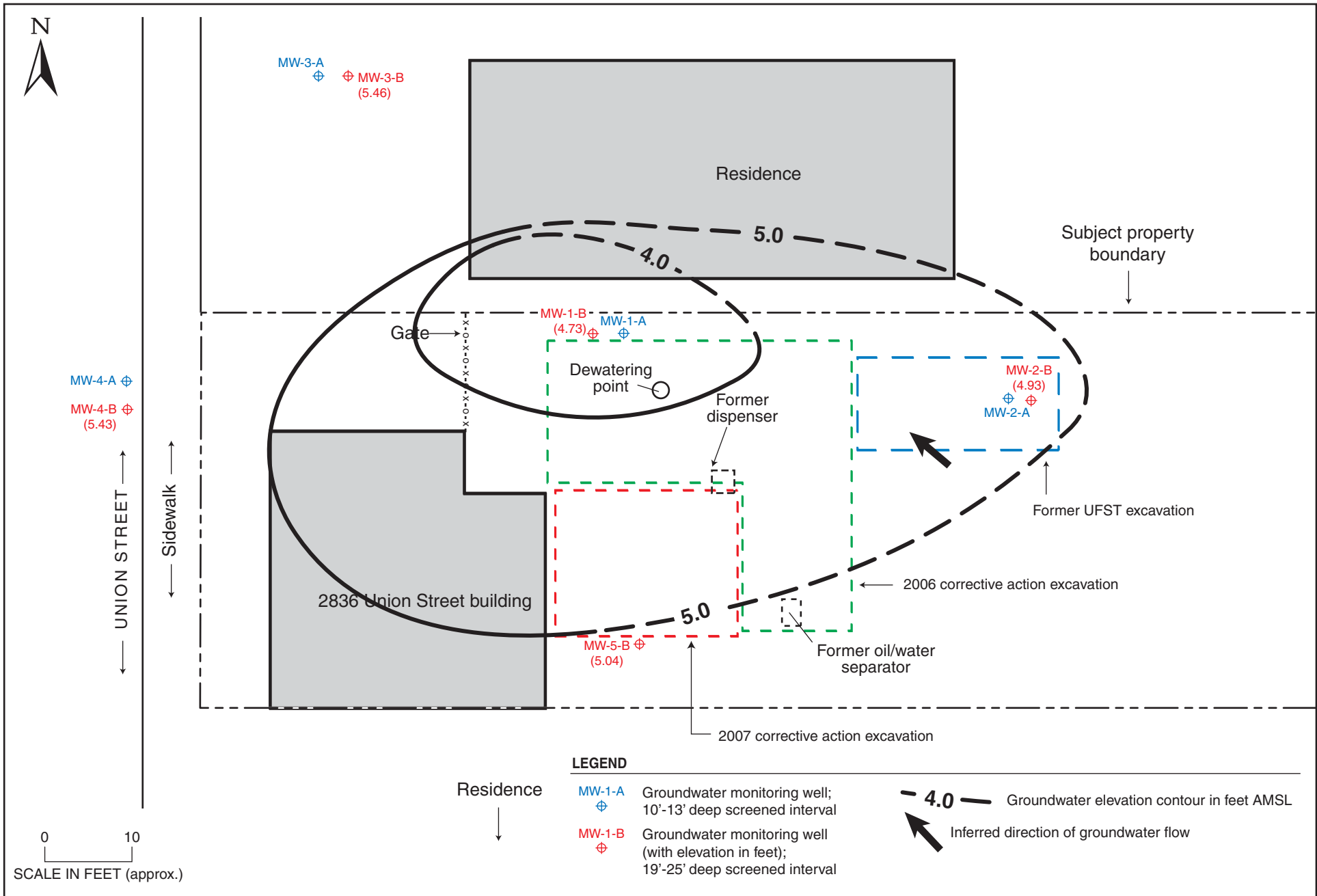
LITHOLOGY AND HYDROGEOLOGY

The predominant soil type in all site boreholes was generally firm and plastic silty clay. Several of the boreholes had no obvious sand or gravel units, although minor amounts of sand and gravel were occasionally present in the overall clay matrix. Groundwater occurred in these units with higher sandy-gravel than clay content. Local heterogeneities in shallow lithology and groundwater levels are typical of the alluvial deposits in this area.

Local groundwater flow direction is generally to the west (toward San Francisco Bay and following local topography) in this area of west Oakland. Groundwater in the immediate vicinity of the former UFST occurs at a depth of less than 10 feet, and appears to be under semi-confining conditions, rising from approximately 20 feet below ground surface to as high as 6 feet below grade such that groundwater is in contact with residual contaminated soil. The groundwater contaminant plume has not been fully delineated, but appears to have an elliptical configuration with the long axis trending east to west-northwest.

GROUNDWATER FLOW DIRECTION

Figure 3 is a groundwater elevation map based on the October 22, 2009 groundwater elevation measurements. The groundwater gradient during this event was approximately flat to 0.005 feet/foot across the site and therefore the flow direction could not be precisely, however it is known from historical data and the groundwater contaminant pattern to move slowly toward the west. The groundwater gradient has varied since October 2006 between approximately 0.001 feet/foot and 0.01 feet/foot, averaging approximately 0.005 feet/foot.



GROUNDWATER ELEVATION MAP (B-WELLS)
2836 Union Street, Oakland, CA

Figure 3

by: MJC

NOVEMBER 2009

3.0 SECOND SEMIANNUAL 2009 GROUNDWATER MONITORING

This section presents the groundwater sampling and analytical methods for the most recent event (Second Semiannual 2009), conducted on October 22, 2009.

GROUNDWATER MONITORING

Groundwater monitoring well water level measurements, sampling, and field analyses were conducted by SES on October 22, 2009. To minimize the potential for cross-contamination, wells were purged and sampled using new disposable tubing at each well. Any equipment used was decontaminated between wells.

As the first monitoring task, static water levels were measured in the nine site wells using an electric water level indicator. Monitoring well MW-5A was destroyed by excavation during the November 2007 corrective action and thus is no longer available for monitoring. The wells were then sampled with a peristaltic pump, during which the groundwater quality parameters of temperature, pH, conductivity, turbidity, and dissolved oxygen were field-measured using daily-calibrated instruments. Approximately 6 gallons of sampling purge water was generated and containerized onsite, and will be disposed of at later date after subsequent monitoring events and additional purge water has accumulated. The samples were placed in an ice chest with ice at approximately 4°C and transported to the analytical laboratory under chain-of-custody the same day. Laboratory analysis was conducted by Curtis and Tompkins, Ltd. (Berkeley, California), an analytical laboratory certified by the State of California Environmental Laboratory Accreditation Program (ELAP).

The locations of all site monitoring wells are shown on Figure 2. Well construction information and groundwater elevation data are summarized in Table 1. Appendix A contains the groundwater monitoring field records for the current event. Appendix B outlines SES's standard sampling protocol for groundwater. Groundwater analytical results are presented and discussed in Section 4.0. Historical groundwater elevation data and analytical results are contained in Appendix D.

Table 1
Monitoring Well Groundwater Elevation Data – October 22, 2009
2836 Union Street, Oakland, California

Well	Well Depth Below TOC	Rim Elevation	TOC Elevation	Groundwater Elevation (10/22/09)
MW-1A	12.59	12.52	12.25	4.63
MW-1B	22.52	12.48	12.05	4.73
MW-2A	12.69	13.06	12.82	5.89
MW-2B	24.59	13.16	12.96	4.93
MW-3A	13.06	11.76	11.59	4.70
MW-3B	25.06	12.10	11.95	5.46
MW-4A	12.28	11.25	11.02	4.61
MW-4B	24.32	11.25	11.04	5.43
MW-5B	25.39	12.57	12.38	5.04

Notes:

TOC = top of casing

Wells are 1-inch diameter.

All elevations are in feet above mean sea level.

4.0 REGULATORY CONSIDERATIONS, ANALYTICAL RESULTS, AND DISCUSSION OF FINDINGS

REGULATORY CONSIDERATIONS AND SCREENING LEVELS

The Water Board has established Environmental Screening Levels (ESLs) for evaluating the likelihood of environmental impact. ESLs are conservative screening-level criteria for soil and groundwater, designed to be generally protective of both drinking water resources and aquatic environments; they incorporate both environmental and human health risk considerations. ESLs are not cleanup criteria (i.e., health-based numerical values or disposal-based values). Rather, they are used as a preliminary guide in determining whether additional remediation and/or investigation may be warranted. Exceedance of ESLs suggests that additional investigation and/or remediation is warranted.

Different ESLs are published for commercial/industrial vs. residential land use, for sites where groundwater is a potential drinking water resource vs. is not a drinking water resource, and the type of receiving water body. A Water Board-published map of the East Bay shows areas where groundwater is, and is not, a potential drinking water resource.

The appropriate ESLs for the subject site are based on the following:

- Residential land use (due to the residences adjoining the property) and commercial/industrial use (for the subject property itself). Note that, for both soil and groundwater contaminants, all ESLs for the site contaminants are the same for both residential and commercial/industrial land use.
- Groundwater is a potential drinking water resource. In our professional opinion, the appropriate ESLs for the subject site are *commercial/industrial land use* and *groundwater is a potential drinking water resource*. This is based on both the property zoning status (commercial/industrial) and the designation of this area of Oakland as “Zone A – Significant Drinking Water Resource (Water Board, 1999).
- The receiving body for groundwater discharge is an estuary (San Francisco Bay).

The State of California has also promulgated drinking water standards (Maximum Contaminant Levels [MCLs]) for some of the site contaminants. Drinking water standards may also be utilized by regulatory agencies to evaluate the potential risk associated with groundwater

contamination. For the site contaminants, MCLs are generally the same as the ESLs (except that there is no MCL for gasoline).

Once ESLs or drinking water standards are exceeded, the need for, and/or type of additional investigative and corrective actions are generally driven by the potential risk associated with the contamination. Minimum regulatory criteria generally applied to fuel leak cases in groundwater include:

- The contaminant source has been removed, including reasonably accessible contaminated soils that pose a long-term impact to groundwater;
- The extent of residual contamination has been fully characterized to obtain sufficient lithologic and hydrogeologic understanding (generally referred to as a Site Conceptual Model);
- Groundwater wells have been installed and are monitored periodically to evaluate groundwater contaminant concentrations and hydrochemical trends;
- The stability of the contaminant plume has been evaluated to determine whether it is moving or increasing in concentration; and
- A determination has been made as to whether the residual contamination poses an unacceptable risk to sensitive receptors.

As stated above, ESLs are used as a preliminary guide in determining whether additional remediation or other action is warranted. Exceeding ESLs may warrant additional actions, such as monitoring plume stability to demonstrate no risk to sensitive receptors in the case of sites where drinking water is not threatened.

ANALYTICAL METHODS

The initial site characterization documented contamination by the following LUFT-related constituents: gasoline; benzene toluene, ethyl benzene, and xylenes (BTEX); and methyl *tertiary*-butyl ether (MTBE). In addition, several other contaminants were analyzed (as required by ACEH)—ethanol; fuel oxygenates (*tertiary*-butyl alcohol [TBA], di-isopropyl ether [DIPE], ethyl *tertiary*-butyl ether [ETBE], and *tertiary*-amyl methyl ether [TAME]); and lead scavengers (1,2-dichloroethane [EDC] and 1,2-dibromoethane [EDB]). Fuel oxygenates and lead scavengers were analyzed in monitoring wells for which there were no data, or in those that showed previous laboratory detectable concentrations for these constituents.

Groundwater samples were analyzed using the following methods for:

- Total volatile hydrocarbons (TVH) gasoline range by EPA Method 8015M;
- BTEX and MTBE by EPA Method 8260;

- TBA, DIPE, ETBE, and TAME by EPA Method 8260B (in accordance with ACEH requirement); and
- EDC and EDB by EPA Method 8260B (in accordance with ACEH requirement).

All groundwater samples were analyzed by Curtis & Tompkins, Ltd. (Berkeley, California) which maintains current ELAP certifications for all the analytical methods utilized in this investigation.

Field parameters including temperature, pH, conductivity, turbidity, and dissolved oxygen were measured using a Horiba U22 meter, which was calibrated the same day of sample collection.

QUALITY CONTROL SAMPLE ANALYTICAL RESULTS

Laboratory quality control (QC) samples (e.g., method blanks, matrix spikes, surrogate spikes) were analyzed by the laboratory in accordance with requirements of each analytical method. All laboratory QC sample results and sample holding times were within the acceptance limits of the methods (see Appendix C).

ANALYTICAL RESULTS AND DISTRIBUTION OF CONTAMINANTS

Tables 2 and 3 summarize the groundwater monitoring analytical results for TVHg, and associated constituents and the dissolved oxygen field measurements. Table 3 presents the analytic results of the fuel oxygenates and lead scavengers analyses. The certified analytical results and chain of custody record are contained in Appendix C. Historical groundwater-monitoring analytical results are contained in Appendix D.

Groundwater Analytical Results

TVH as gasoline was detected above the ESL of 100 micrograms per liter ($\mu\text{g/L}$) in monitoring wells MW-3B and MW-4B. TVH as gasoline was also detected in monitoring well MW-1A, MW-2A, MW-2B, and MW-5B but below the ESL. Monitoring wells MW-3A and MW-4A could not be sampled during this event due to insufficient water quantity. No other monitoring wells had detections of TVH as gasoline above the laboratory detection limit.

MTBE was detected above its ESL of 5.0 $\mu\text{g/L}$ in wells MW-1A, MW-1B, MW-2B, and MW-5B. MTBE was not found above the laboratory detection limit in any of the other wells sampled.

Benzene was found above the ESL of 1.0 $\mu\text{g/L}$ in well MW-1A. Benzene was not found above the laboratory detection limit in any other of the wells sampled. Toluene, ethylbenzene, and total xylenes were not found above the laboratory detection limit in any of the wells sampled.

The lead scavenger 1,2-dichloroethane (EDC) was detected above the ESL of 0.5 µg/L in well MW-1B and MW-2B. EDC was not detected above the laboratory detection limit in any of the other wells sampled. There were no detections of 1,2-dibromomethane (EDB), ethyl tertiary butyl ether (ETBE), isopropyl ether (DIPE), Tertiary-amyl methyl ether (TAME), or Tertiary butyl alcohol (TBA) above the laboratory detection limits in any of the groundwater monitoring wells sampled during this event.

Figure 4 is an isoconcentration contour map of TVH as gasoline in groundwater based on the October 2009 monitoring well analytical results. The plume geometry indicates a west-by-northwest migrational pattern, which is in line with general groundwater flow direction in this area.

Contaminant concentrations have decreased since the Q2-2009 sampling event in April in all of the monitoring wells sampled. In addition, with the exception of MW-2A, all wells have decreased in concentration since the October 2008 sampling event.

Table 2
Groundwater Sample Analytical Results – October 22, 2009
TVHg, BTEX, and MTBE,
2836 Union Street, Oakland, California

Sample	TVHg	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	DO ₂
Monitoring Wells							
MW-1A	63	1.5	<0.5	<0.5	<0.5	110	1,700
MW-1B	<50	<0.5	<0.5	<0.5	<0.5	8.5	700
MW-2A	73	<0.5	<0.5	<0.5	<0.5	<2.0	700
MW-2B	52	<0.5	<0.5	<0.5	<0.5	22	1,400
MW-3A	NS	NS	NS	NS	NS	NS	7,100
MW-3B	1,700	<0.5	<0.5	<0.5	<0.5	<2.0	400
MW-4A	NS	NS	NS	NS	NS	NS	3,000
MW-4B	1,100	<0.5	<0.5	<0.5	<0.5	<2.0	500
MW-5B	66	<0.5	<0.5	<0.5	<0.5	71	7,100
Groundwater ESLs	100 / 210	1.0 / 46	40 / 130	30 / 43	20 / 100	5 / 1,800	NLP

Notes:

ESLs = Water Board Environmental Screening Levels for commercial/industrial sites where groundwater *is/is not* a potential drinking water resource. Sample concentrations in **bold-face** type exceed the ESL criterion where groundwater is a potential drinking water resource.

MTBE = methyl tertiary-butyl ether; TVHg = total volatile hydrocarbons as gasoline ; DO₂ = dissolved oxygen

NA = not analyzed for this constituent; NS = not sampled, insufficient sample amount; NLP = no level published

All concentrations are in micrograms per liter (µg/L).

NS = Not sampled. Insufficient water for sampling.

Table 3
Groundwater Sample Analytical Results – October 22, 2009
Lead Scavengers and Fuel Oxygenates
2836 Union Street, Oakland, California

Sample I.D.	EDC	EDB	ETBE	DIPE	TAME	TBA
Groundwater Analyses (µg/L)						
MW-1A	<1.0	<1.0	<1.0	<1.0	<1.0	<20
MW-1B	3.9	<1.0	<1.0	<1.0	<1.0	<20
MW-2A	NS	NS	NS	NS	NS	NS
MW-2B	4.4	<0.5	<0.5	<0.5	<0.5	<10
MW-3A	NS	NS	NS	NS	NS	NS
MW-3B	NS	NS	NS	NS	NS	NS
MW-4A	NS	NS	NS	NS	NS	NS
MW-4B	NS	NS	NS	NS	NS	NS
MW-5B	<0.5	<0.5	<0.5	<0.5	4.5	<10
Groundwater ESLs	0.5 / 690	0.05 / 510	NLP	NLP	NLP	12 / 18,000

Notes:

ESLs = Water Board Environmental Screening Levels for residential sites where groundwater *is/is not* considered a potential drinking water resource. Sample concentrations in **bold-face** type exceed the ESL criterion where groundwater is a potential drinking water resource.

EDB = ethylene dibromide ; EDC = ethylene dichloride ; ETBE = ethyl tertiary-butyl ether; DIPE = isopropyl ether

TAME = tertiary-amyl methyl ether; TBA = tertiary-butyl alcohol;

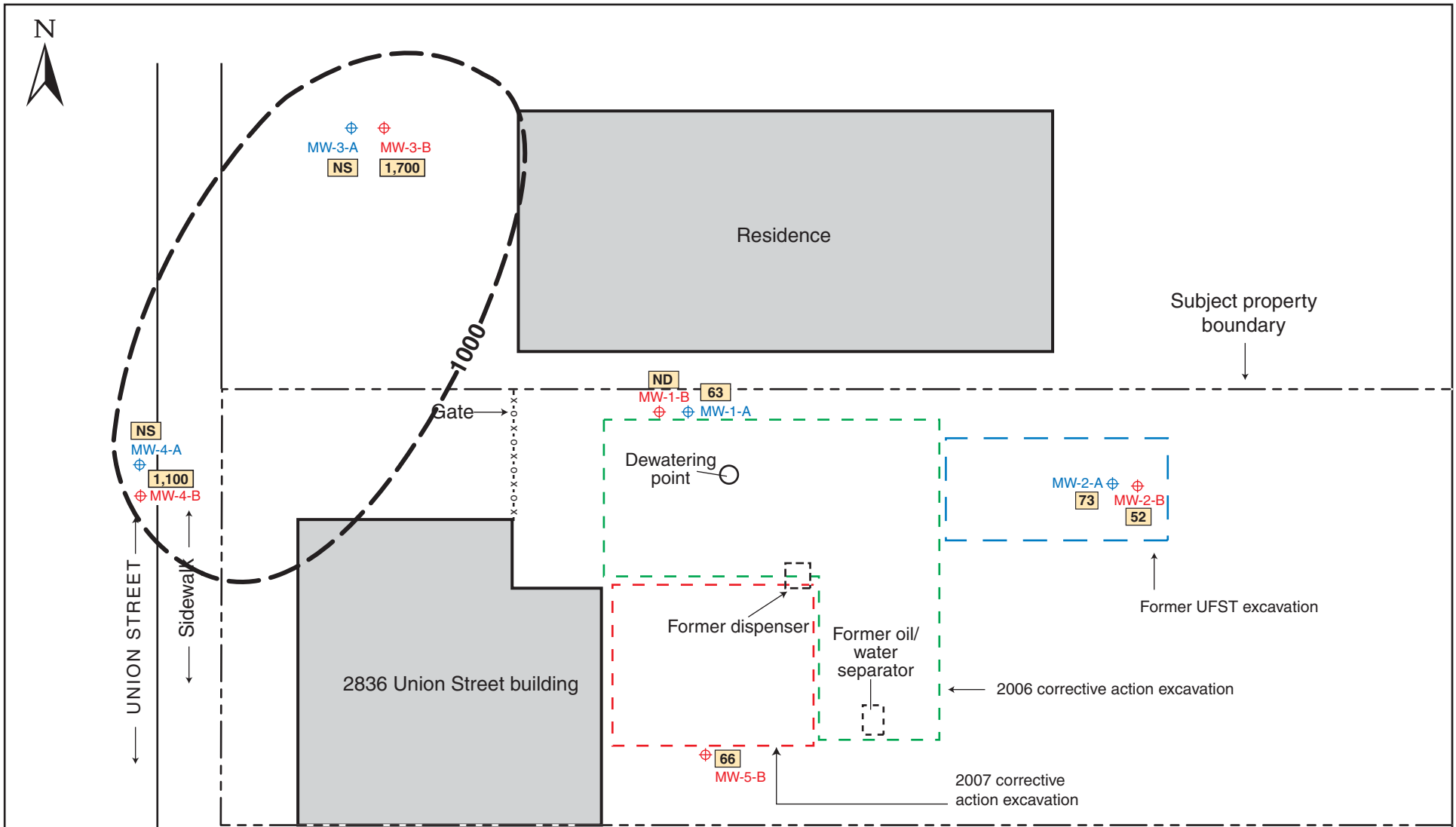
NA = not analyzed for this constituent; NS = not sampled; NLP = no level published

All concentrations are in micrograms per liter (µg/L).

Dissolved Oxygen

Dissolved oxygen (DO) is the most thermodynamically-favored electron acceptor used in aerobic biodegradation of hydrocarbons. Active aerobic biodegradation of petroleum hydrocarbon compounds requires at least one to two mg/L of DO in groundwater. During aerobic biodegradation, DO levels are reduced in the hydrocarbon plume as respiration occurs. Therefore, DO levels that vary inversely to hydrocarbon concentrations are consistent with the occurrence of aerobic biodegradation.

DO concentrations, shown in Table 3, were measured in wells during the current event and ranged from 0.4 mg/L to 7.1 mg/L. Only three wells; MW-3A, MW-4A, and MW-5B contained concentrations of DO above the 2 mg/L. This indicates that the November 2007 ORC™ treatment is diminishing in its effectiveness to release oxygen in the subsurface formation.



0 10
SCALE IN FEET (approx.)

LEGEND

- MW-1-A Groundwater monitoring well; 10'-13' deep screened interval
- MW-1-B Groundwater monitoring well; 19'-25' deep screened interval
- TVH-gas not detected
- Not sampled
- 1,000 — TVH-gasoline isoconcentration contour (µg/L)

TVH-GASOLINE PLUME — OCTOBER 22, 2009, B-ZONE WELLS
2836 Union Street, Oakland, CA

Figure 4

by: MJC NOVEMBER 2009

2005-65-81



5.0 EVALUATION OF HYDROCHEMICAL TRENDS AND PLUME STABILITY

This section evaluates the observed hydrologic and hydrochemical trends with regard to plume stability and contaminant migration. An assessment is made of the nature of residual contaminated soil that acts as a continued source of groundwater contamination. A conceptual model (incorporating site lithology, hydrogeology, and hydrochemistry) is presented to explain the spatial extent and magnitude of the dissolved hydrocarbon plume.

CONTAMINANT SOURCE ASSESSMENT

One 10,000-gallon gasoline UFST was installed in the late 1970s. The UFST operated under Alameda County Environmental Health permit (Permit No. STID 4065) until its removal in 1998.

Site soil and groundwater has been contaminated by gasoline and associated aromatic hydrocarbons. Soil analytical results show that soil contamination began at a depth of approximately 6 to 7 feet, and did not extend deeper than approximately 11 feet.

Soil contamination above ESL criteria appears to be constrained on site in the area of MW-1A and MW-1B where it could not be removed over the property boundary.

While past corrective actions removed a substantial mass of contamination, shallow groundwater will continue to be slightly impacted by the remaining residual soil contamination by desorption from soil into groundwater.

As evidenced by soil boring sample analysis, the dissolved phase hydrocarbon contamination in the groundwater does not appear to be adsorbing onto downgradient soils.

The mass of unsaturated zone soil contamination has been removed to the extent practical and subsequent groundwater monitoring indicate there is no remaining significant residual contamination present in site soils.

WATER LEVEL TRENDS

Appendix D contains historical groundwater elevations. The data support the following conclusions:

- Groundwater elevations in all wells show general correlation with rainy versus dry season. Decreases in elevation are seen from approximately April through December, followed by an increase from December through April. This is a common seasonal trend observed in the upper water-bearing zone in the Bay Area region.
- The range of water level elevations in the B-wells screened from approximately 19 to 25 feet bgs has varied by less than 2 feet, and no substantial differences in elevations (beyond the seasonal fluctuations) have been noted since October 2006.
- The A-wells, screened from approximately 10 to 13 feet bgs and exhibit very slow recharge. These well are screened across units that are not laterally continuous and have not been used in the construction of the site groundwater elevation maps or the calculation of groundwater gradient. They have been used primarily to monitor shallow contamination.
- Groundwater at the site occurs at a depth of less than 10 feet, and appears to be under at least semi-confining conditions, rising in previous investigation borings from approximately 20 feet bgs to as high as 6 feet below grade, such that groundwater is in contact with residual contaminated soil.
- Historical groundwater flow direction has been predominantly to the west-northwest with minor deviations produced by local dewatering of contaminated water.
- Subject property groundwater gradient in previous events has been relatively flat, and was observed during this event at an average of 0.005 feet/foot. Historical groundwater gradient (since October 2006) has varied between approximately 0.001 feet/foot and 0.01 feet/foot, averaging approximately 0.005 feet/foot.

HYDROCHEMICAL TRENDS

The contaminants of concern (those above regulatory ESLs) have been determined to be TVH as gasoline, benzene, MTBE and EDC. Historical groundwater analytical results are included in Appendix D.

Gasoline

Figure 5 show hydrochemical trend data for gasoline in the site wells. Source area wells MW-1A and MW-5B, and historical source wells MW-2A and MW-2B showed an overall trend of decreased gasoline concentrations since monitoring began in October 2006. This is most likely a direct response to the removal of contaminated soil during the 1998 UFST excavation and subsequent 2006 and 2007 corrective action excavations.

In general, downgradient wells MW-3B and MW-4B as well as source area well MW-1B have shown a general increase in gasoline concentrations. However, during this event a decrease was exhibited both as compared to last year, as well as the last event. Downgradient wells MW-3A and MW-4A, which could not be sampled during this event due to lack of sufficient water, have not had gasoline concentrations above the laboratory detection limit since monitoring began. This indicates that while the source area contamination has been removed, dissolved phase contamination is present in the deeper aquifer (represented by the B wells screened from approximately 19- to 25- feet bgs).

Benzene

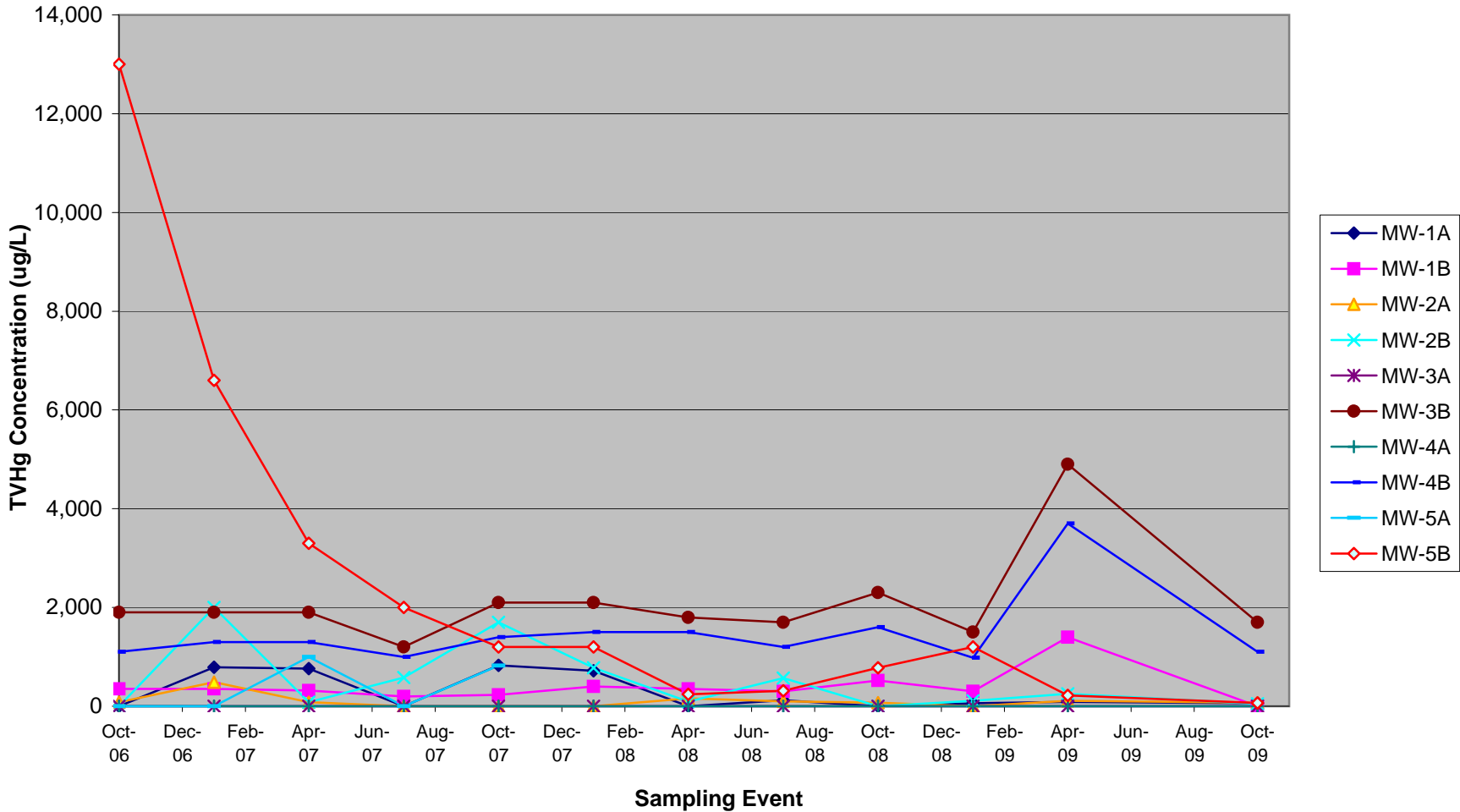
Well MW-1A (downgradient from the UST dispenser) having the highest benzene concentration, has shown a general decrease in benzene concentrations from the maximum 94 µg/L observed in January 2007 to the current concentration of 1.5 µg/L (just 0.5 µg/L above the drinking water standard). Concentrations in well MW-5B have been below the laboratory detection limit since October 2007. Benzene has not been detected above the laboratory detection limit in any of the other wells (with the exception of MW-5A which was destroyed in November 2007) since their installation in 2006.

MTBE and EDC

Concentrations of MTBE have remained relatively stable in all of the wells in which it has been detected. MTBE has been detected at relatively higher concentrations in the shallower A-wells and has been the only detected contaminant in wells, MW-3A, MW-4A downgradient from the source area, demonstrating its high soluble mobility.

EDC has been consistently detected in onsite wells MW-1B, MW-2B, and MW-3A since monitoring began.

**Figure 5: Historical Groundwater Analytical Results
Total Volatile Hydrocarbons as Gasoline (TVHg)
October 2006 - October 2009**



Dissolved Oxygen

Dissolved oxygen (DO) ranged from 400 µg/L (MW-3B) to 7,100 µg/L (MW-5B). These measurements would be expected, as wells located closer to the ORC release zone would be expected to have higher levels of DO than those farther from the release zone.

PLUME GEOMETRY AND MIGRATION INDICATIONS

The groundwater contaminate plume has not been fully delineated, but appears to be in elliptical configuration with its long axis trending east by west-northwest.

As discussed in detail in Section 4.0, the contaminant plume in groundwater (gasoline, benzene and MTBE concentrations above ESL criteria) has an approximate maximum extent within the 100 µg/L TVHg isoconcentration contour of approximately 130 feet long by 60 feet wide in the October 2008 monitoring event, with a generally northwest-southeast longitudinal axis.

Contaminant concentrations of TVH as gasoline and MTBE above ESL criteria extend off site to the north-northwest (under Union Street). The MTBE plume shows generally the same configuration. The downgradient limits of the plume are inferred to extend offsite approximately 20 west and 40 feet north. The plume extends offsite about 20 feet in the south direction while the eastern upgradient limit of the plume is constrained on site.

The plume geometry has not varied substantially since monitoring began in October 2006, although seasonal fluctuations in contaminant concentrations have been observed. While benzene appears to be remaining relatively stable or decreasing, overall, increasing gasoline concentrations in downgradient wells suggest that downgradient migration of this constituent could be occurring.

Groundwater contaminant migration appears to be controlled locally by hydrogeologic conditions. Based on our experience, it is likely that the contaminant concentrations attenuate to below ESL criteria no more than 50 feet off site. However, continued groundwater monitoring of site wells is warranted to confirm that groundwater contaminant concentrations do not continue to increase and/or there is no indication of significant plume migration.

CLOSURE CRITERIA ASSESSMENT AND PROPOSED ACTIONS

The Water Board generally requires that the following criteria be met before issuing regulatory closure of contaminant cases:

The contaminant source has been removed (i.e., the source of the discharge and obviously-contaminated soil). This criterion has been met. The UFST and associated piping and

dispenser and residual soil contamination sources have been removed to the extent possible and borehole and excavation soil sampling have shown that the substantial mass of that will act as an ongoing source of groundwater contamination has been removed.

The groundwater contaminant plume is well characterized, and is stable or reducing in magnitude and extent. As discussed above, in our professional opinion, this criterion has not been entirely met, and continued groundwater monitoring will be needed to evaluate the effect of the November 2007 groundwater dewatering, contaminated soil excavation and ORC® application in order to demonstrate plume stability.

If residual contamination (soil or groundwater) exists, there is no reasonable risk to sensitive receptors (i.e., contaminant discharge to surface water or water supply wells) or to site occupants. This criterion has been met by conducting a Risk-Based Corrective Action (RBCA) assessment which modeled the fate and transport of residual contamination in the context of potential impacts to sensitive receptors (e.g., water wells, residential land use). SES completed this investigation in December 2008 and it was determined that there are no potential sensitive receptors which could be impacted by the groundwater plume.

6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY AND CONCLUSIONS

- One 10,000-gallon gasoline UFST was installed in the late 1970s. The UFST operated under an Alameda County permit until its removal in 1998.
- A preliminary investigation was conducted in August 2005, additional site characterization investigations were conducted in October 2005 and April 2006, and corrective action entailing contaminated soil excavation and the installation of ten monitoring wells was conducted in September to October 2006. The remaining accessible contaminated soil was removed in November 2007 from beneath the former garage building, and the excavation area was treated with ORC® product. The November 2007 corrective action also entailed destruction by excavation of monitoring well MW-5A.
- The primary source (UFST) and secondary source (contaminated soil) have been remediated by excavation. All known accessible residual contaminated soil has been excavated from this site. Residual TVH as gasoline soil contamination (790 to 270 mg/kg) above regulatory ESLs was documented during the October 2006 corrective action along the northern property boundary, but was inaccessible for removal over the property line.
- The subject property groundwater gradient measured approximately 0.005 feet/foot during the October 2009 event and was found to have little or no flow direction. This is most likely due to the recent storm, which may have created an initial flux in water to the wells which has yet to stabilize.
- Monitoring wells MW-3A and MW-4A could not be sampled during this event due to insufficient water quantity.
- TVH as gasoline was detected above the ESL of 100 micrograms per liter (µg/L) in monitoring wells MW-3B and MW-4B. TVH as gasoline was also detected in monitoring well MW-1A, MW-2A, MW-2B, and MW-5B but below the ESL.
- MTBE was detected above its ESL of 5.0 µg/L in wells MW-1A, MW-1B, MW-2B, and MW-5B. MTBE was not found above the laboratory detection limit in any of the other wells sampled.

- Benzene was found above the ESL of 1.0 µg/L in well MW-1A. Benzene was not found above the laboratory detection limit in any other of the wells sampled.
- Toluene, ethylbenzene, and total xylenes were not found above the laboratory detection limit in any of the wells sampled.
- The lead scavenger 1,2-dichloroethane (EDC) was detected above the ESL of 0.5 µg/L in well MW-1B and MW-2B. EDC was not detected above the laboratory detection limit in any of the other wells sampled.
- There were no detections of 1,2-dibromomethane (EDB), ethyl tertiary butyl ether (ETBE), isopropyl ether (DIPE), Tertiary-amyl methyl ether (TAME), or Tertiary butyl alcohol (TBA) above the laboratory detection limits in any of the groundwater monitoring wells sampled during this event.
- Contaminant concentrations have decreased since the Q2-2009 sampling event in April in all of the monitoring wells sampled. In addition, with the exception of MW-2A, all wells have decreased in concentration since the October 2008 sampling event.
- At the request of ACEH, analysis for lead scavengers and fuel oxygenates is limited to the wells with a historical detection—namely, MW-1A, MW-1B, MW-2B, MW-3A, MW-3B, MW-4B and MW-5B.
- DO concentrations measured during the current event ranged from 0.4 mg/L to 7.1 mg/L. Only three wells; MW-3A, MW-4A, and MW-5B contained concentrations of DO above the 2 mg/L. This indicates that the November 2007 ORC™ treatment is diminishing in its effectiveness to release oxygen in the subsurface formation.
- The groundwater contaminate plume has not been fully delineated, but appears to be in elliptical configuration with its long axis trending east by west-northwest.
- It has been 23 months since the November 2007 corrective action excavation and application of ORC™. While the ORC™ treatment appears to have been effective in lowering contaminant concentrations in the source area, historical maximum TVHg concentrations observed in all wells except MW-5B in 2009 sampling events suggest that additional treatment may be necessary to remediate contamination that has migrated away from the source area. At the current groundwater velocity, it is likely that elevated (above regulatory ESLs) contaminant concentrations in these wells will persist for at least 4 to 6 years.

RECOMMENDATIONS

- Additional remediation consisting of limited excavation-backfill purging to control hydraulic migration (and achieve some measure of mass recovery) and injection of ORC™ or similar compound in the vicinity of wells MW-3B and MW-4B is recommended to mitigate the increased concentrations in those downgradient wells. In addition, injection of ORC-like product is recommended in the area of the residual source contamination excavation area on the northern subject property boundary (following groundwater purging) to address contamination in the vicinity of well MW-1B.
- SES recommends following up with ACEH following its receipt of this report, to discuss the requirements to move the site toward regulatory closure.
- We recommend that all future technical reports be provided to the appropriate regulatory agencies, including electronic uploads ACEH's "ftp" system and the State Water Board's GeoTracker system.
- Continued semiannual groundwater monitoring of site wells should be continued as requested by ACEH to monitor the level of breakdown accomplished by the ORC application, to evaluate the magnitude and stability of the contaminant plume over time, and to determine whether site closure criteria can be met.
- Reimbursement requests should continue to be submitted under the State of California Tank Cleanup Fund.

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8.0 LIMITATIONS

This report has been prepared for the exclusive use by the Estate of Mr. Lawrence Wadler (subject property owner), the regulatory agencies, and their authorized assigns and/or representatives. 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 solely on the findings of the investigations discussed herein. This report has been prepared in accordance with generally accepted methodologies and standards of practice of the area. The personnel performing this assessment 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.

APPENDIX A

**GROUNDWATER MONITORING AND
SAMPLING FIELD REPORT**

WELL MONITORING DATA SHEET

Project #: <u>2005-65</u>	Client: <u>Wadler Trust</u>
Sampler: <u>T6</u>	Start Date: <u>10-22-09</u>
Well I.D.: <u>MW-1A</u>	Well Diameter: (circle one) 2 3 4 6 <u> </u>
Total Well Depth: Before <u>12.43</u> After	Depth to Water: Before <u>7.62</u> After
Depth to Free Product: <u>NA</u>	Thickness of Free Product (feet): <u>NA</u>
Measurements referenced to: <u>FVC</u>	Grade Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

3/4" = 0.02

<u>0.09</u>	x	<u>3</u>	=	<u>0.3</u>
1 Case Volume		Specified Volumes		gallons

Purging: <u>Bailer</u> Disposable Bailer Middleburg Electric Submersible <u>Extraction Pump</u> Other _____	Sampling: <u>Bailer</u> Disposable Bailer <u>Extraction Port</u> Other _____
--	---

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
3.0	1336	20.7	6.86	0.12	15	0.1	
1.7	1337	20.0	6.74	0.12	70	0.2	
	<u>Dewatered</u>						

Did Well Dewater? <input checked="" type="checkbox"/> If yes, gals. <u>0.2</u> Gallons Actually Evacuated: <u>0.3</u>
Sampling Time: <u>1550</u> Sampling Date: <u>10-22-09</u>
Sample I.D.: <u>MW-1A</u> Laboratory: <u>C+T</u>
Analyzed for: <u>TPH-G MBTEX</u> TPH-D OTHER: <u>+ 8260</u>
Duplicate I.D.: <u> </u> Cleaning Blank I.D.: <u> </u>
Analyzed for: TPH-G BTEX TPH-D OTHER: (Circle)

WELL MONITORING DATA SHEET

Project #:	2005-65	Client:	Wadler Trust
Sampler:	TG	Start Date:	10-22-09
Well I.D.:	MW-1B	Well Diameter: (circle one)	2 3 4 6 <u>3/4"</u>
Total Well Depth:		Depth to Water:	7.32
Before	22.5	After	
Before	5.6	After	
Depth to Free Product:	NA	Thickness of Free Product (feet):	NA
Measurements referenced to:	<u>PVC</u>	Grade	Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

$$\frac{0.3}{1 \text{ Case Volume}} \times \frac{3}{\text{Specified Volumes}} = \frac{0.9}{\text{gallons}}$$

Purging: Bailer
 Disposable Bailer
 Middleburg
 Electric Submersible
Extraction Pump
 Other _____

Sampling: Bailer
 Disposable Bailer
Extraction Port
 Other _____

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1.5	1340	18.5	6.66	0.13	65	0.3	
0.8	1347	18.2	6.61	0.13	9	0.6	
0.7	1349	18.0	6.59	0.13	20	0.9	

Did Well Dewater? If yes, gals. 0.9 Gallons Actually Evacuated: 1.0

Sampling Time: 1350 Sampling Date: 10-22-09

Sample I.D.: MW-1B Laboratory: C+T

Analyzed for: TPH-G MBTEX TPH-D OTHER:
+ 8260 B

Duplicate I.D.: - Cleaning Blank I.D.: -

Analyzed for: TPH-G BTEX TPH-D OTHER:
-

WELL MONITORING DATA SHEET

Project #: <u>2005-65</u>		Client: <u>Wadler Trust</u>	
Sampler: <u>TS</u>		Start Date:	
Well I.D.: <u>MW-2A</u>		Well Diameter: (circle one) 2 3 4 6 <u>3/4"</u>	
Total Well Depth:		Depth to Water:	
Before <u>12.75</u> After		Before <u>6.93</u> After	
Depth to Free Product: <u>NA</u>		Thickness of Free Product (feet): <u>NA</u>	
Measurements referenced to: <u>PVC</u> Grade Other:			

Well Diameter	VCF	Well Diameter	VCF
1" <u>3/4" = 0.02</u>	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

<u>0.1</u>	<u>x</u>	<u>3</u>	<u>=</u>	<u>0.3</u>
1 Case Volume		Specified Volumes		gallons

 Purging: Bailer
 Disposable Bailer
 Middleburg
 Electric Submersible
Extraction Pump
 Other: _____

 Sampling: Bailer
 Disposable Bailer
Extraction Port
 Other: _____

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>1.2</u>	<u>1322</u>	<u>21.6</u>	<u>7</u>	<u>0.1</u>	<u>10</u>	<u>0.3</u>	
<u>0.7</u>	<u>1323</u>	<u>21.6</u>	<u>6.99</u>	<u>0.11</u>	<u>14</u>	<u>0.3</u>	

Did Well Dewater? If yes, gals. Gallons Actually Evacuated:

Sampling Time: Sampling Date:

 Sample I.D.: MW-2A Laboratory: C&T

 Analyzed for: TPH-G MBTEX TPH-D OTHER:

 Duplicate I.D.: — Cleaning Blank I.D.: —

 Analyzed for: TPH-G BTEX TPH-D OTHER:

WELL MONITORING DATA SHEET

Project #: 2005-65 Client: Waller Trust

Sampler: 76 Start Date: 10-22-09

Well I.D.: MW-2B Well Diameter: (circle one) 2 3 4 6 3/4"

Total Well Depth: Before 24.61 After 24.61

Depth to Water: Before 8.03 After 8.03

Depth to Free Product: NT

Measurements referenced to: PVC Grade Other:

Well Diameter	VCF	Well Diameter	VCF
5"	1.02	16"	0.65
4"	0.37	12"	0.37
3"	0.16	10"	0.16
2"	0.04	8"	0.04
1"		6"	0.04

3 1/4" = 0.02

1 Case Volume 0.3 x Specified Volumes 3 = gallons 0.9

Purging: Bailer Middleburg Electric Submersible Extraction Pump Other

Sampling: Bailer Disposable Bailer Extraction Port Other

TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>2.3</u>	<u>20.1</u>	<u>6.8</u>	<u>0.16</u>	<u>480</u>	<u>0.1</u>	
<u>1.4</u>	<u>20.1</u>	<u>6.89</u>	<u>0.13</u>	<u>150</u>	<u>0.2</u>	
						<u>Decontaminated</u>

Did Well Dewater? If yes, gals. 0.9 Gallons Actually Evacuated:

Sampling Time: 1605 Sampling Date: 10-22-09

Sample I.D.: MW-2B Laboratory: DT

Analyzed for: TPH-G/BTEX OTHER:

Duplicate I.D.: — Cleaning Blank I.D.: —

Analyzed for: TPH-G/BTEX OTHER: + 5260 B

Analyzed for: TPH-G/BTEX OTHER: —

WELL MONITORING DATA SHEET

Project #: <u>2005-65</u>		Client: <u>Wadler Trust</u>	
Sampler: <u>TG</u>		Start Date: <u>10-22-09</u>	
Well I.D.: <u>MW-3A</u>		Well Diameter: (circle one) 2 3 4 6 <u>3/4"</u>	
Total Well Depth: Before <u>12.96</u> After		Depth to Water: Before <u>6.89</u> After	
Depth to Free Product: <u>NA</u>		Thickness of Free Product (feet): <u>NA</u>	
Measurements referenced to: <u>PVC</u> Grada Other:			

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

3/4" = 0.02

<u>0.1</u>	x	<u>3</u>	=	<u>0.3</u>	gallons
1 Case Volume		Specified Volumes			

 Purging: Bailer
 Disposable Bailer
 Middleburg
 Electric Submersible
Extraction Pump
 Other:

 Sampling: Bailer
 Disposable Bailer
Extraction Port
 Other:

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>4.5</u>	<u>1502</u>	<u>20.1</u>	<u>6.92</u>	<u>0.16</u>	<u>31</u>	<u>0.1</u>	
<u>7.1</u>	<u>1504</u>	<u>20.3</u>	<u>6.84</u>	<u>0.15</u>	<u>47</u>	<u>0.2</u>	
		<u>Dewatered</u>					

 Did Well Dewater? If yes, gals. 0.25 Gallons Actually Evacuated: 0.3

 Sampling Time: No sample - dew Sampling Date: 10-22-09

 Sample I.D.: MW-3A Laboratory: C&T

 Analyzed for: TPH-G MBTEX TPH-D OTHER:
+ 8260 B

Duplicate I.D.: _____ Cleaning Blank I.D.: _____

 Analyzed for: TPH-G BTEX TPH-D OTHER:
 (Circle) _____

WELL MONITORING DATA SHEET

Project #: <u>2005-65</u>	Client: <u>Wadler Trust</u>
Sampler: <u>TG</u>	Start Date: <u>10-22-09</u>
Well I.D.: <u>MW-3B</u>	Well Diameter: (circle one) 2 3 4 6 <u>3/4"</u>
Total Well Depth: Before <u>25.03</u> After	Depth to Water: Before <u>6.49</u> After
Depth to Free Product: <u>NA</u>	Thickness of Free Product (feet): <u>NA</u>
Measurements referenced to:	<u>PVC</u> Grade Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2" <u>3/4" = 0.02</u>	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

<u>0.4</u>	x	<u>3</u>	=	<u>1.2</u>
1 Case Volume		Specified Volumes		gallons

 Purging: Bailer
 Disposable Bailer
 Middleburg
 Electric Submersible
Extraction Pump
 Other: _____

 Sampling: Bailer
 Disposable Bailer
Extraction Port
 Other: _____

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>0.8</u>	<u>1514</u>	<u>17.6</u>	<u>6.69</u>	<u>95</u>	<u>360</u>	<u>0.4</u>	
<u>0.5</u>	<u>1517</u>	<u>17.5</u>	<u>6.64</u>	<u>94</u>	<u>71</u>	<u>0.8</u>	
<u>0.4</u>	<u>1520</u>	<u>17.4</u>	<u>6.62</u>	<u>93</u>	<u>32</u>	<u>1.2</u>	

 Did Well Dewater? N If yes, gals. _____ Gallons Actually Evacuated: 1.2

 Sampling Time: 1520 pling Date: 10-22-09

 Sample I.D.: MW-3B Laboratory: C+T

 Analyzed for: TPH-G MTEX TPH-D OTHER:

Duplicate I.D.: _____ Cleaning Blank I.D.: _____

 Analyzed for: TPH-G BTEX TPH-D OTHER:

WELL MONITORING DATA SHEET

Project #: <u>2005-65</u>	Client: <u>Wadler Trust</u>
Sampler: <u>TU</u>	Start Date:
Well I.D.: <u>MW-4A</u>	Well Diameter: (circle one) 2 3 4 6 <u>3/4"</u>
Total Well Depth:	Depth to Water:
Before <u>12.12</u> After	Before <u>6.41</u> After
Depth to Free Product: <u>NA</u>	Thickness of Free Product (feet): <u>NA</u>
Measurements referenced to: <u>PVC</u> <u>Grade</u> <u>Other:</u>	

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

<u>0.1</u>	x	<u>3</u>	=	<u>0.3</u>
1 Case Volume		Specified Volumes		gallons

 Purging: Bailer
 Disposable Bailer
 Middleburg
 Electric Submersible
 Extraction Pump
 Other _____

 Sampling: Bailer
 Disposable Bailer
 Extraction Port
 Other _____

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>3.0</u>	<u>1455</u>	<u>21.8</u>	<u>6.73</u>	<u>0.13</u>	<u>130</u>	<u>0.1</u>	
	<u>Dewatered</u>						

 Did Well Dewater? If yes, gals. 0.15 Gallons Actually Evacuated: 0.16

 Sampling Time: No sample taken - no lw recharge

 Sample I.D.: MW-4A Laboratory: C+T

 Analyzed for: TPH-G MBTEX TPH-D OTHER:

Duplicate I.D.: _____ Cleaning Blank I.D.: _____

 Analyzed for: TPH-G BTEX TPH-D OTHER:

WELL MONITORING DATA SHEET

Project #: <u>2005-65</u>		Client: <u>Wadler Trust</u>	
Sampler: <u>T6</u>		Start Date:	
Well I.D.: <u>MW-4B</u>		Well Diameter: (circle one) 2 3 4 6 <u>3/4"</u>	
Total Well Depth:		Depth to Water:	
Before <u>24.27</u> After		Before <u>5.61</u> After	
Depth to Free Product: <u>NA</u>		Thickness of Free Product (feet): <u>NA</u>	
Measurements referenced to: <u>PVC</u> <u>Grade</u> Other:			

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

<u>0.4</u>	\times	<u>3</u>	$=$	<u>1.2</u>	gallons
1 Case Volume		Specified Volumes			

 Purging: Bailer
 Disposable Bailer
 Middleburg
~~Electric Submersible~~
Extraction Pump
 Other _____

 Sampling: Bailer
~~Disposable Bailer~~
Extraction Port
 Other _____

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
<u>0.7</u>	<u>1441</u>	<u>18.7</u>	<u>6.68</u>	<u>0.10</u>	<u>260</u>	<u>0.4</u>	
<u>0.5</u>	<u>1444</u>	<u>18.6</u>	<u>6.63</u>	<u>0.10</u>	<u>55</u>	<u>0.8</u>	
<u>0.5</u>	<u>1446</u>	<u>18.6</u>	<u>6.62</u>	<u>0.10</u>	<u>42</u>	<u>1.2</u>	

 Did Well Dewater? N If yes, gals. — Gallons Actually Evacuated: 1.2

 Sampling Time: 1450 Sampling Date: 10-22-09

 Sample I.D.: MW-4B Laboratory: C+T

 Analyzed for: TPH-G MBTEX TPH-D OTHER:

Duplicate I.D.: _____ Cleaning Blank I.D.: _____

Analyzed for: TPH-G BTEX TPH-D OTHER:

WELL MONITORING DATA SHEET

Project #: 2005-65	Client: Wadler Trust
Sampler: TB	Start Date:
Well I.D.: MW-5B	Well Diameter: (circle one) 2 3 4 6 <u>3 1/4"</u>
Total Well Depth: Before 25.3 After	Depth to Water: Before 7.34 After
Depth to Free Product: NA	Thickness of Free Product (feet): NA
Measurements referenced to: <u>PVC</u>	Grade Other:

Well Diameter	VCF	Well Diameter	VCF
1"	0.04	6"	1.47
2"	0.16	8"	2.61
3"	0.37	10"	4.08
4"	0.65	12"	5.87
5"	1.02	16"	10.43

$$\frac{0.4}{1 \text{ Case Volume}} \times \frac{3}{\text{Specified Volumes}} = \frac{1.2}{\text{gallons}}$$

 Purging: Bailer
 Disposable Bailer
 Middleburg
 Electric Submersible
Extraction Pump
 Other _____

 Sampling: Bailer
~~Disposable Bailer~~
Extraction Port
 Other _____

DO	TIME	TEMP. (F)	pH	COND.	TURBIDITY:	VOLUME REMOVED:	OBSERVATIONS:
1.0	1404	18.9	6.82	0.11	60	0.4	
1.4	1408	18.6	6.77	0.11	32	0.8	Smells like
7.1	1411	18.8	6.75	95	67	1.2	petroleum

 Did Well Dewater? If yes, gals. - Gallons Actually Evacuated: 1.2

Sampling Time: 1412 Sampling Date: 10-22-09

Sample I.D.: MW-5B Laboratory: CAT

 Analyzed for: TPH-G MBTEX TPH-D OTHER:
 + 8260 B

Duplicate I.D.: - Cleaning Blank I.D.: -

 Analyzed for: TPH-G BTEX TPH-D OTHER:
 (Circle) -

Chain of Custody Record

Lab job no. _____

Date _____

Page 1 of 1

Laboratory Curtis and Tompkins, Ltd.
 Address 2323 Fifth Street
Berkeley, California 94710
510-486-0900

Method of Shipment Hand Delivery

Shipment No. _____

Airbill No. _____

Cooler No. _____

Project Owner Estate of Lawrence Wadler
 Site Address 2836 Union Street
Oakland, CA

Project Manager Richard Makdisi

Telephone No. (510) 644-3123

Project Name USTCF Claim No. 018639

Fax No. (510) 644-3859

Project Number 2005-65

Samplers: (Signature) [Signature]

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		No.	Filtered	No. of Containers	Analysis Required	Remarks
						Cooler	Chemical					
MW-1A	1A	10/22/07	1550	W	VDA	yes	HCL	2	X	X		Run July 19 MBEEX 1 va steady
MW-1B	1B		1350					6	X	X		
MW-2A	2A		1324					3	X			
MW-2B	2B		1605					6	X	X		
MW-3A	3A								X	X		
MW-3B	3B		1620					3	X			
MW-4A	4A		1650						X			
MW-4B	4B		1450					3	X			
MW-5B	5B		1412					6	X	X		

Filtered
 No. of Containers
 MW-1A MBEEX
 Oxidizes by 6/10/08

Relinquished by: [Signature]
 Signature _____
 Printed Neal Glass
 Company Stellar Environmental

Date: 10/22/07
 Time: 1517
 Received by: [Signature]
 Signature _____
 Printed Trey BHC
 Company CEI

Relinquished by: _____
 Signature _____
 Printed _____
 Company _____

Date: _____
 Time: _____
 Received by: _____
 Signature _____
 Printed _____
 Company _____

Turnaround Time: 5 Day TAT - Standard
 Comments: Global ID: TQ600105641

Relinquished by: _____
 Signature _____
 Printed _____
 Company _____

Date: _____
 Time: _____
 Received by: _____
 Signature _____
 Printed _____
 Company _____

2000-00-01

col & inlow

APPENDIX B

SES GROUNDWATER STANDARD SAMPLING PROTOCOLS

APPENDIX B

SES GROUNDWATER STANDARD SAMPLING PROTOCOLS

SAMPLING AND ANALYSIS PERSONNEL

Sampling and analysis is conducted by Blaine Tech Services, a subcontractor to SES, which uses appropriately trained personnel to perform the water level measurements, sampling, and analyses of key natural attenuation indicators.

SUMMARY OF SAMPLING PROCEDURES

Activities that will occur during groundwater sampling are summarized as follows:

- Pre-arrangement with testing laboratory
- Assembly and preparation of equipment and supplies
- Groundwater sampling
 - water-level measurements
 - immiscible material measurements (with an interface probe, if applicable)
 - visual inspection of borehole water
 - well bore evacuation
 - sampling
- Sample preservation and shipment
 - sample preparation
 - onsite measurement of parameters using direct read instruments
 - sample labeling
- Completion of sample records
- Completion of chain-of-custody records
- Samples placed in chilled cooler
- Sample shipment

Detailed sampling and analysis procedures are presented in the following sections.

ARRANGEMENTS WITH ANALYTICAL LABORATORY

Prior to sampling, arrangements will be made with an analytical laboratory to conduct the sample analyses. Samples will be analyzed by Curtis and Tompkins, Ltd. (C&T), an analytical laboratory in Berkeley, California. C&T has the required Department of Toxic Substances Control (DTSC) certification to perform the analyses, and will provide a sufficient number of sample containers for the wells to be sampled and the blanks to be included. C&T will determine the proper type and size for the containers based on the analyses requested. For samples requiring chemical preservation, preservatives will be added to containers by the C&T prior to shipping containers to the facility. Shipping containers (ice chests with adequate container padding) will be sent to the facility with the sample containers.

PREPARATION FOR SAMPLING

Prior to the sampling episode, equipment to be used will be assembled and its operating condition verified, calibrated (if required), and properly cleaned (if required). In addition, all record-keeping materials will be prepared.

Equipment Calibration

Where appropriate, equipment will be calibrated according to the manufacturer's specifications prior to field use. This applies to the equipment for making onsite chemical measurements of pH, conductivity, water temperature, and photoionization detector (PID).

Equipment Cleaning

Portions of sampling and test equipment that will come into contact with the sample will be thoroughly cleaned before use. Such equipment includes water-level probe, bailers, lifting line, and other equipment or portions thereof that may be immersed. The procedure for cleaning non-dedicated equipment is as follows:

- Clean with potable water and phosphate-free detergent;
- Rinse with potable water;
- Rinse with distilled or deionized water; and
- Air dry the equipment prior to use.

Any deviations from these procedures will be documented in the permanent record of the sampling event.

Laboratory-supplied sample containers will be cleaned and sealed by the laboratory before shipping. The type of container provided and the method of container cleaning should be in the laboratory's permanent record of the sampling event.

Sampling equipment to be disposed of after use will be cleaned with potable water and phosphate-free detergent before disposal as solid waste. Rinse water will be stored in properly labeled 55-gallon drums for proper disposal, pending receipt of laboratory results of groundwater and soil sample analyses with assistance from SES.

SAMPLING PROCEDURES

Special care will be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. Contamination of a sample can occur through contact with improperly cleaned equipment. Cross-contamination of the groundwater can occur through insufficient cleaning of equipment between wells. Pre-cleaned disposable sampling equipment will be rinsed with distilled water prior to use. Sampling equipment and sample containers will be thoroughly cleaned before and after field use and between uses at different sampling locations according to the procedures discussed above. In addition to the use of properly cleaned equipment, two further precautions will be taken:

- A new pair of clean, disposable latex (or similar) gloves will be worn each time a different well is sampled.
- Sample collection activities will progress from the least affected (upgradient) area to the most affected (downgradient) area. Wells described as “background” or “upgradient” wells will be sampled first.

The following paragraphs present procedures for the several activities that comprise groundwater sample acquisition. These activities will be performed in the same order as presented below. Exceptions to this procedure will be noted in the permanent sampling record.

Preparation of Location

Prior to starting the sampling procedure, the area around the well will be cleared of foreign materials, such as brush, rocks, debris, etc. A clean (new) disposable plastic sheet will be placed around the well casing so that the sheet is flat on the ground. The sheet will be placed such that the flush-mount well projects through the center of the sheet. This preparation will prevent sampling equipment from inadvertently contacting the ground or exterior parts of the well.

Water-Level Measurement

The first sampling operation is water-level measurement. An electrical probe or a weighted tape will be used to measure the depth to groundwater below the datum to the nearest 0.01 foot. The datum, usually the top of the inner casing (inside and below the protective steel cover), will be described in the monitoring well records. A permanent mark or scribe will be marked on the inner casing.

If the wells to be sampled are closely spaced, the water levels at all of the closely-spaced wells will be measured before any of the wells are evacuated. The water-level probe or weighted tape will be cleaned with phosphate-free detergent in distilled water and with a distilled water rinse between usage at different wells.

Total Depth Measurement

Once the water level and immiscible material thickness is measured and recorded, the water-level probe or weighted tape will be slowly lowered to the bottom of the well. The depth to the bottom will be measured and recorded. The probe or tape will then be slowly withdrawn from the well. The bottom of the probe or tape will be observed after withdrawal to determine any evidence of viscous, heavy contaminants. Descriptions (and measurements, if possible) of such materials will be made from observation of the probe or tape.

Visual Inspection of Well Water

Prior to well evacuation, a small quantity of water will be removed with a bailer that is not completely immersed. The recovered sample is representative of the top of the water column in the well casing. If immiscible materials are present as measured by the interface probe at the top of the water column, this technique can allow their detection. The water will be observed for the presence of any floating films or other indications of immiscible materials. Any sample odors will be noted. Observations regarding odor or visual evidence of immiscible materials will be recorded in the sampling record.

The well water sample will be discarded unless the site-specific protocol calls for retention of this sample. The sample will be placed in a labeled container for proper disposal.

Well Bore Evacuation

Water contained within and adjacent to the well casing can potentially reflect chemical interaction with the atmosphere (by diffusion of gases down the casing) or the well construction materials (through prolonged residence adjacent to the casing).

Observations of this water will be recorded during removal and prior to it being discarded. Onsite parameter measurements of the purged water, as described in this section, will indicate when water-quality parameters have stabilized, and also will be recorded.

The volume of water contained within the well bore at the time of sampling will be calculated, and 4 times the calculated water volume will be removed from the well and discarded. A bailer will be used for well evacuation. The volume of water to be evacuated will be calculated as follows:

Number of Bailers:

$$\text{Number of bailers} = 4 \times \frac{\text{Volume of water in well (Vw)}}{\text{Volume of bailer (Vb)}}$$

Volume of Water in Well:

$$V_w = \frac{3.142 \times d_w^2 \times L_w}{4}$$

where: V_w = water volume in well (ft³)
 d_w = inside diameter of well (ft)
 L_w = length of water column in well (ft)

Volume of Water in Full Bailer:

$$V_b = \frac{3.142 \times d_b^2 \times L_b}{4}$$

where: V_b = water volume in bailer (ft³)
 d_b = inside diameter of bailer (ft)
 L_b = length of bailer (ft)

Wells that can be evacuated to a dry state will be evacuated completely; samples will be taken as soon as sufficient water for sampling is present. Sample compositing—sampling over a lengthy period by accumulating small volumes of water at different times to eventually obtain a sample of sufficient volume—will not be conducted.

Water produced during well evacuation will be contained in a suitable container and temporarily stored onsite pending proper disposal.

Some chemical and physical parameters in water can change significantly within a short time of sample acquisition. The following parameters cannot be accurately measured in a laboratory located more than a few hours from the facility, and will be measured onsite with portable equipment:

- pH
- Specific conductance
- Temperature
- Turbidity units

These parameters will be measured in unfiltered, unpreserved, “fresh” water, using the same sampling technique as for laboratory analyses. The measurements will be made in a clean glass container separate from those intended for laboratory analyses. The tested sample will be discarded after use. The measured values will be recorded in the sampling record.

Natural Attenuation Field Measurements

In addition to the meter reading above, following the indicators that groundwater has been purged sufficiently to represent water within the water bearing materials, natural attenuation parameters were measured by the Blaine Tech sampling personnel. These include meter readings for:

- Oxidation reduction potential;
- Dissolved oxygen; and
- Dissolved ferrous iron.

Sample Extraction

Natural attenuation parameters are measured before the water is purged and sampled. Care will be taken during insertion of sampling equipment to prevent undue disturbance of water in the well.

The pump or bailer will be lowered into the water gently to prevent splashing, and extracted gently to prevent creation of an excessive vacuum in the well. The sample will be transferred directly into the appropriate container. While pouring water from a bailer, the water will be carefully poured down the inside of the sample bottle to prevent significant aeration of the sample. Unless other instructions are given by the analytical laboratory, the sample containers will be completely filled so that no air space remains in the container. Excess water taken during sampling will be placed in a container for proper disposal.

SAMPLE HANDLING

Sample Preservation

Water samples will be properly prepared for transportation to the laboratory by refrigeration and chemical preservation, as necessary. The laboratory providing sample containers will add any necessary chemical preservatives to the sealed containers provided prior to shipment.

Container and Labels

Glass containers and appropriate container lids will be provided by the laboratory. The containers will be filled and container lids tightly closed. Sample container lids will be sealed so as to make obvious any seal tampered with or broken. The label will be firmly attached to the container side (rather than the lid). The following information will be written with permanent marker on the label:

- Facility name;
- Sample identification;
- Sample type (groundwater, surface water, etc.);
- Sampling date;
- Sampling time; and
- Preservatives added, and sample collector's initials.

Sample Shipment

In most instances, the concentration and type of compounds present in the groundwater are considered by the U.S. Department of Transportation to be non-hazardous. Thus, the following packaging and labeling requirements for the sample materials are appropriate for shipping the sample to the testing laboratory:

- Package sample so that it does not leak, spill, or vaporize from its packaging
- Label package with:
 - sample collector's name, address, and telephone number
 - laboratory's name, address, and telephone number
 - description of sample
 - quantity of sample
 - date of shipment

To comply with packaging regulations and prevent damage to expensive groundwater samples, SES will follow packaging and shipping instructions supplied by the certified testing laboratory.

Chain-of-Custody Control

After samples are obtained, chain-of-custody procedures will be followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container will contain a chain-of-custody form to be completed by the sampling personnel packing the samples. The chain-of-custody form for each container will be completed in triplicate. One copy of this form will be maintained at the site; the other two copies will remain at the laboratory. One of the laboratory copies will become a part of the permanent record for the sample and will be returned with the sample analyses.

The record will contain the following minimum information:

- Collector's sample number
- Signature of collector
- Date and time of collection
- Place and address of collection
- Material type
- Preservatives added
- Analyses requested
- Signatures involved in the chain of possession
- Inclusive dates of possession

The shipping container will be sealed so as to make obvious any seal tampered with or broken. The chain-of-custody documentation will be placed inside the container so that it is immediately apparent to the laboratory personnel receiving the container, but could not be damaged or lost during shipping.

SAMPLING RECORDS

To provide complete documentation of sampling, detailed records containing the following information will be maintained during sampling:

- Sample location (facility name)
- Sample identification (name and sample number)
- Sample location map or detailed sketch
- Date and time of sampling

- Sampling method
- Field observations of sample appearance and odor
- Weather conditions
- Samples identification
- Any other significant information

APPENDIX C

CERTIFIED ANALYTICAL LABORATORY REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

**Laboratory Job Number 215953
ANALYTICAL REPORT**

Stellar Environmental Solutions
2198 6th Street
Berkeley, CA 94710

Project : 2005-65
Location : USTCF Claim No. 018639
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
MW-1A	215953-001
MW-1B	215953-002
MW-2A	215953-003
MW-2B	215953-004
MW-3B	215953-005
MW-4B	215953-006
MW-5B	215953-007

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Project Manager

Date: 10/30/2009

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 215953
Client: Stellar Environmental Solutions
Project: 2005-65
Location: USTCF Claim No. 018639
Request Date: 10/22/09
Samples Received: 10/22/09

This data package contains sample and QC results for seven water samples, requested for the above referenced project on 10/22/09. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):

High surrogate recovery was observed for trifluorotoluene (PID) in MW-4B (lab # 215953-006); the corresponding bromofluorobenzene (PID) surrogate recovery was within limits, and no target analytes were detected in the sample. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

MW-1B (lab # 215953-002) was diluted due to high non-target analytes. No other analytical problems were encountered.

Chain of Custody Record

Lab job no. 25953
 Date _____
 Page 1 of 1

Laboratory Curtis and Tompkins, Ltd. Method of Shipment Hand Delivery
 Address 2323 Fifth Street Shipment No. _____
Berkeley, California 94710 Airbill No. _____
510-486-0900 Cooler No. _____
 Project Owner Estate of Lawrence Wadler Project Manager Richard Makdisi
 Site Address 2836 Union Street Telephone No. (510) 644-3123
Oakland, CA Fax No. (510) 644-3859
 Project Name USTCF Claim No. 018639 Samplers: (Signature) [Signature]
 Project Number 2005-65

No.	Filtered	No. of Containers	Analysis Required										Remarks		
1															Run JTAG MBEK 1 va 5 each GASOL
2															
3															
4															
5															
6															
7															

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		No.	Analysis	
						Cooler	Chemical			
1 MW-1A	1A	10/27	1350	W	VDA	yes	HCL	2	X	X
2 MW-1B	1B		1350					6	X	X
3 MW-2A	2A		1350					3	X	X
4 MW-2B	2B		1405					6	X	X
AW-3A	3A								X	X
5 MW-3B	3B		1500					3	X	X
MW-4A	4A		1630						X	X
6 MW-4B	4B		1450					3	X	X
7 MW-5B	5B		1412					6	X	X

Relinquished by: <u>[Signature]</u> Signature _____ Printed <u>Real Glass</u> Company <u>Stellar Environmental</u>	Date <u>10/22/09</u> Time <u>1517</u>	Received by: <u>[Signature]</u> Signature _____ Printed <u>Trey BHC</u> Company <u>CT</u>	Date _____ Time _____	Relinquished by: _____ Signature _____ Printed _____ Company _____	Date _____ Time _____	Received by: _____ Signature _____ Printed _____ Company _____	Date _____ Time _____
Turnaround Time: <u>5 Day TAT - Standard</u>				Relinquished by: _____ Signature _____ Printed _____ Company _____			
Comments: <u>Global ID: TO600105641</u>				Received by: _____ Signature _____ Printed _____ Company _____			

col & inld

2000-00-01

COOLER RECEIPT CHECKLIST



Login # 215953 Date Received 10/22/09 Number of coolers 1
Client SES Project USTCF CLAIM NO. 018639
Date Opened 10/22/09 By (print) M. Villanueva (sign) [Signature]
Date Logged in 10/23/09 By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Cloth material, Foam blocks, Cardboard, Bags, Styrofoam, None, Paper towels

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(C) 2.4

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are samples in the appropriate containers for indicated tests? YES NO

11. Are sample labels present, in good condition and complete? YES NO

12. Do the sample labels agree with custody papers? YES NO

13. Was sufficient amount of sample sent for tests requested? YES NO

14. Are the samples appropriately preserved? YES NO N/A

15. Are bubbles > 6mm absent in VOA samples? YES NO N/A

16. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Curtis & Tompkins Laboratories Analytical Report

Lab #: 215953	Location: USTCF Claim No. 018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Sampled: 10/22/09
Units: ug/L	Received: 10/22/09

Field ID: MW-1A Diln Fac: 1.000
 Type: SAMPLE Batch#: 156521
 Lab ID: 215953-001 Analyzed: 10/27/09

Analyte	Result	RL	Analysis
Gasoline C7-C12	63 Y	50	EPA 8015B
MTBE	110	2.0	EPA 8021B
Benzene	1.5	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	94	48-162	EPA 8015B
Bromofluorobenzene (FID)	116	52-158	EPA 8015B
Trifluorotoluene (PID)	88	21-180	EPA 8021B
Bromofluorobenzene (PID)	95	26-167	EPA 8021B

Field ID: MW-1B Diln Fac: 1.000
 Type: SAMPLE Batch#: 156521
 Lab ID: 215953-002 Analyzed: 10/27/09

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	8.5	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	94	48-162	EPA 8015B
Bromofluorobenzene (FID)	97	52-158	EPA 8015B
Trifluorotoluene (PID)	92	21-180	EPA 8021B
Bromofluorobenzene (PID)	94	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 Z= Sample exhibits unknown single peak or peaks
 NA= Not Analyzed
 ND= Not Detected
 RL= Reporting Limit

Curtis & Tompkins Laboratories Analytical Report

Lab #: 215953	Location: USTCF Claim No. 018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Sampled: 10/22/09
Units: ug/L	Received: 10/22/09

Field ID: MW-2A Diln Fac: 1.000
 Type: SAMPLE Batch#: 156521
 Lab ID: 215953-003 Analyzed: 10/27/09

Analyte	Result	RL	Analysis
Gasoline C7-C12	73 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	94	48-162	EPA 8015B
Bromofluorobenzene (FID)	96	52-158	EPA 8015B
Trifluorotoluene (PID)	84	21-180	EPA 8021B
Bromofluorobenzene (PID)	91	26-167	EPA 8021B

Field ID: MW-2B Lab ID: 215953-004
 Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	52	50	156521	10/27/09	EPA 8015B
MTBE	22	2.0	156440	10/24/09	EPA 8021B
Benzene	ND	0.50	156521	10/27/09	EPA 8021B
Toluene	ND	0.50	156521	10/27/09	EPA 8021B
Ethylbenzene	ND	0.50	156521	10/27/09	EPA 8021B
m,p-Xylenes	ND	0.50	156521	10/27/09	EPA 8021B
o-Xylene	ND	0.50	156521	10/27/09	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	98	48-162	156521	10/27/09	EPA 8015B
Bromofluorobenzene (FID)	116	52-158	156521	10/27/09	EPA 8015B
Trifluorotoluene (PID)	89	21-180	156521	10/27/09	EPA 8021B
Bromofluorobenzene (PID)	95	26-167	156521	10/27/09	EPA 8021B

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 Z= Sample exhibits unknown single peak or peaks
 NA= Not Analyzed
 ND= Not Detected
 RL= Reporting Limit

Curtis & Tompkins Laboratories Analytical Report

Lab #: 215953	Location: USTCF Claim No. 018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Sampled: 10/22/09
Units: ug/L	Received: 10/22/09

Field ID: MW-3B Lab ID: 215953-005
 Type: SAMPLE

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Analysis
Gasoline C7-C12	1,700 Y Z	100	2.000	156598	10/29/09	EPA 8015B
MTBE	ND	2.0	1.000	156440	10/24/09	EPA 8021B
Benzene	ND	0.50	1.000	156521	10/27/09	EPA 8021B
Toluene	ND	0.50	1.000	156521	10/27/09	EPA 8021B
Ethylbenzene	ND	0.50	1.000	156521	10/27/09	EPA 8021B
m,p-Xylenes	ND	0.50	1.000	156521	10/27/09	EPA 8021B
o-Xylene	ND	0.50	1.000	156521	10/27/09	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	104	48-162	2.000	156598	10/29/09	EPA 8015B
Bromofluorobenzene (FID)	105	52-158	2.000	156598	10/29/09	EPA 8015B
Trifluorotoluene (PID)	90	21-180	1.000	156521	10/27/09	EPA 8021B
Bromofluorobenzene (PID)	90	26-167	1.000	156521	10/27/09	EPA 8021B

Field ID: MW-4B Lab ID: 215953-006
 Type: SAMPLE

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Analysis
Gasoline C7-C12	1,100 Y Z	100	2.000	156598	10/29/09	EPA 8015B
MTBE	ND	2.0	1.000	156440	10/24/09	EPA 8021B
Benzene	ND	0.50	1.000	156521	10/27/09	EPA 8021B
Toluene	ND	0.50	1.000	156521	10/27/09	EPA 8021B
Ethylbenzene	ND	0.50	1.000	156521	10/27/09	EPA 8021B
m,p-Xylenes	ND	0.50	1.000	156521	10/27/09	EPA 8021B
o-Xylene	ND	0.50	1.000	156521	10/27/09	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	104	48-162	2.000	156598	10/29/09	EPA 8015B
Bromofluorobenzene (FID)	104	52-158	2.000	156598	10/29/09	EPA 8015B
Trifluorotoluene (PID)	181 *	21-180	1.000	156440	10/24/09	EPA 8021B
Bromofluorobenzene (PID)	89	26-167	1.000	156440	10/24/09	EPA 8021B

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 Z= Sample exhibits unknown single peak or peaks
 NA= Not Analyzed
 ND= Not Detected
 RL= Reporting Limit

Curtis & Tompkins Laboratories Analytical Report

Lab #: 215953	Location: USTCF Claim No. 018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Sampled: 10/22/09
Units: ug/L	Received: 10/22/09

Field ID: MW-5B Lab ID: 215953-007
 Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	66	50	156521	10/27/09	EPA 8015B
MTBE	71	2.0	156440	10/24/09	EPA 8021B
Benzene	ND	0.50	156521	10/27/09	EPA 8021B
Toluene	ND	0.50	156521	10/27/09	EPA 8021B
Ethylbenzene	ND	0.50	156521	10/27/09	EPA 8021B
m,p-Xylenes	ND	0.50	156521	10/27/09	EPA 8021B
o-Xylene	ND	0.50	156521	10/27/09	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	93	48-162	156521	10/27/09	EPA 8015B
Bromofluorobenzene (FID)	93	52-158	156521	10/27/09	EPA 8015B
Trifluorotoluene (PID)	78	21-180	156521	10/27/09	EPA 8021B
Bromofluorobenzene (PID)	85	26-167	156521	10/27/09	EPA 8021B

Type: BLANK Batch#: 156440
 Lab ID: QC518162 Analyzed: 10/24/09
 Diln Fac: 1.000 Analysis: EPA 8021B

Analyte	Result	RL
MTBE	ND	2.0

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		100	21-180
Bromofluorobenzene (PID)		96	26-167

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 Z= Sample exhibits unknown single peak or peaks
 NA= Not Analyzed
 ND= Not Detected
 RL= Reporting Limit

Curtis & Tompkins Laboratories Analytical Report

Lab #: 215953	Location: USTCF Claim No. 018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Sampled: 10/22/09
Units: ug/L	Received: 10/22/09

Type: BLANK	Batch#: 156521
Lab ID: QC518489	Analyzed: 10/27/09
Diln Fac: 1.000	

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	90	48-162	EPA 8015B
Bromofluorobenzene (FID)	96	52-158	EPA 8015B
Trifluorotoluene (PID)	84	21-180	EPA 8021B
Bromofluorobenzene (PID)	94	26-167	EPA 8021B

Type: BLANK	Batch#: 156598
Lab ID: QC518809	Analyzed: 10/28/09
Diln Fac: 1.000	

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	98	48-162	EPA 8015B
Bromofluorobenzene (FID)	93	52-158	EPA 8015B
Trifluorotoluene (PID)	90	21-180	EPA 8021B
Bromofluorobenzene (PID)	87	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
 Y= Sample exhibits chromatographic pattern which does not resemble standard
 Z= Sample exhibits unknown single peak or peaks
 NA= Not Analyzed
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	156440
Units:	ug/L	Analyzed:	10/24/09
Diln Fac:	1.000		

Type: BS Lab ID: QC518163

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.05	101	36-168

Surrogate	%REC	Limits
Trifluorotoluene (PID)	94	21-180
Bromofluorobenzene (PID)	94	26-167

Type: BSD Lab ID: QC518164

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	9.063	91	36-168	10	35

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	21-180
Bromofluorobenzene (PID)	102	26-167

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	156521
Units:	ug/L	Analyzed:	10/27/09
Diln Fac:	1.000		

Type: BS Lab ID: QC518490

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	8.808	88	36-168
Benzene	10.00	9.350	93	69-121
Toluene	10.00	10.03	100	64-132
Ethylbenzene	10.00	10.44	104	64-136
m,p-Xylenes	10.00	10.46	105	63-138
o-Xylene	10.00	10.40	104	64-135

Surrogate	%REC	Limits
Trifluorotoluene (PID)	90	21-180
Bromofluorobenzene (PID)	101	26-167

Type: BSD Lab ID: QC518491

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	8.017	80	36-168	9	35
Benzene	10.00	9.843	98	69-121	5	24
Toluene	10.00	10.07	101	64-132	0	27
Ethylbenzene	10.00	10.26	103	64-136	2	27
m,p-Xylenes	10.00	10.15	101	63-138	3	32
o-Xylene	10.00	9.888	99	64-135	5	27

Surrogate	%REC	Limits
Trifluorotoluene (PID)	80	21-180
Bromofluorobenzene (PID)	90	26-167

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC518492	Batch#:	156521
Matrix:	Water	Analyzed:	10/27/09
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,028	103	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	48-162
Bromofluorobenzene (FID)	106	52-158

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Field ID:	MW-2A	Batch#:	156521
MSS Lab ID:	215953-003	Sampled:	10/22/09
Matrix:	Water	Received:	10/22/09
Units:	ug/L	Analyzed:	10/27/09
Diln Fac:	1.000		

Type: MS Lab ID: QC518493

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	73.44	2,000	1,911	92	49-129

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	48-162
Bromofluorobenzene (FID)	111	52-158

Type: MSD Lab ID: QC518494

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,084	101	49-129	9	19

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	48-162
Bromofluorobenzene (FID)	110	52-158

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC518812	Batch#:	156598
Matrix:	Water	Analyzed:	10/28/09
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	977.4	98	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	48-162
Bromofluorobenzene (FID)	101	52-158

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	156598
MSS Lab ID:	216061-012	Sampled:	10/27/09
Matrix:	Water	Received:	10/27/09
Units:	ug/L	Analyzed:	10/29/09
Diln Fac:	1.000		

Type: MS Lab ID: QC518813

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	40.60	2,000	2,033	100	49-129

Surrogate	%REC	Limits
Trifluorotoluene (FID)	121	48-162
Bromofluorobenzene (FID)	108	52-158

Type: MSD Lab ID: QC518814

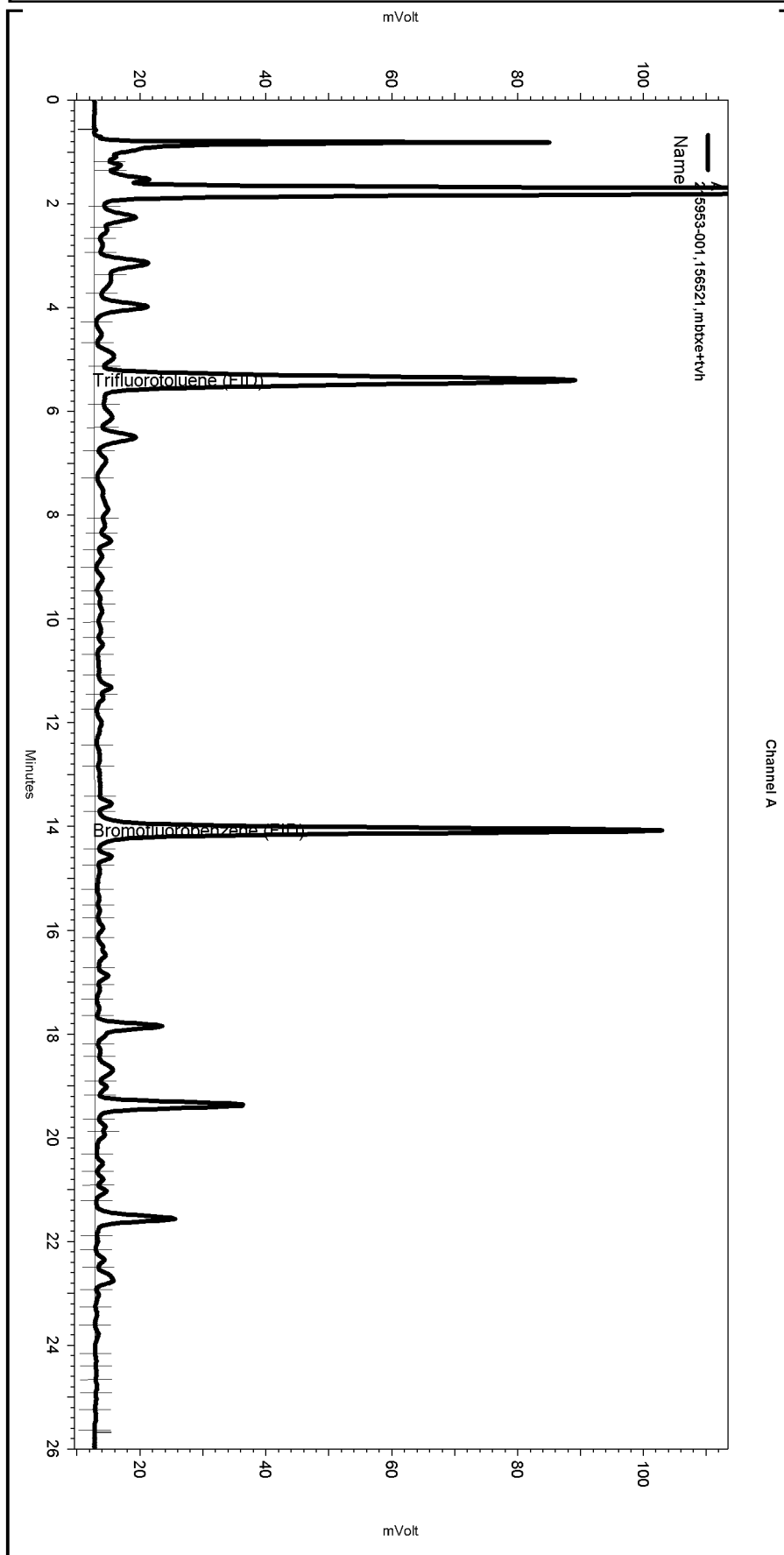
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,028	99	49-129	0	19

Surrogate	%REC	Limits
Trifluorotoluene (FID)	124	48-162
Bromofluorobenzene (FID)	108	52-158

RPD= Relative Percent Difference

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 Sample Name: 215953-001,156521,mbtXe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_009
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHBTxe295.met

Software Version 3.1.7
 Run Date: 10/27/2009 1:25:47 PM
 Analysis Date: 10/27/2009 2:23:46 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: b1.0



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Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Yes	Threshold	0	0	50

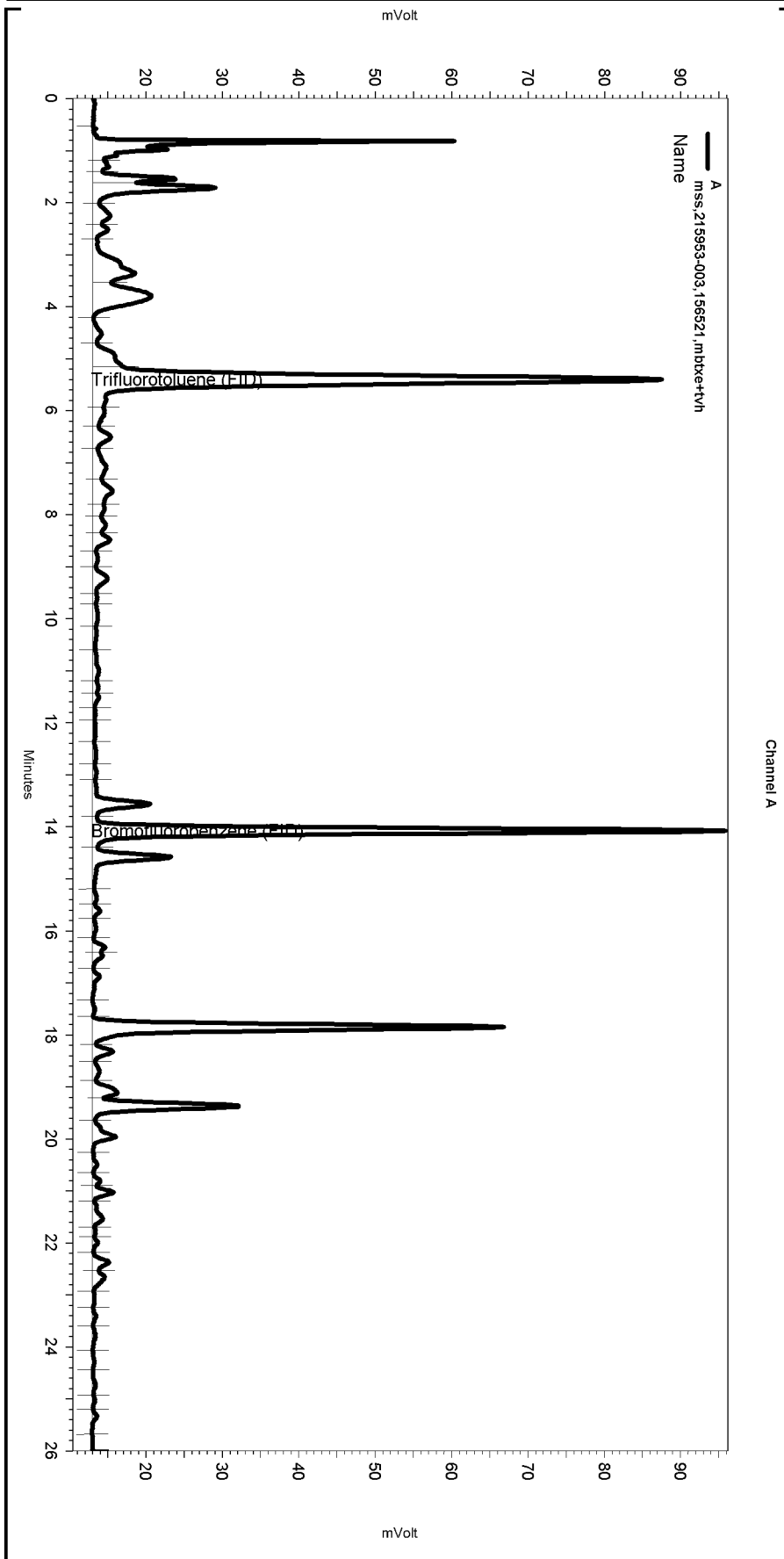
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_009

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\300.seq
 Sample Name: mss,215953-003,156521,mbtixe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_006
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe295.met

Software Version 3.1.7
 Run Date: 10/27/2009 11:33:04 AM
 Analysis Date: 10/28/2009 8:44:42 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: b1.0



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Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

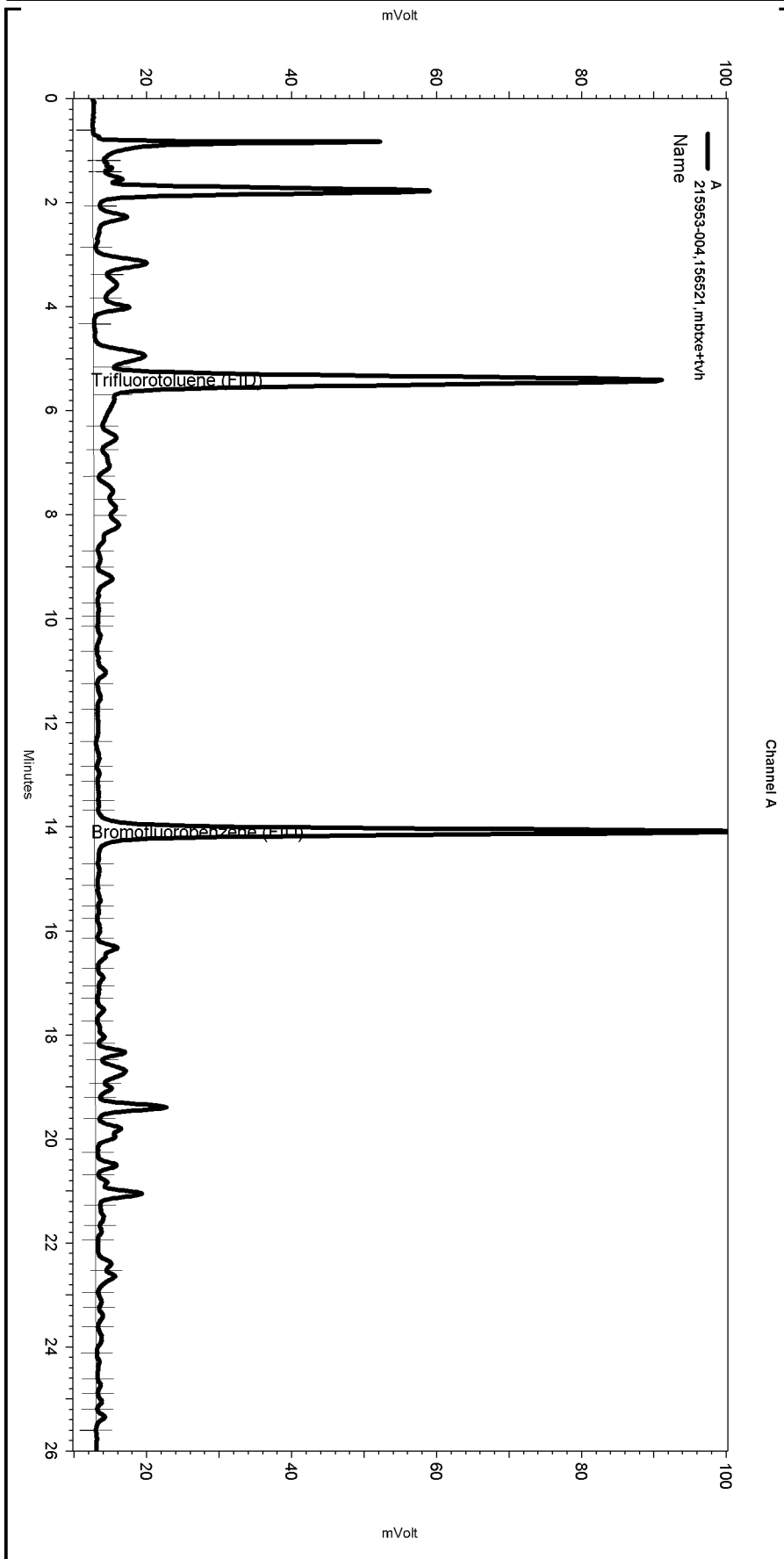
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_006

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.154	0	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\300.seq
 Sample Name: 215953-004,156521,mbtXe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_016
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHBTXE295.MET

Software Version 3.1.7
 Run Date: 10/27/2009 5:49:07 PM
 Analysis Date: 10/28/2009 8:49:44 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: e1.0



---< General Method Parameters >---

No items selected for this section

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No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

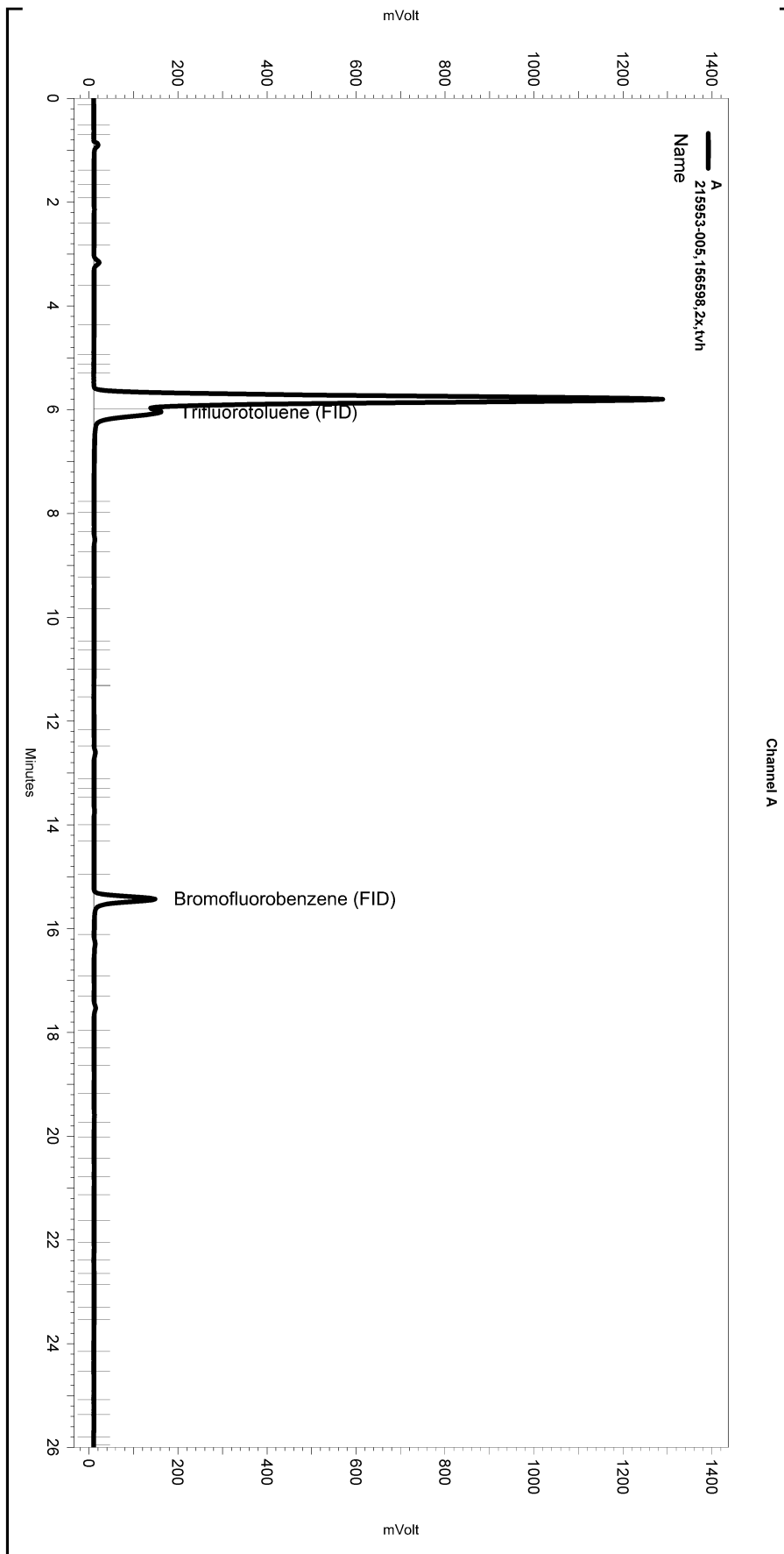
Manual Integration Fixes

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Yes	Split Peak	5.693	0	0

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 Sample Name: 215953-005,156598,2x,tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\301_025
 Instrument: GC07 (Offline) Vial: N/A Operator: Tvh 1. Analyst (lims2k3\tvh1)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC07\Method\TVHBTX294.met

Software Version 3.1.7
 Run Date: 10/29/2009 1:45:21 AM
 Analysis Date: 10/29/2009 1:17:38 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: c1.0



---< General Method Parameters >---

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No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

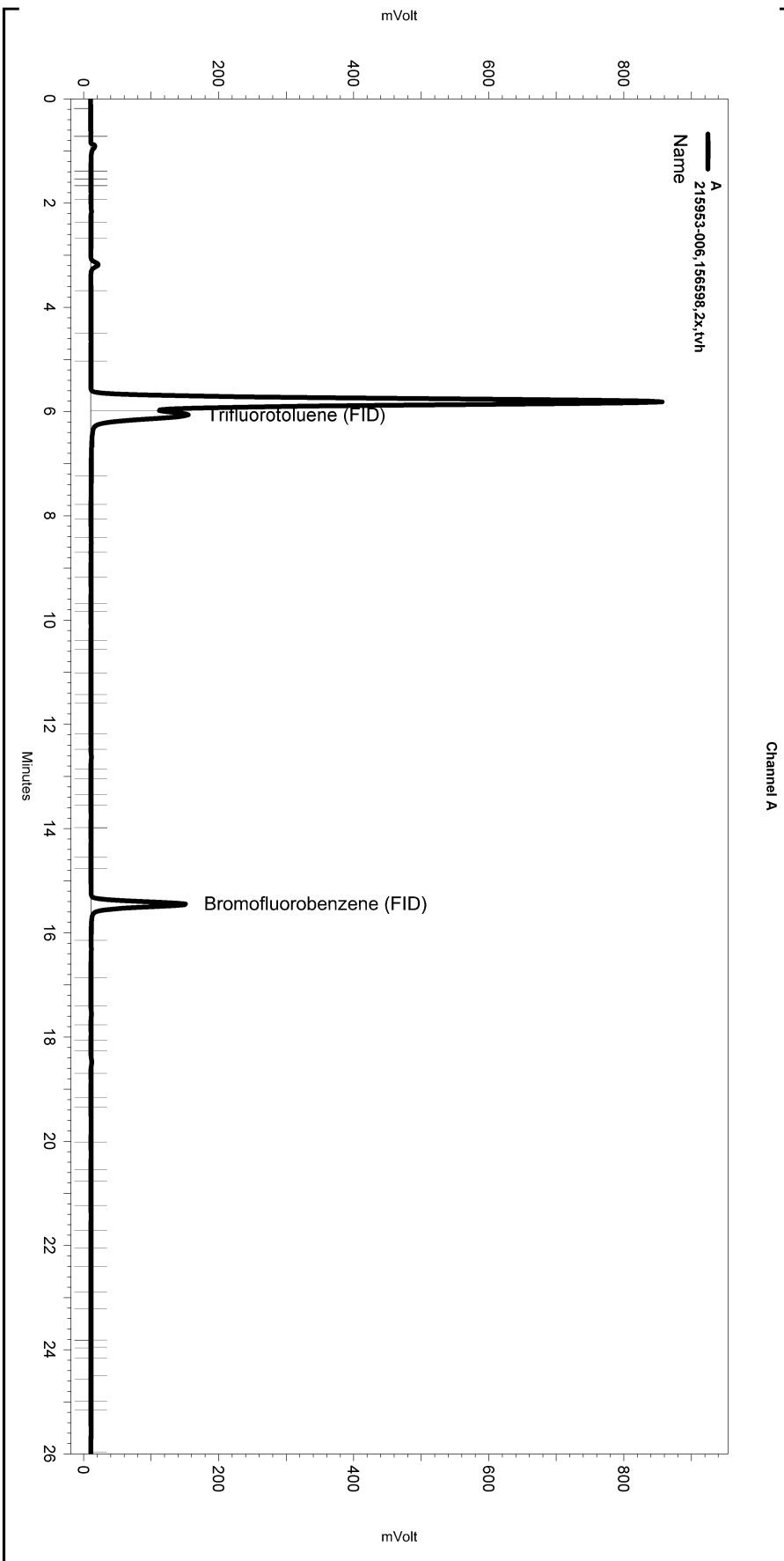
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\301_025

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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 Sample Name: 215953-006,156598,2x,tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\301_026
 Instrument: GC07 (Offline) Vial: N/A Operator: Tvh 1. Analyst (lims2k3\tvh1)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC07\Method\tvhbtxe294.met

Software Version 3.1.7
 Run Date: 10/29/2009 2:21:21 AM
 Analysis Date: 10/29/2009 1:17:44 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: c1.0



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Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

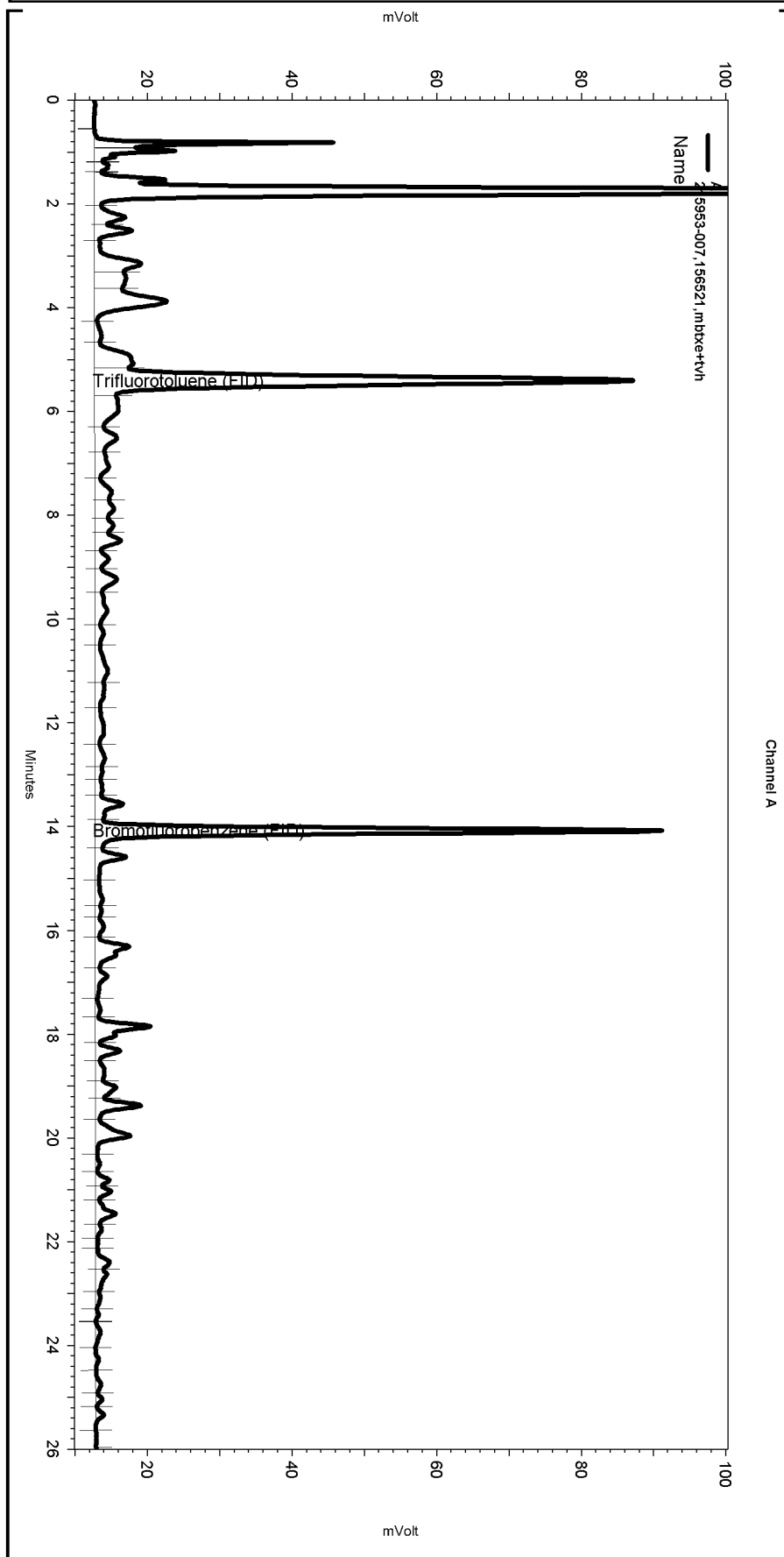
Manual Integration Fixes

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Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\300.seq
 Sample Name: 215953-007,156521,mbtXe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_019
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lms2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHBTXE295.MET

Software Version 3.1.7
 Run Date: 10/27/2009 7:41:52 PM
 Analysis Date: 10/28/2009 8:56:53 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: e1.0



---< General Method Parameters >---

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No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

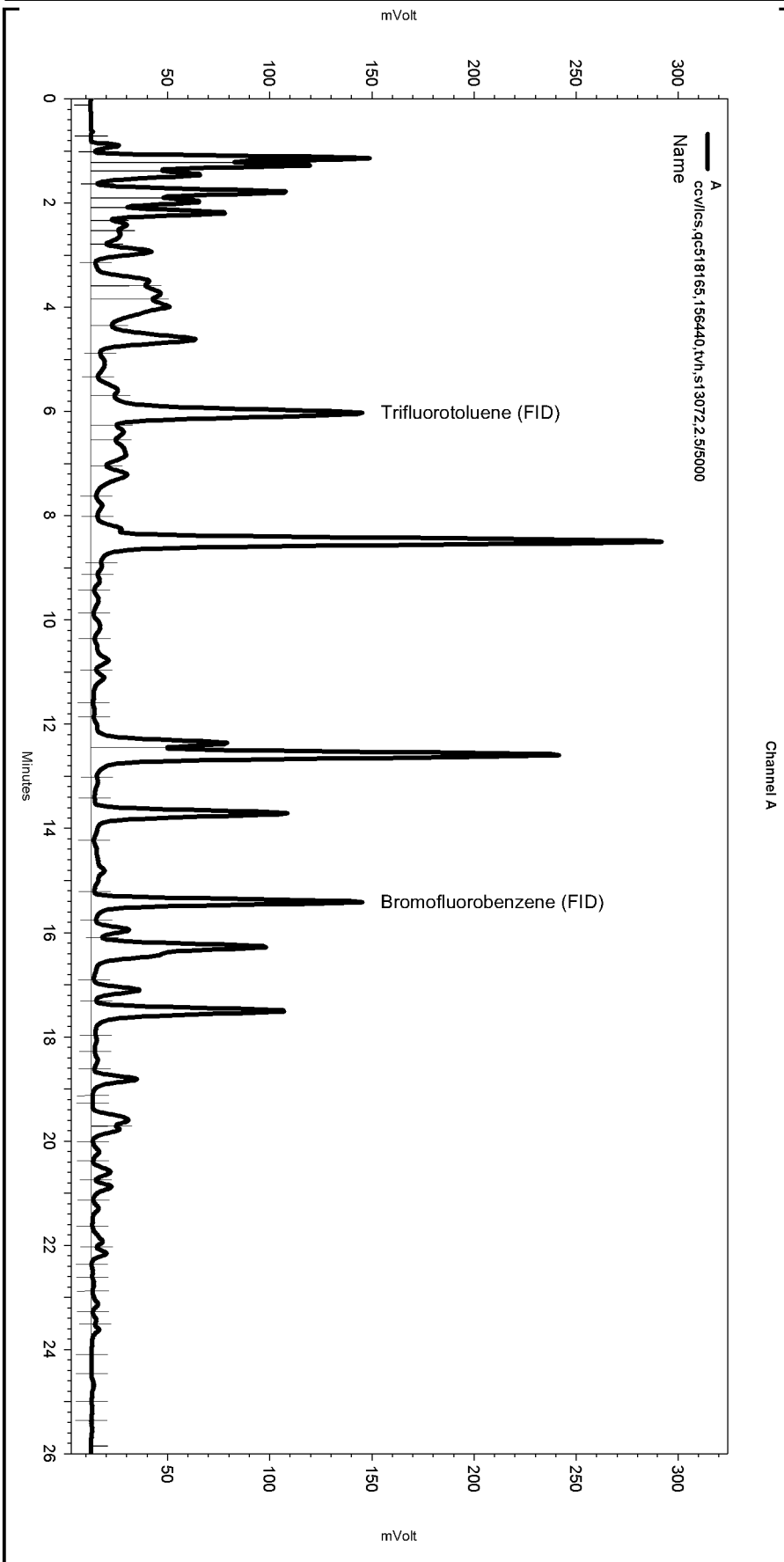
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\300_019

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Sequence File: \\Lims\gdrive\ezchrom\Projects\GC07\Sequence\297.seq
 Sample Name: ccv\lcs,qc518165,156440,tvh,s13072,2,5/5000
 Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\297_005
 Instrument: GC07 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lms2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC07\Method\tvhbtxe294.met

Software Version 3.1.7
 Run Date: 10/24/2009 10:11:04 AM
 Analysis Date: 10/26/2009 7:35:27 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: {Data Description}



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No items selected for this section

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Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\297_005

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
None				

Gasoline Oxygenates by GC/MS

Lab #: 215953	Location: USTCF Claim No. 018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	Analysis: EPA 8260B
Matrix: Water	Sampled: 10/22/09
Units: ug/L	Received: 10/22/09
Batch#: 156508	Analyzed: 10/27/09

Field ID: MW-1A Lab ID: 215953-001
 Type: SAMPLE Diln Fac: 2.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	20
MTBE	140	1.0
Isopropyl Ether (DIPE)	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	1.0
1,2-Dichloroethane	ND	1.0
1,2-Dibromoethane	ND	1.0

Surrogate	%REC	Limits
Dibromofluoromethane	109	81-124
1,2-Dichloroethane-d4	107	73-140
Toluene-d8	98	88-113
Bromofluorobenzene	99	80-127

Field ID: MW-1B Lab ID: 215953-002
 Type: SAMPLE Diln Fac: 2.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	20
MTBE	8.4	1.0
Isopropyl Ether (DIPE)	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	1.0
1,2-Dichloroethane	3.9	1.0
1,2-Dibromoethane	ND	1.0

Surrogate	%REC	Limits
Dibromofluoromethane	108	81-124
1,2-Dichloroethane-d4	107	73-140
Toluene-d8	98	88-113
Bromofluorobenzene	100	80-127

ND= Not Detected
 RL= Reporting Limit

Gasoline Oxygenates by GC/MS			
Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	10/22/09
Units:	ug/L	Received:	10/22/09
Batch#:	156508	Analyzed:	10/27/09

Field ID: MW-2B Lab ID: 215953-004
 Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	26	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	4.4	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	109	81-124
1,2-Dichloroethane-d4	111	73-140
Toluene-d8	98	88-113
Bromofluorobenzene	99	80-127

Field ID: MW-5B Lab ID: 215953-007
 Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	93	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	4.5	0.5
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	81-124
1,2-Dichloroethane-d4	110	73-140
Toluene-d8	99	88-113
Bromofluorobenzene	99	80-127

ND= Not Detected
 RL= Reporting Limit

Gasoline Oxygenates by GC/MS

Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	10/22/09
Units:	ug/L	Received:	10/22/09
Batch#:	156508	Analyzed:	10/27/09

Type: BLANK Diln Fac: 1.000
 Lab ID: QC518440

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	81-124
1,2-Dichloroethane-d4	109	73-140
Toluene-d8	98	88-113
Bromofluorobenzene	98	80-127

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Gasoline Oxygenates by GC/MS			
Lab #:	215953	Location:	USTCF Claim No. 018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	156508
Units:	ug/L	Analyzed:	10/27/09
Diln Fac:	1.000		

Type: BS Lab ID: QC518441

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	133.6	107	36-156
MTBE	25.00	25.09	100	61-123
Isopropyl Ether (DIPE)	25.00	25.89	104	54-139
Ethyl tert-Butyl Ether (ETBE)	25.00	25.09	100	64-133
Methyl tert-Amyl Ether (TAME)	25.00	24.30	97	73-124

Surrogate	%REC	Limits
Dibromofluoromethane	108	81-124
1,2-Dichloroethane-d4	105	73-140
Toluene-d8	101	88-113
Bromofluorobenzene	99	80-127

Type: BSD Lab ID: QC518442

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	125.0	126.7	101	36-156	5	23
MTBE	25.00	25.40	102	61-123	1	11
Isopropyl Ether (DIPE)	25.00	26.40	106	54-139	2	11
Ethyl tert-Butyl Ether (ETBE)	25.00	25.71	103	64-133	2	11
Methyl tert-Amyl Ether (TAME)	25.00	24.47	98	73-124	1	11

Surrogate	%REC	Limits
Dibromofluoromethane	109	81-124
1,2-Dichloroethane-d4	102	73-140
Toluene-d8	100	88-113
Bromofluorobenzene	97	80-127

RPD= Relative Percent Difference

APPENDIX D

HISTORICAL GROUNDWATER ELEVATION AND ANALYTICAL DATA

TABLE A
Historical Groundwater Monitoring Well Data
2836 Union Street, Oakland, California

MW-1A										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	dry	dry	NA	NS	NS	NS	NS	NS	NS
2	Jan-07	9.80	2.45	NA	790	94	< 0.5	8.6	< 0.5	100
3	Apr-07	7.49	4.76	NA	760	63	<0.5	1.9	<0.5	150
4	Jul-07	7.16	5.09	NA	NS	NS	NS	NS	NS	NS
5	Oct-07	7.29	4.96	NA	830	28	<0.7	13	<0.7	110
6	Jan-08	6.82	5.70	NA	720	8.1	< 0.5	< 0.5	< 0.5	130
7	Apr-08	6.32	5.70	NA	NS	NS	NS	NS	NS	NS
8	Jul-08	8.25	4.00	NA	120	1.0	<0.5	<0.5	<0.5	86
9	Oct-08	9.04	3.21	NS	NS	NS	NS	NS	NS	NS
10	Jan-09	7.00	5.25	NA	63	1.2	<0.5	<0.5	<0.5	77
11	Apr-09	5.62	6.63	7,100	89	8.7	<0.5	0.75	<0.5	150
12	Oct-09	7.62	4.63	1,700	63	1.5	<0.5	<0.5	<0.5	110

MW-1B										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	7.44	4.56	NA	350	<1.3	<1.3	<1.3	<1.3	2.7
2	Jan-07	6.40	5.65	NA	350	<1.3	<1.3	<1.3	<1.3	3.6
3	Apr-07	6.42	5.63	NA	320	<0.5	<0.5	<0.5	<0.5	4.2
4	Jul-07	7.19	4.86	NA	200	<1.3	<1.3	<1.3	<1.3	3.2
5	Oct-07	7.10	4.95	NA	230	<0.7	<0.7	<0.7	<0.7	6.0
6	Jan-08	5.81	6.67	NA	400	< 0.5	< 0.5	< 0.5	< 0.5	6.2
7	Apr-08	6.82	5.23	NA	350	<0.5	<0.5	<0.5	<0.5	7.8
8	Jul-08	7.62	4.43	NA	300	<0.5	<0.5	<0.5	<0.5	8.4
9	Oct-08	8.21	3.84	3,600	520	<0.5	<0.5	<0.5	<0.5	5.9
10	Jan-09	6.89	5.16	6,160	300	<0.5	<0.5	<0.5	<0.5	7.5
11	Apr-09	6.27	5.78	6,000	1,400	<1.0	<1.0	<1.0	<1.0	7.7
12	Oct-09	7.32	4.73	700	<50	<0.5	<0.5	<0.5	<0.5	8.5

MW-2A										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	7.93	4.87	NA	80	<0.5	<0.5	<0.5	<0.5	<0.5
2	Jan-07	6.58	6.24	NA	490	<0.5	<0.5	<0.5	<0.5	<0.5
3	Apr-07	6.52	6.30	NA	83	<0.5	<0.5	<0.5	<0.5	<0.5
4	Jul-07	7.37	5.45	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5
5	Oct-07	7.33	5.49	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5
6	Jan-08	5.50	7.56	NA	<50	<0.5	<0.5	<0.5	<0.5	<2.0
7	Apr-08	6.86	5.96	NA	160	<0.5	<0.5	<0.5	<0.5	3.0
8	Jul-08	7.70	5.12	NA	97	<0.5	<0.5	<0.5	<0.5	5.5
9	Oct-08	8.44	4.38	3,280	71	<0.5	<0.5	<0.5	<0.5	<2.0
10	Jan-09	6.99	5.83	2,120	<50	<0.5	<0.5	<0.5	<0.5	<2.0
11	Apr-09	6.47	6.35	5,800	110	<0.5	<0.5	<0.5	<0.5	1.9
12	Oct-09	6.93	5.89	700	73	<0.5	<0.5	<0.5	<0.5	<2.0

Table A continued

MW-2B										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	7.90	5.06	NA	NS	NS	NS	NS	NS	NS
2	Jan-07	6.59	6.37	NA	2,000	<0.5	1.1	6.7	0.8	19
3	Apr-07	6.20	6.76	NA	84	<0.5	<0.5	<0.5	<0.5	18
4	Jul-07	7.33	5.63	NA	580	<0.5	<0.5	<0.5	<0.5	6.0
5	Oct-07	7.12	5.84	NA	1,700	<0.5	<0.5	<0.5	<0.5	83
6	Jan-08	5.51	7.65	NA	780	<0.5	<0.5	<0.5	<0.5	32
7	Apr-08	6.56	6.40	NA	92	<0.5	<0.5	<0.5	<0.5	2.4
8	Jul-08	7.78	5.18	NA	570	<0.5	<0.5	<0.5	0.72	17
9	Oct-08	8.62	4.34	NS	NS	NS	NS	NS	NS	NS
10	Jan-09	7.03	5.93	2,160	110	<0.5	<0.5	<0.5	<0.5	27
11	Apr-09	6.21	6.75	5,800	250	<0.5	<0.5	<0.5	<0.5	30
12	Oct-09	8.03	4.93	1,400	52	<0.5	<0.5	<0.5	<0.5	22

MW-3A										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	dry	dry	NA	NS	NS	NS	NS	NS	NS
2	Jan-07	6.32	5.27	NA	NS	NS	NS	NS	NS	NS
3	Apr-07	5.75	5.84	NA	<50	<0.5	<0.5	<0.5	<0.5	75
4	Jul-07	6.19	5.40	NA	NS	NS	NS	NS	NS	NS
5	Oct-07	6.50	5.09	NA	<50	<0.5	<0.5	<0.5	<0.5	<0.5
6	Jan-08	5.69	6.07	NA	<50	<0.5	<0.5	<0.5	<0.5	70
7	Apr-08	6.56	6.40	NA	<50	<0.5	<0.5	<0.5	<0.5	77
8	Jul-08	6.73	4.86	NA	<50	<0.5	<0.5	<0.5	<0.5	56
9	Oct-08	8.68	2.91	NS	NS	NS	NS	NS	NS	NS
10	Jan-09	6.28	5.31	NS	NS	NS	NS	NS	NS	NS
11	Apr-09	5.58	6.01	8,100	<50	<0.5	<0.5	<0.5	<0.5	52
12	Oct-09	6.89	4.70	7,100	NS	NS	NS	NS	NS	NS

MW-3B										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	7.34	4.61	NA	1,900	<10	<10	<10	<10	<10
2	Jan-07	6.41	5.54	NA	1,900	<8.3	<8.3	<8.3	<8.3	<8.3
3	Apr-07	6.39	5.56	NA	1,900	<0.5	<0.5	<0.5	<0.5	<0.5
4	Jul-07	7.15	4.80	NA	1,200	<2.0	<2.0	<2.0	<2.0	<2.0
5	Oct-07	7.11	4.84	NA	2,100	<7.1	<7.1	<7.1	<7.1	<7.1
6	Jan-08	5.60	6.50	NA	2,100	<0.5	<0.5	<0.5	<0.5	<2.0
7	Apr-08	6.77	5.18	NA	1,800	<0.5	<0.5	<0.5	<0.5	<2.0
8	Jul-08	7.50	4.45	NA	1,700	<0.5	<0.5	<0.5	<0.5	<2.0
9	Oct-08	8.11	3.84	1,490	2,300	<0.5	<0.5	<0.5	<0.5	<2.0
10	Jan-09	6.84	5.11	1,480	1,500	<0.5	<0.5	<0.5	<0.5	<2.0
11	Apr-09	6.24	5.71	5,300	4,900	<0.5	<0.5	<0.5	<0.5	<2.0
12	Oct-09	6.49	5.46	400	1,700	<0.5	<0.5	<0.5	<0.5	<2.0

Table A continued

MW-4A										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	9.74	1.28	NA	NS	NS	NS	NS	NS	NS
2	Jan-07	5.64	5.38	NA	<50	<0.5	<0.5	<0.5	<0.5	72
3	Apr-07	5.34	5.68	NA	<50	<0.5	0.6	<0.5	0.6	77
4	Jul-07	5.71	5.31	NA	<50	<0.5	<0.5	<0.5	<0.5	64
5	Oct-07	6.09	4.93	NA	<50	<0.5	<0.5	<0.5	<0.5	73
6	Jan-08	5.53	5.72	NA	NS	NS	NS	NS	NS	NS
7	Apr-08	5.56	5.46	NA	<50	<0.5	<0.5	<0.5	<0.5	61
8	Jul-08	6.30	4.34	NA	<50	<0.5	<0.5	<0.5	<0.5	46
9	Oct-08	10.45	0.57	1,870	<50	<0.5	<0.5	<0.5	<0.5	66
10	Jan-09	6.00	5.02	2,350	<50	<0.5	<0.5	<0.5	<0.5	6.7
11	Apr-09	5.45	5.57	7,100	<50	<0.5	<0.5	<0.5	<0.5	11
12	Oct-09	6.41	4.61	3,100	NS	NS	NS	NS	NS	NS

MW-4B										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	6.63	4.41	NA	1,100	<2.5	<2.5	<2.5	<2.5	<2.5
2	Jan-07	5.55	5.49	NA	1,300	<4.2	<4.2	<4.2	<4.2	<4.2
3	Apr-07	5.45	5.59	NA	1,300	<0.5	<0.5	<0.5	<0.5	<0.5
4	Jul-07	6.28	4.76	NA	1,000	<4.2	<4.2	<4.2	<4.2	<4.2
5	Oct-07	6.13	4.91	NA	1,400	<4.2	<4.2	<4.2	<4.2	<4.2
6	Jan-08	4.81	6.44	NA	1,500	<0.5	<0.5	<0.5	<0.5	<2.0
7	Apr-08	5.90	5.14	NA	1,500	<0.5	<0.5	<0.5	<0.5	<2.0
8	Jul-08	6.70	4.34	NA	1,200	<0.5	<0.5	<0.5	<0.5	<2.0
9	Oct-08	7.24	3.80	1,960	1,600	<0.5	<0.5	<0.5	<0.5	<2.0
10	Jan-09	6.00	5.04	1,620	980	<0.5	<0.5	<0.5	<0.5	<2.0
11	Apr-09	5.35	5.69	5,200	3,700	<4.2	<4.2	<4.2	<4.2	<4.2
12	Oct-09	5.61	5.43	500	1,100	<0.5	<0.5	<0.5	<0.5	<2.0

Table A continued

MW-5A										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	9.60	2.82	NA	NS	NS	NS	NS	NS	NS
2	Jan-07	6.72	6.10	NA	NS	NS	NS	NS	NS	NS
3	Apr-07	5.74	6.68	NA	1,000	6.6	<0.5	29	7.6	79
4	Jul-07	6.98	5.44	NA	NS	NS	NS	NS	NS	NS
5	Oct-07	8.32	4.10	NA	820	6.6	<0.5	6.6	1.8	78
Well Destroyed in November 2007										

MW-5B										
Sampling Event No.	Date Sampled	Depth to Groundwater (a)	Groundwater Elevation (b)	Dissolved Oxygen	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	9.07	3.31	NA	13,000	9.6	0.6	21	1.9	37
2	Jan-07	6.45	5.93	NA	6,600	4.0	<0.5	10	1.0	22
3	Apr-07	6.45	5.93	NA	3,300	0.7	<0.5	2.7	<0.5	<0.5
4	Jul-07	7.15	5.23	NA	2,000	1.1	<0.5	2.2	<0.5	26
5	Oct-07	7.28	5.10	NA	1,200	<0.5	<0.5	<0.5	<0.5	45
6	Jan-08	4.94	7.63	NA	1,200	<0.5	<0.5	4.1	<0.5	69
7	Apr-08	6.51	5.87	NA	240	<0.5	<0.5	<0.5	<0.5	65
8	Jul-08	7.64	4.74	NA	310	<0.5	<0.5	<0.5	<0.5	68
9	Oct-08	8.24	4.14	1,670	780	<0.5	<0.5	<0.5	<0.5	84
10	Jan-09	6.93	5.45	3,210	1,200	<0.5	<0.5	<0.5	4.2	56
11	Apr-09	5.82	6.56	5,900	220	<0.5	<0.5	<0.5	<0.5	73
12	Oct-09	7.34	5.04	7,100	66	<0.5	<0.5	<0.5	<0.5	71

Notes:

All concentrations reported in micrograms per liter.

TVH-g = Total volatile hydrocarbons – gasoline range.

NA = Not analyzed for this constituent. NS = Not sampled

(a) Feet below top of casing

(b) Relative to mean sea level