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**SECOND SEMIANNUAL 2010
GROUNDWATER MONITORING AND
OXYGEN RELEASE COMPOUND
TREATMENT CORRECTIVE ACTION
REPORT**

**2836 UNION STREET
OAKLAND, CALIFORNIA**

Prepared for:

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

November 2010

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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 24, 2010

November 24, 2010

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 2010 Groundwater Monitoring and Advanced Oxygen Release Compound Treatment Corrective Action 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 2010 Groundwater Monitoring and Oxygen Release Compound (ORC™) Treatment Action Report for the former Modern Mail Service Facility at 2836 Union Street, Oakland, California. This report documents the Advanced ORC™ injection conducted on September 1 and 2, 2010 and the Second Semiannual 2010 groundwater monitoring event conducted in October 2010.

This is the 14th consecutive groundwater monitoring event conducted at this site. 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



Elana Aabas
Property Estate Trustee



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



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1.0 INTRODUCTION

PROJECT BACKGROUND

Stellar Environmental Solutions, Inc. (Stellar Environmental) was contracted by 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 2010 groundwater monitoring conducted on October 18, 2010 and the Advanced ORC™ injection conducted on September 1 and 2, 2010. Figure 1 shows the site location. Figure 2 shows the site plan with the locations of groundwater wells, borings, and the former UFST.

SITE OBJECTIVES AND SCOPE OF WORK

The overall objective of the latest remedial action is to continue trying to reduce the residual hydrocarbons in the source area and downgradient along Union Street (which is the subject property border). Historical remedial efforts have shown that residual hydrocarbons entrained in subsurface material and/or stratigraphic traps are continuing to release significant amounts of hydrocarbons into the groundwater. This report discusses the following activities conducted/coordinated by Stellar Environmental Solutions, Inc. (Stellar Environmental) during the second 2010 semiannual period:

- Injecting Advanced Oxygen Release Compound™ (Advanced ORC™) across the site, in conformance with the Corrective Action Workplan (CAP) of May 2010
- Collecting water levels in site wells to determine shallow groundwater flow direction
- Sampling site wells for contaminant analysis and natural attenuation indicators
- Performing semiannual monitoring

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);



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

**2836 Union Street
Oakland, CA**

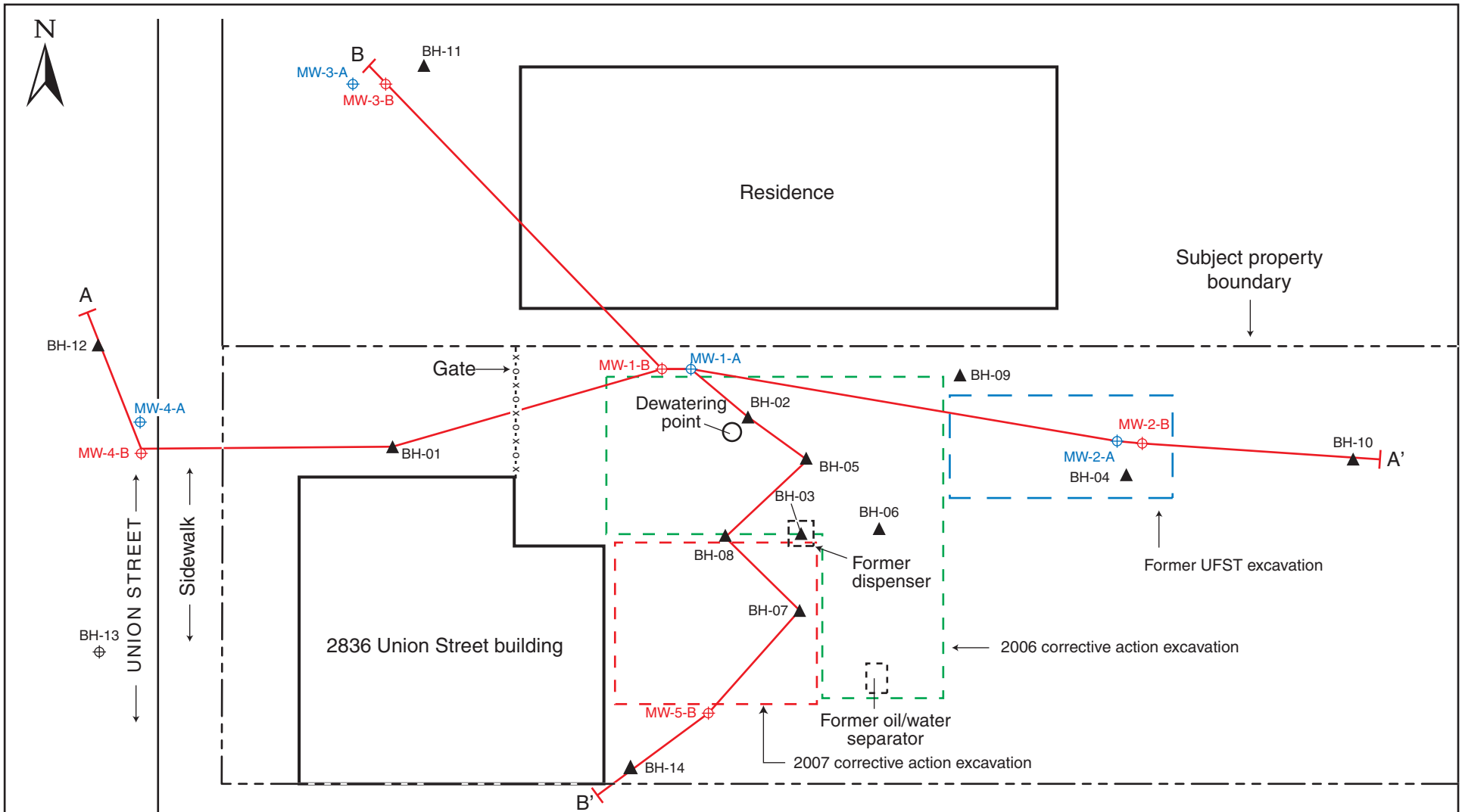
By: MJC

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
- A-A' 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



- 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 Stellar Environmental 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 (Stellar Environmental, 2005b).

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 (Stellar Environmental, 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 Stellar Environmental technical reports (Stellar Environmental, 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 (Stellar Environmental, 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.

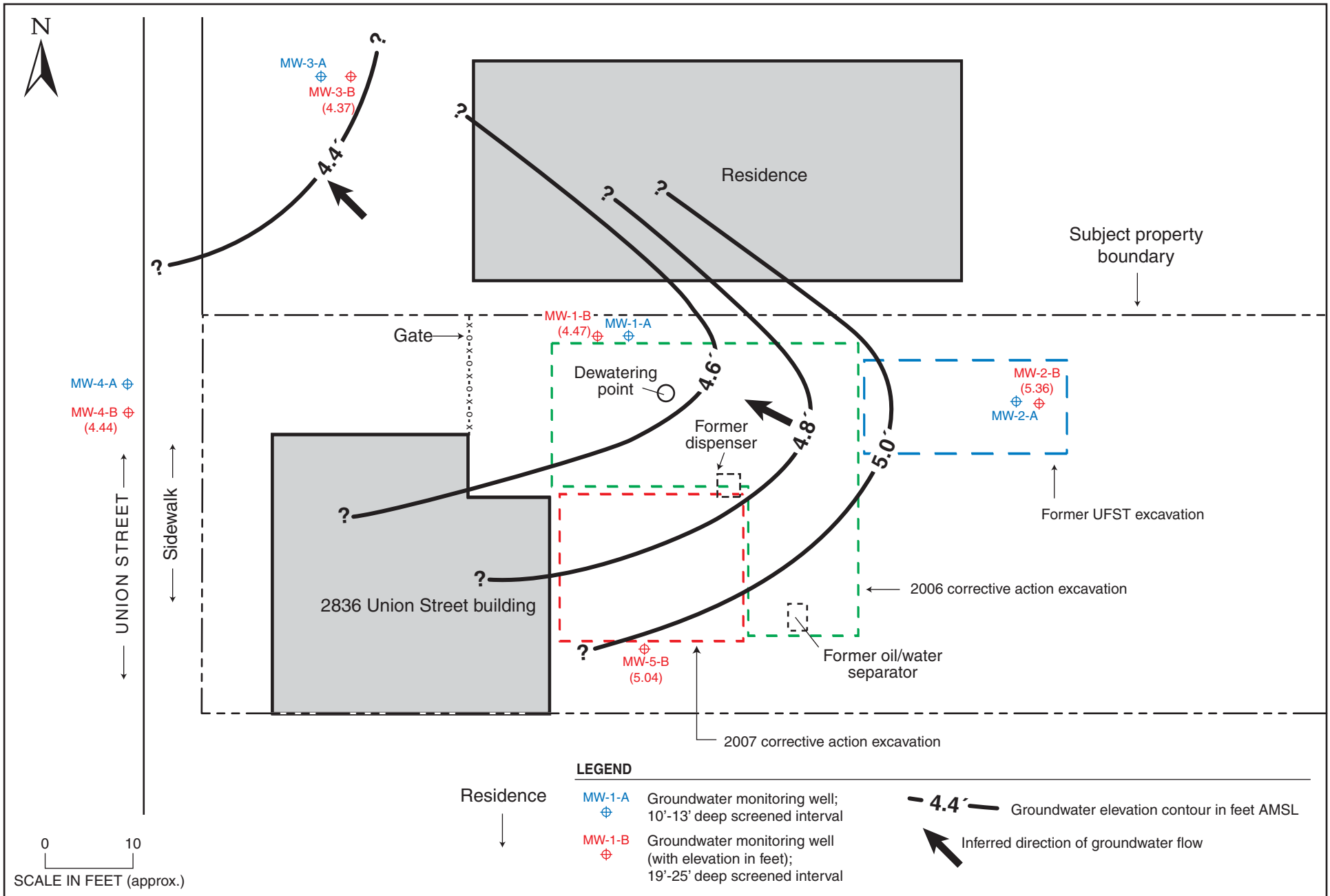
LITHOLOGY AND HYDROGEOLOGY

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 18, 2010 groundwater elevation measurements. The groundwater gradient during this event was approximately 0.009 feet/foot across the site with a gradient to the north northwest, consistent with historical data. 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 2010

3.0 ORC™ INJECTION CORRECTIVE ACTION PROGRAM

This section discusses the implementation of the Advanced ORC™ injection that was conducted on September 1 and 2, 2010, in accordance with the CAP, dated May 26, 2010 (Stellar Environmental, 2010b). The CAP was uploaded to the ACEH “ftp” and CA GeoTracker electronic servers and ACEH was notified by email of these uploads on May 26, 2010. ACEH did not respond within the 60-day LOP review period stipulated by California Code of Regulations, Title 23, Division 3, Chapter 16, Underground Tank Regulations and thus Stellar Environmental proceeded with the CAP implementation after expiration of the review period.

This Advanced ORC™ injection was conducted by RSI Drilling, a California-licensed hazardous drilling contractor, under the direct supervision of Stellar Environmental. Prior to the field activity, a drilling permit was obtained from Alameda County Public Works (ACPW), and a site visit was made to mark the boring locations to obtain utility clearance from Underground Service Alert (USA # 256045). The project activities and bore grouting were inspected by Mr. Ron Smalley of ACPW on September 1 and 2, 2010.

Photodocumentation of the injection field activity is contained in Appendix E. Appendix F includes the Alameda County Department of Public Works drilling permit.

BACKGROUND AND OBJECTIVES OF SITE CORRECTIVE ACTION

Quarterly and subsequent semiannual monitoring events, conducted since October 2006, have shown a relatively flat groundwater gradient on the site which averages approximately 0.005 feet/foot. As stated previously, concentrations in the downgradient portion of the plume have shown an increasing trend in comparison to the source area where a significant reduction in contaminant concentrations has been achieved. This difference in concentrations is attributed to the flat groundwater gradient and a corresponding hydrologic condition that is not conducive to conveying the ORC™ product applied in the November 2007 excavation treatment to the distal areas of the groundwater contaminant plume.

This CAP was designed to target gasoline hydrocarbon-impacted groundwater in the downgradient zone, represented by wells MW-3B and MW-4B, which have not shown the effect of the November 2007 corrective action ORC™ inoculation. Subsequent monitoring in these downgradient wells has shown contaminant concentrations which remain steadily elevated or have increased, with maximum gasoline concentrations exceeding 4,000 µg/L. The higher concentrations—and upward concentration trendline—in the downgradient wells made it very

problematic to achieve regulatory closure. This corrective action was designed to demonstrate that all practical measures have been implemented so that regulatory closure can be petitioned for.

The ORC™ injections should be effective in reducing the toxicity of the plume by accelerating the biodegradation significantly within the first 6 to 12 months. This remedy will create highly oxygenated treatment zones at critical locations transverse to the plume, focusing on depth and loading based on lithology and suspected hydrocarbon contaminant mass in groundwater. The mobility of the plume will likewise be reduced. The idea of this revisited in-situ remedy is to also inject the oxygenating material in the downgradient areas where it can travel along the routes already established by the plume.

ADVANCED ORC™ INJECTION AND REMEDIAL PROCESS

The Advanced ORC™ product is a patented formulation of magnesium peroxide that produces a slow and sustained (upward of 12-month duration) release of molecular oxygen when in contact with soil moisture or groundwater. The Advanced ORC™ is a longer-lasting and more powerful oxygen delivery compound than the original ORC™ compound. The oxygen release function stimulates the growth of naturally occurring microbes that aerobically degrade petroleum hydrocarbons, using the carbon as a food source. This process is especially useful in areas where elevated levels of petroleum hydrocarbons have inhibited naturally occurring oxygen to levels below those required for microbial degradation. A smaller percentage of hydrocarbon degradation is anticipated via direct oxidation, especially in close proximity to the injection boreholes.

Advanced ORC™ is a white powder with low solubility composed of a proprietary, high-oxygen-yielding calcium oxyhydroxide compound. When hydrated, Advanced ORC™ is designed to release its full amount of oxygen (17 percent by weight) in approximately 1 year. This process enables aerobic microbes to significantly accelerate rates of bioremediation over longer periods of time. This Advanced ORC™ has been engineered with Controlled Release Technology (CRT™), which retards the hydration of the calcium oxyhydroxide crystal and slows the formation oxygen in, and its release from, the crystal structure. The CRT™ chemistry prevents premature release of oxygen that can lead to uncontrolled bubbling and oxygen waste via “blow off” prior to injection into a contaminated aquifer. CRT™ involves the intercalation (permeation) of phosphate into the crystalline structure of calcium oxyhydroxide. Advanced ORC™ has been tested in the laboratory for oxygen release characteristics, and has been injected for aerobic bioremediation at several field sites.

The volume of dissolved hydrocarbons within the generalized area will likely be reduced within the first 12 months by 50 percent or more—according to the manufacturer's data. This approach

ensures continued long-term treatment of remaining contaminants through low-cost bioremediation after the chemical oxidation treatment is completed.

ORC™ INJECTION PROCEDURE

Regenesis, the Advanced ORC™ compound manufacturer, estimates that the radius of the product injection will be approximately 7.5 feet outside of each injection point. However, the Stellar Environmental design adopts a more conservative radius of effective injection, assuming sufficient overlap so that the Advanced ORC™ is assured to reach the target zone. Stellar Environmental placed the injection points on 10 foot centers, allowing for a more conservative 5 feet of outbound penetration to occur, while still providing effective coverage.

The injection system equipment consisted of:

- Direct-push Geoprobe® rig
- Drive rods (1½-inch outside diameter) and injection tooling with fluid delivery sub-assembly
- Injection pump (Geoprobe® DP-2000) capable of applying product at a pressure of up to 2000 pounds per square inch (psi)
- Injection hosing equipped with a pressure gauge and a pressure relief valve with bypass
- Power drill paint stirrer (3-inch diameter or smaller propeller tip)
- Granular bentonite and quick-set grout concrete for closing and sealing injection holes
- Portable electric generator supplied by drilling contractor

The Geoprobe® rig advanced a 1.5-inch-diameter, hollow, steel rod to the bottom of the treatment zone target depth. The casing was then lifted approximately 1 foot to drop the sacrificial drive point and expose the inner casing through which the Advanced ORC™ slurry was pumped. The slurry was mixed in a 5 gallon bucket, transferred to an in-line hopper and pumped down through the rods into the formation. Care was taken to deliver an approximately uniform mass of Advanced ORC™ over the treatment interval. The underlying formation accepted the product under a delivery pressure ranging from 25 - 50 psi and only a short waiting period of about 2-3 minutes was needed before disconnecting the injection apparatus to allow the system to depressurize and prevent the ORC™ product from being extruded through the rod assembly and back to the surface. “Short-circuiting” of the ORC™ slurry around the drive rods to the ground surface was not observed during the injection, indicating that the product was successfully delivered to the desired depth interval. Following full injection over the interval, the drive casing was fully withdrawn and the open portion of the borehole was filled with bentonite chips and hydrated and then filled with cement grout.

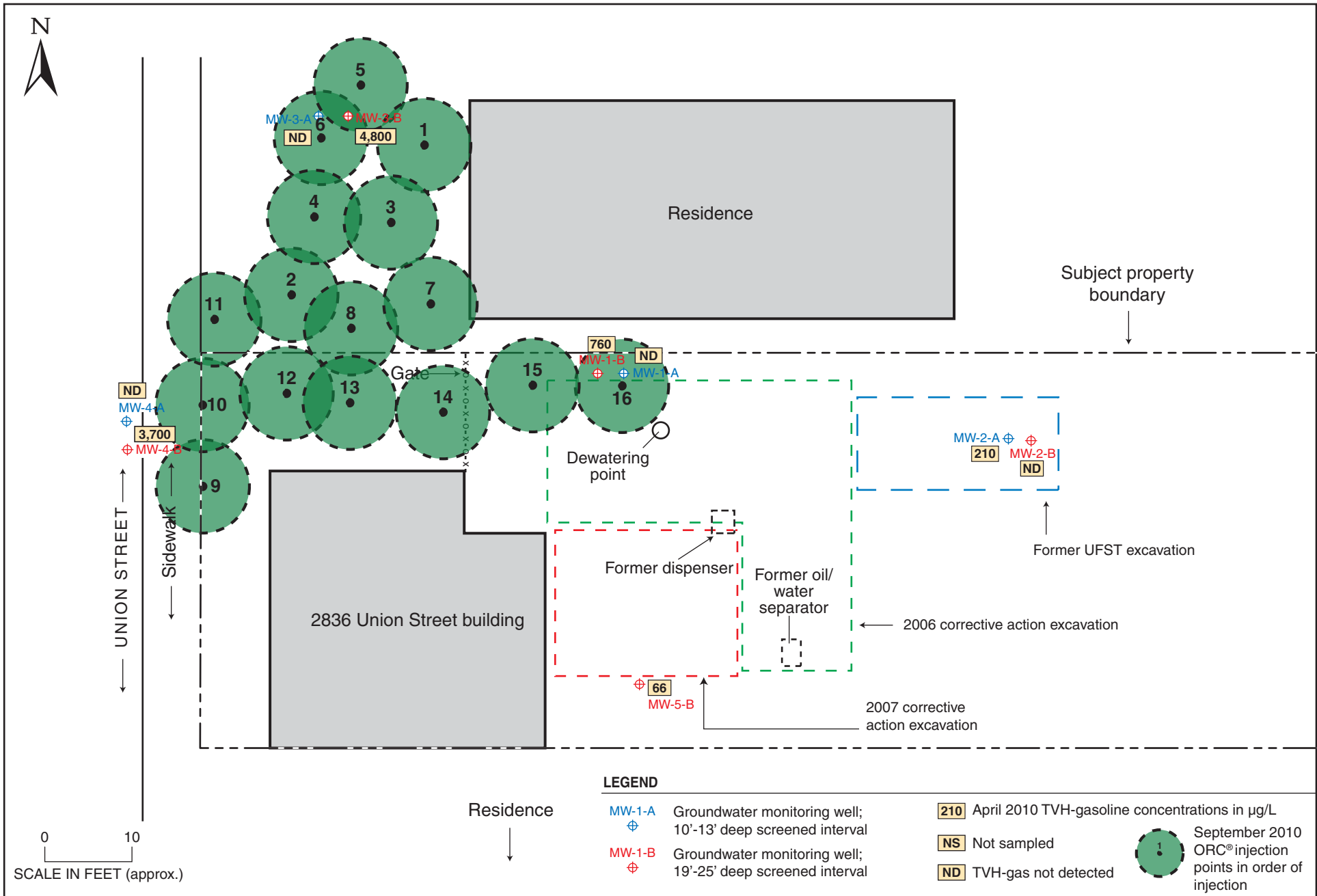
The injection specifications for the treatment are as follows:

- A total of 16 injection points were drilled using direct-push technology to inject between 20 -26 feet below ground surface (bgs) into the various points in the treatment zone;
- The treatment zone traversed across the long dimension of the plume and cover a total area of approximately 2,400 square feet;
- Delivery point spacing was approximately 10 feet.
- The saturated thickness of the treatment zone was 6 feet.
- The oxidant loading was approximately 9 pounds per foot, which is based on treating a conservative average of 4,250 µg/L total volatile hydrocarbons as gasoline (TVHg) as detected in the latest groundwater monitoring event (first 2010 semiannual groundwater monitoring event).
- A total of 825 pounds (33 buckets at 25 lbs per bucket) of Advanced ORC™ was mixed with water to achieve a 20% solid slurry that was delivered to the subsurface. The mix consisted of approximately 0.5 gallons water per pound Advanced ORC™. Approximately 4.3 gallons of water was mixed with 9 lbs of Advanced ORC™ and injected per bore-foot across the 6 foot treatment zone for a total of approximately 54 lbs Advanced ORC™ delivered in each bore.

Figure 4 shows the Advanced ORC™ injection treatment locations of the 16 injection bores.

FIELD OBSERVATIONS DURING THE ORC™ INJECTION

Communication between boreholes was observed during injection of the ORC™ between boreholes B16 and B15. Approximately 1.0 gallons of product was observed to extrude to the surface through borehole B15 while product was being injected into borehole B16. As soon as this product extrusion occurred, the injection was immediately stopped and the formation was allowed to depressurize for about 5 minutes, after which the borehole was plugged with bentonite chips before injection was resumed.



2005-65-85

4.0 SECOND SEMIANNUAL 2010 GROUNDWATER MONITORING

This section presents the groundwater sampling and analytical methods for the most recent event (Second Semiannual 2010), conducted on October 18, 2010.

GROUNDWATER MONITORING

Groundwater monitoring well water level measurements, sampling, and field analyses were conducted by Stellar Environmental on October 18, 2010. 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 Stellar Environmental's standard sampling protocol for groundwater. Groundwater analytical results are presented and discussed in Section 5.0. Historical groundwater elevation data and analytical results are contained in Appendix D.

Table 1
Monitoring Well Groundwater Elevation Data – October 18, 2010
2836 Union Street, Oakland, California

Well	Well Depth Below TOC	Rim Elevation	TOC Elevation	Groundwater Elevation (10/18/10)
MW-1A	12.59	12.52	12.25	4.65
MW-1B	22.52	12.48	12.05	4.47
MW-2A	12.69	13.06	12.82	4.92
MW-2B	24.59	13.16	12.96	5.36
MW-3A	13.06	11.76	11.59	4.46
MW-3B	25.06	12.10	11.95	4.37
MW-4A	12.28	11.25	11.02	4.85
MW-4B	24.32	11.25	11.04	4.44
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.

5.0 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

Table 2 summarizes 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-1B, MW-2B, MW-3B, MW-4B, and MW-5B. TVH as gasoline was also detected in monitoring well MW-2A but below the ESL. Monitoring wells MW-1A, MW-3A and MW-4A could not be sampled during this event due to insufficient water quantity.

MTBE was detected above its ESL of 5.0 $\mu\text{g/L}$ in wells MW-1B, MW-2B, and MW-5B. MTBE was not sampled in the remaining wells due to insufficient water quantity.

Benzene, toluene, ethyl benzene, and total xylenes were not found above the laboratory detection limit in any of the wells sampled.

Lead scavengers were only analyzed for in wells MW-1B, MW-2B, and MW-5B during this event due to insufficient water quantity in the remaining wells. The lead scavenger 1,2-dichloroethane (EDC) was detected above the ESL of 0.5 $\mu\text{g/L}$ in well MW-1B and MW-2B.

EDC was not detected above the laboratory detection limit in MW-5B. Tertiary-amyl methyl ether (TAME) was detected in well MW-5B at 3.1 µg/L. There is no ESL for TAME. TAME was not detected above the laboratory detection limit in MW-1B or MW-2B. There were no detections of 1,2-dibromethane (EDB), ethyl tertiary butyl ether (ETBE), isopropyl ether (DIPE), or Tertiary butyl alcohol (TBA) above the laboratory detection limits in any of the groundwater monitoring wells sampled during this event.

Figure 5 is an isoconcentration contour map of TVH as gasoline in groundwater based on the October 2010 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 in general have decreased since the 1st Semiannual 2010 event; however, concentrations have increased since the October 2009 event. As the ORC™ begins to migrate through the aquifer, a more significant drop should be observed in subsequent sampling events.

Table 2
Groundwater Sample Analytical Results – October 18, 2010
TVHg, BTEX, and MTBE,
2836 Union Street, Oakland, California

Sample	TVHg	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	DO ₂ (mg/L)
Monitoring Wells							
MW-1A	NS	NS	NS	NS	NS	NS	NS
MW-1B	280	<0.5	<0.5	<0.5	<0.5	8.4	1.17
MW-2A	68	<0.5	<0.5	<0.5	<0.5	NS	7.90
MW-2B	140	<0.5	<0.5	<0.5	<0.5	20	0.98
MW-3A	NS	NS	NS	NS	NS	NS	NS
MW-3B	1,900	<0.5	<0.5	<0.5	<0.5	NS	2.05
MW-4A	NS	NS	NS	NS	NS	NS	0.81
MW-4B	1,400	<0.5	<0.5	<0.5	<0.5	NS	0.16
MW-5B	870	<0.5	<0.5	<0.5	<0.5	66	1.93
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 in milligrams per liter (mg/L)
 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) unless otherwise noted.
 NS = Not sampled. Insufficient water for sampling.

Table 3
Groundwater Sample Analytical Results – October 18, 2010
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	NS	NS	NS	NS	NS	NS
MW-1B	3.3	<0.5	<0.5	<0.5	<0.5	<10
MW-2A	NS	NS	NS	NS	NS	NS
MW-2B	0.8	<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	3.1	<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;

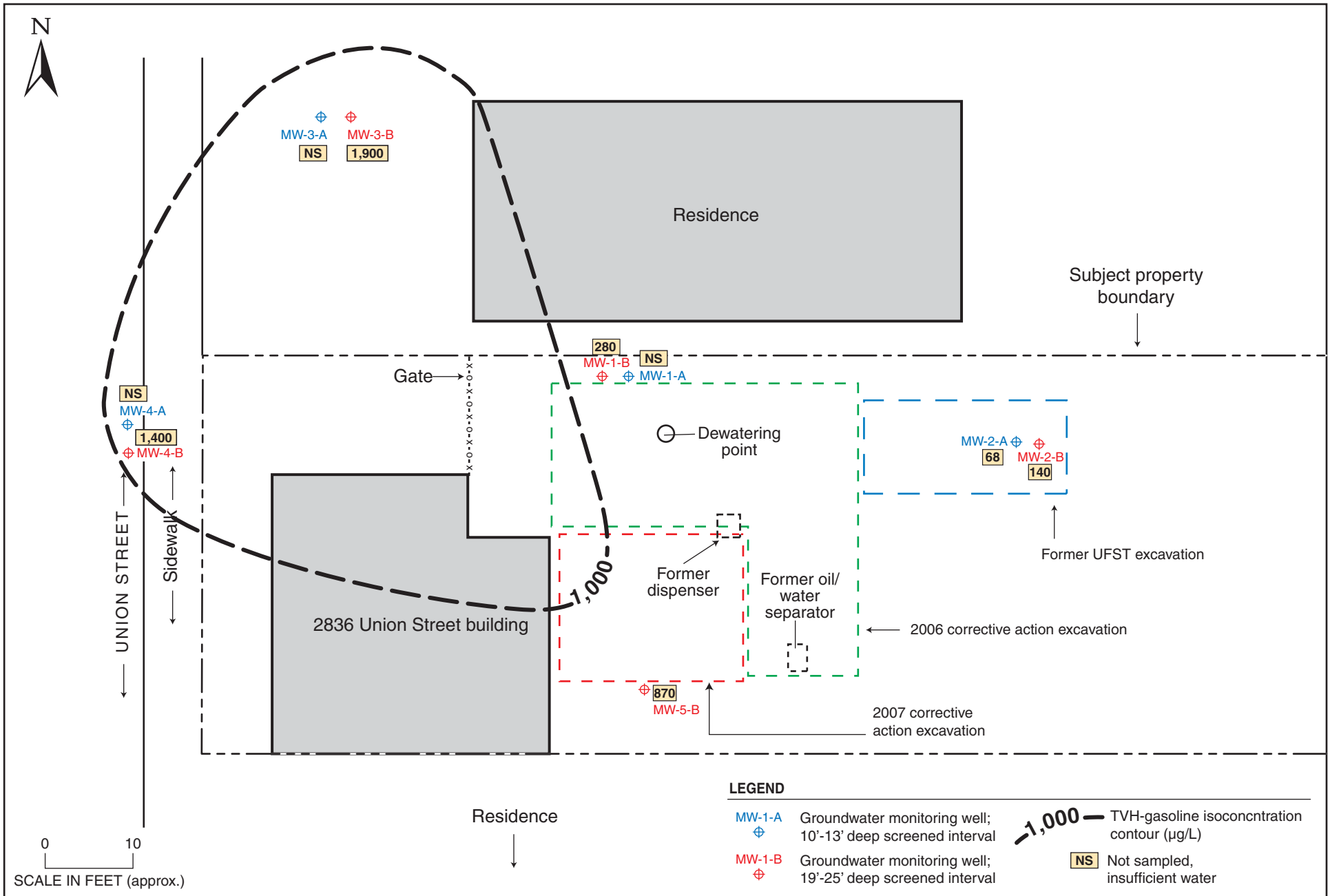
NA = not analyzed for this constituent; NS = not sampled; NLP = no level published

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 2, were measured in wells during the current event and ranged from 0.16 mg/L to 7.9 mg/L. Four of the seven wells sampled for DO (wells MW-1A and MW-3A could not be sampled for DO due to insufficient water quantity) contained concentrations higher than 1.0 mg/L. This indicates that the ORC™ injection has resulted in a slight increase in oxygen concentration available to promote biodegradation.



TVH-GASOLINE PLUME — OCTOBER 18, 2010, B-ZONE WELLS
2836 Union Street, Oakland, CA

6.0 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 0.009 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 6 show hydrochemical trend data for gasoline in the site wells. In general source area wells MW-5B and historical source area wells MW-2A and MW-2B have shown 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. Source area well MW-5B and historical source area well MW-2B showed a slight increase during this 2nd Semiannual 2010 event as compared to both the previous event, and 2nd Semiannual 2009 event; however, the concentrations have not risen above the pre-2007 excavation concentrations. Historical source area well MW-2A showed a decrease in concentrations as compared to both the previous event and October 2009 event.

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. 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).

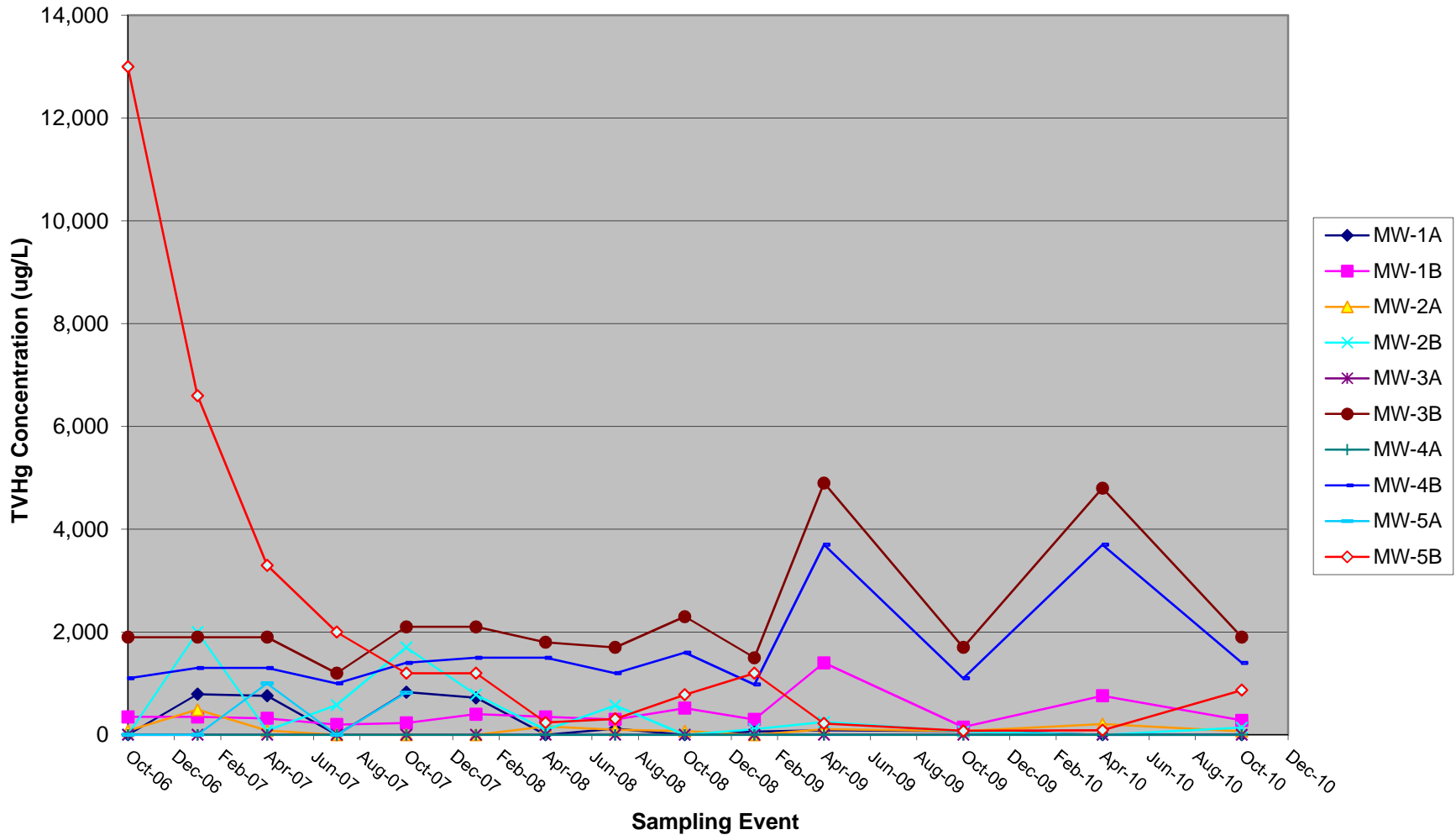
Benzene

Benzene was not detected above the laboratory detection limit in any of the wells sampled during this event. Well MW-1A (downgradient from the UST dispenser) has historically had the highest benzene concentration; however, this well as wells as MW-3A and MW-4A could not be sampled during this event due to insufficient water quantity.

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 (which were not sampled for during this event due to insufficient water quantity) downgradient from the source area, demonstrating its high soluble mobility.

**Figure 6: Historical Groundwater Analytical Results
Total Volatile Hydrocarbons as Gasoline (TVHg)
October 2006 - October 2010**



EDC has been consistently detected in onsite wells MW-1B and MW-2B since monitoring began. EDC has also historically been detected in MW-3A, which was not sampled during this event due to insufficient water quantity.

Dissolved Oxygen

As discussed in the last section, four of the seven wells sampled for DO (monitoring wells MW-1A and MW-3A could not be sampled for DO due to insufficient water quantity) contained concentrations higher than 1.0 mg/L. This indicates that the ORC™ material is working in the system. The DO concentration increases in wells MW-1B and MW-3B are especially indicative of the ORC™ effectiveness as these two wells were located directly adjacent to the injection points.

PLUME GEOMETRY AND MIGRATION INDICATIONS

The groundwater contaminate plume has not been fully delineated; however, the gasoline contaminant plume in groundwater above the ESL appears to be centered over the downgradient B zone wells. The plume is triangular in nature extending out from former source area well MW-5B to widen and encompass the downgradient wells MW-3B and MW-4B. However, concentrations of MTBE that are higher than the ESL are generally found in the upgradient and former source area wells.

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 stability of the contaminant plume and the effect of the September 2010 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). Stellar Environmental 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.

7.0 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®. 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 groundwater gradient during this event was approximately 0.009 feet/foot across the site with a gradient to the north northwest, consistent with historical data. 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.
- Monitoring wells MW-1A, 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-1B, MW-2B, MW-3B, MW-4B, and MW-5B. TVH as gasoline was also detected in monitoring well MW-2A but below the ESL.
- MTBE was detected above its ESL of 5.0 µg/L in wells MW-1B, MW-2B, and MW-5B.
- Benzene, toluene, ethyl benzene, 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 MW-5B. Tertiary-amyl methyl ether (TAME) was detected in well MW-5B at 3.1 µg/L. There is no ESL for TAME. TAME was not detected above the laboratory detection limit in MW-1B or MW-2B. There were no detections of 1,2-dibromomethane (EDB), ethyl tertiary butyl ether (ETBE), isopropyl ether (DIPE), or Tertiary butyl alcohol (TBA) above the laboratory detection limits in any of the groundwater monitoring wells sampled during this 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. As mentioned above, monitoring wells MW-1A and MW-3A could not be sampled during this event due to insufficient water quantity.
- DO concentrations were measured in wells during the current event and ranged from 0.16 mg/L to 7.9 mg/L. Four of the seven wells sampled for DO (MW-1B, MW-2A, MW-3B, and MW-5B) contained concentrations higher than 1.0 mg/L. This indicates that the ORC™ material is beginning to work within the plume.
- The groundwater contaminate plume has not been fully delineated, but appears to be currently triangular in configuration with its long axis trending east by west-northwest.
- The November 2007 excavation and ORC™ treatment appear to have been effective in lowering contaminant concentrations in the source area, as indicated by the historical maximum TVHg concentrations observed in the source well MW-5B.
- The September 2010 corrective ORC™ treatment injection was designed to target hydrocarbon-impacted groundwater in the downgradient zone, represented by wells MW-3B and MW-4B, and to a lesser degree by MW-1B and to demonstrate that all practical measures have been implemented so that regulatory closure can be petitioned for.
- This October 2010 monitoring and sampling event suggests that additional time is needed to evaluate the affect of the ORC™ on hydrocarbon contamination in the downgradient and off-site wells, however a slight increase in DO concentrations measured in the downgradient wells suggests that the ORC™ has induced subsurface conditions favorable to biodegradation of hydrocarbon contamination.

RECOMMENDATIONS

- Stellar Environmental 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.
- Semiannual groundwater monitoring should be continued (the next event is scheduled in April 2011) as requested by ACEH, to monitor the level of breakdown accomplished by the September 2010 Advanced 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.

8.0 REFERENCES

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9.0 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 GAUGING DATA

Project # 101018AK2 Date 10-18-10 Client STELLAR

Site 2836 UNION STREET, OAKLAND

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1A	1130	3/4					7.60	12.58	↓	
MW-1B	1128	3/4					7.58	22.50		
MW-2A	1124	3/4					7.90	12.60		
MW-2B	1138	3/4					7.60	24.50		
MW-3A	1145	3/4					7.13	12.92		
MW-3B	1135	3/4					7.58	25.07		
MW-4A	1121	3/4					6.17	12.18		
MW-4B	1133	3/4					6.60	24.28		
MW-5B	1142	3/4					7.34	25.30		✓
REMOVED ALL CAPS PRIOR TO GAUGING & CALLED										
INTO PM TO REVIEW WATER LEVELS PRIOR TO										
PURGING										

WELL MONITORING DATA SHEET

Project #: 101018AKZ	Client: STELLAR
Sampler: AK	Date: 10-18-10
Well I.D.: MW-2A	Well Diameter: 2 3 4 6 8 (3/4)
Total Well Depth (TD): 12.60	Depth to Water (DTW): 7.90
Depth to Free Product: N/A	Thickness of Free Product (feet): N/A
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 8.84	

Purge Method: Bailer
 Disposable Bailer
 Positive Air Displacement
 Electric Submersible

Watera
 Peristaltic
 Extraction Pump
 Other _____

Sampling Method: Bailer
 Disposable Bailer
 Extraction Port
 Dedicated Tubing
 Other: _____

WC = 4.70

$$0.1 \text{ (Gals.)} \times 3 = 0.3 \text{ Gals.}$$
 1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1255	22.2	7.38	1019	33	0.1	
1257	21.8	7.36	1012	12	0.2	
1259	21.5	7.37	1015	10	0.3	

Did well dewater? Yes **(No)** Gallons actually evacuated: **0.3**

Sampling Date: **10/18** Sampling Time: **1300** Depth to Water: **7.90**

Sample I.D.: **MW-2A** Laboratory: Kiff CalScience Other **C&T**

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: **SEE COC**

EB I.D. (if applicable): @ _____ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd): Pre-purge: **1.70** mg/L Post-purge: **2.14** mg/L

O.R.P. (if req'd): Pre-purge: _____ mV Post-purge: _____ mV

WELL MONITORING DATA SHEET

Project #: 101018AKZ	Client: STELLAR
Sampler: AK	Date: 10-18-10
Well I.D.: MW-4A	Well Diameter: 2 3 4 6 8 <u>3/4</u>
Total Well Depth (TD): 12.18	Depth to Water (DTW): 6.17
Depth to Free Product: N/A	Thickness of Free Product (feet): N/A
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): <u>YSI</u> HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 7.37	

Purge Method: Bailer	Waters	Sampling Method: Bailer
Disposable Bailer	<u>Peristaltic</u>	<u>Disposable Bailer</u>
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: _____

WC = 6.01

0.13 (Gals.) X	3	= 0.41 Gals.
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1236	20.3	6.93	1250	174	0.13	
DEWATERED @			0.13 GALLONS			DTW: 11.70
1525 - INSUF. WATER TO SAMPLE						
* CLIENT ASKED BTS NOT TO SUBMIT SAMPLE						

Did well dewater? <u>Yes</u> No	Gallons actually evacuated: 0.13
Sampling Date: 10-18	Sampling Time: 1230 * Depth to Water: 6.17
Sample I.D.: MW-4A	Laboratory: Kiff CalScience Other <u>C&T</u>
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE COL	
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:	
D.O. (if req'd): Pre-purge: 1.64 mg/L	Post-purge: 0.81 mg/L
O.R.P. (if req'd): Pre-purge: mV	Post-purge: mV

H or Purge Water Drum Log

Client: STELLAR ENV.
 Site Address: 2836 UNION ST., OAKLAND

STATUS OF DRUM(S) UPON ARRIVAL						
Date	4/10/08	7/7/08	10/17/08	01/13/09	10/10/10	
Number of drum(s) empty:	1	1		0	3	
Number of drum(s) 1/4 full:	1	1	2	2		
Number of drum(s) 1/2 full:	1	1	1	1		
Number of drum(s) 3/4 full:					1	
Number of drum(s) full:	1	1	1	1		
Total drum(s) on site:	4	4	4	4	4	
Are the drum(s) properly labeled?	Y		N	N	N	
Drum ID & Contents:	purge H ₂ O	soil, Purge H ₂ O / Tools →			H ₂ O	
If any drum(s) are partially or totally filled, what is the first use date:	—	—	—	—	—	

- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.
- If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.
- All BTS drums MUST be labeled appropriately.

STATUS OF DRUM(S) UPON DEPARTURE						
Date	4/10/08		10/17/08	01/13/09	10/10/10	
Number of drums empty:	1	2			3	
Number of drum(s) 1/4 full:	1	2	2	2		
Number of drum(s) 1/2 full:	1	1	1	2		
Number of drum(s) 3/4 full:		2			1	
Number of drum(s) full:	1	1	1	1		
Total drum(s) on site:	4	4	4	4	4	
Are the drum(s) properly labeled?	Y	Yes	N	N	N	
Drum ID & Contents:	purge H ₂ O	soil, Purge H ₂ O / Tools →		purge H ₂ O	H ₂ O	

LOCATION OF DRUM(S)
 Describe location of drum(s): ALONG THE SOUTH FENCE BEHIND THE BUILDING
Drums w/ soil & Tools not secure

FINAL STATUS						
Number of new drum(s) left on site this event	0	0	0	0	0	
Date of inspection:	4/10/08	7/7/08	10/17/08	01/13/09	10/10/10	
Drum(s) labelled properly:	Y	Y	NO	N	NO	
Logged by BTS Field Tech:	IN	BD	PC	JO	AK	
Office reviewed by:	N	N	Y	P	Y	

APPENDIX B

SES GROUNDWATER STANDARD SAMPLING PROTOCOLS

APPENDIX B STELLAR ENVIRONMENTAL GROUNDWATER STANDARD SAMPLING PROTOCOLS

SAMPLING AND ANALYSIS PERSONNEL

Sampling and analysis is conducted by Blaine Tech Services, a subcontractor to Stellar Environmental, 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 223323
ANALYTICAL REPORT**

Stellar Environmental Solutions
2198 6th Street
Berkeley, CA 94710

Project : 2005-65
Location : Wadler
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
MW-1B	223323-001
MW-2A	223323-002
MW-2B	223323-003
MW-3B	223323-004
MW-4B	223323-005
MW-5B	223323-006

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: 10/25/2010

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 223323
Client: Stellar Environmental Solutions
Project: 2005-65
Location: Wadler
Request Date: 10/19/10
Samples Received: 10/19/10

This data package contains sample and QC results for six water samples, requested for the above referenced project on 10/19/10. The samples were received cold and intact.

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

No analytical problems were encountered.

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

No analytical problems were encountered.

Chain of Custody Record

Lab job no. 223323
 Date 10-18-10
 Page 1 of 1

Laboratory C&T Method of Shipment LAB COURIER
 Address 2323 FIFTH ST Shipment No. _____
BERKELEY, CA
 Project Owner LARRY WADLER Cooler No. _____
 Site Address 2836 UNION ST. Project Manager R. MAKDISI
OAKLAND, CA Telephone No. (510) 644-3123
 Project Name WADLER Fax No. (510) 644-3859
 Project Number 2005-65 Samplers: (Signature) JK

Filtered	No. of Containers	Analysis Required										Remarks
6	X	X	X	X	X	X	X	X	X	X	X	(800) 878-8268 7PM-9/PM/ (5) Oxy. BY 8/26/08 was 10/19/10 N/A was 10/19/10
6	X	X	X	X	X	X	X	X	X	X	X	
6	X	X	X	X	X	X	X	X	X	X	X	
6	X	X	X	X	X	X	X	X	X	X	X	
6	X	X	X	X	X	X	X	X	X	X	X	
6	X	X	X	X	X	X	X	X	X	X	X	

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation	
						Cooler	Chemical
1 MW-1B		10/18	1555	W	40ML AMBER HCL VOA	X	ICED
2 MW-2A			1300	W	↓	X	
3 MW-2B			1610	W	↓	X	
4 MW-3B			1450	W	↓	X	
5 MW-4B			1520	W	↓	X	
6 MW-5B		↓	1545	W	↓	X	

Relinquished by: <u>J Kim</u> Signature _____ Printed <u>J. KRESS</u> Company <u>BTS</u>	Date <u>10/18/10</u> Time <u>1825</u>	Received by: <u>J Kim</u> Signature _____ Printed <u>J. KRESS</u> Company <u>BTS</u>	Date <u>10/18/10</u> Time <u>1825</u>	Relinquished by: <u>[Signature]</u> Signature _____ Printed <u>Michael Winkler</u> Company <u>BTS</u>	Date <u>10/19/10</u> Time <u>1400</u>	Received by: <u>[Signature]</u> Signature _____ Printed <u>Riley Gross</u> Company <u>C&T</u>	Date <u>10/19/10</u> Time <u>1400</u>		
Turnaround Time: <u>STANDARD</u> Comments: <u>EDF REQUIRED</u> <u>GLOBAL ID: T0600105641</u>				Relinquished by: _____ Signature _____ Printed _____ Company _____				Received by: _____ Signature _____ Printed _____ Company _____	

2000-00-01

intact cold RC

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 223323 Date Received 10/19/10 Number of coolers 1
Client SES Project WADLER

Date Opened 10/19/10 By (print) M. Villanueva (sign) [Signature]
Date Logged in 10/19/10 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, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation:

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

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 comments]

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	223323	Location:	Wadler
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC565138	Batch#:	168171
Matrix:	Water	Analyzed:	10/20/10
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	908.6	91	73-127

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	70-140

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	223323	Location:	Wadler
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	168171
MSS Lab ID:	223320-001	Sampled:	10/19/10
Matrix:	Water	Received:	10/19/10
Units:	ug/L	Analyzed:	10/20/10
Diln Fac:	1.000		

Type: MS Lab ID: QC565140

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	30.23	2,000	1,802	89	68-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	111	70-140

Type: MSD Lab ID: QC565141

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,790	88	68-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	111	70-140

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	223323	Location:	Wadler
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	168171
Units:	ug/L	Analyzed:	10/20/10
Diln Fac:	1.000		

Type: BS Lab ID: QC565142

Analyte	Spiked	Result	%REC	Limits
Benzene	10.00	9.367	94	70-122
Toluene	10.00	9.058	91	72-125
Ethylbenzene	10.00	8.880	89	72-126
m,p-Xylenes	10.00	9.117	91	73-126
o-Xylene	10.00	9.038	90	71-127

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	85	54-134

Type: BSD Lab ID: QC565143

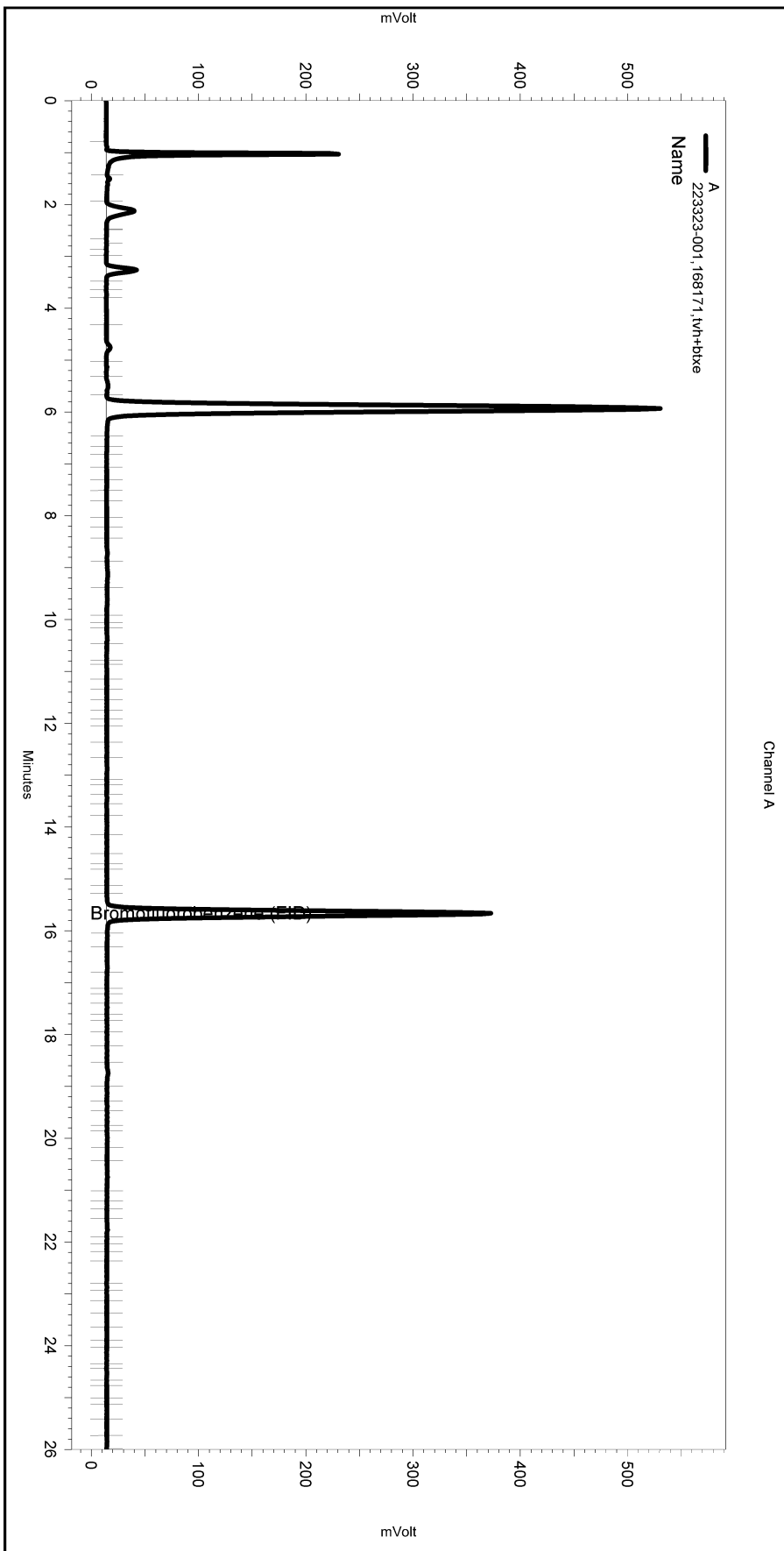
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	10.00	9.168	92	70-122	2	33
Toluene	10.00	8.900	89	72-125	2	25
Ethylbenzene	10.00	8.701	87	72-126	2	26
m,p-Xylenes	10.00	8.963	90	73-126	2	25
o-Xylene	10.00	8.859	89	71-127	2	25

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	83	54-134

RPD= Relative Percent Difference

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC05\Sequence293.seq
 Sample Name: 223323-001,168171,tvh+btxe
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-009
 Instrument: GC05 Vial: N/A Operator: lms2k3\tvh3
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe278.met

Software Version 3.1.7
 Run Date: 10/20/2010 5:03:42 PM
 Analysis Date: 10/20/2010 5:32:26 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: b1.0



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Integration Events

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Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

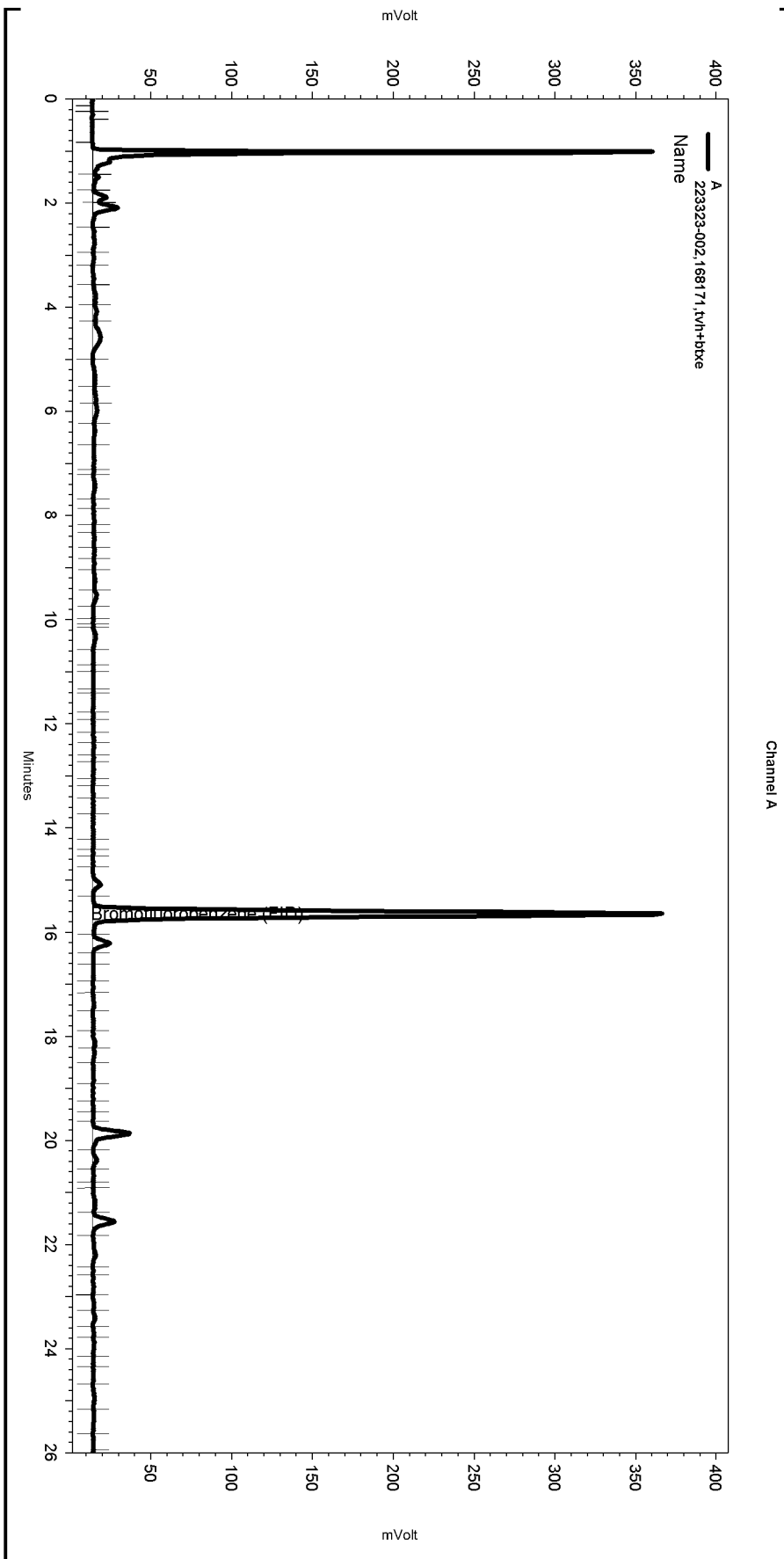
Manual Integration Fixes

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 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-010
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\TVHBTXE278.met

Software Version 3.1.7
 Run Date: 10/20/2010 5:40:20 PM
 Analysis Date: 10/21/2010 10:43:17 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



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Integration Events

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Yes	Threshold	0	0	50

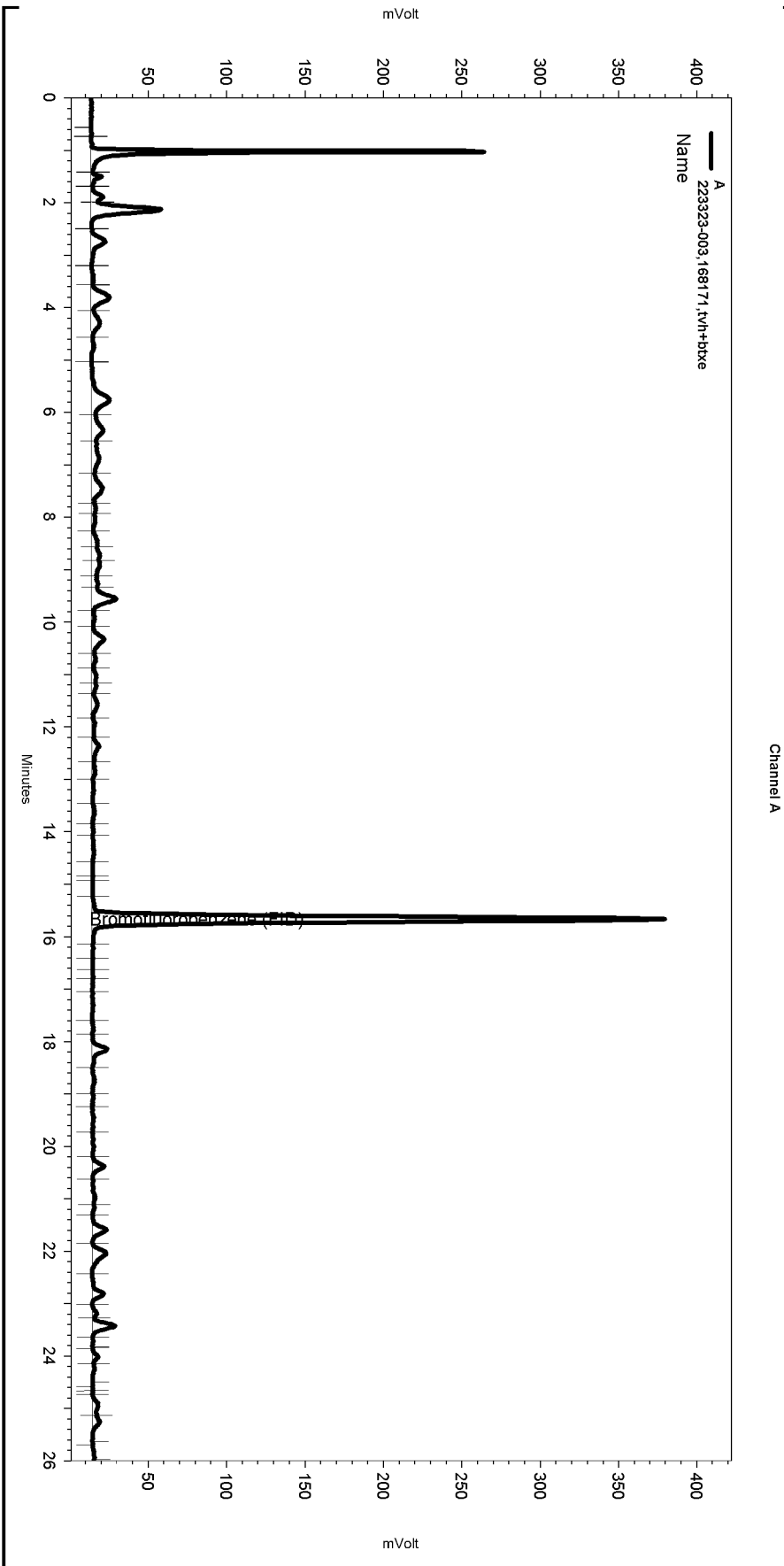
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 Sample Name: 223323-003,168171,tvh+btxe
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-011
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe278.met

Software Version 3.1.7
 Run Date: 10/20/2010 6:16:57 PM
 Analysis Date: 10/21/2010 10:48:16 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
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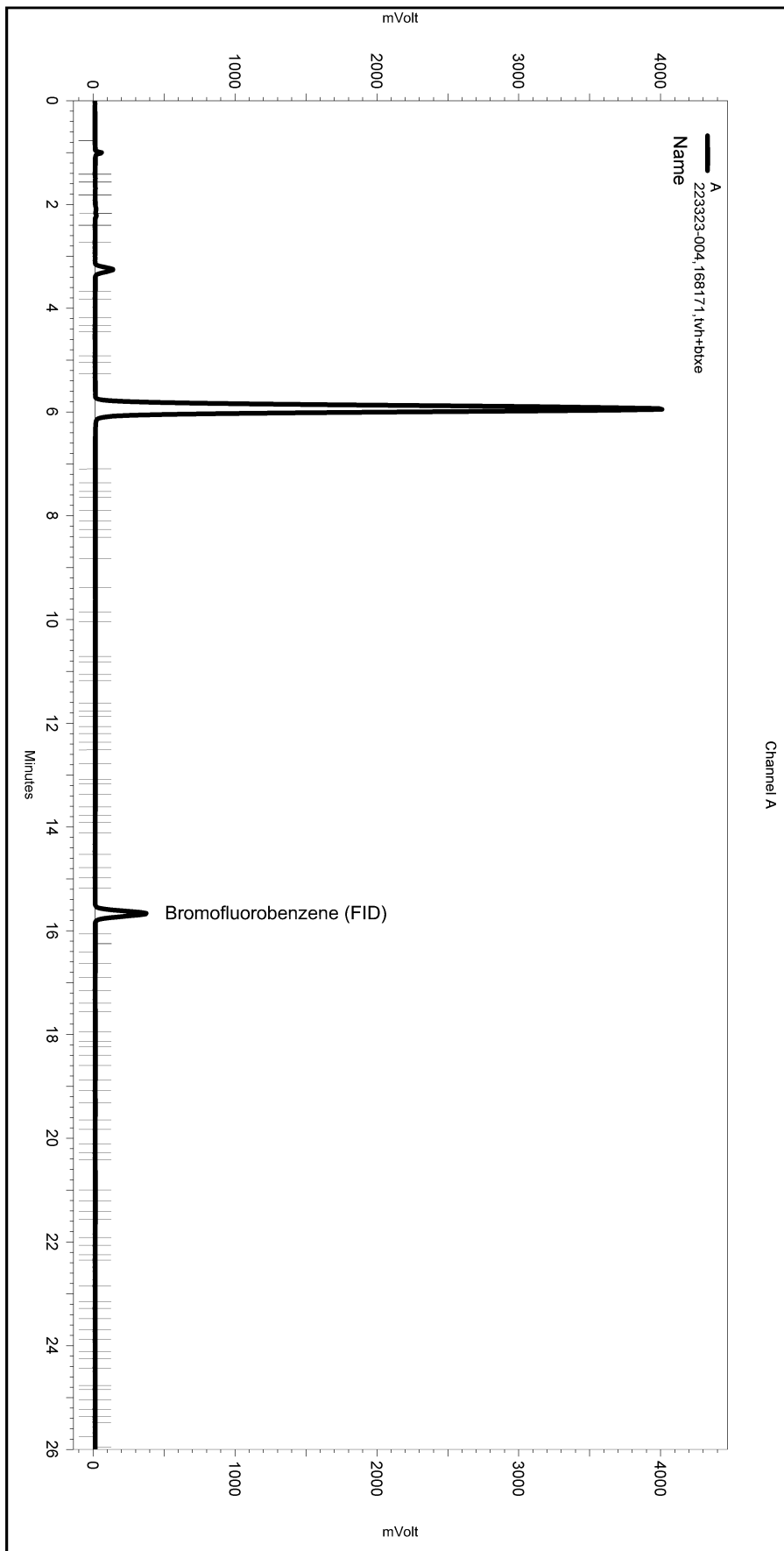
Manual Integration Fixes

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 Instrument: GC05 Vial: N/A Operator: lims2k3\tvh3
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Software Version 3.1.7
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 Analysis Date: 10/20/2010 7:22:18 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



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No items selected for this section

Integration Events

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

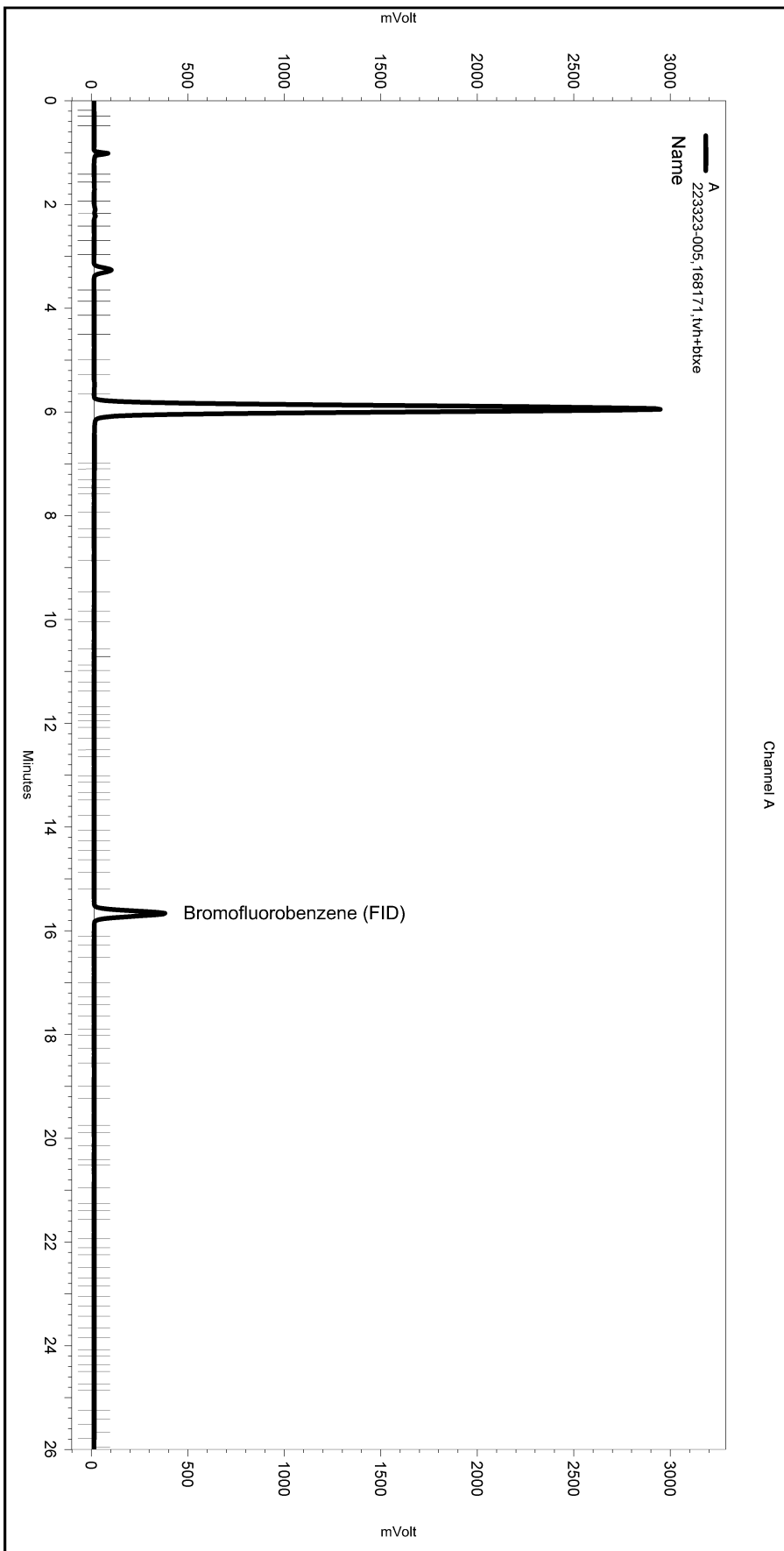
Manual Integration Fixes

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 Data\Instrument.10048\293-012_2412.tmp

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

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC05\Sequence293.seq
 Sample Name: 223323-005,168171,tvh+btxe
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-013
 Instrument: GC05 Vial: N/A Operator: lims2k3\tvh3
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe278.met

Software Version 3.1.7
 Run Date: 10/20/2010 7:30:09 PM
 Analysis Date: 10/20/2010 7:58:52 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



 ---< 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
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Yes	Threshold	0	0	50

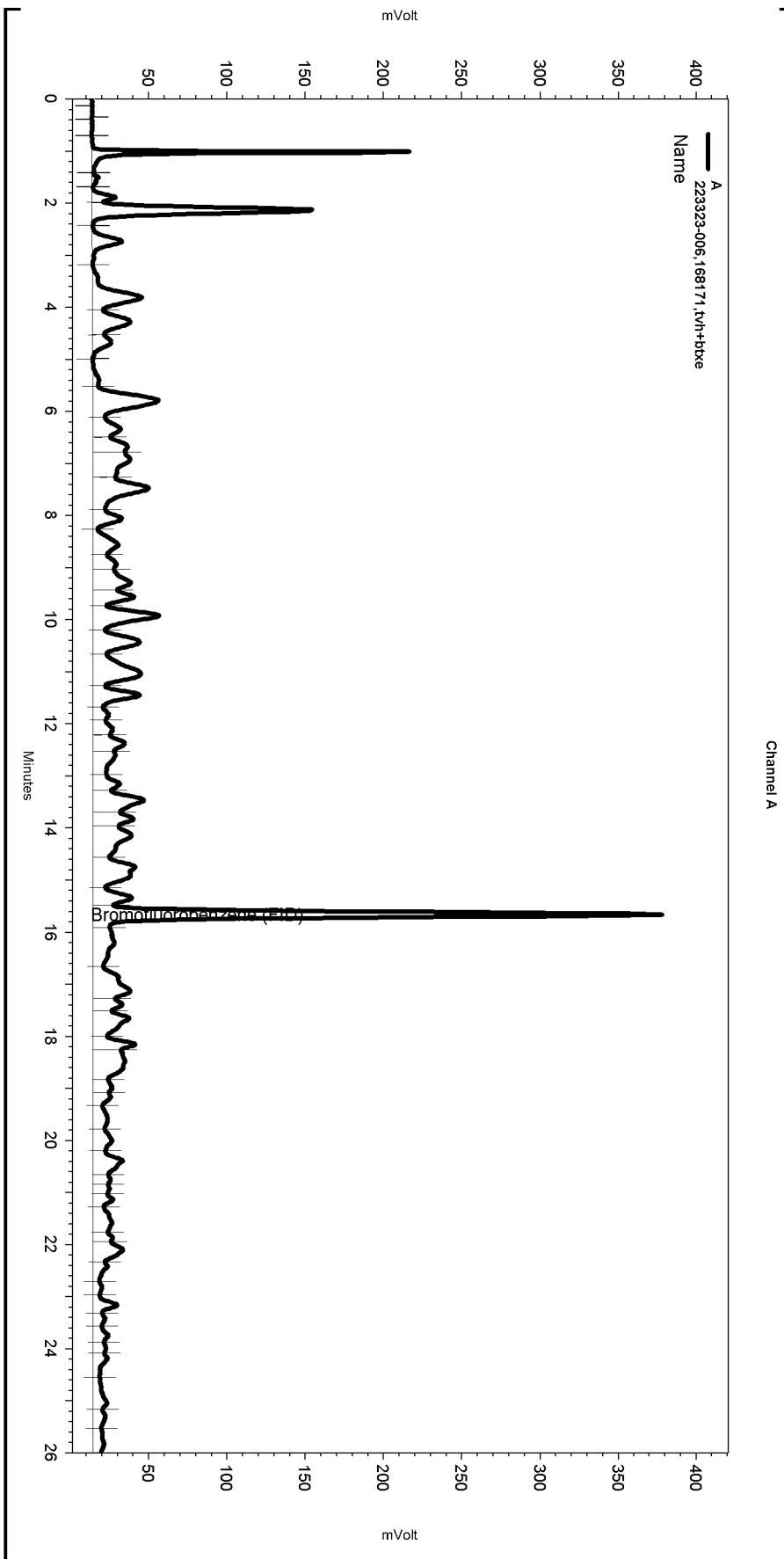
Manual Integration Fixes

Data File: C:\Documents and Settings\All Users\Application
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 Data\Instrument.10048\293-013_2413.tmp

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-014
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe278.met

Software Version 3.1.7
 Run Date: 10/20/2010 8:06:44 PM
 Analysis Date: 10/21/2010 11:58:57 AM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: f1.0



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No items selected for this section

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Integration Events

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

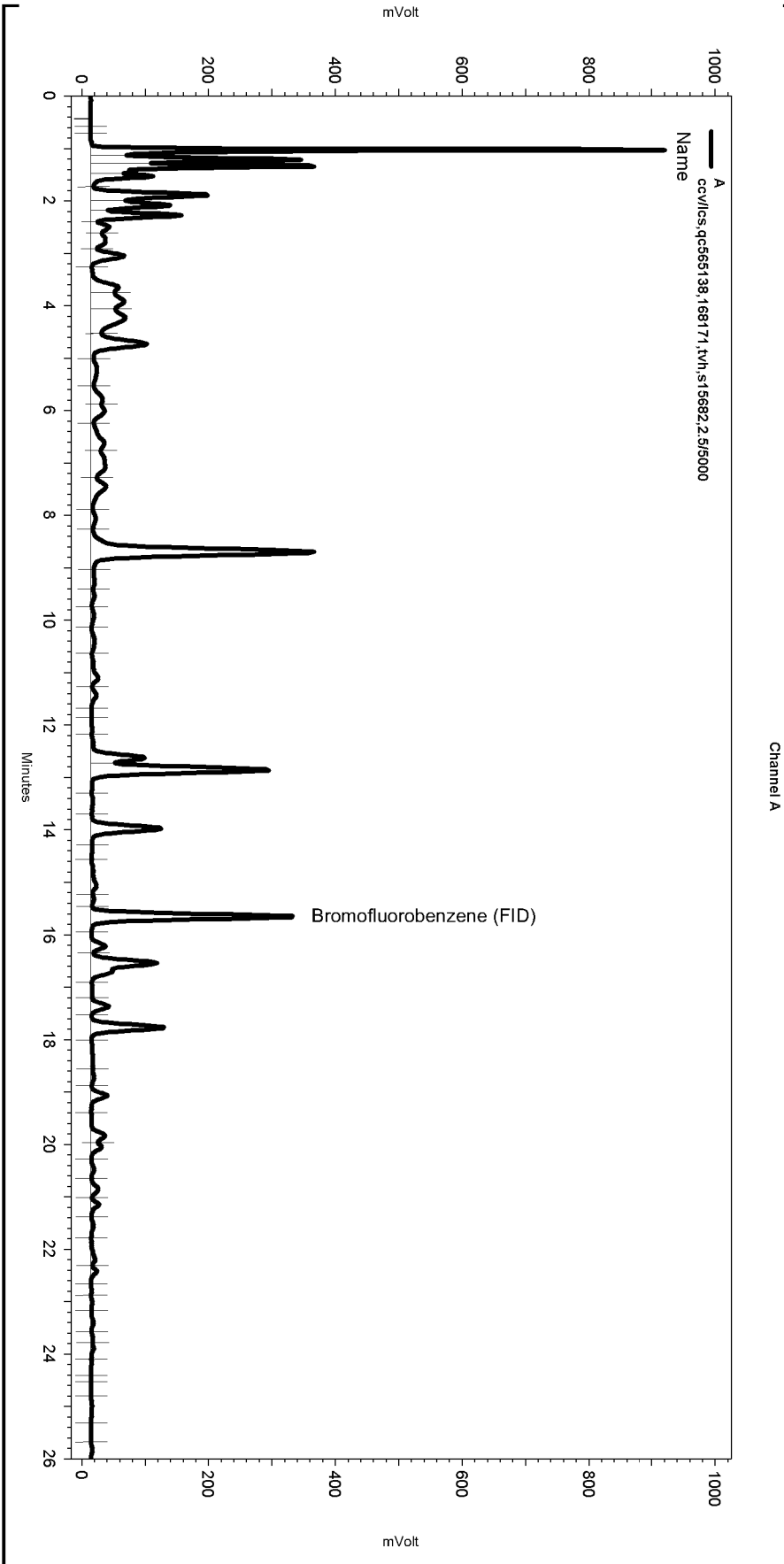
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-014

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Sequence File: \\Lims\gdrive\ezchrom\Projects\GC05\Sequence\293.seq
 Sample Name: ccv/lcs,qc565138,168171,tvh,s15682,2.5/5000
 Data File: \\Lims\gdrive\ezchrom\Projects\GC05\Data\293-005
 Instrument: GC05 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC05\Method\tvhbtxe278.met

Software Version 3.1.7
 Run Date: 10/20/2010 1:28:19 PM
 Analysis Date: 10/21/2010 10:36:46 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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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\GC05\Data\293-005

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Gasoline Oxygenates by GC/MS

Lab #: 223323	Location: Wadler
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	Analysis: EPA 8260B
Matrix: Water	Sampled: 10/18/10
Units: ug/L	Received: 10/19/10
Diln Fac: 1.000	

Field ID: MW-1B	Batch#: 168236
Type: SAMPLE	Analyzed: 10/22/10
Lab ID: 223323-001	

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	8.4	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	3.3	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	88	80-122
1,2-Dichloroethane-d4	111	71-140
Toluene-d8	97	80-120
Bromofluorobenzene	90	80-121

Field ID: MW-2B	Batch#: 168144
Type: SAMPLE	Analyzed: 10/20/10
Lab ID: 223323-003	

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	20	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	0.8	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	89	80-122
1,2-Dichloroethane-d4	109	71-140
Toluene-d8	98	80-120
Bromofluorobenzene	90	80-121

Batch QC Report

Gasoline Oxygenates by GC/MS			
Lab #:	223323	Location:	Wadler
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	168144
Units:	ug/L	Analyzed:	10/20/10
Diln Fac:	1.000		

Type: BS Lab ID: QC565058

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	126.3	101	45-152
MTBE	25.00	20.98	84	66-120
Isopropyl Ether (DIPE)	25.00	21.48	86	56-134
Ethyl tert-Butyl Ether (ETBE)	25.00	21.68	87	60-124
Methyl tert-Amyl Ether (TAME)	25.00	23.05	92	66-120

Surrogate	%REC	Limits
Dibromofluoromethane	90	80-122
1,2-Dichloroethane-d4	106	71-140
Toluene-d8	97	80-120
Bromofluorobenzene	89	80-121

Type: BSD Lab ID: QC565059

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	125.0	121.4	97	45-152	4	30
MTBE	25.00	20.27	81	66-120	3	20
Isopropyl Ether (DIPE)	25.00	20.53	82	56-134	4	20
Ethyl tert-Butyl Ether (ETBE)	25.00	21.12	84	60-124	3	20
Methyl tert-Amyl Ether (TAME)	25.00	22.96	92	66-120	0	20

Surrogate	%REC	Limits
Dibromofluoromethane	88	80-122
1,2-Dichloroethane-d4	106	71-140
Toluene-d8	97	80-120
Bromofluorobenzene	90	80-121

RPD= Relative Percent Difference

Batch QC Report

Gasoline Oxygenates by GC/MS			
Lab #:	223323	Location:	Wadler
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	168236
Units:	ug/L	Analyzed:	10/22/10
Diln Fac:	1.000		

Type: BS Lab ID: QC565397

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	125.0	124.0	99	45-152
MTBE	25.00	20.42	82	66-120
Isopropyl Ether (DIPE)	25.00	20.26	81	56-134
Ethyl tert-Butyl Ether (ETBE)	25.00	20.98	84	60-124
Methyl tert-Amyl Ether (TAME)	25.00	22.76	91	66-120

Surrogate	%REC	Limits
Dibromofluoromethane	90	80-122
1,2-Dichloroethane-d4	109	71-140
Toluene-d8	98	80-120
Bromofluorobenzene	89	80-121

Type: BSD Lab ID: QC565398

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	125.0	135.7	109	45-152	9	30
MTBE	25.00	21.57	86	66-120	5	20
Isopropyl Ether (DIPE)	25.00	21.36	85	56-134	5	20
Ethyl tert-Butyl Ether (ETBE)	25.00	22.01	88	60-124	5	20
Methyl tert-Amyl Ether (TAME)	25.00	23.98	96	66-120	5	20

Surrogate	%REC	Limits
Dibromofluoromethane	91	80-122
1,2-Dichloroethane-d4	108	71-140
Toluene-d8	97	80-120
Bromofluorobenzene	90	80-121

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	72	1.5	<0.5	<0.5	<0.5	110
13	Apr-10	5.74	6.51	3,400	<50	<0.5	<0.5	<0.5	<0.5	28
14	Oct-10	7.60	4.65	NS	NS	NS	NS	NS	NS	NS

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	150	<0.5	<0.5	<0.5	<0.5	8.5
13	Apr-10	4.92	7.13	600	760	<0.5	<0.5	<0.5	<0.5	5.8
14	Oct-10	7.58	4.47	1,170	280	<0.5	<0.5	<0.5	<0.5	8.4

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	75	<0.5	<0.5	<0.5	<0.5	<2.0
13	Apr-10	4.82	8.00	500	210	<0.5	<0.5	<0.5	<0.5	3.1
14	Oct-10	7.90	4.92	7,900	68	<0.5	<0.5	<0.5	<0.5	NS

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	65	<0.5	<0.5	<0.5	<0.5	22
13	Apr-10	5.73	7.23	1,100	<50	3.2	<0.5	0.68	<0.5	86
14	Oct-10	7.60	5.36	980	140	<0.5	<0.5	<0.5	<0.5	20

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
13	Apr-10	5.67	5.92	9,500	<50	<0.5	<0.5	<0.5	<0.5	25
14	Oct-10	7.13	4.46	NS	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
13	Apr-10	4.98	6.97	300	4,800	<0.5	<0.5	<0.5	<0.5	<5.0
14	Oct-10	7.58	4.37	2,050	1,900	<0.5	<0.5	<0.5	NS	<0.5

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
13	Apr-10	4.15	6.87	6,900	<50	<0.5	<0.5	<0.5	<0.5	16
14	Oct-10	6.17	4.85	810	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
13	Apr-10	4.01	7.03	500	3,700	<4.2	<4.2	<4.2	<4.2	<4.2
14	Oct-10	6.60	4.44	160	1,400	<0.5	<0.5	<0.5	<0.5	NS

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	76	<0.5	<0.5	<0.5	<0.5	71
13	Apr-10	4.71	7.67	7,900	90	<0.5	<0.5	<0.5	<0.5	4.9
14	Oct-10	7.34	5.04	1,930	870	<0.5	<0.5	<0.5	<0.5	66

Notes:

All concentrations reported in micrograms per liter.

TVH-g = Total volatile hydrocarbons – gasoline range.

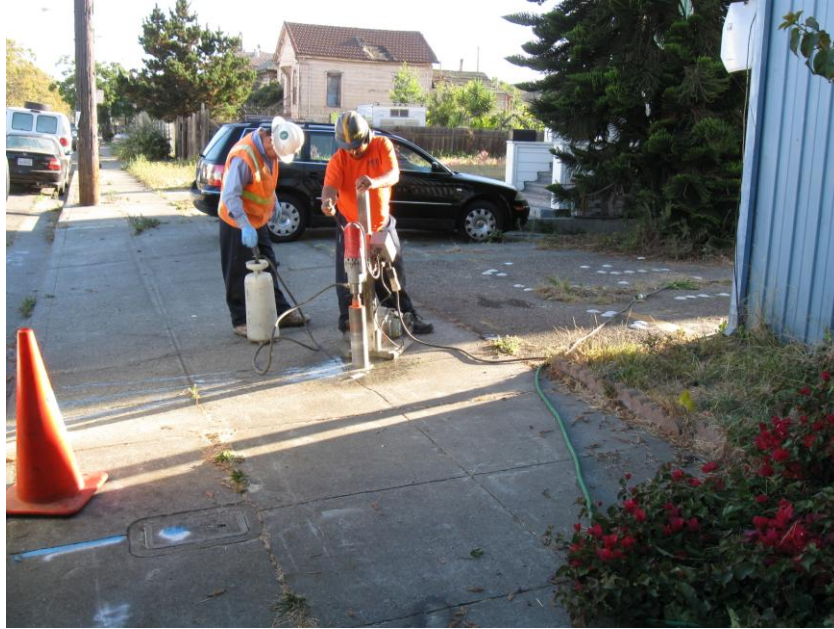
NA = Not analyzed for this constituent. NS = Not sampled

(a) Feet below top of casing

(b) Relative to mean sea level

APPENDIX E

PHOTODOCUMENTATION



Subject: Concrete coring prior to ORC™ injection.

Site: 2836 Union Street, Oakland, CA

Date Taken: September 1, 2010

Project No.: SES 2005-65

Photographer: H. Pietropaoli

Photo No.: 01



Subject: ORC™ product being injected through drill rod down bore.

Site: 2836 Union Street, Oakland, CA

Date Taken: September 1, 2010

Project No.: SES 2005-65

Photographer: H. Pietropaoli

Photo No.: 02



Subject: Mixing ORC™ and pouring into pump hopper as it is pumped down bore in photo background.

Site: 2836 Union Street, Oakland, CA

Date Taken: September 2, 2010

Project No.: SES 2005-65

Photographer: H. Pietropaoli

Photo No.: 03



Subject: Final concrete surface completion.

Site: 2836 Union Street, Oakland, CA

Date Taken: September 2, 2010

Project No.: SES 2005-65

Photographer: H. Pietropaoli

Photo No.: 04

APPENDIX F

**ALAMEDA COUNTY DEPARTMENT OF PUBLIC
WORK DRILLING PERMIT**

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 08/24/2010 By jamesy

Permit Numbers: W2010-0645
Permits Valid from 09/01/2010 to 09/02/2010

Application Id: 1282688161328
Site Location: 2836 Union Street
Project Start Date: 09/01/2010
Assigned Inspector: Contact Ron Smalley at (510) 670-5407 or ronaldws@acpwa.org

City of Project Site:Oakland

Completion Date:09/02/2010

Applicant: Stellar Environmental Solutions, Inc - Teal Glass
2198 6th Street, Ste 201, Berkeley, CA 94710
Property Owner: Estate of Lawrence Wadler
2525 Mandela Parkway, Oakland, CA 94607
Client: ** same as Property Owner **
Contact: Henry Pietropaoli

Phone: 510-644-3123

Phone: --

Phone: 510-644-3123
Cell: 510-926-9416

Receipt Number: WR2010-0294 Total Due: \$265.00
Payer Name : Teal Glass Total Amount Paid: \$265.00
Paid By: VISA PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Contamination Study - 15 Boreholes
Driller: RSI Drilling - Lic #: 802334 - Method: DP

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2010-0645	08/24/2010	11/30/2010	15	2.00 in.	26.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Alameda County Public Works Agency - Water Resources Well Permit

5. Applicant shall contact Ron Smalley for an inspection time at 510-670-5407 or email to ronaldws@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

7. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.
