FIRST QUARTER 2010 GROUNDWATER MONITORING AND OXYGEN RELEASE COMPOUND TREATMENT CORRECTIVE ACTION REPORT

REDWOOD REGIONAL PARK
SERVICE YARD
OAKLAND, CALIFORNIA

Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

April 2010

STELLAR
ENVIRONMENTAL SOLUTIONS, INC.
GEOSCIENCE & ENGINEERING CONSULTING

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Prepared for:

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Prepared by:

STELLAR ENVIRONMENTAL SOLUTIONS, INC.
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April 20, 2010

Project No. 2008-02

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April 20, 2010

Mr. Jerry Wickham, P.G.
Hazardous Materials Specialist
Local Oversight Program
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: First Quarter 2010 Groundwater and Surface Water Monitoring and Oxygen Release Compound™ Treatment Corrective Action Report — Redwood Regional Park Service Yard Site, Oakland, California (ACEH Fuel Leak Case No. RO0000246)

Dear Mr. Wickham:

Attached is the referenced report for the underground fuel storage tank (UFST) site at the Redwood Regional Park Service Yard, located at 7867 Redwood Road, Oakland, California. This project is being conducted for the East Bay Regional Park District (EBRPD), and follows previous site investigation and remediation activities (conducted since 1993) associated with former leaking UFSTs. The key regulatory agencies for this investigation are the Alameda County Department of Environmental Health, the Regional Water Quality Control Board, and the California Department of Fish and Game.

This report summarizes First Quarter 2010 groundwater and surface monitoring and sampling activities, conducted between January 1 and March 31, 2010. These activities include: the Oxygen Release Compound™ remedial injection performed on February 1-2, 2010; a 30-day post-injection monitoring event conducted on March 2, 2010; and the quarterly sampling conducted on March 29, 2010. Ongoing bioventing activities are reported in technical submittals separate from the quarterly monitoring reports; however, brief summaries of salient information are included in the quarterly reports.

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

Sincerely,

Richard S. Makdisi, R.G., R.E.A.
Principal and Project Manager

cc: Carl Wilcox, California Department of Fish and Game
Matt Graul, East Bay Regional Park District
State of California GeoTracker System
Alameda County Department of Environmental Health ftp system

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1.0 INTRODUCTION

PROJECT BACKGROUND

The subject property is the East Bay Regional Park District (EBRPD) Redwood Regional Park Service Yard located at 7867 Redwood Road in Oakland, Alameda County, California. The site has undergone site investigations and remediation since 1993 to address subsurface contamination caused by leakage from one or both former underground fuel storage tanks (UFSTs) that contained gasoline and diesel fuel. The Alameda County Department of Environmental Health (ACEH) has provided regulatory oversight of the investigation since its inception (ACEH Fuel Leak Case No. RO0000246). Other regulatory agencies with historical involvement in site review include the Regional Water Quality Control Board (Water Board) and the California Department of Fish and Game (CDFG).

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 in the downgradient slope area (which is inaccessible to any remedies other than in-situ). 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) between January 1 and March 31, 2010 (First Quarter 2010):

- Injecting Oxygen Release Compound™ (ORC™) across the site, in conformance with the ACEH-approved Remedial Action Workplan (RAW) of August 2009
- Conducting post-ORC™ injection monitoring to evaluate remedy effectiveness
- Collecting water levels in site wells to determine shallow groundwater flow direction
- Sampling site wells for contaminant analysis and natural attenuation indicators
- Collecting surface water samples for contaminant analysis
- Performing quarterly monitoring and maintenance of bioventing system operation

HISTORICAL CORRECTIVE ACTIONS AND INVESTIGATIONS

Other Stellar Environmental reports have discussed previous site remediation and investigations, site geology and hydrogeology, residual site contamination, conceptual model for contaminant fate and transport, and hydrochemical trends and plume stability. Section 8.0 (References and Bibliography) of this report lists all technical reports for the site.

The general phases of site work included:

- An October 2000 Feasibility Study report for the site, submitted to ACEH, which provided detailed analyses of the regulatory implications of the site contamination and a request for the assessment and implementation of viable corrective actions (Stellar Environmental, 2000d).
- Two instream bioassessment events, conducted in April 1999 and January 2000, to evaluate potential impacts to stream biota associated with the site contamination. No impacts were documented.
- Additional monitoring well installations and corrective action by ORC™ injection proposed by Stellar Environmental and approved by ACEH in its January 8, 2001 letter to the EBRPD. Two phases of ORC™ injection were conducted—in September 2001 and July 2002.
- Groundwater monitoring and sampling, conducted on a quarterly basis since project inception (in November 1994). A total of 11 groundwater monitoring wells are currently available for monitoring.
- A bioventing pilot test, conducted in September and October 2004, to evaluate the feasibility of this corrective action strategy, and installation of the full-scale bioventing system in November and December 2005. Bioventing well VW-3 was decommissioned and two additional bioventing wells (VW-4 and VW-5) were installed on March 4, 2008. However, the bioventing remedy has not been effective to date. Bioventing activities conducted to date have been, and will continue to be, discussed in bioventing-specific technical reports, and updates will be provided in groundwater monitoring progress reports as they relate to this ongoing program.
- An ORC™ injection pilot test, conducted by Stellar Environmental on March 10, 2009, to control historical high levels of hydrocarbons contamination that began to appear in September 2007 in source well MW-2.
- A RAW (dated August 20, 2009) prepared by Stellar Environmental in response to a letter from ACEH. ACEH approved the RAW in a letter (dated October 2, 2009) to the EBRPD.
- An ORC™ injection conducted over the full footprint of plume that could be accessed during First Quarter 2010 (on February 1-2), followed by 30-day post-injection monitoring and sampling of key site wells (on March 2).

SITE DESCRIPTION

The site slopes to the west, from an elevation of approximately 564 feet above mean sea level (amsl) at the eastern edge of the service yard to approximately 530 feet amsl at Redwood Creek, which defines the approximate western edge of the project site with regard to this investigation. Figure 1 shows the location of the project site, and Figure 2 presents the site plan.

REGULATORY OVERSIGHT

The lead regulatory agency for the site investigation and remediation is ACEH (Case No. RO0000246), with oversight provided by the Water Board (GeoTracker Global ID T0600100489). The CDFG is also involved with regard to water quality impacts to Redwood Creek. All workplans and reports have been submitted to these agencies. Historical ACEH-approved revisions to the groundwater sampling program have included:

- Discontinuing hydrochemical sampling and analysis in wells MW-1, MW-3, MW-5, and MW-6
- Discontinuing creek surface water sampling at upstream location SW-1
- Reducing the frequency of creek surface water sampling from quarterly to semi-annually. The latter recommendation has not yet been implemented due to the EBRPD's continued concern over potential impacts to Redwood Creek.

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

N

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

Redwood Reg. Park Service Yard Oakland, CA	By: MJC	MARCH 2006
	Figure 1	

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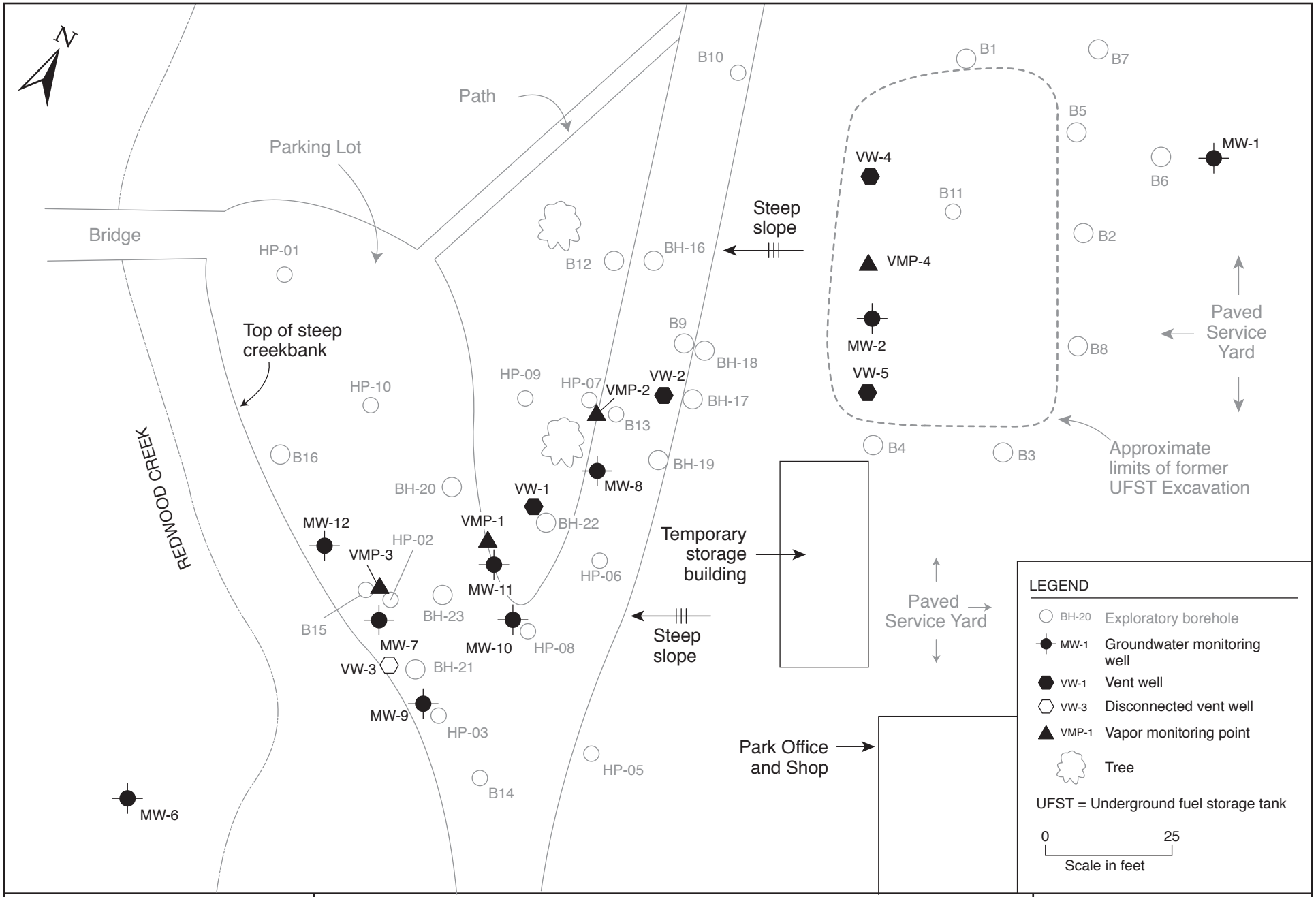
2006-17-01



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SITE PLAN AND WELL LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 2

by: MJC | MARCH 2008

2008-02-02

2.0 PHYSICAL SETTING

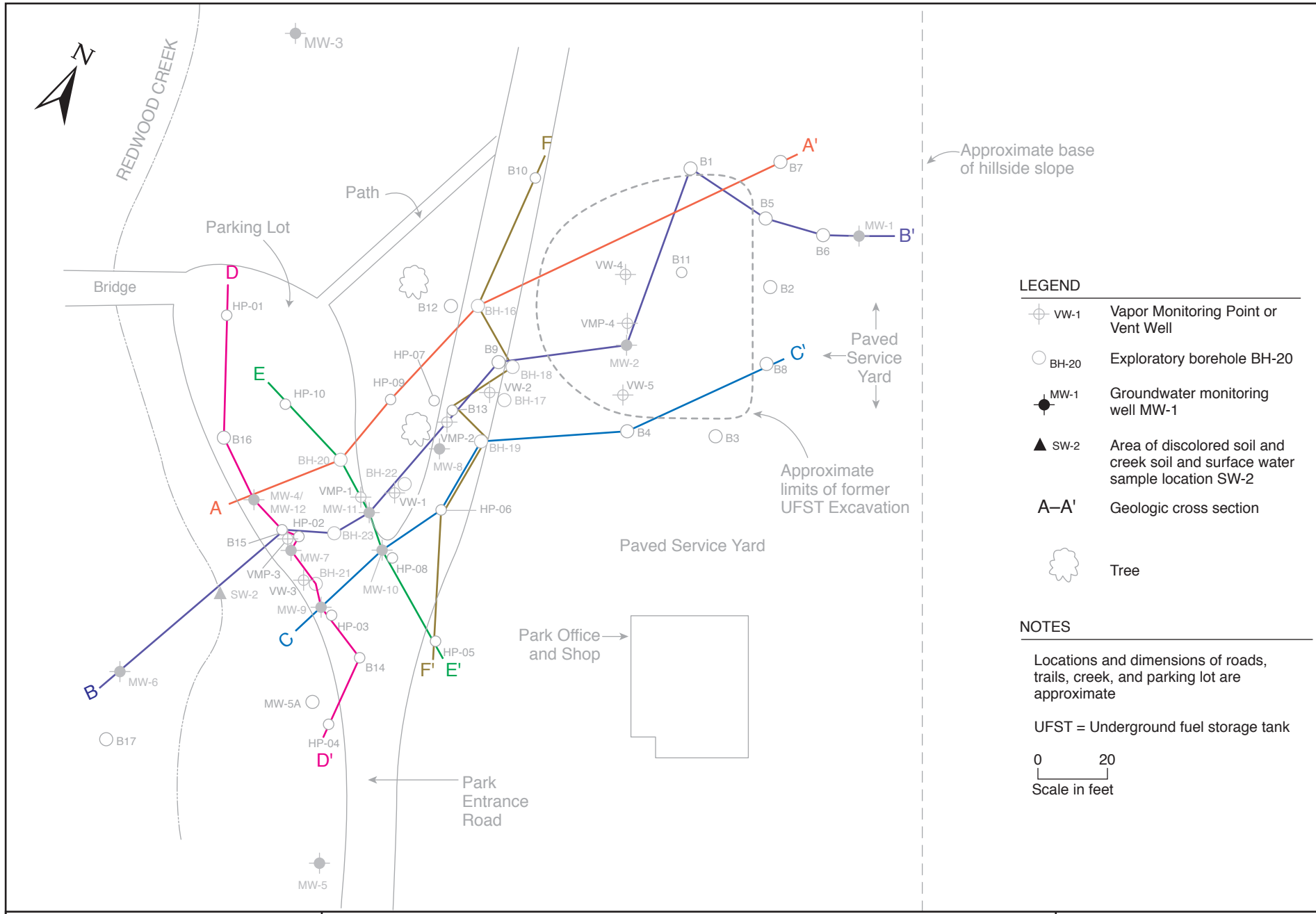
This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous Stellar Environmental reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH requested an additional evaluation of site lithology—specifically, the preparation of multiple geologic cross-sections both parallel and perpendicular to the contaminant plume's long axis.

SITE LITHOLOGY

Figure 3 shows the locations of geologic cross-sections. Figure 4 shows three sub-parallel geologic cross-sections (A-A' through C-C') along the long axis of the groundwater contaminant plume (i.e., along local groundwater flow direction). Figure 5 shows three sub-parallel geologic cross-sections (D-D' through F-F') roughly perpendicular to groundwater direction. In each figure, the three sub-parallel sections are presented together for ease of comparison. Due to the small scale, these sections show only lithologic conditions (soil type and bedrock depth). Additional information on water level depths, historical range of water levels, and inferred thickness of soil contamination are presented in a previous report (Stellar Environmental, 2004c) for cross-section B-B'.

Shallow soil stratigraphy consists of a surficial 3- to 10-foot-thick clayey silt unit underlain by a 5- to 15-foot-thick silty clay unit. In the majority of boreholes, a 5- to 10-foot-thick clayey coarse-grained sand and clayey gravel unit that laterally grades to a clay or silty clay was encountered. This unit overlies a weathered siltstone at the base of the observed soil profile. Soils in the vicinity of MW-1 in the most upgradient part of the site that abuts the canyon slope are inferred to be landslide debris.

A previous report (Stellar Environmental, 2004c) presented a bedrock surface isopleth map (elevation contours for the top of the bedrock surface) in the contaminant plume area. As shown in Figures 4 and 5, the isopleth map indicates the following: The bedrock surface slopes steeply, approximately 0.3 feet/foot, from east to west (toward Redwood Creek) in the upgradient portion of the site (from the service yard to under the entrance road), then shows a gentle east-to-west slope in the downgradient portion of the site (under the gravel parking area) toward Redwood Creek. This general gradient corresponds to the local groundwater flow direction. On the



LEGEND

VW-1	Vapor Monitoring Point or Vent Well
BH-20	Exploratory borehole BH-20
MW-1	Groundwater monitoring well MW-1
SW-2	Area of discolored soil and creek soil and surface water sample location SW-2
A–A'	Geologic cross section
	Tree

NOTES

Locations and dimensions of roads, trails, creek, and parking lot are approximate

UFST = Underground fuel storage tank

0 20

Scale in feet

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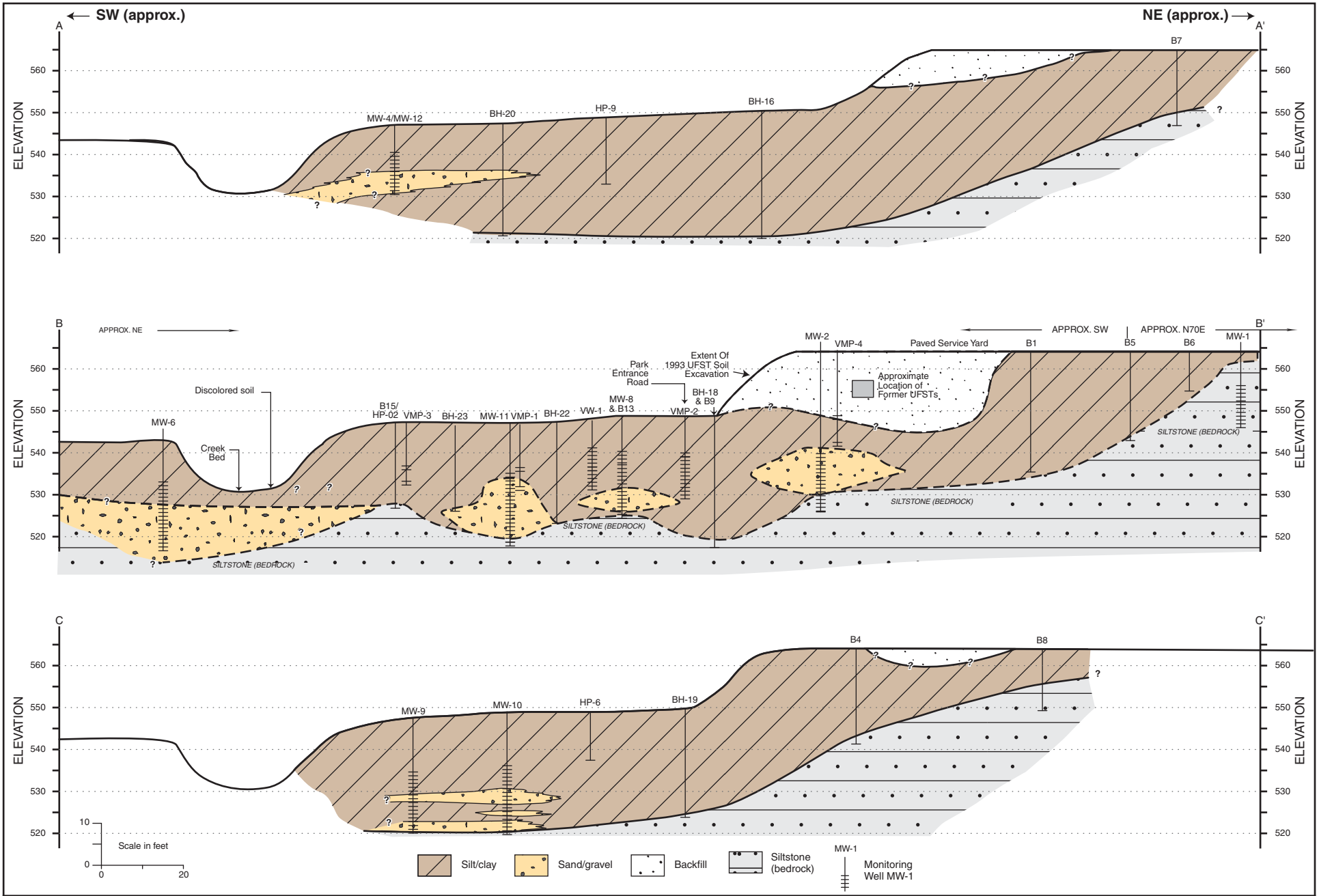
GEOLOGIC CROSS-SECTION LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 3

by: MJC | MARCH 2008

2008-02-05



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GEOLOGIC CROSS SECTIONS — A-A' through C-C'

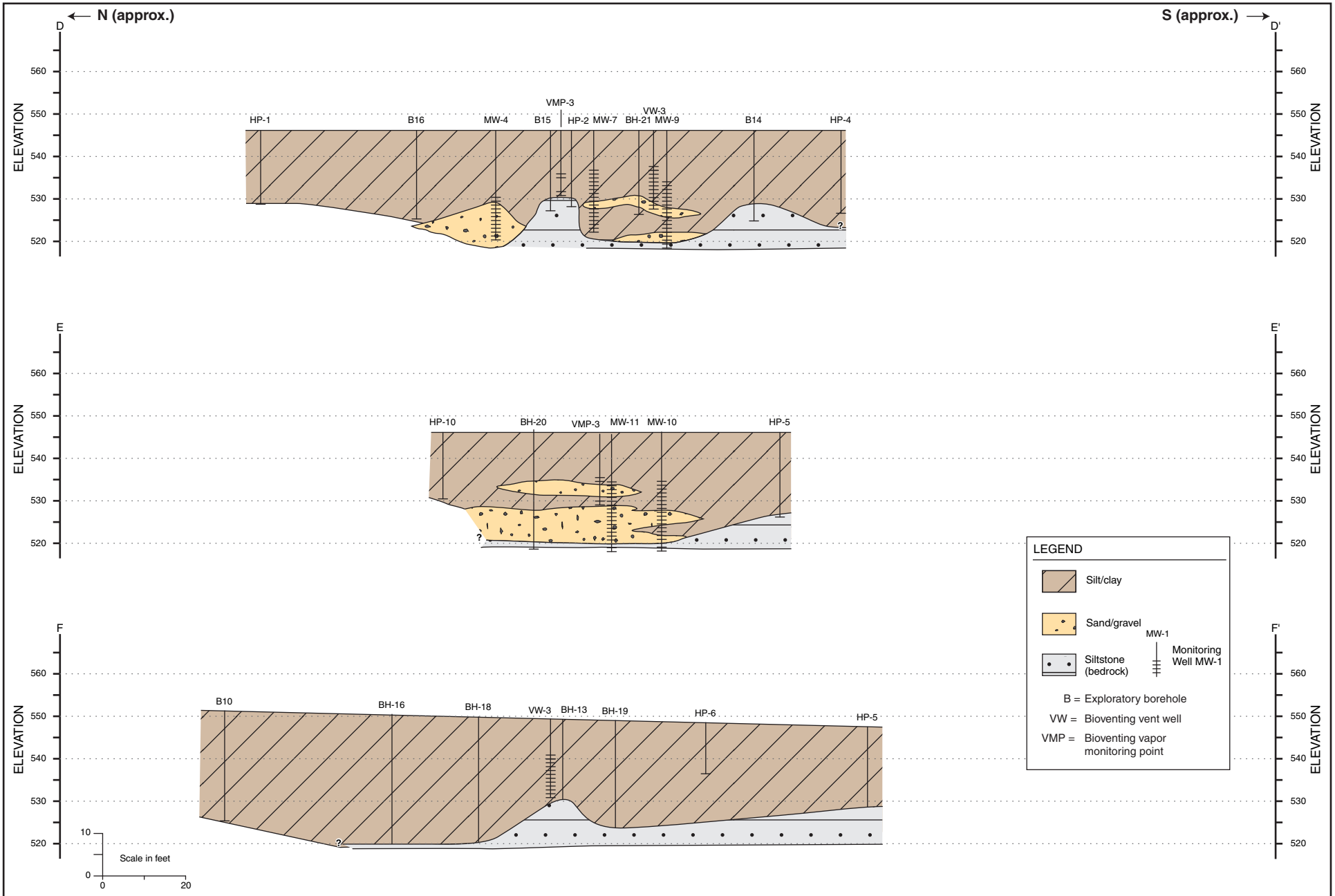
Redwood Regional Park Service Yard, Oakland, CA

Figure 4

by: MJC

DECEMBER 2007

2005-66-14



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GEOLOGIC CROSS SECTIONS — D-D' through F-F'
Redwood Regional Park Service Yard, Oakland, CA

Figure 5

by: MJC | DECEMBER 2005

2005-66-13

southern side of the plume area, bedrock slopes gently from south to north (the opposite of the general topographic gradient). Bedrock topography on the northern side of the plume cannot be determined from the available data.

In the central and downgradient portions of the groundwater contaminant plume (under the entrance road and the parking area), the bedrock surface has local, fairly steep elevation highs and lows, expressing a hummocky surface. Bedrock elevations vary by up to 10 feet over distances of less than 20 feet in this area. Local bedrock elevation highs are observed at upgradient location BH-13 (see cross-section F-F') and at downgradient location B15/HP-02 (see cross-section B-B'). Intervening elevation lows create troughs that trend north-south in the central portion of the plume and east-west in the downgradient portion of the plume.

The bedrock surface (and overlying unconsolidated sediment lithology) suggests that it may have undergone channel erosion from a paleostream(s) flowing sub-parallel to present-day Redwood Creek. Because groundwater flows in the unconsolidated sediments that directly overlie the bedrock surface, it is likely that the surface affects local groundwater depth and flow direction. This is an important hydrogeologic control that should be considered if groundwater-specific corrective action is contemplated.

HYDROGEOLOGY

Groundwater at the site occurs under unconfined and semi-confined conditions, generally within the clayey, silty, sand-gravel zone. The top of this zone varies between approximately 12 and 19 feet below ground surface (bgs); the bottom of the water-bearing zone (approximately 25 to 28 feet bgs) corresponds to the top of the siltstone bedrock unit. Seasonal fluctuations in groundwater depth create a capillary fringe of several feet that is saturated in the rainy period (late fall through early spring) and unsaturated during the remainder of the year. The thickness of the saturated zone plus the capillary fringe varies between approximately 10 and 15 feet in the area of contamination. Local perched water zones have been observed well above the top of the capillary fringe. Consistent with the bedrock isopleth map showing an elevation depression in the vicinity of MW-11, historical groundwater elevations in MW-11 are sporadically lower than in the surrounding area. As discussed in the previous subsection, local groundwater flow direction likely is more variable than expressed by groundwater monitoring well data, due to local variations in bedrock surface topography.

We assume a site groundwater velocity of 7 to 10 feet per year, using general look-up tables for permeability characteristics for the site-specific lithologic data obtained from site investigations. This velocity estimate is conservatively low, but does meet minimum-distance-traveled criteria from the date when contamination was first observed in Redwood Creek (1993) relative to the time of the UFST installations (late 1970s). Locally, however, the groundwater velocity could

vary significantly. Calculating the specific hydraulic conductivity critical to accurately estimating site-specific groundwater velocity would require direct testing of the water-bearing zone through a slug or pumping test.

Redwood Creek, which borders the site to the west, is a seasonal creek known for the occurrence of rainbow trout. Creek flow in the vicinity of the site shows significant seasonal variation, with little to no flow during the summer and fall dry season, and vigorous flow with depths exceeding 1 foot during the winter and spring wet season. The creek is a gaining stream (i.e., it is recharged by groundwater seeps and springs) in the vicinity of the site, and discharges into Upper San Leandro Reservoir located approximately 1 mile southeast of the site. During low-flow conditions, the groundwater table is below the creek bed in most locations (including the area of historical contaminated groundwater discharge); consequently, there is little to no observable creek flow at these times.

The following groundwater gradient information is based on the First Quarter 2010 monitoring data contained in Section 6.0 of this report. In the upgradient portion of the site (between well MW-1 and MW-2, in landslide debris and the former UFST excavation backfill), the groundwater gradient during this event was measured at approximately 0.20 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek), the groundwater gradient during this event was approximately 0.1 feet per foot. The average groundwater elevation was 1.3 feet higher than the previous (December 2009) event, with the greatest increase of 3.9 feet measured in MW-8 and the lowest increase measured in MW-3 of 0.4 foot. The direction of shallow groundwater flow during the current event was to the west-southwest (toward Redwood Creek), which is consistent with historical site groundwater flow direction.

3.0 REGULATORY CONSIDERATIONS

This section summarizes the regulatory considerations with regard to surface water and groundwater contamination. There are no ACEH or Water Board cleanup orders for the site, although all site work has been conducted under oversight of these agencies.

GROUNDWATER CONTAMINATION

As specified in the Water Board's *San Francisco Bay Region Water Quality Control Plan* (Water Board, 1995), all groundwaters are considered potential sources of drinking water unless otherwise approved by the Water Board, and are also assumed to ultimately discharge to a surface water body and potentially impact aquatic organisms. While it is likely that site groundwater would satisfy geology-related criteria for exclusion as a drinking water source (excessive total dissolved solids and/or insufficient sustained yield), Water Board approval for this exclusion has not been obtained for the site. As summarized in Table 5 (in Section 7.0), site groundwater contaminant levels are compared to two sets of criteria: 1) Water Board Tier 1 Environmental Screening Levels (ESLs) for residential sites where groundwater *is* a current or potential drinking water source; and 2) ESLs for residential sites where groundwater *is not* a current or potential drinking water source.

As stipulated in the ESL guidance (Water Board, 2008), the ESLs are not cleanup criteria; rather, they are conservative screening-level criteria designed to be protective of both drinking water resources and aquatic environments in general. The groundwater ESLs are composed of multiple components, including ceiling value, human toxicity, indoor air impacts, and aquatic life protection. Exceedance of ESLs suggests that additional investigation and/or remediation is warranted. While drinking water standards [e.g., Maximum Contaminant Levels (MCLs)] are published for the site contaminants of concern, ACEH has indicated that impacts to nearby Redwood Creek are of primary importance, and that site target cleanup standards should be evaluated primarily in the context of surface water quality criteria.

SURFACE WATER CONTAMINATION

As summarized in Table 5 (in Section 7.0), site surface water contaminant levels are compared to the most stringent screening level criteria published by the State of California, U.S. Environmental Protection Agency, and U.S. Department of Energy. These screening criteria address chronic and acute exposures to aquatic life. As discussed in the ESL document (Water

Board, 2008), benthic communities at the groundwater/surface water interface (e.g., at site groundwater discharge location SW-2) are assumed to be exposed to the full concentration of groundwater contamination prior to dilution/mixing with the surface water). This was also a fundamental assumption in the instream benthic macroinvertebrate bioassessment events, which documented no measurable impacts.

Historical surface water sampling in the immediate vicinity of contaminated groundwater discharge (SW-2) has sporadically documented petroleum contamination, usually in periods of low stream flow, and generally at concentrations several orders of magnitude less than adjacent (within 20 feet) groundwater monitoring well concentrations. It is likely that mixing/dilution between groundwater and surface water precludes obtaining an "instantaneous discharge" surface water sample that is wholly representative of groundwater contamination at the discharge location. Therefore, the most conservative assumption is that surface water contamination at the groundwater/surface water interface is equivalent to the upgradient groundwater contamination (e.g., site downgradient wells MW-7, MW-9, and MW-12).

While site target cleanup standards for groundwater have not been determined, it is likely that no further action will be required by regulatory agencies when groundwater (and surface water) contaminant concentrations are all below their respective screening level criteria. Residual contaminant concentrations in excess of screening level criteria might be acceptable to regulatory agencies if a more detailed risk assessment (e.g., Tier 2 and/or Tier 3) demonstrates that no significant impacts are likely.

4.0 ORC™ INJECTION CORRECTIVE ACTION PROGRAM

This section discusses the ORC™ injection corrective action that was conducted on February 1 and 2, 2010, in accordance with the RAW (Stellar Environmental, 2009b). This injection was conducted by Vironex 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, and a site visit was made to mark the boring locations to obtain utility clearance from both Underground Service Alert and park maintenance personnel.

Photodocumentation of the injection field activity is contained in Appendix E. Appendix F includes the City of Berkeley drilling permit and associated waste disposal documentation.

BACKGROUND AND OBJECTIVES OF SITE CORRECTIVE ACTION

Following the initial (2001 and 2002) ORC™ injections in the downgradient portion of the plume area, a contaminant concentration rebound occurred within approximately 1 year. This lead to the realization that there was significant unrecorded contaminant mass upgradient of the injected area, despite base-of-excavation and other data points suggesting otherwise. Subsequent additional borings (BH-16 through BH-19) in 2003 confirmed the residual total petroleum hydrocarbon (TPH) mass upgradient. Due to the difficulty of excavating this area (a steep embankment slope), a soil bioventing system was installed to oxygenate the former UFST removal area. The bioventing remediation has been only partially successful, as it does not effectively address the residual contamination held in the stratigraphic traps in the saturated zone and capillary fringe zone.

Significant increases in the hydrocarbon concentrations in upgradient source area well MW-2, which was installed in the former UFST excavation in 1994, were observed in December 2007. These increases suggested that the previous 2 years of drought resulted in a release of hydrocarbons from the original UFST excavation area and/or capillary fringe, and saturated areas were exposed.

In March 2009, a small pilot test injection of ORC™ in the upgradient source area around well MW-2 was conducted to determine if ORC™ would be efficient in achieving dissolved hydrocarbon concentration reductions in the former source area. Subsequent monitoring showed a consistent reduction in both diesel- and gasoline-range hydrocarbons in MW-2.

Based on further examination of the 2001 and 2002 injection areas and considering the high variability of sediments, an in-situ injection design of "treatment zones" transverse to the plume (as opposed to the "area" design) was decided upon and implemented in February 2010. Advanced ORC™ was selected to inoculate the groundwater in a treatment barrier design in the source zone and immediately downgradient in the downhill roadway area. This remedy was designed to create highly oxygenated barrier zones at critical locations transverse to the plume, focusing depth and loading based on lithology and known or suspected TPH mass.

The Advanced ORC™ injections should be effective in reducing the toxicity of the plume by accelerating the biodegradation significantly within the first 6 to 12 months. The mobility of the plume will likewise be reduced, although historical data from the last 6 years suggest that the remnant source between the corporation yard access road and the former UFST excavation area exhibits contaminant persistence due to probable hydrocarbons sorption and possibly lithologic (trap) causes. The idea of this revisited in-situ remedy (using Advanced ORC™ in this case) is to also inject the oxygenating material in the upgradient source location where it can travel along the routes already established by the plume.

ORC™ INJECTION METHOD 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 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 each injection point. However, Stellar Environmental designed a more conservative radius of 5.0 feet of effective injection, assuming sufficient overlap, to ensure that the ORC™ reaches all target zones. Stellar Environmental placed the injection points on 10-foot (rather than 15-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 deliver sub-assembly
- Injection pump rated for 5 gallons per minute at 200 pounds per square inch (psi) for sandy formations, and 800 psi for silt and clay formations (Geoprobe® DP-800)
- Injection hosing and a pressure relief valve with bypass
- Pressure gauges
- Power drill paint stirrer (3-inch diameter or smaller propeller tip)
- 5-amp sump pump (such as Little Giant) and hose
- One 55-gallon drum or similarly sized tank for ORC™ mixing
- Granular bentonite, quick-set grout concrete for closing and sealing injection holes
- Portable electric supply and water supplied by drilling contractor

A total of 24 borehole injections in four zones throughout the plume were advanced to deliver the Advanced ORC™ product to treat and/or intercept all of the known and accessible hydrocarbon contamination.

The Geoprobe® rig advanced an approximately 1.5-inch-diameter, hollow, steel-drive casing 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 screened casing through which the ORC™ slurry was pumped. A slurry of approximately 7 gallons of water to 25 pounds of ORC™ powder was mixed in a hopper to achieve a 30 percent solid slurry mixture. The slurry was transferred to an in-line hopper and pumped down the casing, through the screen, and into the formation at a pressure of approximately 200 psi. Care was taken to deliver an approximately uniform mass of ORC™ over each saturated interval. A waiting period of about 15 minutes was needed before disconnecting the injection apparatus and extracting the drill rods to allow the system to depressurize and prevent the ORC™ product from being extruded back up the rod assembly to the surface. "Short-circuiting" of the ORC™ slurry around the drive casing and to 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 or filled with cement grout.

The injection specifications for each of the treatment zones are shown in Table 1. The procedures for the treatment injections are as follows:

- The four project treatment zones transverse the plume (mainly in the upgradient plume area) over a combined total area of approximately 2,300 square feet; they are delineated separately in Table 1.
- A total of 24 injection points were drilled using direct-push technology to various depths in each of the treatment zones, as shown in Table 4.
- A total of approximately 2,075 pounds of ORC™, mixed with water to achieve a 30-percent slurry mix, was delivered to the subsurface (25 pounds of Advanced ORC™ mixed with 7 gallons of water is equivalent to 8.4 pounds of ORC™ mixed with 2.3 gallons of water per foot).
- The oxidant loading was approximately 8.4 pounds per foot, which is based on a conservative average of 8,000 micrograms per liter (µg/L) of total volatile hydrocarbons as gasoline (TVHg) and total extractable hydrocarbons as diesel (TEHd).
- Delivery point spacing is approximately 10 feet.
- The thickness of the treatment zone ranges from 7 to 15 feet, as specified in Table 1, for each of the four treatment zones.
- The ideal injection schedule is during winter 2010 before the rainy season, to allow for optimum transport of the oxygenating compound.
- A total of 581 gallons of water was mixed with the 2,075 pounds of ORC™ and pumped into the 2,300-square-foot plume footprint. This translates into a total of 596 cubic feet across the 7-foot vertical interval.

Table 1
Advanced ORC™ Treatment Zone Injection Parameters

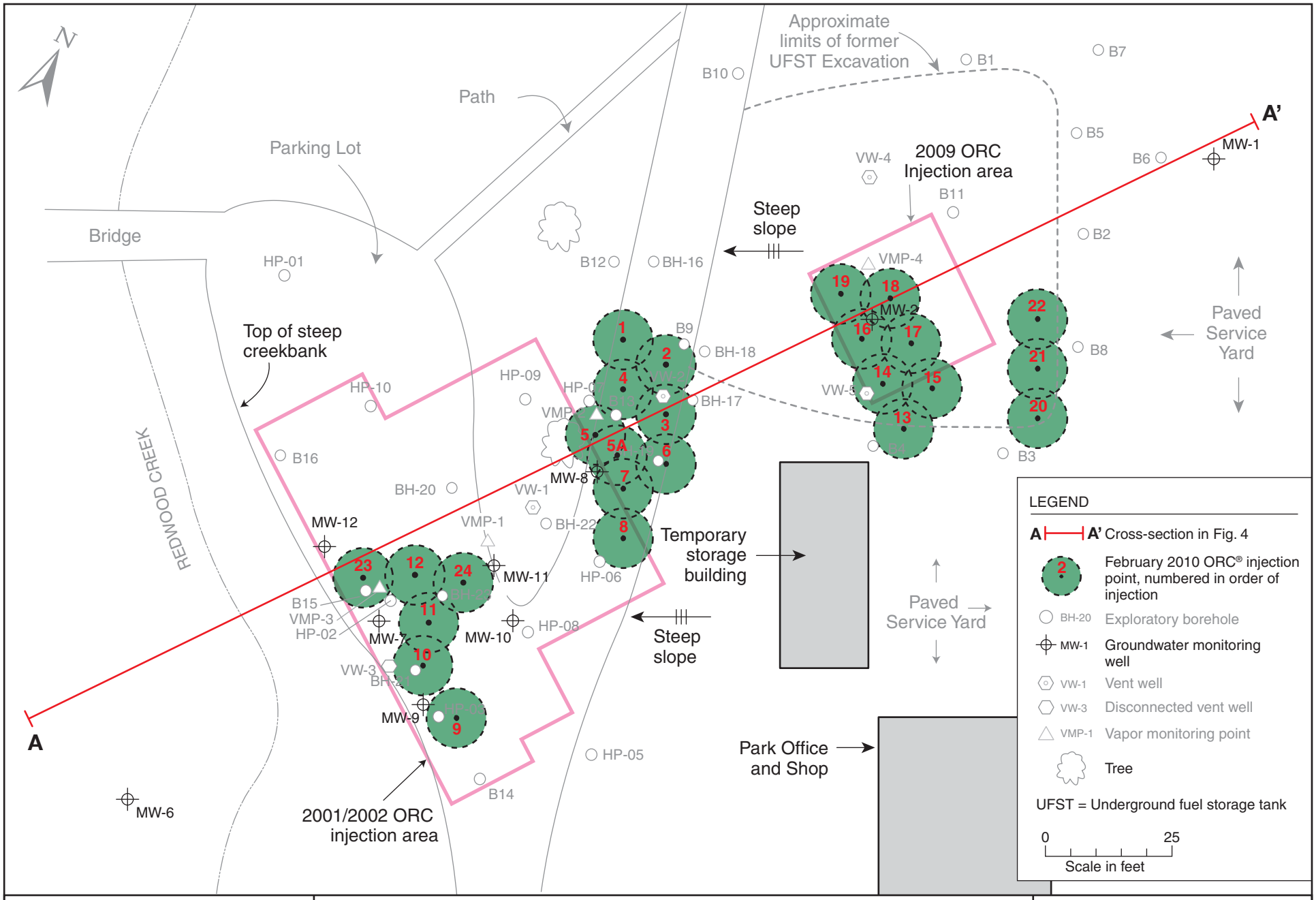
ORC™ Treatment Zone (see figures for locations)	Treatment Zone Thickness	Treatment Zone Area (square feet)	Subsurface Treatment Zone Elevation Range (feet amsl)	Treatment Zone Depth Range (feet bgs)	Number of Bores in Treatment Zone	ORC™ Product Injected per Bore/Zone (pounds)
ORC-1	7 feet	300	545-552	12-19	3	59/177
ORC-2	15 feet	700	533-548	16-31	7	126/880
ORC-3	10 feet	750	532-542	7-17	8	84/670
ORC-4	7 feet	600	529-536	13-20	6	58/348

Figure 6 shows the historical (2001-2002 and 2009) injection areas and the current Advanced ORC™ injection treatment entailing the 24 injection bores. A longitudinal cross-section through the contaminant plume is presented in Figure 7 to illustrate the variable depth of the Advanced ORC™ injections and how they are related to both lithology and historical high-low water levels. This is a generalized depiction; the width of the injection material will be greater in some areas, as can be seen in Figure 6.

FIELD OBSERVATIONS DURING THE ORC™ INJECTION

Communication between boreholes was observed during injection in the upper ORC™ source areas (likely due to the relatively more permeable backfill in these areas). The communication was observed between boreholes 5 and 7 and between boreholes 15 and 17. Approximately 2.5 gallons of product was observed to extrude to the surface through borehole 15 while it was being injected into borehole 17; about 1 gallon was recovered and reinjected. Another 5 gallons of product was observed to extrude to the surface through borehole 20 while it was being injected into borehole 21; about 2 gallons was recovered and reinjected. As soon as this product extrusion occurred, the injection was immediately stopped and the formation was allowed to depressurize for about 15 minutes, after which the borehole was plugged with bentonite chips before injection was resumed.

During placement of ORC™ in bore 5 in injection area 3, the ground seal with the rod failed, and product began to extrude to the surface adjacent to the rod when the injector reached 12 foot bgs. This injection was discontinued. The failure likely occurred due to the presence of very loose soils in this area, indicated by the very low resistance during downhole advancement of the rods. However, the failure could also be related to cavities within the root system of the large Buckeye tree located less than 5 feet away.



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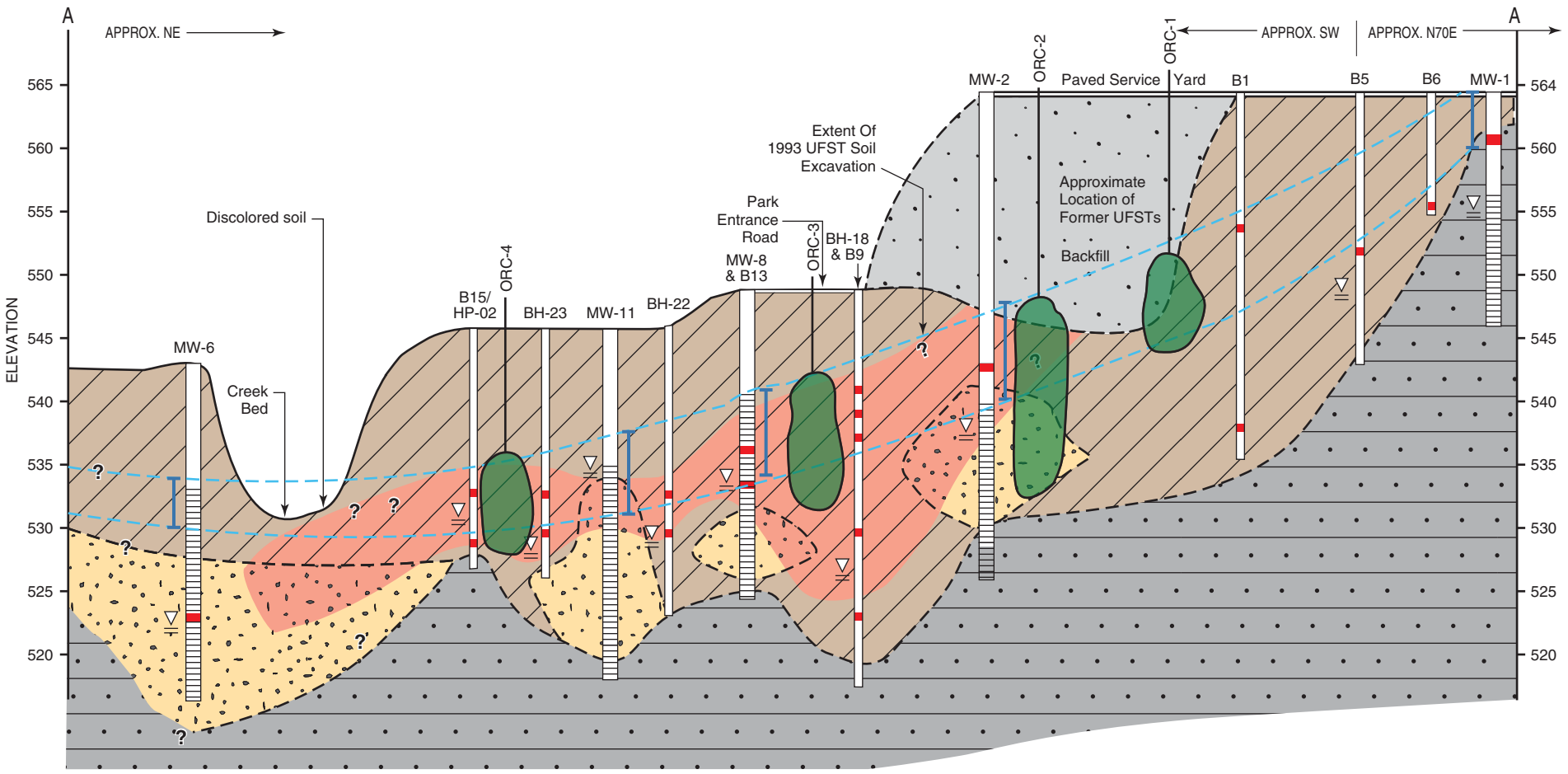
SITE PLAN SHOWING HISTORICAL AND RECENT ORC® INJECTION LOCATIONS

Redwood Regional Park Service Yard, Oakland, CA

Figure 6

by: MJC | **FEBRUARY 2010**

2009-02-06



LEGEND

- B1 — Exploratory Boring B1
- Location of soil sample collected for laboratory analysis
- MW-1 — Monitoring Well MW-1
- Location of soil sample collected for laboratory analysis
- Well screen interval
- First occurance of groundwater during drilling
- Projected range of water levels
- Historical range of equilibrated water levels in wells
- Silt/clay
- Backfill
- Sand/gravel
- Zone of soil contamination
- Siltstone (bedrock)

NOTES

Locations and dimensions of roads, trails and parking lot are approximate

UFST = Underground fuel storage tank (not to scale)

All elevations are expressed as feet above mean sea level (MSL)

Well casing and boring widths not to scale

Some borings projected into cross section (see Figure 2)

10
Scale in feet
Vertical exaggeration Is 2.5x
0
0
20

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CROSS SECTION A-A' SHOWING FEBRUARY 2010 ORC® INJECTION ZONES

Redwood Regional Park Service Yard, Oakland, CA

Figure 7

by: MJC

FEBRUARY 2010

2009-02-07

The presence of either voids or loose porous soil in this area also explain why vent well VW-2 and the associated vapor monitoring points (VMP-2s and VMP-2d) show the most favorable bioventing activity across the site. Bore 5 was abandoned, and the product intended for delivery to the 7- to 12-foot-depth range in bore 5 was injected across this depth interval in alternate bore 5A (approximately 4 feet away in the direction of bore 7).

PRE AND POST-ORC™ INJECTION GROUNDWATER ELEVATIONS

Groundwater measurements were collected in four selected site wells before and after the injection activity on February 1 and 2, respectively. All four monitoring wells showed a rise in groundwater elevation greater than ½ foot immediately (within 1 hour) after injection into surrounding bores, attesting to the distribution of ORC™ product in these areas. Monitoring well MW-2 showed the most dramatic elevation increase (8.6 feet of groundwater rise) within 1 hour after injection of the surrounding bores. Only MW-10 failed to equilibrate to close to its pre-injection elevation. The water level data are summarized in Table 2.

Table 2
Pre- and Post-ORC™ Injection Groundwater Elevation Data –
February 1 and 2, 2010

Well ID	Well Depth	Screened Interval	TOC Elevation	Pre-Injection Groundwater Elevation (2/1/10)	Within 1 Hour Following Injection of Surrounding Bores	Post-Injection Groundwater Elevation (2/2/10)
MW-2	36	20 to 35	566.42	545.64	554.19	545.62
MW-8	23	8 to 23	549.13	537.95	538.53	538.02
MW-10	26	11 to 26	547.22	535.09	535.72	535.53
MW-12	25	10 to 25	544.67	535.25	535.82	535.19

Notes:

TOC = top of casing

All elevations are expressed in feet above U.S. Geological Survey mean sea level.

5.0 30-DAY POST-ORC™ INJECTION EVALUATION

OVERVIEW

As requested by ACEH (in a letter to the EPRPD dated October 2, 2009), groundwater sampling of the five key plume wells (MW-2, MW-7, MW-8, MW-9, and MW-11) was conducted on March 2, 2010, approximately 1 month after the February 1-2, 2010 Advanced ORC™ injection event. This section presents the field and laboratory results of that monitoring event. Table 3 summarizes the contaminant analytical results. Appendix C contains the certified analytical laboratory report and chain-of-custody record.

Table 3
30-Day Post-Injection Groundwater Monitoring – March 2, 2010
Analytical Results

Location	Dissolved Oxygen	Contaminant Concentrations						
		TVHg	TEHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-2	3.22	**1,900**	**3,200**	<0.5	<0.5	<0.5	2.2	2.2
MW-7	0.14	**5,300**	**4,300**	**17**	<0.5	**110**	2.6	**16**
MW-8	0.37	**220**	**270**	0.84	<0.5	**14**	3.1	3.9
MW-9	0.14	**3,300**	**2,600**	**15**	<0.5	**140**	12	**8.6**
MW-11	0.15	**2,300**	**2,500**	**13**	<0.5	**59**	0.79	**3.4**
Groundwater ESLs	*NLP*	*100 / 210*	*100/ 210*	*1.0 / 46*	*4.0 / 130*	*30 / 43*	*20 / 100*	*5.0 / 1,800*

Notes:

ESLs = Water Board Environmental Screening Levels, where groundwater is/is not a potential drinking water resource (Water Board, 2008)

TEHd = total extractable hydrocarbons - diesel range
TVHg = total volatile hydrocarbons - gasoline range
MTBE = methyl tertiary-butyl ether
NLP = no level published

All contaminant concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion. Samples in **bold-face** type exceed the ESLs and/or surface water screening levels where groundwater is a potential drinking water resource. Dissolved oxygen concentrations are expressed in milligrams per liter (mg/L).

ANALYTICAL RESULTS

Volatile Organic Compounds

Groundwater contaminant concentrations exceeded the groundwater ESL for TVHg and TEHd in all five of the key plume wells sampled (MW-2, MW-7, MW-8, MW-9, and MW-11). The ESL for benzene was exceeded in MW-2, MW-7, MW-8, and MW-11; the ESL for ethylbenzene was exceeded in MW-7, MW-8, MW-9, and MW-11; and the ESL for methyl tertiary-butyl ether

(MTBE) was exceeded in MW-7, MW-9, and MW-11. Total xylenes were detected in all five wells, but below the ESL. Toluene was not detected above the laboratory detection limit in any of the five wells.

The total TEHd and TVHg concentration ranged from 490 µg/L in MW-8 to maximum of 9,600 µg/L in MW-7 (located on the eastern side of Redwood Creek, downgradient of the original source area). The suggests that insufficient time has elapsed to see a reduction in concentration compared to both the baseline concentrations in the Fourth Quarter 2009 event and previous similar seasonal first-quarter events.

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 1 to 2 milligrams per liter (mg/L) of DO in groundwater. During aerobic biodegradation, DO levels are reduced in the hydrocarbon plume as microbial respiration occurs. Therefore, DO levels that vary inversely to hydrocarbon concentrations are consistent with the occurrence of aerobic biodegradation.

To help evaluate the effect of the February 2010 Advanced ORC™ injection, DO was measured in the site wells during the Fourth Quarter 2009 sampling event to establish a baseline for comparison in future monitoring events. Post-purge measurements during the Fourth Quarter 2009 event showed a maximum DO concentration of 0.47 mg/L in site wells. DO was at a high of 3.22 mg/L in key source area well MW-2 during the current monitoring. This concentration spike in MW-2 likely occurred due to its location in relatively more permeable backfill, in which groundwater and subsequently the ORC™ moves more rapidly. There was an overall decrease of 14.8 percent in DO concentration across the five key wells (MW-2, MW-7 MW-8, MW-9, and MW-11) compared to the December 2009 baseline, indicating that insufficient time had elapsed to see a response to the February 2010 ORC™ treatment. This suggests that 30 days is insufficient residence time for the ORC™ to affect the concentrations in the other key wells.

It should be noted that DO concentrations in the field are not indicative of the total amount of oxygen release by Advanced ORC™, as the oxygen is rapidly utilized by microorganisms.

6.0 FIRST QUARTER 2010 QUARTERLY MONITORINGACTIVITIES

This section presents the quarterly creek surface water and groundwater sampling and analytical methods for the most recent groundwater monitoring event (First Quarter 2010), conducted in March 2010. A summary of bioventing-related activities is also provided.

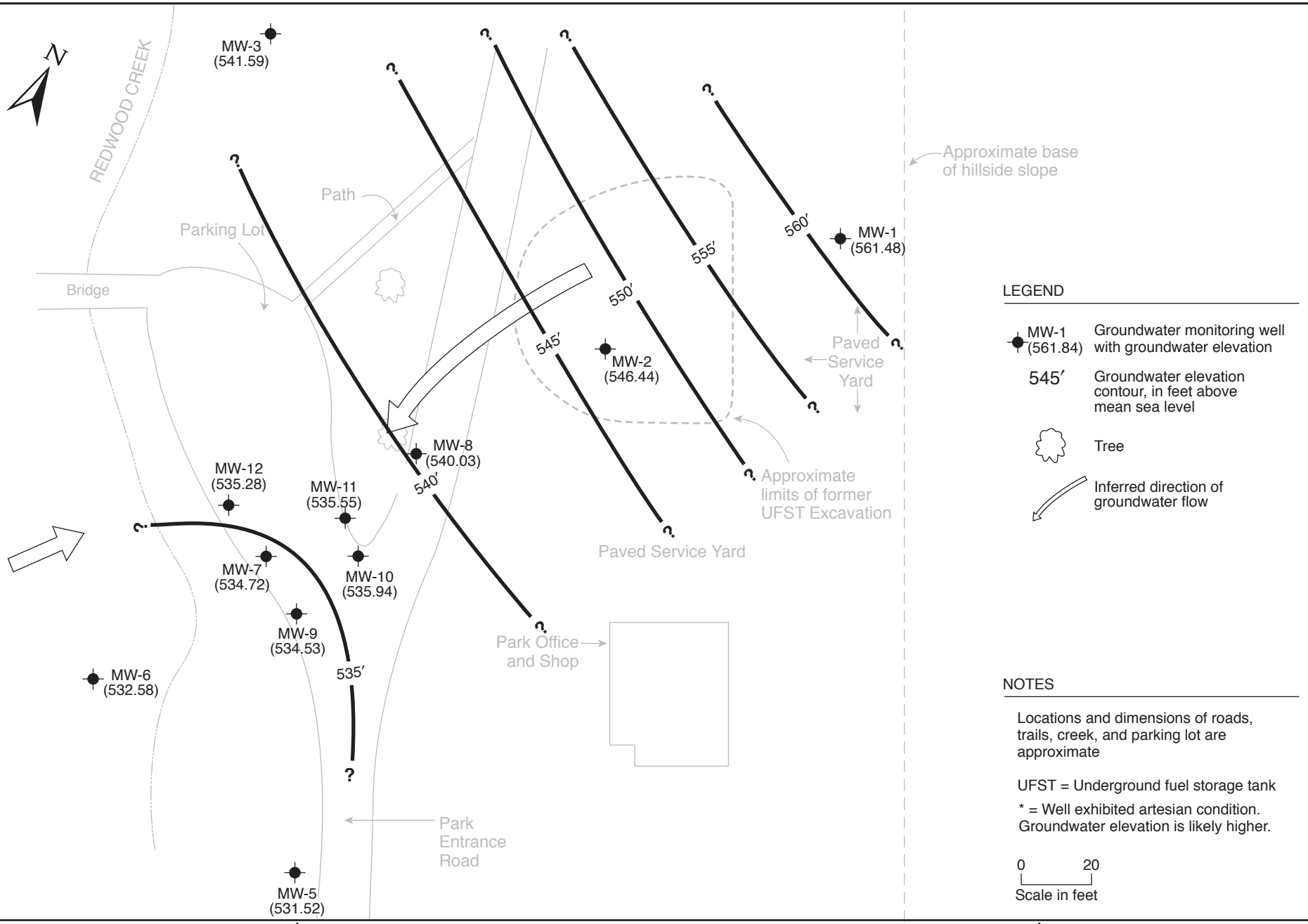
Groundwater and surface water analytical results are summarized in Section 7.0. Monitoring and sampling protocols were in accordance with the ACEH-approved workplan (Stellar Environmental, 1998a). Current First Quarter 2010 event activities included:

- Measuring static water levels in all 11 site wells
- Collecting post-purge groundwater samples for laboratory analysis of site contaminants from wells located within (or potentially within) the groundwater plume (MW-2, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12)
- Collecting Redwood Creek surface water samples for laboratory analysis from locations SW-2 and SW-3

Redwood Creek surface water sampling and groundwater monitoring and sampling was conducted on March 29, 2010. The locations of all site monitoring wells and creek water sampling locations are shown on Figure 2 (in Section 1.0). Appendix A contains historical groundwater elevation data. Appendix B contains the groundwater monitoring field records for the current event. Figure 8 is a groundwater elevation map constructed from the First Quarter 2010 event monitoring well elevation data. Table 4 summarizes the groundwater elevation data.

GROUNDWATER LEVEL MONITORING AND SAMPLING

Groundwater monitoring well water level measurements, purging, sampling, and field analyses were conducted by Blaine Tech Services under the supervision of Stellar Environmental personnel. Groundwater sampling was conducted in accordance with State of California guidelines for sampling dissolved analytes in groundwater associated with leaking UFSTs (State Water Resources Control Board, 1989), and followed the methods and protocols approved by ACEH in the workplan (Stellar Environmental, 1998a).



STELLAR ENVIRONMENTAL SOLUTIONS, INC
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GROUNDWATER ELEVATION MAP—March 29, 2010
Redwood Regional Park Service Yard, Oakland, CA

Figure 8

by: MJC | APRIL 2010

2010-02-01

Table 4
Groundwater Monitoring Well Construction
and Groundwater Elevation Data – March 29, 2010

Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Elevation (3/29/10)
MW-1	18	7 to17	565.83	561.48
MW-2	36	20 to 35	566.42	546.44
MW-3	42	7 to 41	560.81	541.59
MW-5	26	10 to 25	547.41	531.52
MW-6	26	10 to 25	545.43	532.58
MW-7	24	9 to24	547.56	534.72
MW-8	23	8 to 23	549.13	540.03
MW-9	26	11 to 26	549.28	534.53
MW-10	26	11 to 26	547.22	535.94
MW-11	26	11 to 26	547.75	535.55
MW-12	25	10 to 25	544.67	535.28

Notes:

TOC = top of casing

Wells MW-1 through MW-6 are 4-inch diameter; all other wells are 2-inch diameter.

All elevations are expressed in feet above U.S. Geological Survey mean sea level.

As the first task of the monitoring event, static water levels were measured using an electric water level indicator. The wells to be sampled for contaminant analyses were then purged (by bailing and/or pumping) of three wetted casing volumes. Aquifer stability parameters (temperature, pH, electrical conductivity, and turbidity) were measured after each purged casing volume to ensure that representative formation water would be sampled. In addition to the aquifer stability parameters, DO is being measured to evaluate the effects of the March 2009 and February 2010 ORC™ applications. To minimize the potential for cross contamination, wells were purged and sampled in order of increasing contamination (based on the analytical results of the previous quarter).

The sampling-derived purge water and decontamination rinseate (approximately 65 gallons) from the current event was containerized in the onsite aboveground storage tank. Purge water from future events will continue to be accumulated in the onsite tank until it is full, at which time the water will be transported offsite for proper disposal.

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by Stellar Environmental personnel on March 29, 2010. Surface water samples were collected from Redwood Creek location SW-2 (immediately downgradient of the former UFST source area and within the area of documented creek bank soil contamination), and at SW-3 (located approximately 500 feet downstream of the SW-2 location). In accordance with a previous Stellar Environmental recommendation approved by ACEH, upstream sample location SW-1 is no longer part of the surface water sampling program.

At the time of sampling, the creek was at a high stage due to recent rain events; water depths ranged from approximately 1 to 2 feet, and the creek was flowing steadily. Stellar Environmental did not observe any orange algae or sheen during this event, and no odors were detected.

BIOVENTING-RELATED ACTIVITIES

The bioventing system was installed and started up in December 2005/January 2006. Weekly system monitoring and air flow optimization events were conducted for a 1-month period in January and February 2006. Bioventing system operations and maintenance events had been conducted monthly since March 2006; however, they have been reduced to quarterly events beginning in 2009. Redwood Regional Park staff check the system on a weekly basis to ensure that it is continuing to function properly, and will notify Stellar Environmental in the event of a problem. As noted previously, two new bioventing wells (VW-4 and VW-5) were installed on March 4, 2008 to augment the system, and VW-3, which historically has seen no change in pressurization, was disconnected. Bioventing activities are discussed in detail in separate technical documents.

7.0 FIRST QUARTER 2010 ANALYTICAL RESULTS

This section presents the field and laboratory results of the current monitoring event. Table 5 summarizes the contaminant analytical results. Figure 9 shows the contaminant results and the inferred limits of the gasoline groundwater plume. Appendix C contains the certified analytical laboratory report and chain-of-custody record. Appendix D summarizes the historical groundwater and surface water analytical results.

GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS

First Quarter 2010 site groundwater contaminant concentrations exceeded the groundwater ESL for TVHg in six of the seven wells sampled (MW-2, MW-7, MW-8, MW-9, MW-11, and MW-12). TVHg was also detected in MW-10, but below the ESL. Contaminant concentrations of TEHd exceeded the ESL in all seven of the wells sampled. The ESL for benzene was exceeded in MW-7, MW-8, MW-9, MW-10, and MW-11; the ESL for ethylbenzene was exceeded in MW-7, MW-8, MW-9, and MW-11; the ESL for total xylenes was exceeded in MW-8. MTBE was only detected above the laboratory detection limit in well MW-9; however, the concentration was below the ESL. Toluene was not detected above the ESL in any of the seven wells sampled.

The maximum concentration of TVHg was detected in MW-8 (located just downgradient of the source area). MW-7 (located in the downgradient area of the plume) contained the highest concentration of TEHd. The northern edge of the plume in the downgradient area of the plume is defined by well MW-12. The southern edge of the plume in the downgradient area is not strictly defined; however, based on historical groundwater data, it appears to be located between well MW-9 and well MW-5. The current event contaminant plume geometry is consistent with historical contaminant distribution. While the center of contaminant mass in groundwater is generally located downgradient of the former source area, historically, contamination also has been observed in the former source area.

While contaminant concentrations remain elevated, a general decrease was observed in both gasoline and diesel concentrations as compared to the same quarter last year (March 2009).

No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this March 2010 sampling event.

Table 5
Groundwater and Surface Water Samples – March 29, 2010
Analytical Results

Location	Dissolved Oxygen (mg/L)	Contaminant Concentrations						
		TVHg	TEHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES								
MW-2	2.41	**2,000**	**4,300**	<0.5	<0.5	<0.5	3.45	<2.0
MW-7	0.38	**2,600**	**6,100**	**11**	<0.5	**76**	4.5	<2.0
MW-8	0.29	**3,400**	**5,700**	**28**	<0.5	**340**	**255.7**	<2.0
MW-9	1.01	**2,500**	**3,400**	**16**	<0.5	**70**	15.4	2.1
MW-10	0.49	63	**280**	**1.3**	<0.5	2.7	0.94	<2.0
MW-11	0.28	**1,500**	**3,400**	**12**	<0.5	**48**	<0.5	<2.0
MW-12	1.05	**240**	**380**	<0.5	<0.5	2.7	<0.5	<2.0
Groundwater ESLs [(a)]	*NLP*	*100 / 210*	*100 / 210*	*1.0 / 46*	*4.0 / 130*	*30 / 43*	*20 / 100*	*5.0 / 1,800*
REDWOOD CREEK SURFACE WATER SAMPLES								
SW-2	NA	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
SW-3	NA	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
Surface Water Screening Levels [(b)]	*NLP*	*100*	*100*	*1.0*	*40*	*30*	*20*	*5.0*

Notes:

[(a)] ESLs = Water Board Environmental Screening Levels, where groundwater is/is not a potential drinking water resource (Water Board, 2008)

[(b)] Water Board Surface Water Screening Levels for freshwater habitats (Water Board, 2008)

NA = not analyzed
NLP = no level published

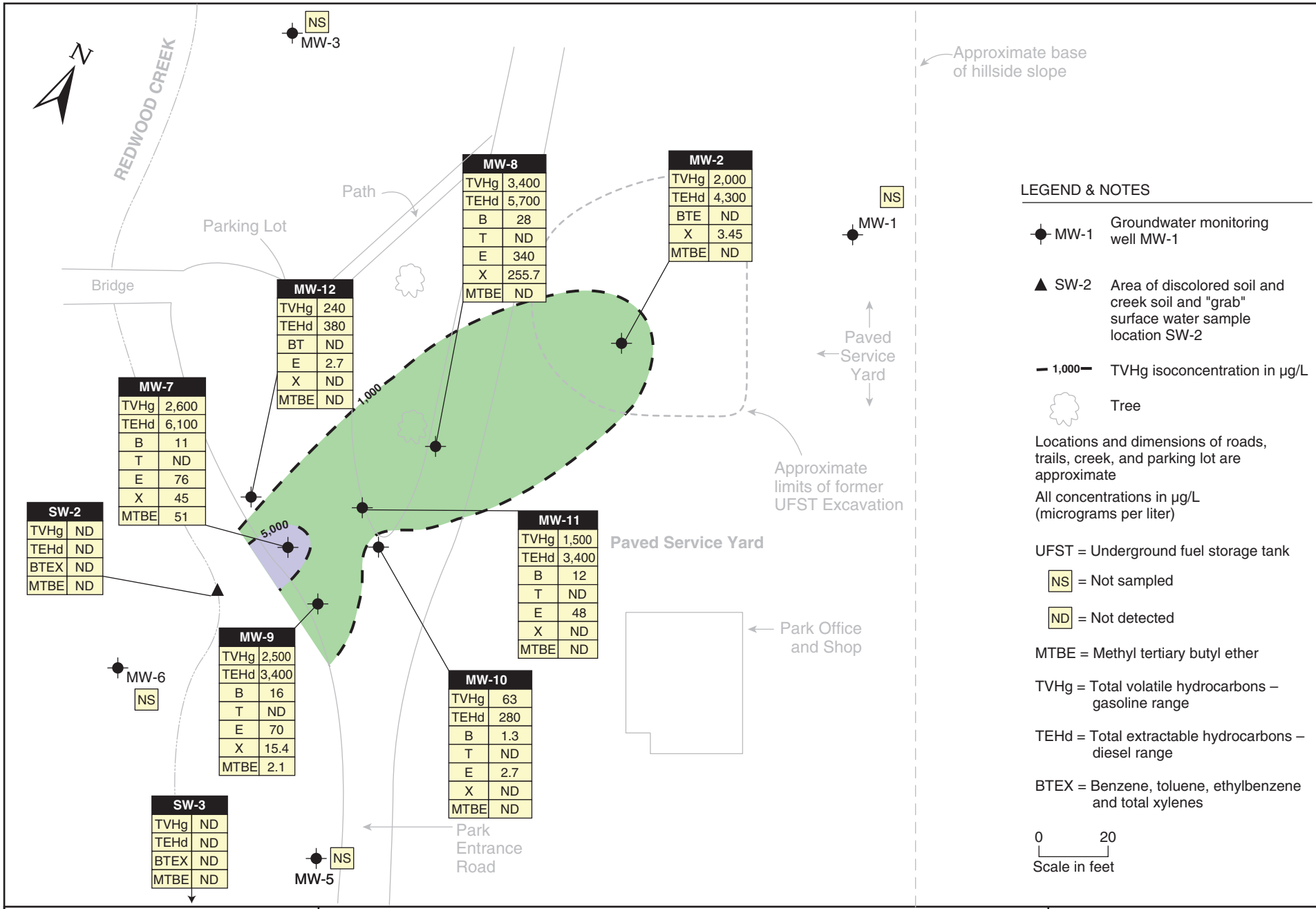
MTBE = methyl tertiary-butyl ether
TEHd = total extractable hydrocarbons - diesel range
TVHg = total volatile hydrocarbons - gasoline range

All contaminant concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion. Samples in **bold-face** type exceed the ESLs and/or surface water screening levels where groundwater is a potential drinking water resource

Dissolved oxygen concentrations are expressed in milligrams per liter (mg/L).

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).



LEGEND & NOTES

- MW-1 — Groundwater monitoring well MW-1
- SW-2 — Area of discolored soil and creek soil and "grab" surface water sample location SW-2
- 1,000 — TVHg isoconcentration in µg/L
- Tree

Locations and dimensions of roads, trails, creek, and parking lot are approximate

All concentrations in µg/L (micrograms per liter)

UFST = Underground fuel storage tank

NS = Not sampled

ND = Not detected

MTBE = Methyl tertiary butyl ether

TVHg = Total volatile hydrocarbons – gasoline range

TEHd = Total extractable hydrocarbons – diesel range

BTEX = Benzene, toluene, ethylbenzene and total xylenes

0 20

Scale in feet

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ANALYTICAL RESULTS AND GASOLINE PLUME—March 2010

Redwood Regional Park Service Yard, Oakland, CA

Figure 9

by: MJC | APRIL 2010

2010-02-02

EVALUATION OF EFFECT OF FEBRUARY 2010 ORC™ INJECTION

Despite the emphasis on oxygen and aerobic degradation, it is well known and widely accepted that natural attenuation of petroleum hydrocarbons at many sites primarily occurs anaerobically using alternate electron acceptors such as NO_3^-, Fe^{+3}, SO_4^{-2} and CO_2. However, clearly at this site, Advanced ORC™ is designed to provide a relatively long-term oxygen source for aerobic bioremediation. Laboratory studies have demonstrated a linear oxygen release rate of ORC™ as engineered by CRT™ (intercalation with phosphate), providing an efficient and steady supply of oxygen. Field results continue to confirm the efficacy of Advanced ORC™ as a cost-effective approach to contact recalcitrant residual hydrocarbons entrained in the subsurface materials and enhance natural attenuation.

The injection of the February 2010 ORC™ into the plume area follows a historical effort of remedial action to reduce the residual hydrocarbons in the source area and downgradient slope area that is inaccessible to any remedies other than in-situ. Historical efforts to address the continued hydrocarbon input into the groundwater has focused on enhancing reduction of the residual hydrocarbons entrained in subsurface material and/or stratigraphic traps. The dissolved fraction that results from this release forms a recalcitrant plume that still daylights at the Redwood Creek interface. As described in the analytical results below, this most recent remedial action continues to support the trend line of a reduction in hydrocarbon plume concentrations, but the concentration still remains well above the ESLs. The following is a discussion of the effect of the February 2010 ORC™ injection remedy.

Groundwater Analytical Results

The 30-day post-injection monitoring and First Quarter 2010 monitoring event took place approximately 60 days after the ORC™ treatment. The results of the monitoring suggest that either insufficient time had elapsed for the treatment to reduce hydrocarbon concentrations or an in-situ interference with the microbial activity is affecting the hydrocarbon reduction process. However, the overall concentrations of TVHg and TEHd in the five key site wells (with the exception of MW-2) during the March 2010 event are 15 to 200+ percent lower than concentrations detected during previous first-quarter events since March 2006. Source area monitoring well MW-2 showed significant increases in hydrocarbon concentrations since December 2007, attributed to the previous 2 years of drought that resulted in a release of hydrocarbons from the original UFST excavation area. The TVHg and TEHd concentration trends for the past 5 years of first-quarter events in wells MW-2, MW-7, MW-8, MW-9, and MW-11 are presented in Figures 10, 11, 12, 13, and 14, respectively.

Figure 10: Gasoline and Diesel Hydrochemical Trends in the Month of March: Well MW-2
Redwood Regional Park Service Yard, Oakland, California

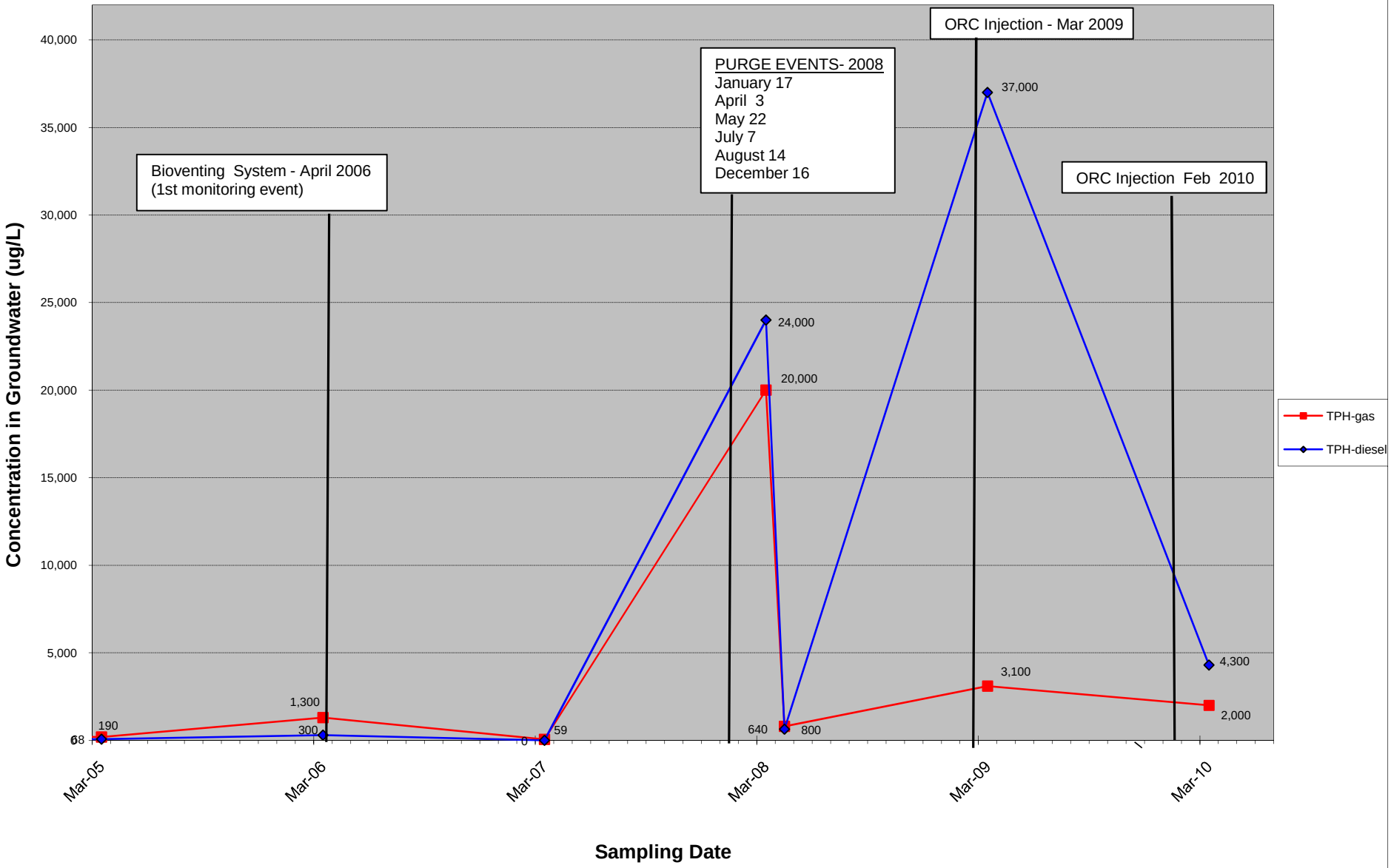


Figure 11: Gasoline and Diesel Hydrochemical Trends in the Month of March: Well MW-7
Redwood Regional Park Service Yard, Oakland, California

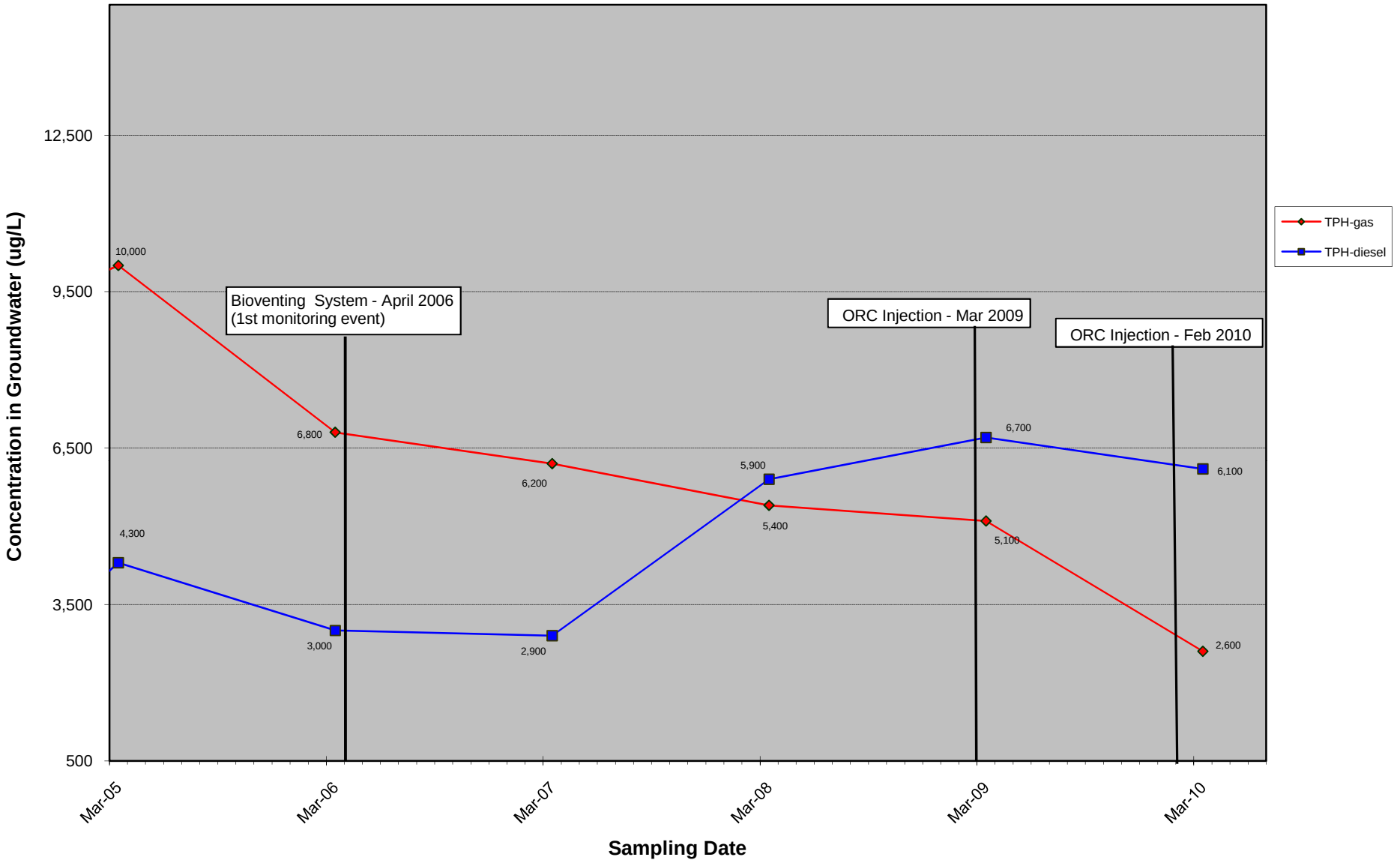


Figure 12: Gasoline and Diesel Hydrochemical Trends in the Month of March: Well MW-8
Redwood Regional Park Service Yard, Oakland, California

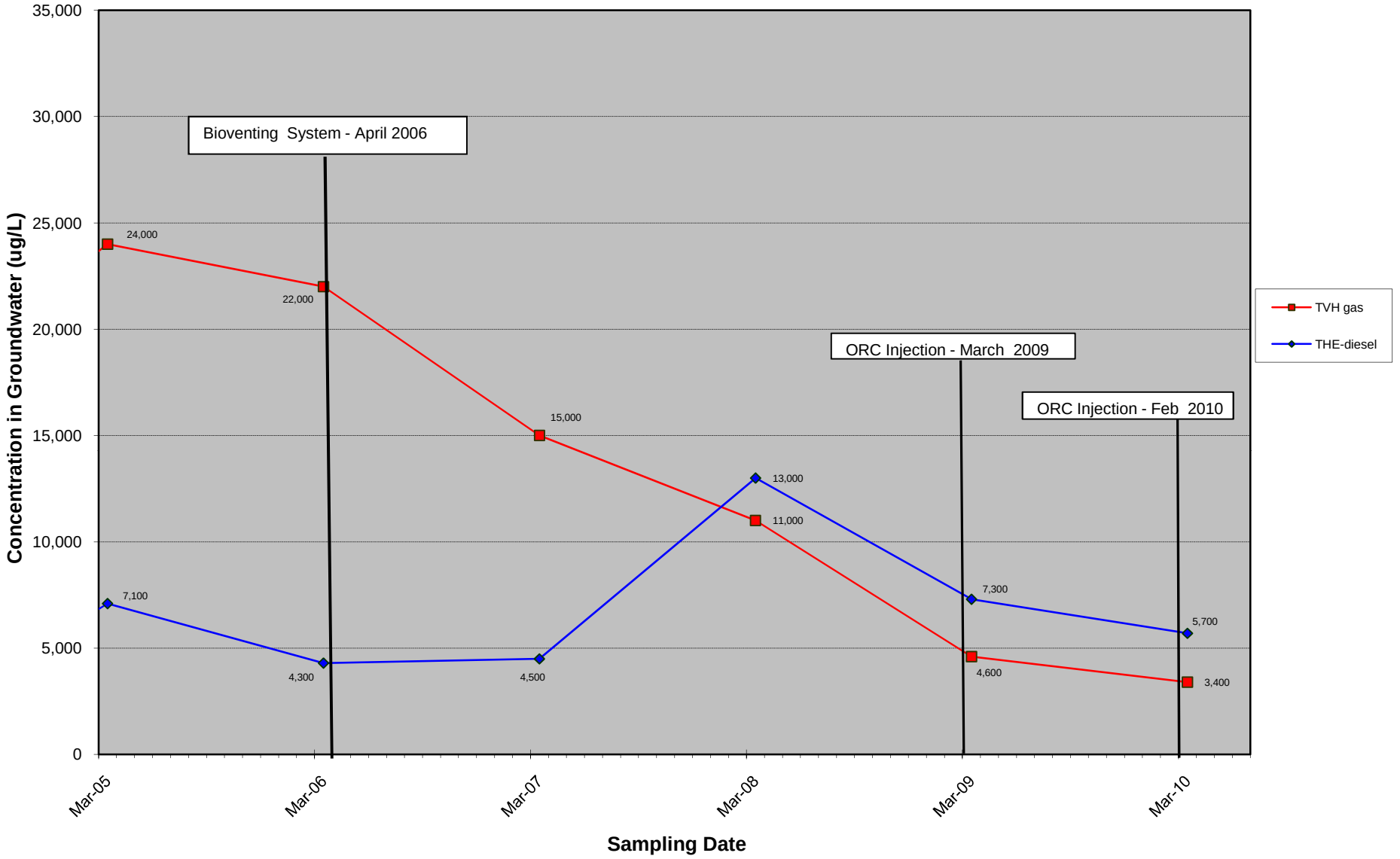


Figure 13: TPH-gasoline and TPH-diesel Hydrochemical Trends in the Month of March: Well MW-9
Redwood Regional Park Service Yard, Oakland, California

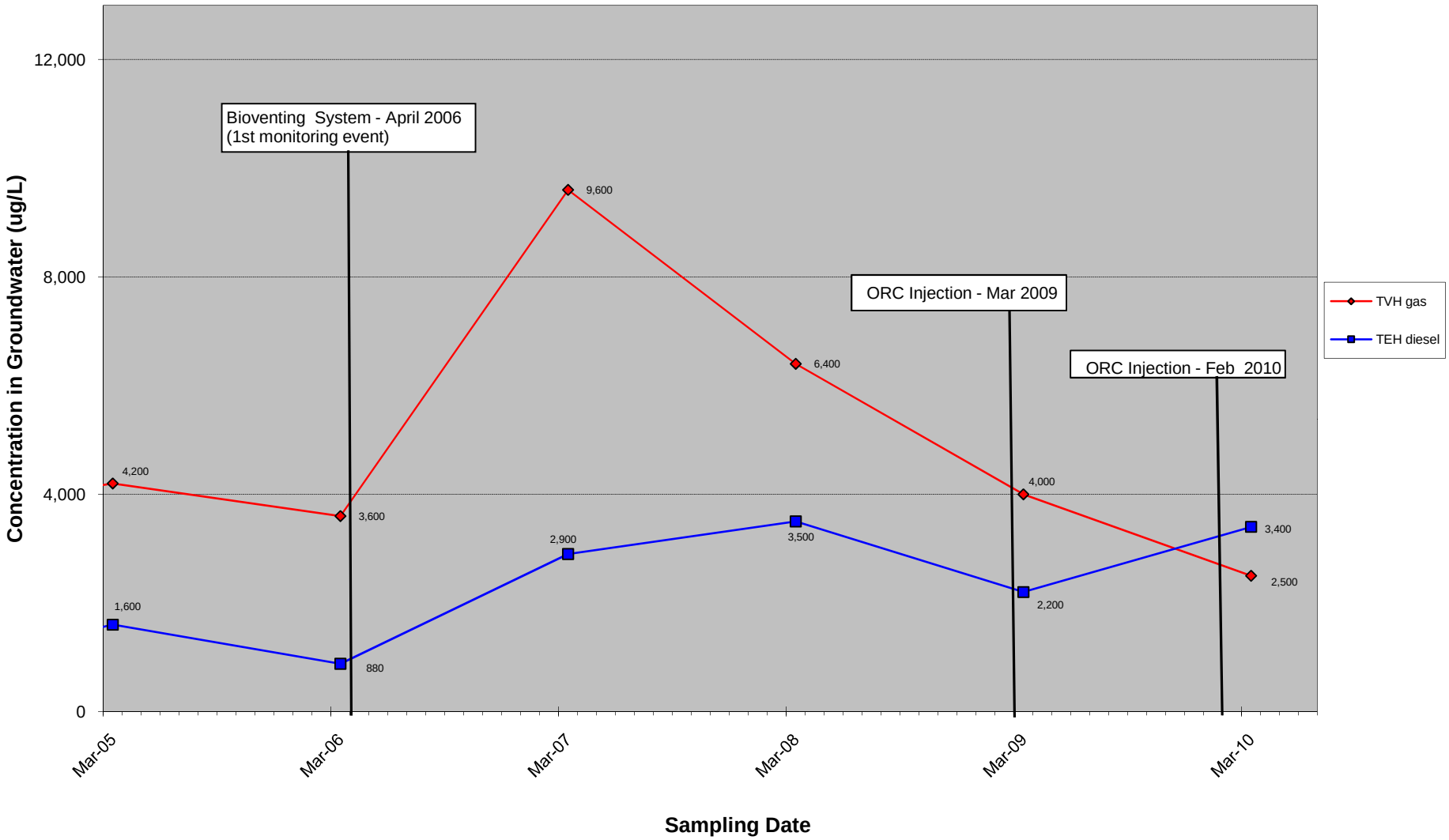
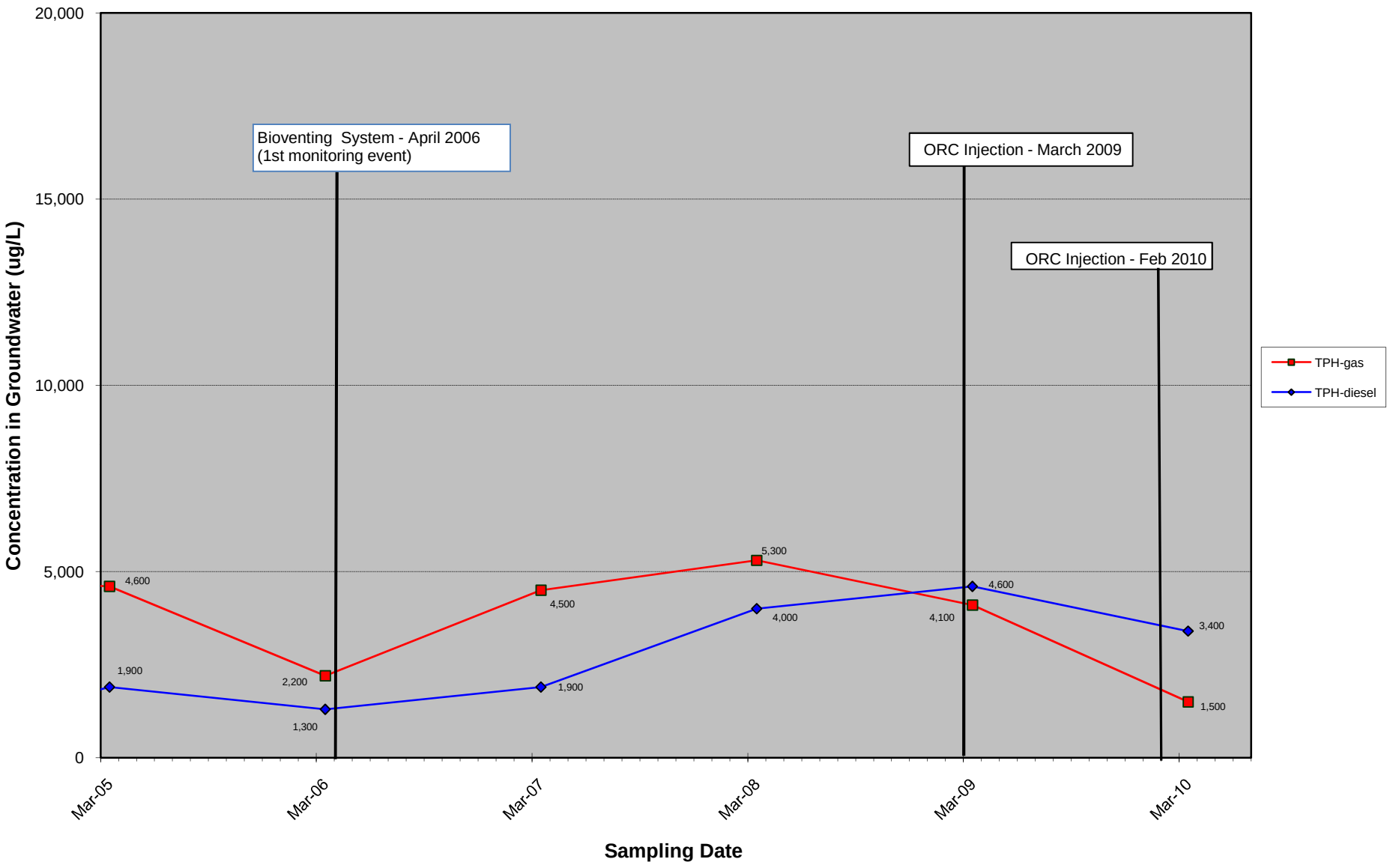


Figure 14: Gasoline and Diesel Hydrochemical Trends in the Month of March: Well MW-11
Redwood Regional Park Service Yard, Oakland, California



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 1 to 2 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 in MW-2 had been measured throughout 2009 to monitor the March 2009 pilot ORC™ injection. The DO concentration was at a high of 1.32 mg/L in June 2009, but reduced to 0.2 mg/L in December 2009—a return to the pre-ORC™ injection level.

During the First Quarter 2010 sampling event, DO concentrations in site wells ranged from 0.28 to 2.41 mg/L. An overall DO increase of 34.2 percent was measured in the five key wells (MW-2, MW-7 MW-8, MW-9 and MW-11), which indicates a favorable response to the February 2010 ORC™ treatment.

FUTURE ORC™ MONITORING ACTIVITIES

The effectiveness of the ORC™ injection corrective action program in reducing groundwater contaminant concentrations in site wells will continue to be evaluated in subsequent quarterly groundwater monitoring events. This evaluation will occur though the comparison of the pre-injection baseline data with post-injection groundwater monitoring well analytical results over subsequent quarterly sampling events. The post-injection groundwater data are evaluated in the context of effectiveness of the corrective action, including DO and hydrochemical trends.

The main active ingredient in Advanced ORC™ is magnesium peroxide. The optimal pH of such a system is adjusted to 7 to 9. Under these conditions, the solid peroxygens will release their activity partially as hydrogen peroxide and partially as oxygen. This allows for the initial chemical oxidation to take place, starting the breakup of the contaminants. The oxygen is then released more slowly, which will assist bioremediation over a period of up to 1.5 years. Although hydroxide radicals can be generated from hydrogen peroxide at this pH, iron will precipitate as ferric hydroxide.

Because only a moderate reduction in hydrocarbon contaminant concentrations has been observed in the key site wells 60 days post-injection, it is suspected that microbial biodegradation activity may be occurring preferentially in natural site constituents, in competition with the target residual hydrocarbons. This hypothesis can be tested by collecting additional site chemical parameters during sampling in subsequent quarterly monitoring events.

In the next quarterly sampling, alternate electron acceptors such as NO_3^-, Fe^{+3}, SO_4^{-2} and NH^{4+} will be analyzed for, along with ORC™ signature amino acids, to track the ORC™ utilization. One concern about the use of ORC™ is that other non-hydrocarbon-utilizing microorganisms will use the product as well, without the benefit of hydrocarbon reduction occurring as effectively. The oxygen demand exerted by extraneous oxygen sinks such as reduced Fe, NH^{4+}, and S^{-2} can then be estimated to evaluate its equivalent to the oxygen demand exerted by the contaminants of concern.

8.0 SUMMARY, CONCLUSIONS AND PROPOSED ACTIONS

The following conclusions and proposed actions are based on the findings of the current event activities, as well as on salient historical data.

SUMMARY AND CONCLUSIONS

- The overall objective of the current (additional) remedial action is to continue trying to reduce the residual hydrocarbons in the source area and in the downgradient slope area (which is inaccessible to any remedies other than in-situ). 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. The dissolved fraction that results from this release forms a recalcitrant plume that still daylights at the Redwood Creek interface. As described in the report, the First Quarter 2010 remedial action continues to support the trend line of a reduction in hydrocarbon plume concentrations, although the levels remain above the ESLs.
- Groundwater sampling has been conducted on an approximately quarterly basis since November 1994. A total of 11 site wells are available for monitoring; 7 of the available wells are currently monitored for contamination.
- Site contaminants of concern include gasoline, diesel, BTEX, and MTBE. Current groundwater concentrations exceed regulatory screening levels for TVHg, TEHd, benzene, ethylbenzene, total xylenes, and MTBE in groundwater and TEHd in surface water.
- The primary environmental risk is discharge of contaminated groundwater to the adjacent Redwood Creek. A stream bioassessment concluded that there were no direct impacts to the surface water benthic community; however, groundwater contamination is sporadically detected in surface water samples, and there is historical visual evidence of plume discharge at the creek/groundwater interface. Surface water samples have sporadically exceeded surface water ESL criteria for gasoline, diesel, and benzene, and generally only under low-creek flow conditions. An in-stream bioassessment evaluation conducted from 1999 to 2000 determined that there were no impacts to the benthic macroinvertebrate community.
- The existing well layout adequately constrains the lateral extent of groundwater contamination, and the vertical limit is very likely the top of the near-surface (25 to 28

feet bgs) siltstone bedrock. The saturated interval extends approximately 12 to 15 feet from top of bedrock through the capillary fringe. Groundwater elevations fluctuate seasonally, creating a capillary fringe that varies seasonally in thickness.

- To address concerns raised by ACEH in its March 24, 2009 letter regarding source area and overall sitewide contamination, Stellar Environmental developed a corrective action workplan entailing injection of Advanced ORC™. On February 1-2, 2010, in accordance with the ACEH-approved workplan, a total of 24 injection points were drilled to various depths using direct-push technology to deliver approximately 2,075 pounds of Advanced ORC™ mixed in a 30 percent water slurry mix to the subsurface.
- In accordance with ACEH requirements, groundwater sampling of the five key plume wells (MW-2, MW-7, MW-8, MW-9, and MW-11) was conducted on March 2, 2010, approximately 1 month after the February 1-2, 2010 Advanced ORC™ injection event. The analytical results, as well as the measured DO concentrations, show that the ORC™ had not been given sufficient time to significantly affect contaminant concentrations.
- First Quarter 2010 site groundwater contaminant concentrations exceeded the groundwater ESL for TVHg in six of the seven wells sampled (MW-2, MW-7, MW-8, MW-9, MW-11, and MW-12). TVHg was also detected in MW-10, but below the ESL. TEHd concentrations exceeded the ESL in all seven of the wells sampled.
- The ESL for benzene was exceeded in MW-7, MW-8, MW-9, MW-10, and MW-11; the ESL for ethylbenzene was exceeded in MW-7, MW-8, MW-9, and MW-11; the ESL for total xylenes was exceeded in MW-8. MTBE was only detected above the laboratory detection limit in well MW-9; however, the concentration was below the ESL. Toluene was not detected above the ESL in any of the seven wells sampled.
- While concentrations of both gasoline and diesel remain elevated, they have generally decreased since the First Quarter 2009 event.
- The contaminant plume is neither stable nor reducing, as groundwater contaminant concentrations fluctuate seasonally, and the center of mass of the contaminant plume (represented by maximum concentrations) has alternated between the upgradient, mid-plume, and downgradient wells in recent history.
- Soil bioventing is a proven technology for contaminant mass removal in the unsaturated zone, under conditions similar to the site. However, the heterogeneous environment in the location of the plume limits effectiveness; with only MW-8 in the upper center of the plume area showing a significant reduction in hydrocarbon concentrations. In other areas of the plume, it appears as if tight soil morphology is preventing air saturation in several of the vent wells, and the system is therefore performing at a less-than-optimal level.

- Moderate initial lowering of the hydrocarbon contaminant concentrations has been observed in the key site wells in both the 30-day post-injection and quarterly monitoring (equivalent to 60-day post-injection) events. This may be due to the recharge influencing distribution of the injected Advanced ORC™ product, or it could reflect that microbial biodegradation activity is occurring preferentially in natural site constituents in competition with the target residual hydrocarbons.

PROPOSED ACTIONS

The EBRPD proposes to implement the following actions to address regulatory concerns:

- Continue to monitor the February 2010 ORC™ injection remedy effectiveness during regular quarterly sampling events. Include the collection of additional site chemical parameters during sampling in subsequent quarterly monitoring events to investigate whether microbial biodegradation activity is occurring preferentially in natural site constituents in competition with the target residual hydrocarbons.
- Continue the quarterly monitoring program of creek and groundwater sampling and reporting.
- Continue to inform regulators of site progress and seek their concurrence with proposed actions.
- Continue to operate the bioventing system as a part of the overall corrective action program, although it has limited potential to achieve significant reduction in contaminant mass throughout the affected area.
- Continue to evaluate analytical results (and bioventing contaminant removal data) in the context of hydrochemical trends, impacts of groundwater contamination on Redwood Creek, and effectiveness of the corrective action.
- Continue to make required Electronic Data Format uploads to the State of California GeoTracker database, and upload an electronic copy of technical reports to the ACEH ftp system.

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10.0 LIMITATIONS

This report has been prepared for the exclusive use of the East Bay Regional Park District, its authorized representatives, and the regulatory agencies. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based on the review of previous investigators' findings at the site, as well as onsite activities conducted by Stellar Environmental since September 1998. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The Stellar Environmental personnel who performed this work are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

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

APPENDIX A

Historical Groundwater Monitoring Well Water Level Data

HISTORICAL GROUNDWATER ELEVATIONS IN MONITORING WELLS

REDWOOD REGIONAL PARK SERVICE YARD

7867 REDWOOD ROAD, OAKLAND, CALIFORNIA

Well I.D.	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12
TOC Elevation (a)	565.83	566.42	560.81	548.10	547.41	545.43	547.56	549.13	549.28	547.22	547.75	544.67
Date Monitored	Groundwater Elevations (feet above mean sea level)											
09/18/98	563.7	544.2	540.8	534.5	531.1	531.4						
04/06/99	565.2	546.9	542.3	535.6	532.3	532.9						
12/20/99	562.9	544.7	541.5	534.9	531.2	532.2						
09/28/00	562.8	542.7	538.3	532.2	530.9	532.0						
01/11/01	562.9	545.1	541.7	535.0	531.2	532.3	534.9	538.1				
04/13/01	562.1	545.7	541.7	535.1	531.5	532.4	535.3	539.8				
09/01/01	560.9	542.0	537.7	533.9	530.7	531.8	534.0	535.6				
12/17/01	562.2	545.2	542.2	534.8	531.4	532.4	534.8	538.4	534.6	535.7	535.2	
03/14/02	563.0	547.1	542.2	535.5	532.4	533.3	535.7	541.8	535.0	537.6	536.6	
06/18/02	562.1	544.7	541.1	534.6	531.2	532.2	534.8	537.9	534.7	535.6	535.3	
09/24/02	561.4	542.2	537.3	533.5	530.6	531.8	533.5	535.5	535.3	533.8	531.7	
12/18/02	562.4	545.0	542.0	534.8	531.5	532.5	534.6	537.1	536.5	535.2	532.8	
03/27/03	562.6	545.7	541.7	534.8	531.6	532.4	535.1	539.9	537.2	536.2	533.6	
06/19/03	562.3	544.9	541.5	534.8	531.3	532.3	534.9	538.2	536.9	535.7	533.2	
09/10/03	561.6	542.1	537.9	533.8	530.8	531.9	533.7	535.6	535.6	534.1	531.9	
12/10/03	562.4	542.7	537.6	533.7	530.9	531.9	533.7	535.2	535.5	533.8	531.7	
03/18/04	563.1	546.6	541.9	535.0	531.7	532.4	535.2	540.9	537.4	536.6	533.8	
06/17/04	562.1	544.3	540.7	534.3	531.0	532.1	534.6	537.4	536.5	535.1	532.7	
09/21/04	561.5	541.1	536.5	533.1	530.5	531.6	533.1	534.7	532.7	533.2	533.2	
12/14/04	562.2	545.3	541.7	534.7	531.4	532.2	534.6	540.4	536.7	535.5	532.9	
03/16/05	563.8	547.3	541.7	535.3	532.4	532.8	535.6	541.8	538.0	537.1	534.2	
06/15/05	562.9	545.9	541.6	535.0	531.7	532.5	535.0	540.0	535.0	536.1	535.6	
09/13/05	562.3	543.5	539.7	534.4	530.9	532.2	534.3	536.7	536.1	534.7	532.4	
12/15/05	562.2	544.3	541.4	(b)	531.0	532.2	534.5	537.3	534.1	534.7	534.9	535.1
03/30/06	565.8	548.6	542.7		533.9	534.4	536.2	542.3	536.4	537.3	537.6	535.7
06/20/06	563.6	545.4	541.6		531.5	532.5	534.9	538.6	534.6	536.2	535.5	535.0
09/29/06	561.9	542.8	539.0		530.7	532.1	535.1	536.1	533.7	534.6	534.7	534.7
12/14/06	562.9	544.2	541.5		531.1	532.3	534.7	536.7	534.0	534.8	535.2	535.0
03/21/07	562.5	545.2	541.7		531.4	532.4	534.9	539.3	534.6	535.6	535.6	535.1
06/20/07	561.5	543.5	540.8		531.0	532.4	534.6	537.1	531.1	535.2	535.3	534.9
9/14/2007	560.71	541.02	536.99		530.46	531.58	533.42	534.86	532.64	533.47	533.68	533.74
12/6/2007	560.62	541.22	536.85		530.68	531.48	533.21	535.08	532.62	533.3	533.61	533.64
3/14/2008	561.76	545.73	541.63		531.34	532.30	534.88	539.30	534.67	536.04	535.89	535.72
6/13/2008	560.92	543.61	540.6		530.83	532.02	534.42	536.86	533.81	534.84	535.16	534.67
9/18/2008	560.43	540.15	536.41		529.85	531.11	532.69	534.15	531.97	532.65	533.09	533.12
12/17/2008	561.11	540.88	536.77		530.68	531.67	533.26	534.04	532.35	532.94	533.29	533.66
3/16/2009	561.84	546.25	539.51		531.63	532.58	534.65	539.51	534.56	535.55	535.49	535.08
6/10/2009	561.05	545.02	541.38		531.02	532.08	534.45	537.94	534.08	535.40	535.18	534.96
9/25/2009	560.00	540.79	536.33		529.98	Dry	532.58	534.25	531.96	532.62	532.97	533.08
12/21/2009	560.93	543.49	541.22		530.96	532.06	534.03	536.17	533.46	534.13	534.57	534.69
3/29/2010	561.48	546.44	541.59		531.52	532.58	534.72	540.03	534.53	535.94	535.55	535.28

TOC = Top of well Casing

(a) TOC Elevations resurveyed on December 15, 2005 in accordance GeoTracker requirements.

(b) Well decomissioned and replaced by MW-12 in December 2005.

APPENDIX B

Groundwater Monitoring
Field Documentation

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME				PROJECT NUMBER			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
Myron L Ultrameter II	622 6032	3-2-10 630	PH 7.0, 10.0, 4.0 cond 3400	PH 7.0, 10.1, 4.0 cond 3900	yes		
Hach Turbidimeter		3-2-10 630	~~20~~ NTU 100 NTU 800 NTU			—	BD
YSI 550 A	08B100 951	3-2-10 630	100% DO	10.08 mg/L	yes	17.5°C	BD

WELLHEAD INSPECTION CHECKLIST

Date 3-2-10 Client Stellar Redwood Regional Park Service

Site Address Redwood Regional Park Service Yard Oakland CA

Job Number 100302-BP1 Technician BP

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
MW-1 ★	X							
MW-2 ★	X							
MW-3 ★	X							
MW-5 ★	X							
MW-6 ★	X							
MW-7 ★	X							
MW-8		X						
MW-9 ★	X							
MW-10								
MW-11 ★	X							
MW-12	X							

★ locked standpipe

NOTES: MW-10 2/2 tabs stripped, MW-8 3/3 tabs stripped, 3/3 bolts missing

WELL GAUGING DATA

Project # 100302-BP1 Date 03-02-10 Client Stellar

Site Redwood Regional Park service Yard Oakland CA

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-1	950	4					4.07	19.12		
MW-2	955	4					19.85	38.92		
MW-3	945	4					18.96	45.68		
MW-5	845	4					15.51	27.02		
MW-6	925	4					11.92	13.80		
MW-7	900	2					12.78	25.35		
MW-8	935	2					10.16	22.11		
MW-9	855	2					14.62	30.29		
MW-10	930	2					11.39	28.34		
MW-11	905	2					12.13	29.56		
MW-12	915	2					9.19	32.72		

WELL MONITORING DATA SHEET

Project #: 100302-BP1	Client: Stellar Env @ Redwood Regional Park
Sampler: BP	Start Date: 03-02-10
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 38.42	Depth to Water: 19.85 WC 19.5
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- ~~Disposable Bailer~~ BP
- Positive Air Displacement
- (Electric Submersible)
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method:

- Bailer
- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other:_____

80% Recharge = 23.56

12.0 (Gals.) X 3 = 36 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	radius² * 0.163

Time	Temp. (°F or °C)	pH	Conductivity (mS or µS)	Turbidity (NTU)	Gals. Removed	Observations
1034	59.1	9.5	690.1	454	12	cloudy
WELL DE	WATERED @ 15	Gallons	DTW: 23.89			
1320	58.5	10.0	642.0	183	—	DTW: 23.16

Did well dewater? (Yes) No Gallons actually evacuated: 15.0

Sampling Time: 1320 Sampling Date: 03-02-10

Sample I.D.: MW-2 Laboratory: ~~STL~~ CAT

Analyzed for: ~~TPH-G~~ ~~BTEX~~ ~~MTBE~~ ~~TPH-D~~ (BP) Other: SEE COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	3.22	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:		mV

WELL MONITORING DATA SHEET

Project #: 100302-BP1	Client: Stellar Env @ Redwood Regional Park
Sampler: BP	Start Date: 03-02-10
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 25.35	Depth to Water: 12.78 (WC 12.5)
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- (Disposable Bailer)
- Positive Air Displacement
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method:

- Bailer
- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other:_____

80% Recharge = 15.29

2.0 (Gals.) X	3	= 6.0 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	Conductivity (mS or µS)	Turbidity (NTU)	Gals. Removed	Observations
1100	55.2	7.1	792.3	274	2.0	odor
1105	55.2	6.7	816.3	222	4.0	↓
1110	55.3	6.7	806.2	193	6.0	↓
						DTW: 13.90

Did well dewater? Yes (No) Gallons actually evacuated: 6.0

Sampling Time: 1115 Sampling Date: 03-02-10

Sample I.D.: MW-7 Laboratory: ~~STL~~ CAT

Analyzed for: ~~TPH-G~~ ~~BTEX~~ ~~MTBE~~ ~~TPH-D~~ (BP) Other: SEE COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.14 mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 100302-BP1	Client: Stellar ENV @ Redwood Regional Park
Sampler: BP	Start Date: 03-02-10
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 22.11	Depth to Water: 10.16 wc. 11.9
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- (Disposable Bailer)
- Positive Air Displacement
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method:

- Bailer
- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other:_____

80% recharge = 12.55

1.9 (Gals.) X	3	= 5.7 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	radius² * 0.163

Time	Temp. (°F or °C)	pH	Conductivity (mS or µS)	Turbidity (NTU)	Gals. Removed	Observations
1218	57.1	7.1	845.2	435	1.9	
1222	57.4	7.1	843.0	423	3.8	
1226	57.9	7.1	843.3	274	5.7	
						DTW: 11.02

Did well dewater? Yes (No)	Gallons actually evacuated: 5.7
Sampling Time: 1230	Sampling Date: 03-02-10
Sample I.D.: MW-8	Laboratory: ~~STL~~ C4T
Analyzed for: ~~TPH-G~~ ~~BTEX~~ ~~MTBE~~ ~~TPH-D~~ (BL)	Other: SEE COC
Equipment Blank I.D.: @ Time	Duplicate I.D.:
Analyzed for: TPH-G BTEX MTBE TPH-D	Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	0.37 mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 10 0302 - BP1	Client: Stellar Env @ Redwood Regional Park
Sampler: BP	Start Date: 03-02-10
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 30.29	Depth to Water: 14.62 (wc 15.6)
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- (Disposable Bailer)
- Positive Air Displacement
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method:

- Bailer
- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other:_____

80% recharge = 17.75

2.5 (Gals.) X	3	= 7.5 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	radius² * 0.163

Time	Temp. (°F or °C)	pH	Conductivity (mS or µS)	Turbidity (NTU)	Gals. Removed	Observations
1140	55.6	6.8	957.3	176	2.5	odor
1148	55.9	6.8	965.6	514	5.0	↓
1152	56.1	6.8	984.4	>1000	7.5	↓
						DTW: 17.25

Did well dewater? Yes (No)	Gallons actually evacuated: 7.5
Sampling Time: 1200	Sampling Date: 03-02-10
Sample I.D.: MW-9	Laboratory: ~~STL~~ C&T
Analyzed for: ~~TPH-G~~ ~~BTEX~~ ~~MTBE~~ (TPH-D) BP	Other: SEE COC
Equipment Blank I.D.: @ Time	Duplicate I.D.:
Analyzed for: TPH-G BTEX MTBE TPH-D	Other:

D.O. (if req'd):	Pre-purge:	mg/L	(Post-purge:)	0.14 mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 100302-BP1	Client: Stellar Env @ Redwood Regional Park
Sampler: BP	Start Date: 03-02-10
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 28.56	Depth to Water: 12.13 wc: 16.4
Before: After:	Before: After:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method:

- Bailer
- (Disposable Bailer)
- Positive Air Displacement
- Electric Submersible
- Waterra
- Peristaltic
- Extraction Pump
- Other_____

Sampling Method:

- Bailer
- (Disposable Bailer)
- Extraction Port
- Dedicated Tubing
- Other:_____

807 - Recharge = 15.41

2.6 (Gals.) X 3 = 7.8 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	radius² * 0.163

Time	Temp. (°F or °C)	pH	Conductivity (mS or µS)	Turbidity (NTU)	Gals. Removed	Observations
1250	55.7	7.1	743.8	371	2.6	cloudy
1255	55.9	6.9	773.2	381	5.2	
1300	56.1	6.8	783.0	548	7.8	
						DTW: 12.72

Did well dewater? Yes (No) Gallons actually evacuated: 7.8

Sampling Time: 1305 Sampling Date: 03-02-10

Sample I.D.: MW-11 Laboratory: ~~STL~~ C&T

Analyzed for: ~~TPH-G~~ ~~BTEX~~ ~~MTBE~~ (TPH-D) (8D) Other: SEE COC

Equipment Blank I.D.: @ Time Duplicate I.D.:

Analyzed for: TPH-G BTEX MTBE TPH-D Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.15 mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME Stellar Env. Redwood Regional Park				PROJECT NUMBER 100329-BP1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
Myron L Ultrameter	02238 39	3/29/10 0700	pH 7.00 10.00 4.00	pH 6.99 9.98 4.01	yes	19.7	BP
			US 3900	US 3901	yes	19.7	BP
YSI 550	03G1029 AH 03[illegible]	3/29/10 0705	100%	98%	yes	—	BP
Turbidimeter Hach	98030C 0 28 731	3/29/10 0710	0.1, 20, NTU 100, 800	0.1, 20 100, 800	yes	—	BP

WELL GAUGING DATA

Project # 100329-BP1 Date 3/29/10 Client Stellar Env.

Site Redwood Regional Parks Service Yard Oakland CA

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-1	0935	4					4.35	19.10		
MW-2	0940	4	odor				19.98	37.48		✓
MW-3	0930	4					19.22	45.04		
MW-5	0924	4					15.89	27.04		
MW-6	0911	4					12.85	~~13.27~~ 27.53 ~~27.53~~		
MW-7	0905	2					12.84	25.32		
MW-8	0900	2					9.10	22.16		
MW-9	0840	2					14.75	30.24		
MW-10	0855	2					11.28	28.35		
MW-11	0845	2					12.20	28.69		
MW-12	0850	2					9.39	23.84		
★MW-6 obstruction @ 14' depth to bottom 27.53										

WELLHEAD INSPECTION CHECKLIST

Date 3/29/10 Client Stellar Env.

Site Address Redwood Regional Parks Service Yard Oakland, CA

Job Number 100329-BP1 Technician BP

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
MW-1 ★	X							
MW-2 ★	X							
MW-3 ★	X							
MW-5 ★	X							
MW-6 ★	X							
MW-7 ★	X							
MW-8		X						
MW-9 ★	X							
MW-10								
MW-11 ★	X							
MW-12	X							
★ = LOCKED		STANDPIPE						

NOTES: MW-8 3/3 bolts missing / MW-10 2/2 tabs stripped

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 37.48	Depth to Water (DTW): 19.98
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 23.48	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; (Electric Submersible); Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

WC: 17.50

11.4 (Gals.) X	3	=	34.2 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
1006	59.5	8.17	706	212	11.4	
Well	Dewatered	@ 15	gallons			DTW: 32.82
1420	58.9	8.92	632	123	—	

Did well dewater? (Yes) No Gallons actually evacuated: 15.0

Sampling Date: 3/29/10 Sampling Time: 1420 Depth to Water: 27.82

Sample I.D.: MW-2 Laboratory: Kiff CalScience Other CAT

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:		mg/L	(Post-purge:)	2.41 mg/L
O.R.P. (if req'd):	Pre-purge:		mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 25.32	Depth to Water (DTW): 12.84
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 15.34	

Purge Method: Bailer / (Disposable Bailer) / Positive Air Displacement / Electric Submersible / Waterra / Peristaltic / Extraction Pump / Other_____

Sampling Method: Bailer / (Disposable Bailer) / Extraction Port / Dedicated Tubing / Other: _____

WC: 12.48

2.0 (Gals.) X 3 = 6.0 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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1100	55.4	7.39	756	143	2.0	
1106	55.6	7.23	760	112	4.0	
1112	55.6	7.21	764	195	6.0	

Did well dewater? Yes (No) Gallons actually evacuated: 6.0

Sampling Date: 3/29/10 Sampling Time: 1120 Depth to Water: 14.80

Sample I.D.: MW-7 Laboratory: Kiff CalScience Other CAT

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:	mg/L	(Post-purge:)	0.38	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8
Total Well Depth (TD): 22.16	Depth to Water (DTW): 9.10
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.71	

Purge Method: Bailer; (Disposable Bailer); Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

WC: 13.06

2.0 (Gals.) X 3 = 6.0 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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1231	57.8	7.28	990	99	2.0	
1236	57.8	7.14	964	194	4.0	
1242	58.0	7.20	945	160	6.0	

Did well dewater? Yes (No) Gallons actually evacuated: 6.0

Sampling Date: 3/29/10 Sampling Time: 1250 Depth to Water: 10.27

Sample I.D.: MW-8 Laboratory: Kiff CalScience Other CAT

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:	mg/L	(Post-purge:)	0.29	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 30.24	Depth to Water (DTW): 14.75
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 17.85	

Purge Method: Bailer; (Disposable Bailer); Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

WC: 15.41

2.5 (Gals.) X 3 = 7.5 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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1157	56.3	7.06	913	150	2.5	odor/sheen
1202	56.5	7.08	915	378	5.0	odor/sheen
1208	56.5	7.10	909	>1000	7.5	odor/sheen

Did well dewater? Yes (No) Gallons actually evacuated: 7.5

Sampling Date: 3/29/10 Sampling Time: 1215 Depth to Water: 17.65

Sample I.D.: MW-9 Laboratory: Kiff CalScience Other CAT

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:	mg/L	(Post-purge):	1.01 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 28.35	Depth to Water (DTW): 11.28
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 14.69	

Purge Method: Bailer; (Disposable Bailer); Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

WC: 17.07

2.7 (Gals.) X 3 = 8.1 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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1031	57.8	8.38	775	124	2.7	
1038	57.8	8.19	810	176	5.4	
1043	57.9	7.84	832	334	8.1	
1049	58.0	7.55	824	585	10.8	
1053	58.0	7.53	819	610	13.5	DTW: 18.05

Did well dewater? Yes (No) Gallons actually evacuated: 13.5

Sampling Date: 3/29/10 Sampling Time: 1340 Depth to Water: 12.68

Sample I.D.: MW-10 Laboratory: Kiff CalScience Other CAT

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:	mg/L	(Post-purge):	0.49	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 28.69	Depth to Water (DTW): 12.20
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 15.50	

Purge Method: Bailer; (Disposable Bailer); Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

WC: 16.99

2.6 (Gals.) X 3 = 7.8 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
1307	56.3	7.47	~~702.6~~ 752	301	2.6	
1313	56.1	7.43	716	233	5.2	
1320	56.2	7.29	723	204	7.8	
1325	56.2	~~7.28~~ ~~7.20~~	733	168	10.4	

Did well dewater? Yes (No) Gallons actually evacuated: 10.4

Sampling Date: 3/29/10 Sampling Time: 1330 Depth to Water: 13.21

Sample I.D.: MW-11 Laboratory: Kiff CalScience Other CAT

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:	mg/L	(Post-purge:)	0.28	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

WELL MONITORING DATA SHEET

Project #: 100329-BP1	Client: Stellar Env / Redwood Regional Parks Service Yard
Sampler: BP	Date: 3/29/10
Well I.D.: MW-12	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 23.84	Depth to Water (DTW): 9.39
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.28	

Purge Method: Bailer; (Disposable Bailer); Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

WC: 14.45

2.3 (Gals.) X 3 = 6.9 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
1135	54.9	7.24	659	208	2.3	
1139	55.2	7.13	673	250	4.6	
1143	55.4	7.11	677	575	6.9	DTW: 14.02

Did well dewater? Yes (No) Gallons actually evacuated: 6.9

Sampling Date: 3/29/10 Sampling Time: 1350 Depth to Water: 10.52

Sample I.D.: MW-12 Laboratory: Kiff CalScience Other CAT

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:	mg/L	(Post-purge:)	1.05	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:		mV

APPENDIX C

Analytical Laboratory Report and Chain-of-Custody Record


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 218550
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2008-12
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-2	218550-001
MW-7	218550-002
MW-8	218550-003
MW-9	218550-004
MW-11	218550-005

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: _____ Date: 03/09/2010
Project Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**218550**
Client:	**Stellar Environmental Solutions**
Project:	**2008-12**
Location:	**Redwood Regional Park**
Request Date:	**03/02/10**
Samples Received:	**03/02/10**

This data package contains sample and QC results for five water samples, requested for the above referenced project on 03/02/10. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):
Low surrogate recovery was observed for trifluorotoluene (FID) in MW-7 (lab # 218550-002); the corresponding bromofluorobenzene (FID) surrogate recovery was within limits. High surrogate recoveries were observed for bromofluorobenzene (FID) and trifluorotoluene (FID) in a number of samples. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Chain of Custody Record

218550

Lab job no. 100302-BP1

Date 3/2/10

Page 1 of 1

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

Method of Shipment Hand Delivery
Shipment No.
Airbill No.
Cooler No.
Project Manager Richard Makdisi
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature)

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Road
Oakland, California
Project Name Redwood Regional Park
Project Number ~~2006.16~~ 2008-12

	Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	TVH-G (8015)	BTEX/MTBE (8021)	TEH-D (8015)	Remarks
1	MW-2		3/2/10	1320	W	4		HCl/UNPRES			X	X	X	
2	MW-7		3/2/10	1115	W	4		HCl/UNPRES			X	X	X	
3	MW-8		3/2/10	1230	W	4		HCl/UNPRES			X	X	X	
4	MW-9		3/2/10	1200	W	4		HCl/UNPRES			X	X	X	
5	MW-11		3/2/10	1305	W	4		HCl/UNPRES			X	X	X	

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature		Signature		Signature	3/2/10	Signature	3/2/10
Printed	Time	Printed	Time	Printed Ben Panell	Time	Printed Pat Gonzalez	Time 3:03
Company Stellar Environmental		Company		Company Blaine Tech Services		Company C&T	

Turnaround Time: 5 Day TAT

Comments: ~~Please provide a GeoTracker EDF for groundwater samples only~~ (MRET)
~~Surface water samples collected by Stellar Environmental Solutions.~~
~~Groundwater samples collected by Blaine Tech Services.~~

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

2000-00-01

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 218550 Date Received 3/2/10 Number of coolers 1
Client STELLAR Project REDWOOD REGIONAL PARK

Date Opened 3/2/10 By (print) MILLIANNE (sign)
Date Logged in 6 By (print) 6 (sign) 6

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

_____
_____
_____
_____
_____
_____
_____
_____

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Batch#:	160633
Units:	ug/L	Sampled:	03/02/10
Diln Fac:	1.000	Received:	03/02/10

Field ID:	MW-2	Lab ID:	218550-001
Type:	SAMPLE	Analyzed:	03/04/10

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,900 Y	50	EPA 8015B
MTBE	2.2 C	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	2.2	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	136	48-162	EPA 8015B
Bromofluorobenzene (FID)	172 *	52-158	EPA 8015B
Trifluorotoluene (PID)	119	21-180	EPA 8021B
Bromofluorobenzene (PID)	141	26-167	EPA 8021B

Field ID:	MW-7	Lab ID:	218550-002
Type:	SAMPLE	Analyzed:	03/05/10

Analyte	Result	RL	Analysis
Gasoline C7-C12	5,300	50	EPA 8015B
MTBE	16 C	2.0	EPA 8021B
Benzene	17 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	110	0.50	EPA 8021B
m,p-Xylenes	2.6 C	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	0 *	48-162	EPA 8015B
Bromofluorobenzene (FID)	143	52-158	EPA 8015B
Trifluorotoluene (PID)	37	21-180	EPA 8021B
Bromofluorobenzene (PID)	87	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Batch#:	160633
Units:	ug/L	Sampled:	03/02/10
Diln Fac:	1.000	Received:	03/02/10

Field ID: MW-8 Lab ID: 218550-003
Type: SAMPLE Analyzed: 03/04/10

Analyte	Result	RL	Analysis
Gasoline C7-C12	220	50	EPA 8015B
MTBE	3.9	2.0	EPA 8021B
Benzene	0.84	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	14	0.50	EPA 8021B
m,p-Xylenes	3.1	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	132	48-162	EPA 8015B
Bromofluorobenzene (FID)	134	52-158	EPA 8015B
Trifluorotoluene (PID)	101	21-180	EPA 8021B
Bromofluorobenzene (PID)	114	26-167	EPA 8021B

Field ID: MW-9 Lab ID: 218550-004
Type: SAMPLE Analyzed: 03/04/10

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,300	50	EPA 8015B
MTBE	8.6 C	2.0	EPA 8021B
Benzene	15	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	140	0.50	EPA 8021B
m,p-Xylenes	12 C	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	355 *	48-162	EPA 8015B
Bromofluorobenzene (FID)	212 *	52-158	EPA 8015B
Trifluorotoluene (PID)	103	21-180	EPA 8021B
Bromofluorobenzene (PID)	133	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Batch#:	160633
Units:	ug/L	Sampled:	03/02/10
Diln Fac:	1.000	Received:	03/02/10

Field ID:	MW-11	Lab ID:	218550-005
Type:	SAMPLE	Analyzed:	03/05/10

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,300	50	EPA 8015B
MTBE	3.4 C	2.0	EPA 8021B
Benzene	13	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	59	0.50	EPA 8021B
m,p-Xylenes	0.79	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	274 *	48-162	EPA 8015B
Bromofluorobenzene (FID)	132	52-158	EPA 8015B
Trifluorotoluene (PID)	42	21-180	EPA 8021B
Bromofluorobenzene (PID)	86	26-167	EPA 8021B

Type:	BLANK	Analyzed:	03/04/10
Lab ID:	QC534895		

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	142	48-162	EPA 8015B
Bromofluorobenzene (FID)	166 *	52-158	EPA 8015B
Trifluorotoluene (PID)	129	21-180	EPA 8021B
Bromofluorobenzene (PID)	146	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	160633
Units:	ug/L	Analyzed:	03/04/10
Diln Fac:	1.000		

Type: BS Lab ID: QC534896

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.78	108	36-168
Benzene	10.00	9.594	96	69-121
Toluene	10.00	10.24	102	64-132
Ethylbenzene	10.00	9.569	96	64-136
m,p-Xylenes	10.00	9.512	95	63-138
o-Xylene	10.00	9.531	95	64-135

Surrogate	%REC	Limits
Trifluorotoluene (PID)	130	21-180
Bromofluorobenzene (PID)	146	26-167

Type: BSD Lab ID: QC534897

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	11.08	111	36-168	3	35
Benzene	10.00	9.427	94	69-121	2	24
Toluene	10.00	9.524	95	64-132	7	27
Ethylbenzene	10.00	9.622	96	64-136	1	27
m,p-Xylenes	10.00	9.213	92	63-138	3	32
o-Xylene	10.00	9.645	96	64-135	1	27

Surrogate	%REC	Limits
Trifluorotoluene (PID)	117	21-180
Bromofluorobenzene (PID)	128	26-167

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC534898	Batch#:	160633
Matrix:	Water	Analyzed:	03/04/10
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,861	93	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	160	48-162
Bromofluorobenzene (FID)	145	52-158

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12	Analysis:	EPA 8015B
Field ID:	MW-2	Batch#:	160633
MSS Lab ID:	218550-001	Sampled:	03/02/10
Matrix:	Water	Received:	03/02/10
Units:	ug/L	Analyzed:	03/04/10
Diln Fac:	1.000		

Type: MS Lab ID: QC534899

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,864	2,000	3,595	87	49-129

Surrogate	%REC	Limits
Trifluorotoluene (FID)	181 *	48-162
Bromofluorobenzene (FID)	184 *	52-158

Type: MSD Lab ID: QC534900

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	3,769	95	49-129	5	19

Surrogate	%REC	Limits
Trifluorotoluene (FID)	183 *	48-162
Bromofluorobenzene (FID)	184 *	52-158

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

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Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe061.met

Software Version 3.1.7
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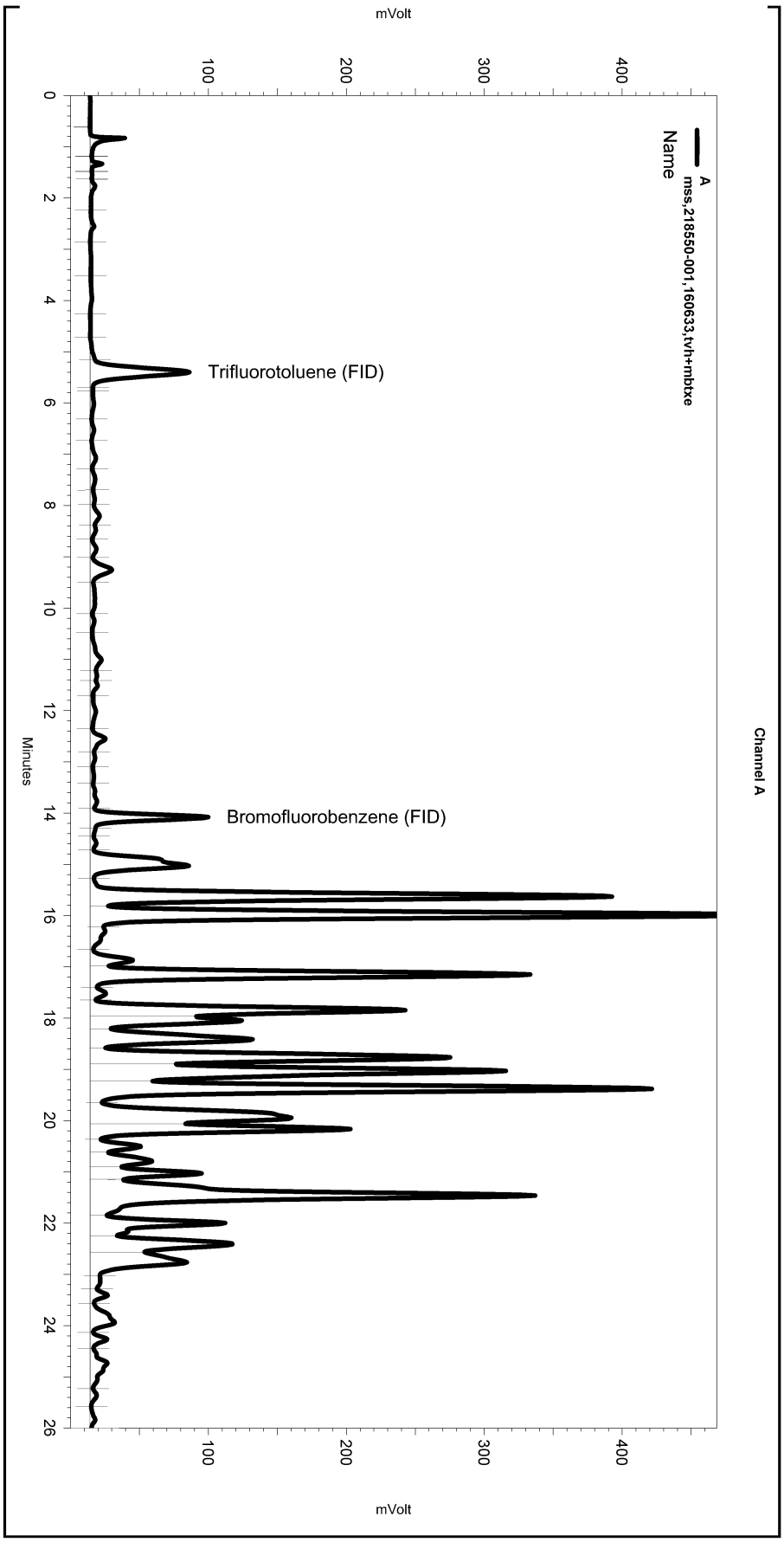
Vial & pH or Core ID: a1.0



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Integration Events

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Yes	Threshold	0	0	50

Manual Integration Fixes

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Yes	Lowest Point Horizontal Baseli	0	26.017	0
Yes	Split Peak	5.148	0	0
Yes	Split Peak	5.696	0	0
Yes	Split Peak	14.306	0	0

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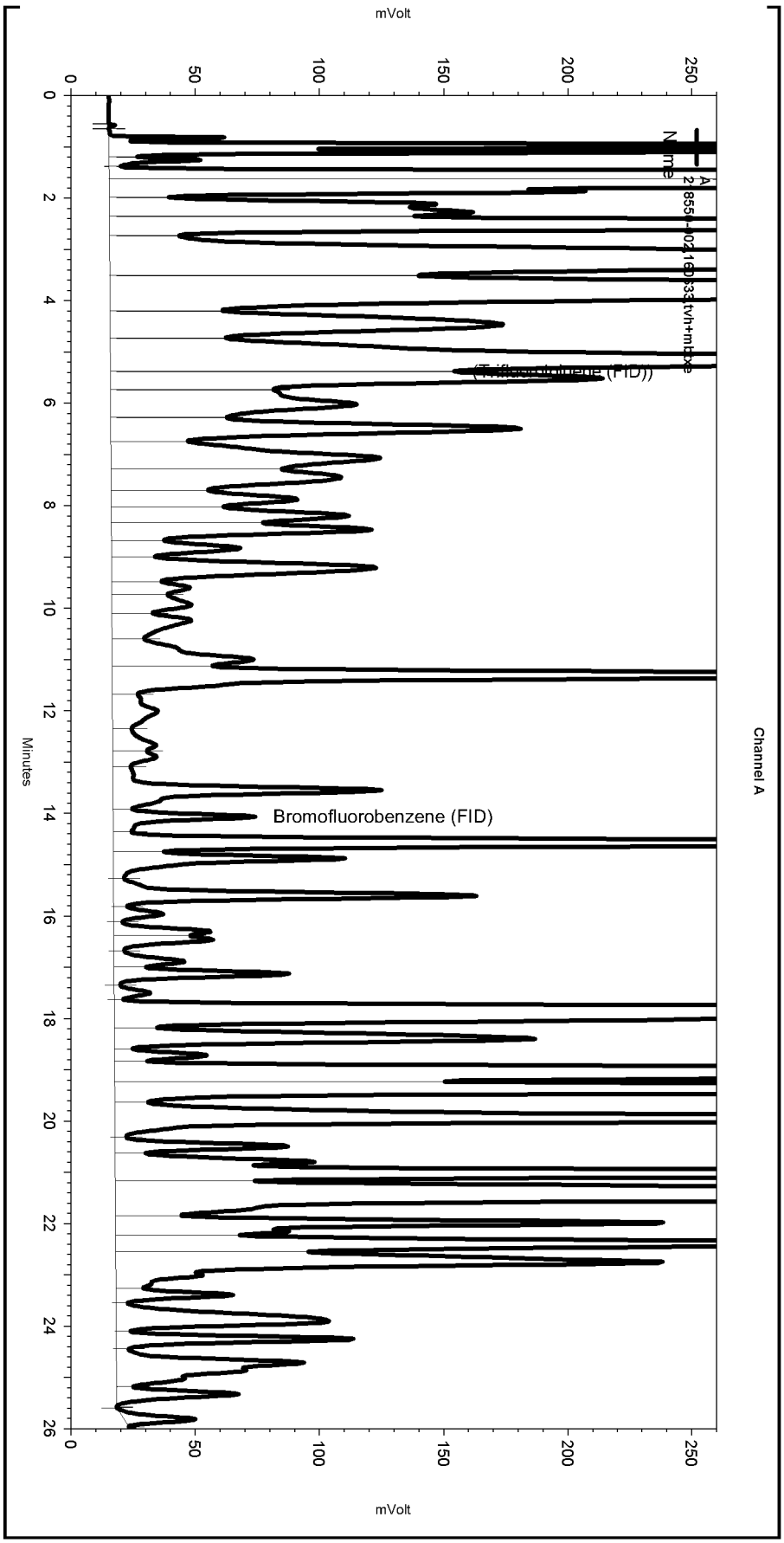
Vial & pH or Core ID: b1.3



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Yes	Threshold	0	0	50

Manual Integration Fixes

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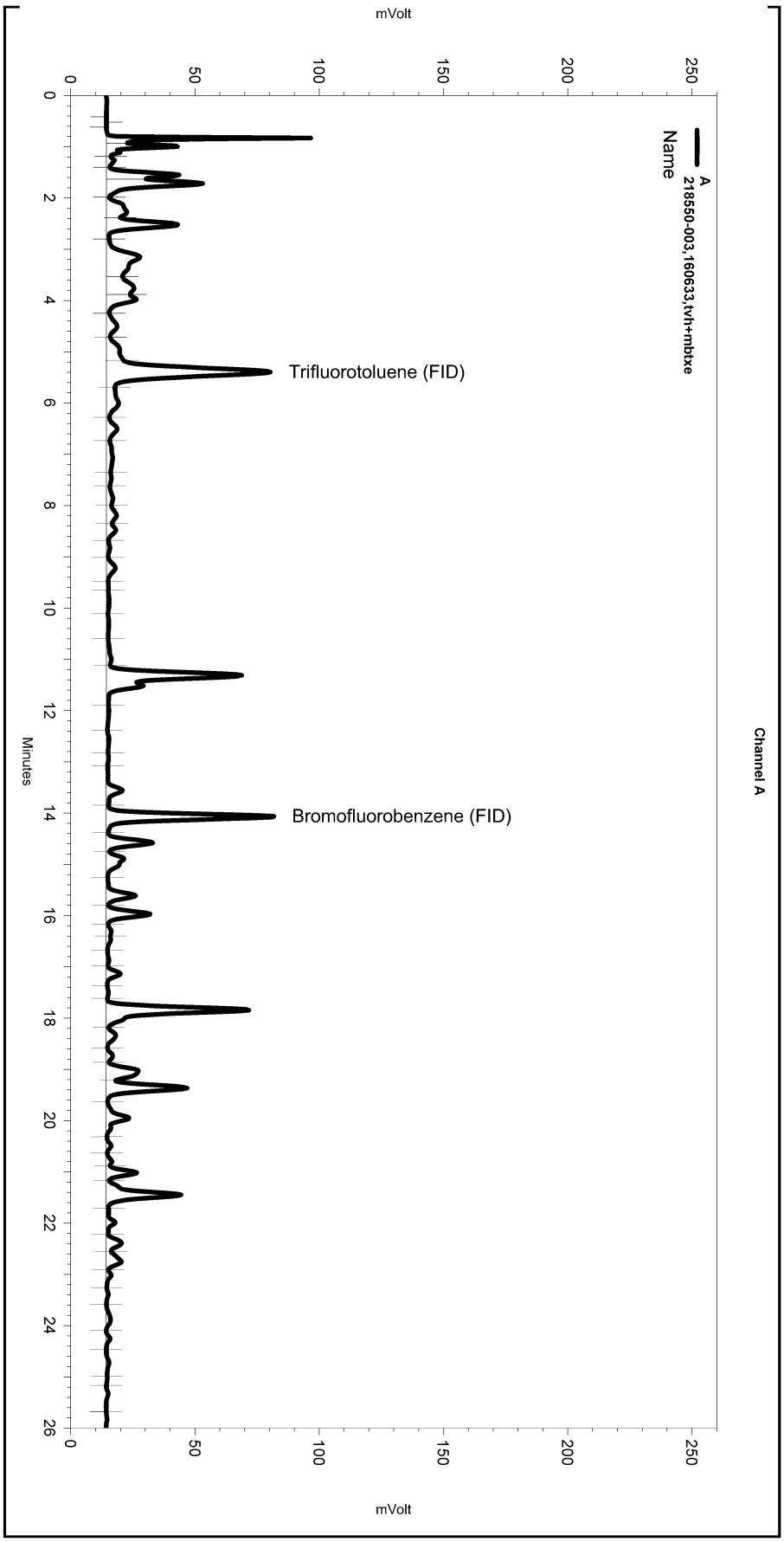
Vial & pH or Core ID: a1.3



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Yes	Threshold	0	0	50

Manual Integration Fixes

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Yes	Split Peak	5.167	0	0

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Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe061.met

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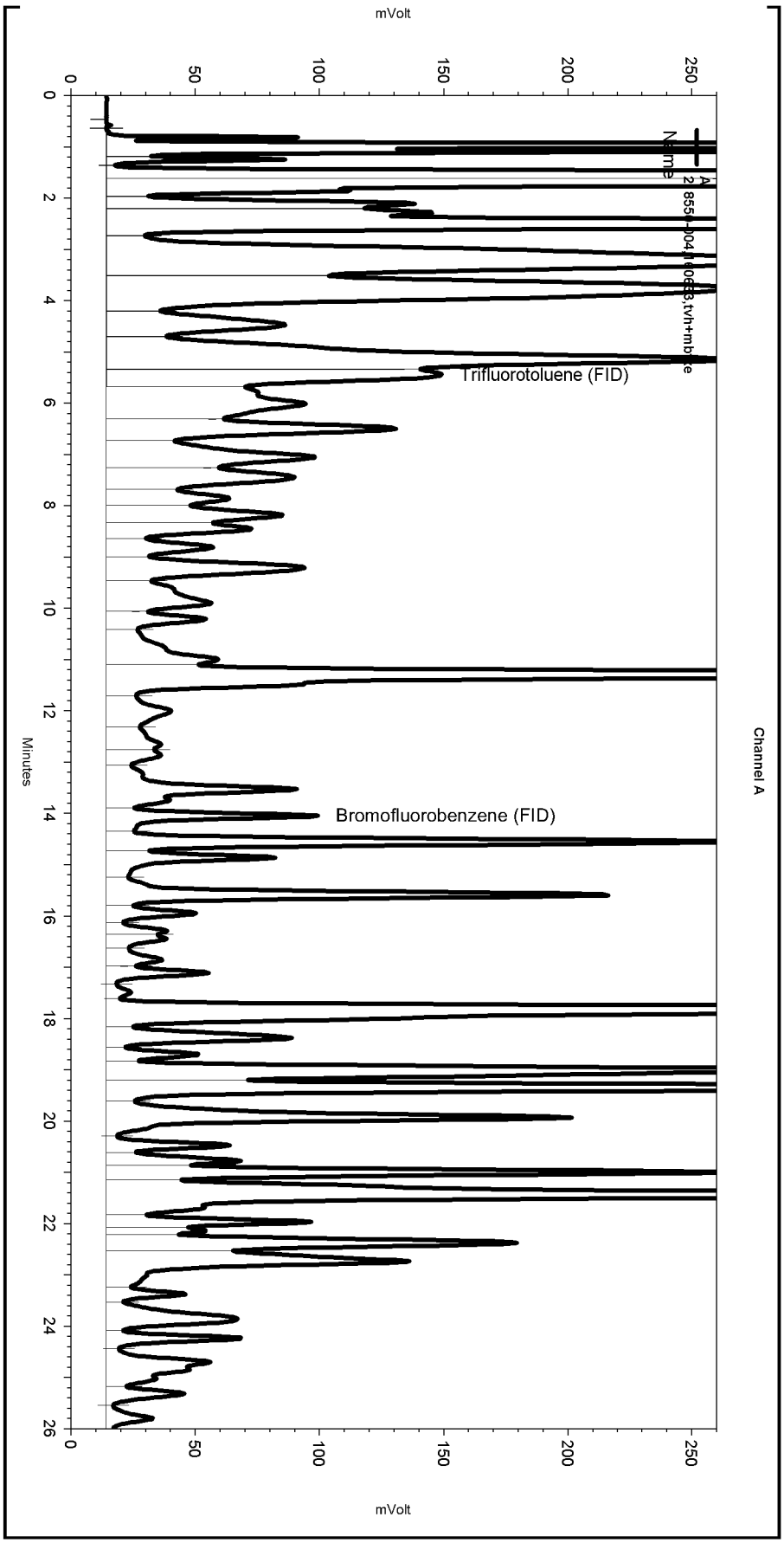
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.3



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Yes	Threshold	0	0	50

Manual Integration Fixes

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Yes	Lowest Point Horizontal Baseli	0	26.017	0

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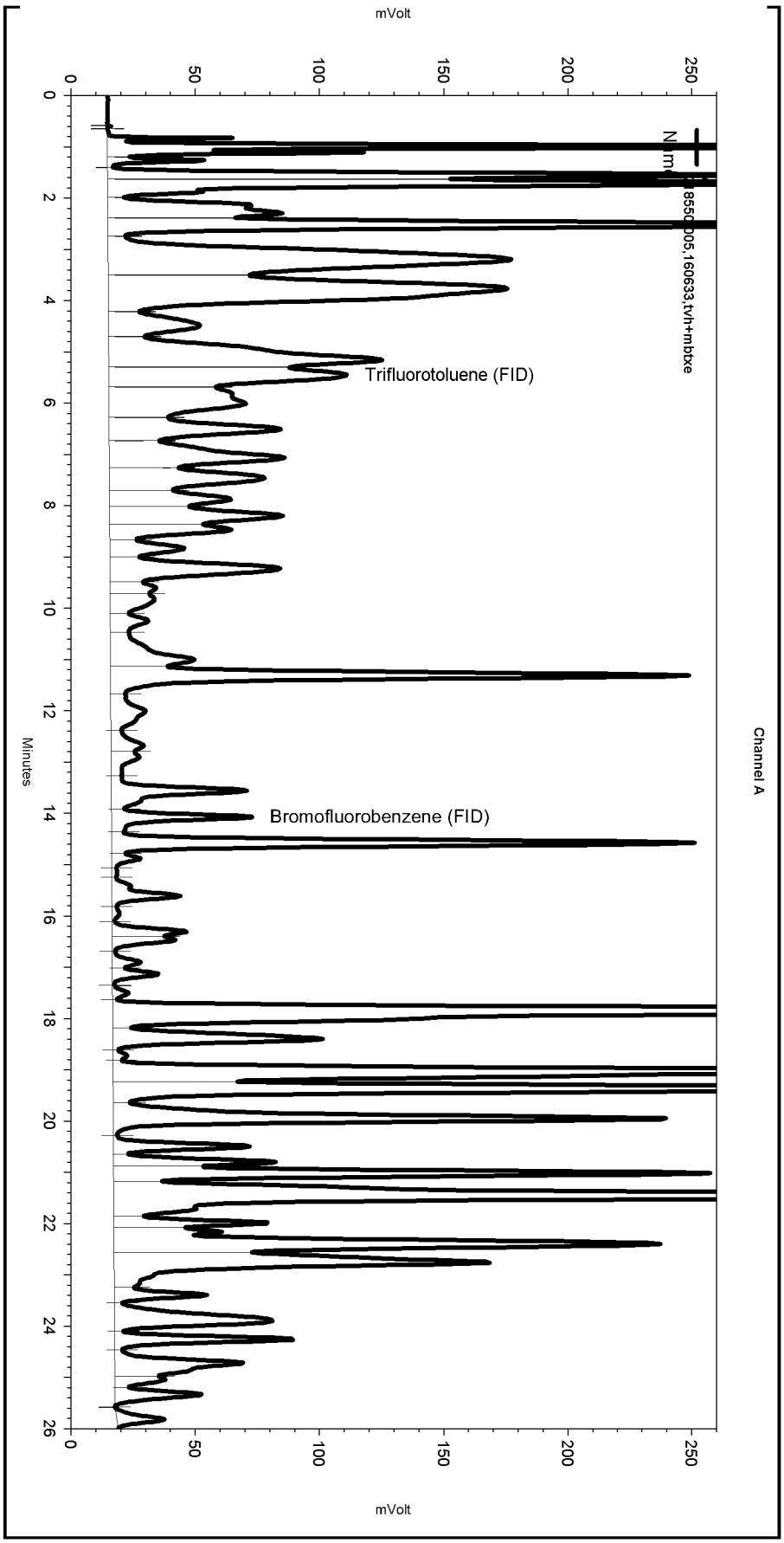
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: b1.3



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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

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Sample Name: **ccv,tvh,s13766,2.5/5000**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\063_003**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 1. Analyst (lims2k3\tvh1)
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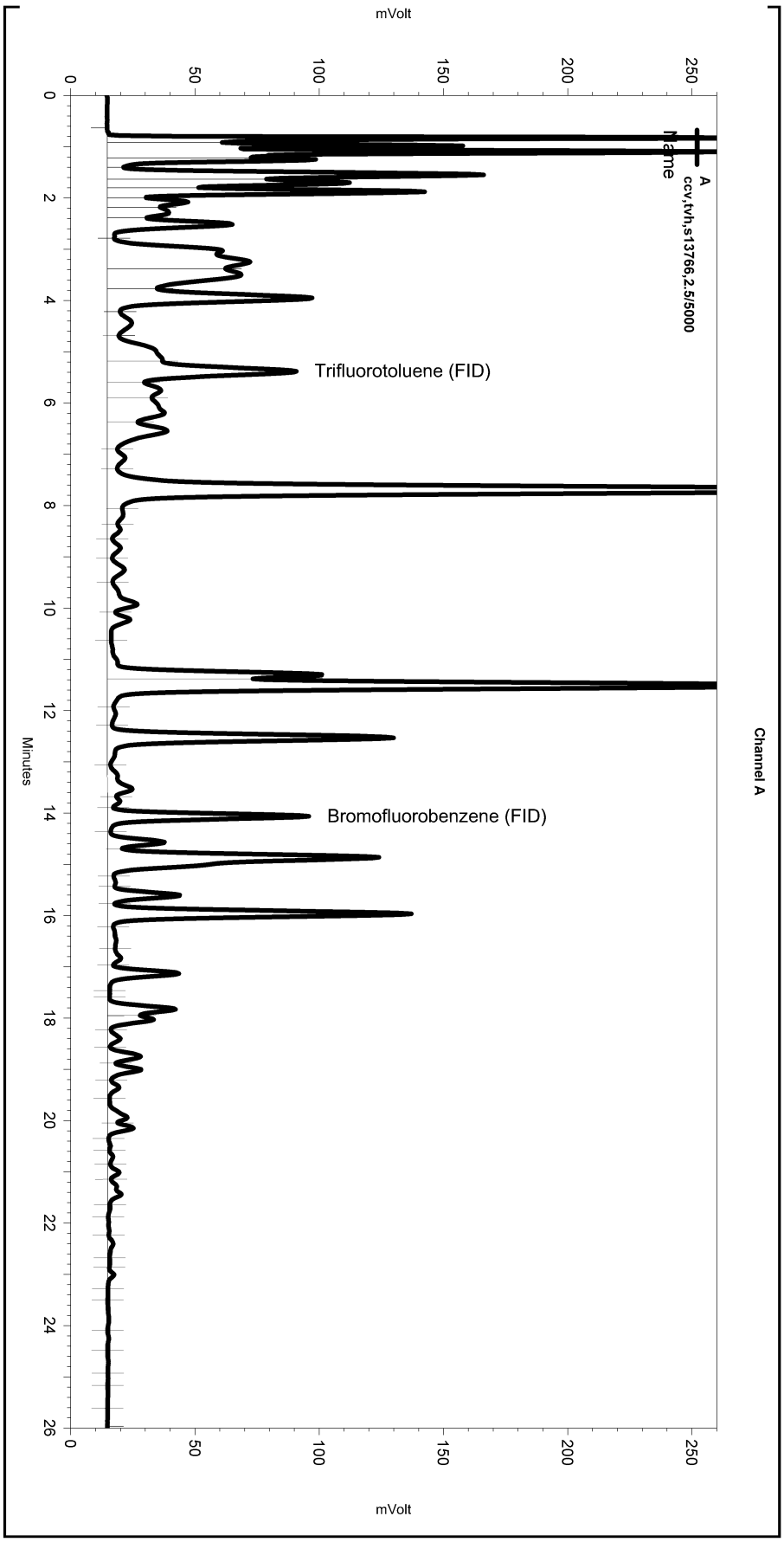
Vial & pH or Core ID: {Data Description}



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Integration Events

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

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\063_003

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.183	0	0

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/02/10
Units:	ug/L	Received:	03/02/10
Diln Fac:	1.000	Prepared:	03/04/10
Batch#:	160635		

Field ID: MW-2 Lab ID: 218550-001
Type: SAMPLE Analyzed: 03/05/10

Analyte	Result	RL
Diesel C10-C24	3,200	50

Surrogate	%REC	Limits
o-Terphenyl	101	39-150

Field ID: MW-7 Lab ID: 218550-002
Type: SAMPLE Analyzed: 03/05/10

Analyte	Result	RL
Diesel C10-C24	4,300	50

Surrogate	%REC	Limits
o-Terphenyl	102	39-150

Field ID: MW-8 Lab ID: 218550-003
Type: SAMPLE Analyzed: 03/05/10

Analyte	Result	RL
Diesel C10-C24	270 Y	50

Surrogate	%REC	Limits
o-Terphenyl	102	39-150

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/02/10
Units:	ug/L	Received:	03/02/10
Diln Fac:	1.000	Prepared:	03/04/10
Batch#:	160635		

Field ID: MW-9 Lab ID: 218550-004
Type: SAMPLE Analyzed: 03/05/10

Analyte	Result	RL
Diesel C10-C24	2,600	50

Surrogate	%REC	Limits
o-Terphenyl	97	39-150

Field ID: MW-11 Lab ID: 218550-005
Type: SAMPLE Analyzed: 03/05/10

Analyte	Result	RL
Diesel C10-C24	2,500	50

Surrogate	%REC	Limits
o-Terphenyl	101	39-150

Type: BLANK Analyzed: 03/07/10
Lab ID: QC534906

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	105	39-150

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC534907	Batch#:	160635
Matrix:	Water	Prepared:	03/04/10
Units:	ug/L	Analyzed:	03/05/10

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,335	93	34-144

Surrogate	%REC	Limits
o-Terphenyl	103	39-150

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	218550	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	160635
MSS Lab ID:	218563-001	Sampled:	03/02/10
Matrix:	Water	Received:	03/02/10
Units:	ug/L	Prepared:	03/04/10
Diln Fac:	1.000	Analyzed:	03/05/10

Type: MS
Lab ID: QC534908
Cleanup Method: EPA 3630C

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	143.6	2,500	2,403	90	21-160

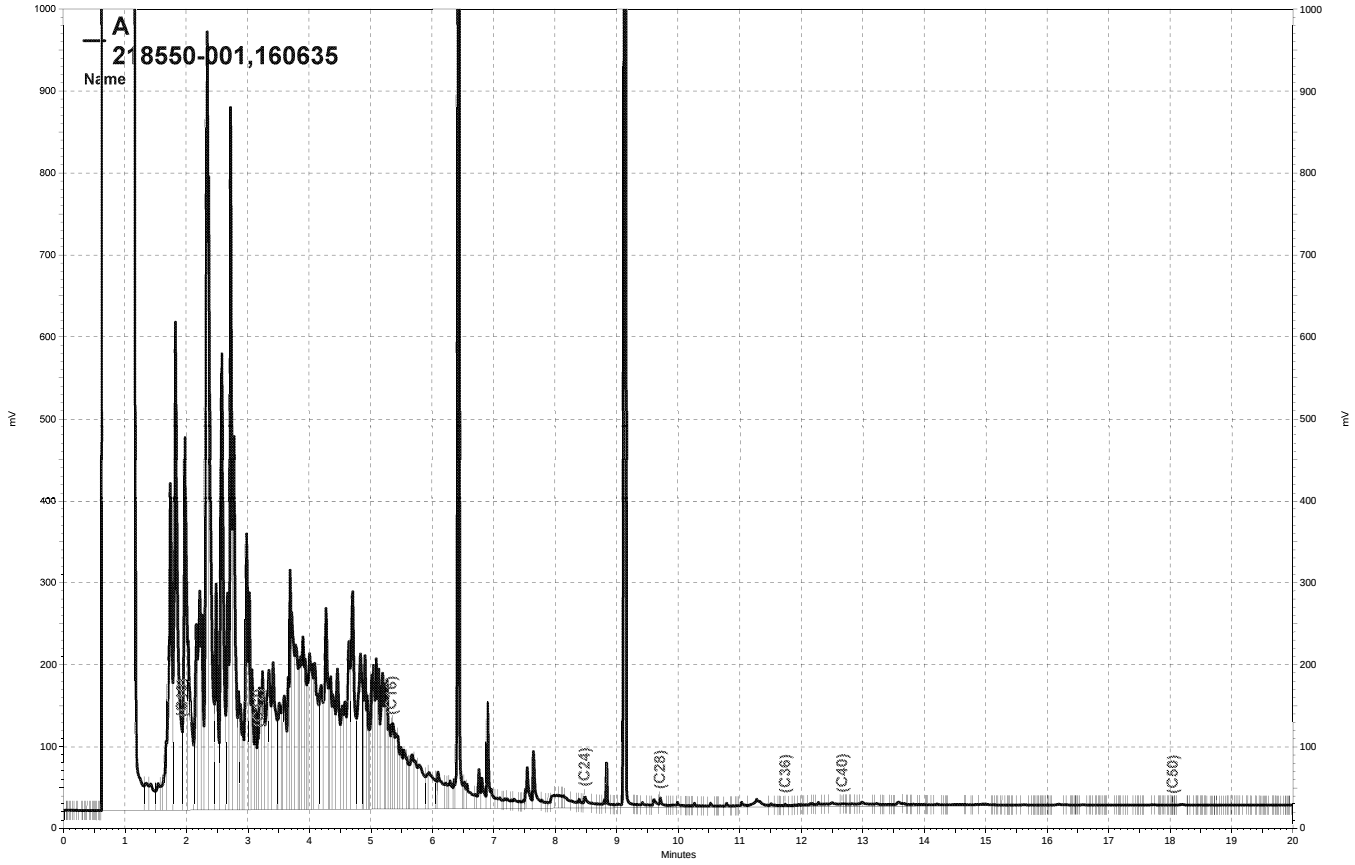
Surrogate	%REC	Limits
o-Terphenyl	105	39-150

Type: MSD
Lab ID: QC534909
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,526	95	21-160	5	58

Surrogate	%REC	Limits
o-Terphenyl	111	39-150

RPD= Relative Percent Difference



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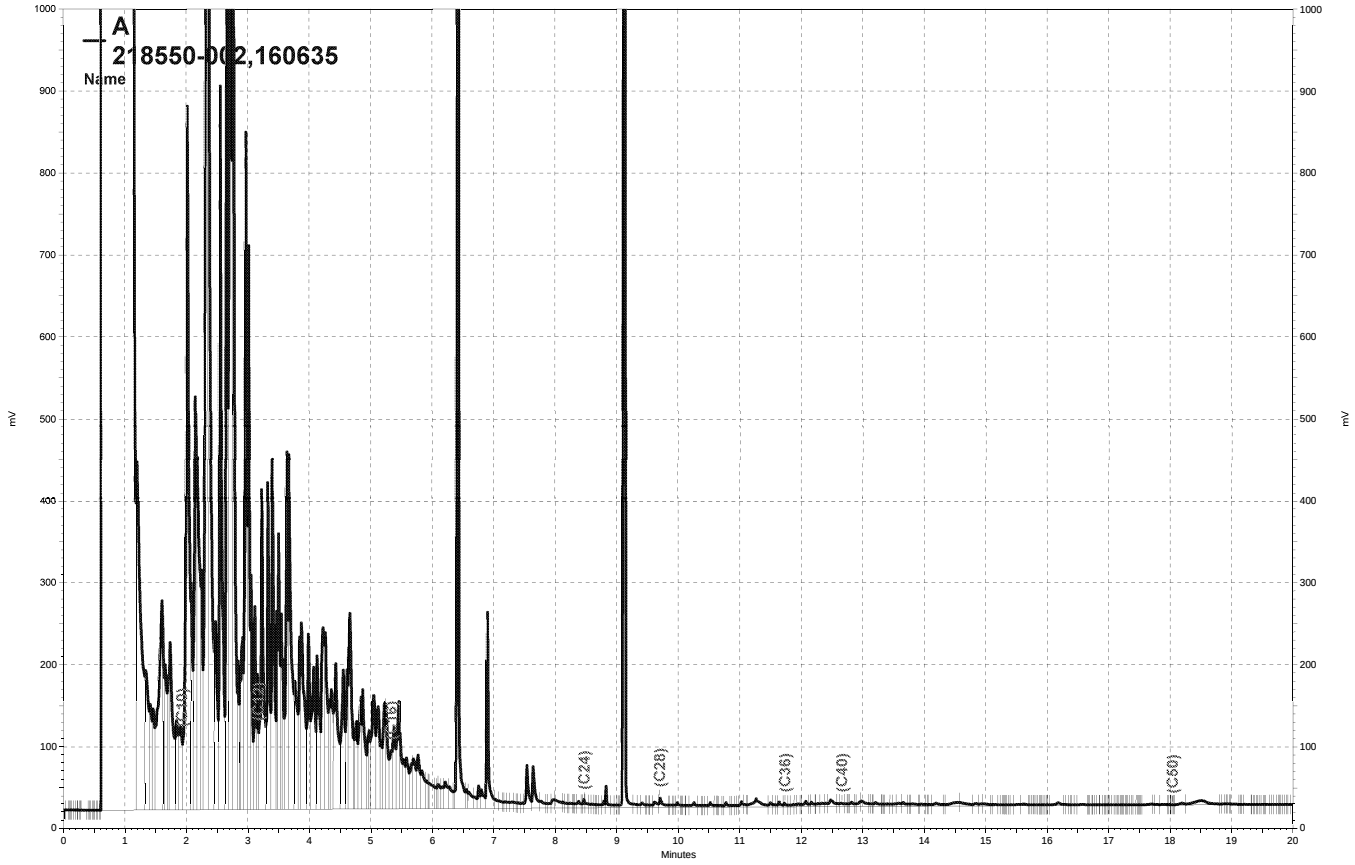

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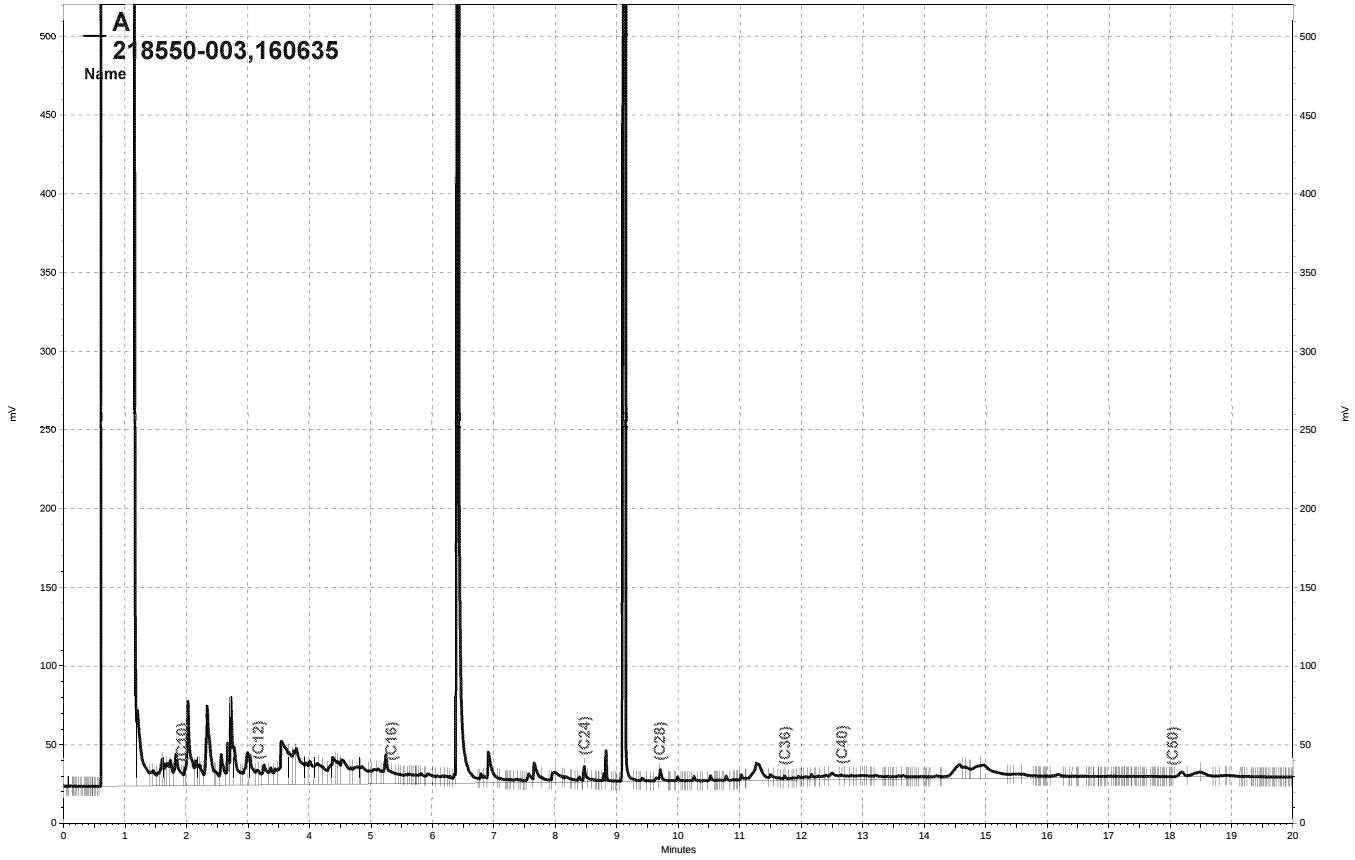

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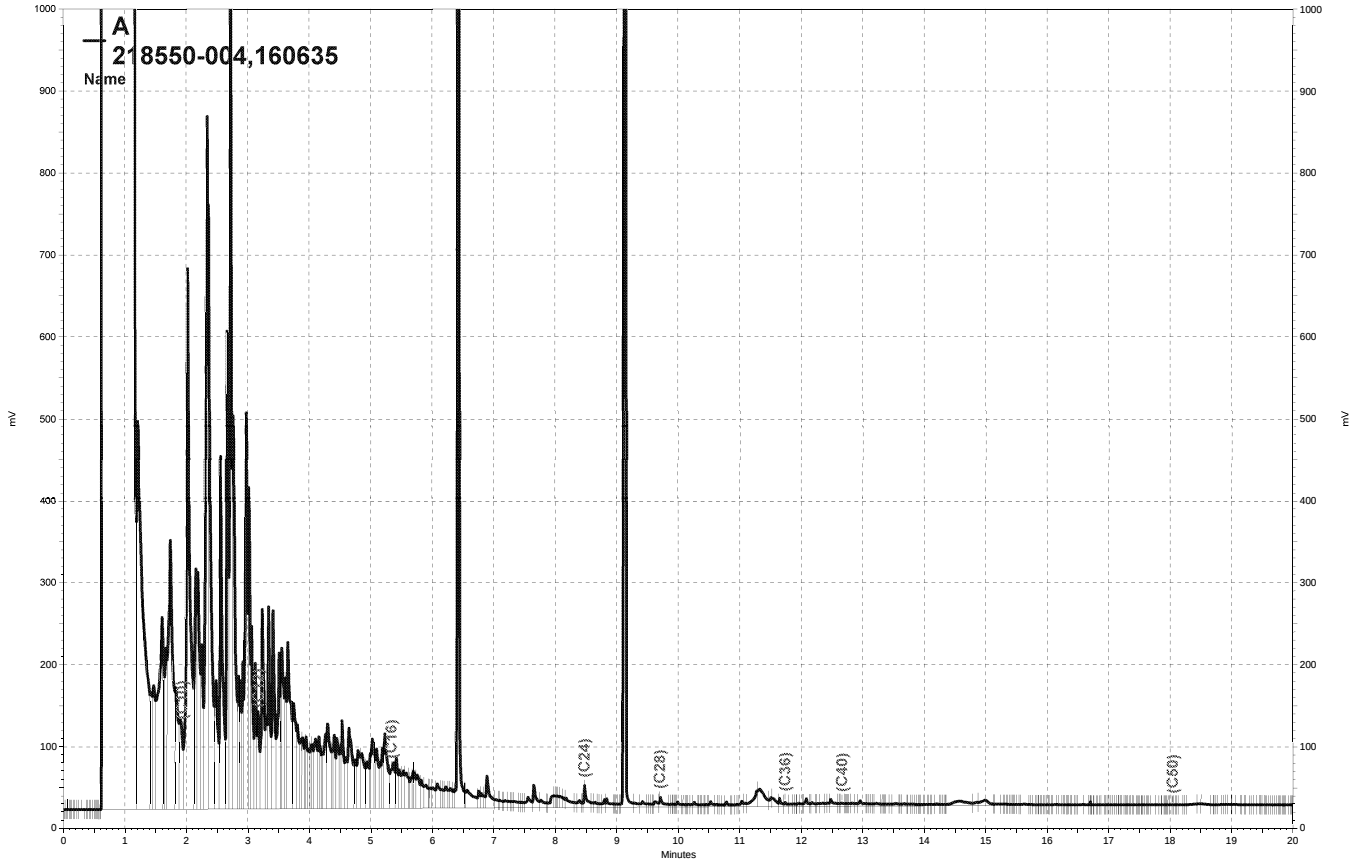

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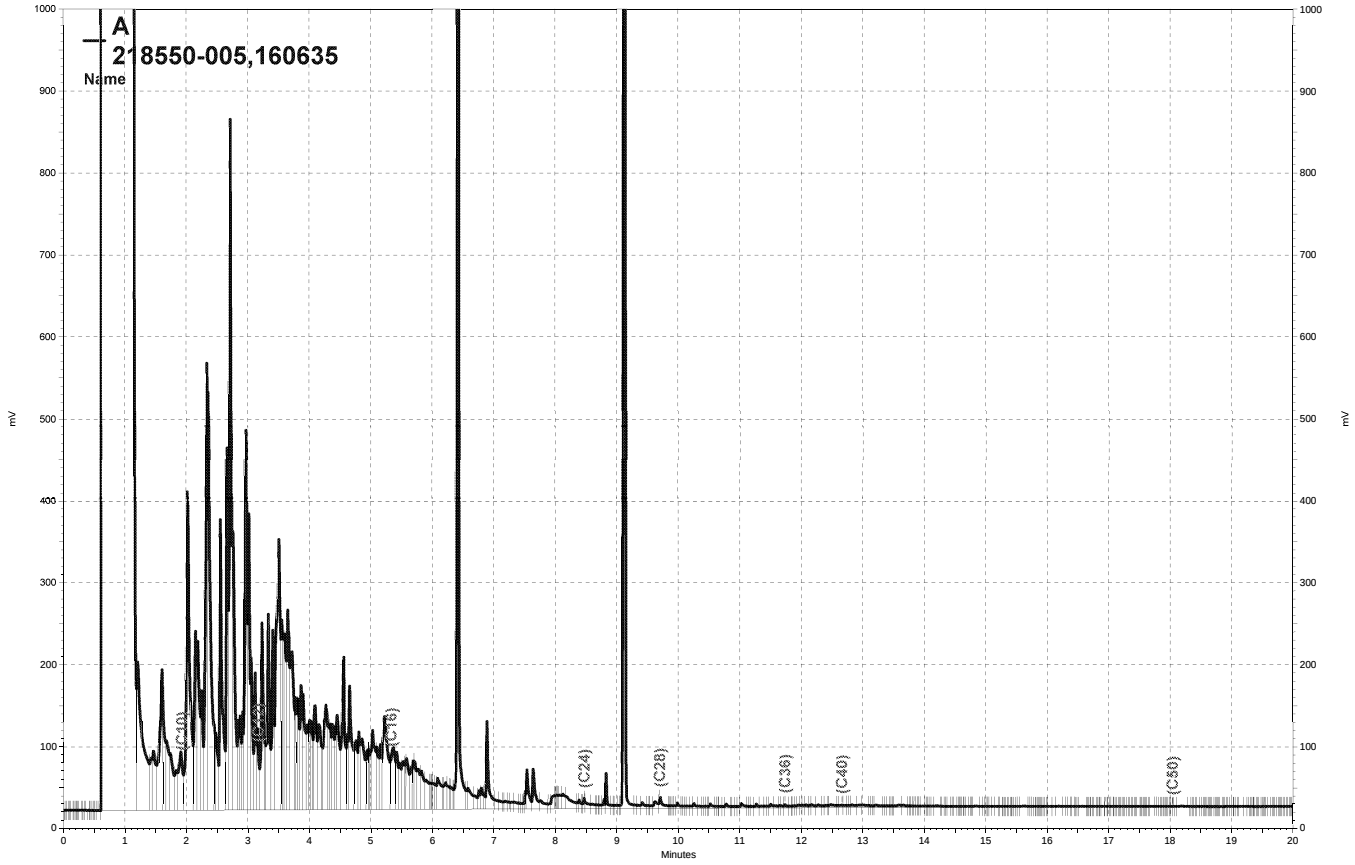

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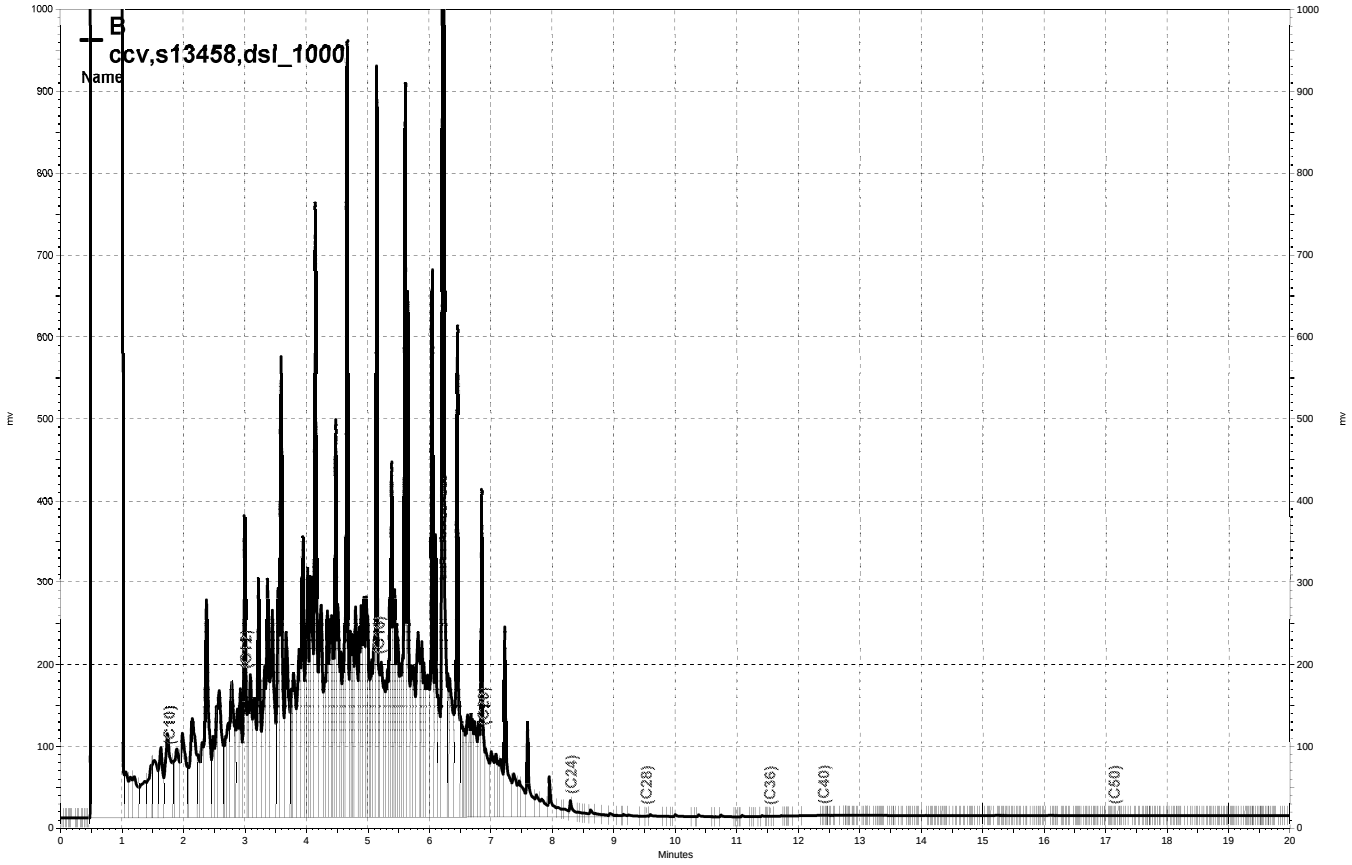

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Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 219145
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2008-12
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-2	219145-001
MW-7	219145-002
MW-8	219145-003
MW-9	219145-004
MW-10	219145-005
MW-11	219145-006
MW-12	219145-007

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

Signature: _____ Date: 04/06/2010
Project Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**219145**
Client:	**Stellar Environmental Solutions**
Project:	**2008-12**
Location:	**Redwood Regional Park**
Request Date:	**03/29/10**
Samples Received:	**03/29/10**

This data package contains sample and QC results for seven water samples, requested for the above referenced project on 03/29/10. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):
High surrogate recovery was observed for trifluorotoluene (FID) in MW-11 (lab # 219145-006); the corresponding bromofluorobenzene (FID) surrogate recovery was within limits. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

2008-12

Chain of Custody Record

Lab job no. 100329-BP1
Date 3/29/10
Page 1 of 1

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

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Road
Oakland, California

Project Name Redwood Regional Park
Project Number ~~2008-16~~ 2008-12

Method of Shipment Hand Delivery
Shipment No.
Airbill No.
Cooler No.
Project Manager Richard Makdisi
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) Ben Paul

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	TVH-G (8015)	BTEX-MTBE (8021)	TEH-D (8015)	Remarks
1 MW-2		3/29/10	1420	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	
2 MW-7		3/29/10	1120	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	
3 MW-8		3/29/10	1250	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	
4 MW-9		3/29/10	1215	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	
5 MW-10		3/29/10	1340	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	
6 MW-11		3/29/10	1330	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	
7 MW-12		3/29/10	1350	W	40mL VOA/1L Amber		HCL/NP		4	X	X	X	

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature		Signature	3/29/10	Signature	3/29/10	Signature	
Printed	Time	Printed Ben Paul II	Time	Printed Pat Gonzalez	Time 3:45	Printed	Time
Company Stellar Environmental		Company BlaineTech	1545	Company CAT		Company	

Turnaround Time: 5 Day TAT

Comments: Please provide a GeoTracker EDF for groundwater samples only
Surface water samples collected by Stellar Environmental Solutions.
Groundwater samples collected by Blaine Tech Services.

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

2000-00-01

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 29145 Date Received 3-29-10 Number of coolers 1
Client STEVAR Project REDMOND REGIONAL PARK

Date Opened 3-29-10 By (print) S. EVANS (sign)
Date Logged in ~~3-29-10~~ 3/31/10 By (print) (sign)

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
SAMPLE # 007 - 1/3 WAS BROKE WHILE LOGGING IN

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Analyzed:	04/05/10
Batch#:	161659		

Field ID: MW-2 Lab ID: 219145-001
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,000	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	0.75	0.50	EPA 8021B
o-Xylene	2.7	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	106	48-162	EPA 8015B
Bromofluorobenzene (FID)	111	52-158	EPA 8015B
Trifluorotoluene (PID)	92	21-180	EPA 8021B
Bromofluorobenzene (PID)	92	26-167	EPA 8021B

Field ID: MW-7 Lab ID: 219145-002
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,600	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	11 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	76	0.50	EPA 8021B
m,p-Xylenes	2.7 C	0.50	EPA 8021B
o-Xylene	1.8	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	150	48-162	EPA 8015B
Bromofluorobenzene (FID)	95	52-158	EPA 8015B
Trifluorotoluene (PID)	94	21-180	EPA 8021B
Bromofluorobenzene (PID)	77	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Analyzed:	04/05/10
Batch#:	161659		

Field ID: MW-8 Lab ID: 219145-003
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,400	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	28	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	340	0.50	EPA 8021B
m,p-Xylenes	250	0.50	EPA 8021B
o-Xylene	5.7	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	160	48-162	EPA 8015B
Bromofluorobenzene (FID)	109	52-158	EPA 8015B
Trifluorotoluene (PID)	120	21-180	EPA 8021B
Bromofluorobenzene (PID)	96	26-167	EPA 8021B

Field ID: MW-9 Lab ID: 219145-004
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,500	50	EPA 8015B
MTBE	2.1 C	2.0	EPA 8021B
Benzene	16 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	70	0.50	EPA 8021B
m,p-Xylenes	9.5	0.50	EPA 8021B
o-Xylene	5.9	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	157	48-162	EPA 8015B
Bromofluorobenzene (FID)	142	52-158	EPA 8015B
Trifluorotoluene (PID)	138	21-180	EPA 8021B
Bromofluorobenzene (PID)	114	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Analyzed:	04/05/10
Batch#:	161659		

Field ID: MW-10 Lab ID: 219145-005
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	63	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	1.3	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	2.7	0.50	EPA 8021B
m,p-Xylenes	0.94	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	104	48-162	EPA 8015B
Bromofluorobenzene (FID)	102	52-158	EPA 8015B
Trifluorotoluene (PID)	89	21-180	EPA 8021B
Bromofluorobenzene (PID)	93	26-167	EPA 8021B

Field ID: MW-11 Lab ID: 219145-006
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,500	50	EPA 8015B
MTBE	2.6 C	2.0	EPA 8021B
Benzene	12	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	48	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	164 *	48-162	EPA 8015B
Bromofluorobenzene (FID)	115	52-158	EPA 8015B
Trifluorotoluene (PID)	114	21-180	EPA 8021B
Bromofluorobenzene (PID)	95	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12		
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Analyzed:	04/05/10
Batch#:	161659		

Field ID: MW-12 Lab ID: 219145-007
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	240	50	EPA 8015B
MTBE	3.6	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	2.7	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	126	48-162	EPA 8015B
Bromofluorobenzene (FID)	108	52-158	EPA 8015B
Trifluorotoluene (PID)	101	21-180	EPA 8021B
Bromofluorobenzene (PID)	97	26-167	EPA 8021B

Type: BLANK Lab ID: QC539098

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	102	48-162	EPA 8015B
Bromofluorobenzene (FID)	93	52-158	EPA 8015B
Trifluorotoluene (PID)	89	21-180	EPA 8021B
Bromofluorobenzene (PID)	85	26-167	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC539099	Batch#:	161659
Matrix:	Water	Analyzed:	04/05/10
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	985.5	99	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	48-162
Bromofluorobenzene (FID)	100	52-158

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12	Analysis:	EPA 8015B
Field ID:	MW-2	Batch#:	161659
MSS Lab ID:	219145-001	Sampled:	03/29/10
Matrix:	Water	Received:	03/29/10
Units:	ug/L	Analyzed:	04/05/10
Diln Fac:	1.000		

Type: MS Lab ID: QC539100

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,033	2,000	3,715	84	49-129

Surrogate	%REC	Limits
Trifluorotoluene (FID)	134	48-162
Bromofluorobenzene (FID)	120	52-158

Type: MSD Lab ID: QC539101

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	3,744	86	49-129	1	19

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	48-162
Bromofluorobenzene (FID)	117	52-158

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-12	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	161659
Units:	ug/L	Analyzed:	04/05/10
Diln Fac:	1.000		

Type: BS Lab ID: QC539102

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	11.08	111	36-168
Benzene	10.00	10.09	101	69-121
Toluene	10.00	10.26	103	64-132
Ethylbenzene	10.00	10.65	106	64-136
m,p-Xylenes	10.00	10.51	105	63-138
o-Xylene	10.00	10.90	109	64-135

Surrogate	%REC	Limits
Trifluorotoluene (PID)	89	21-180
Bromofluorobenzene (PID)	88	26-167

Type: BSD Lab ID: QC539103

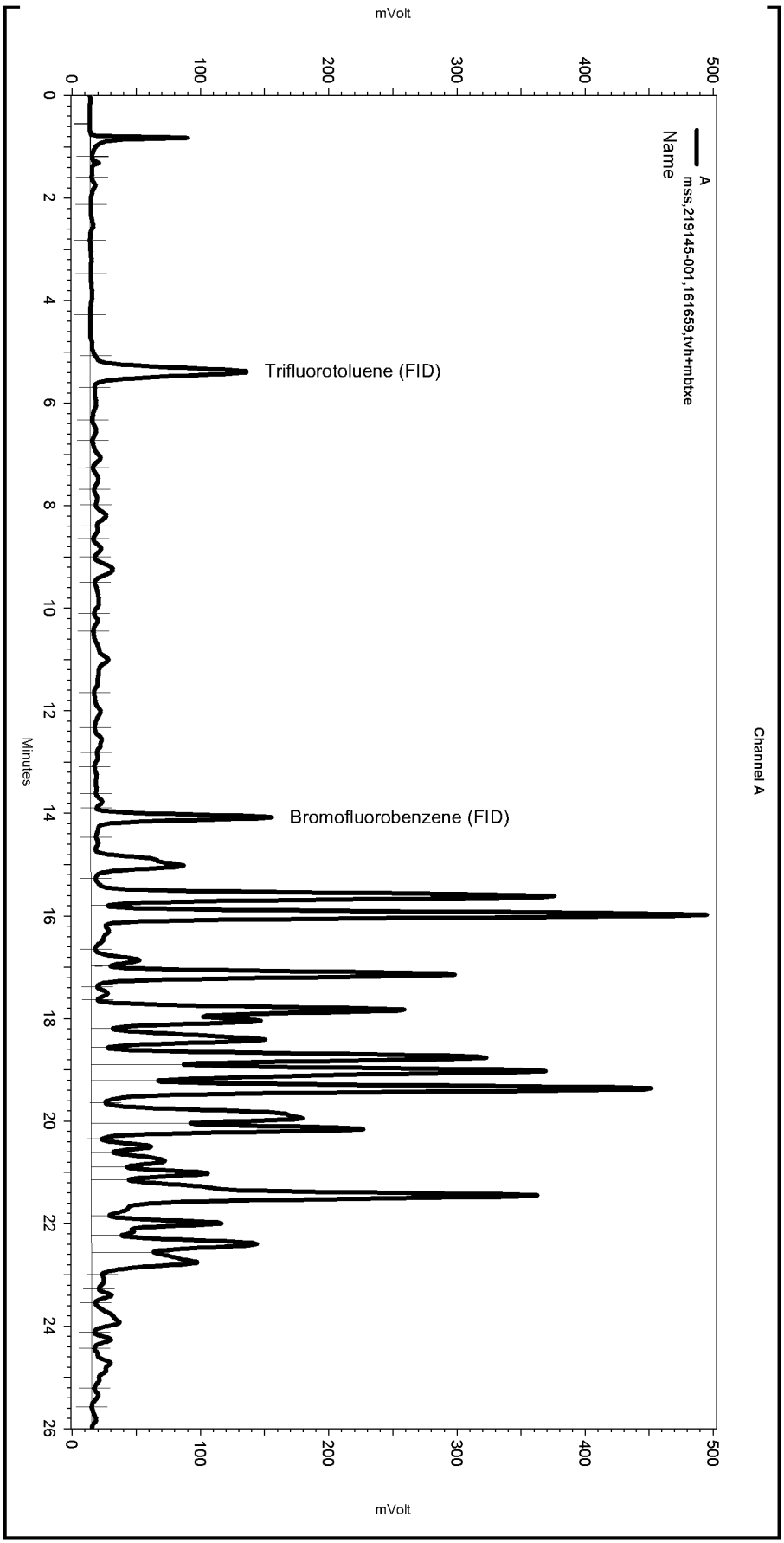
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	10.98	110	36-168	1	35
Benzene	10.00	10.14	101	69-121	0	24
Toluene	10.00	10.61	106	64-132	3	27
Ethylbenzene	10.00	10.31	103	64-136	3	27
m,p-Xylenes	10.00	10.66	107	63-138	1	32
o-Xylene	10.00	10.74	107	64-135	1	27

Surrogate	%REC	Limits
Trifluorotoluene (PID)	90	21-180
Bromofluorobenzene (PID)	89	26-167

RPD= Relative Percent Difference

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **mss,219145-001,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_006**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 4:16:33 PM
Analysis Date: 4/6/2010 4:10:09 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: b1.0



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No items selected for this section

Integration Events

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

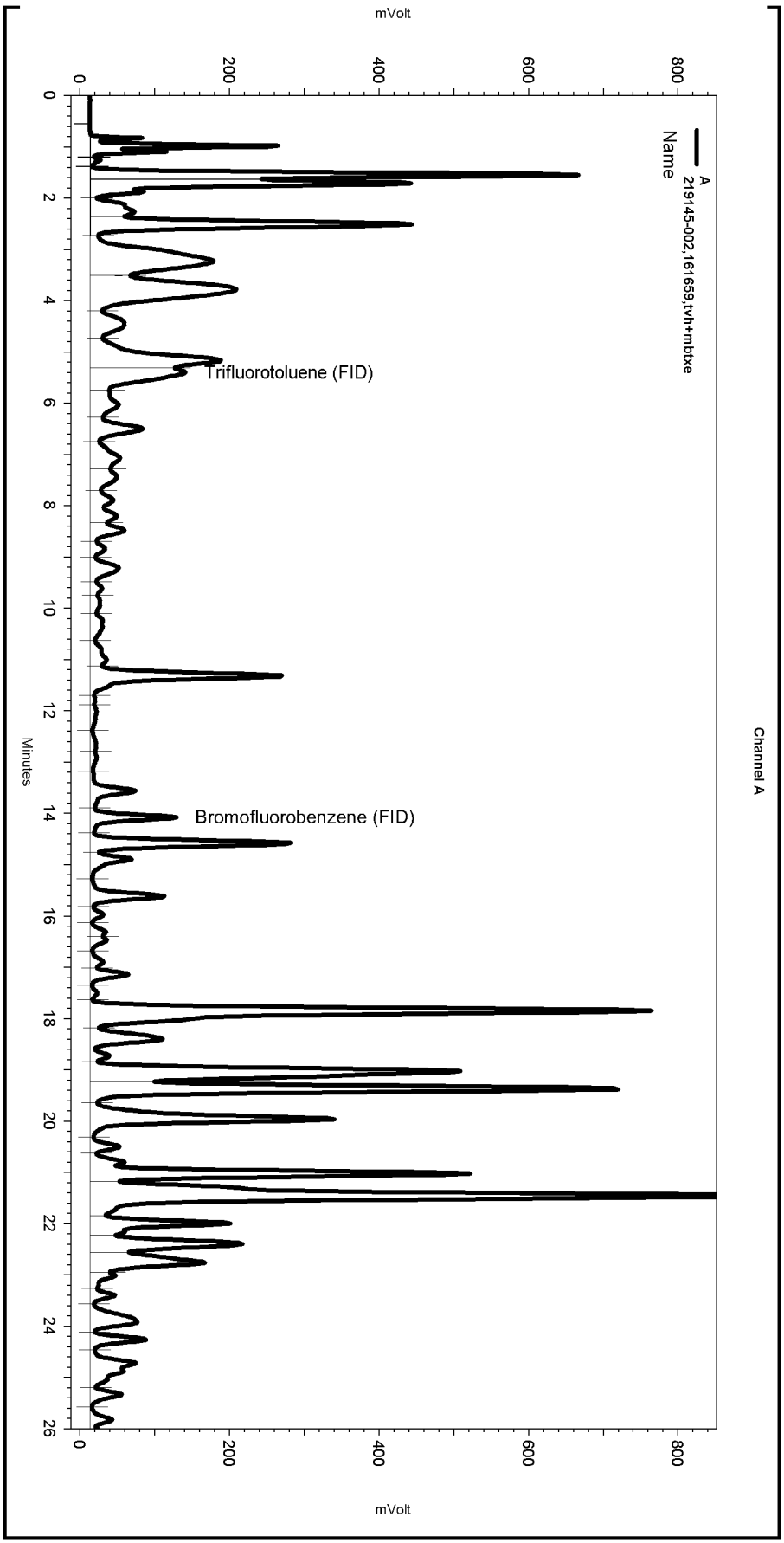
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_006

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.091	0	0

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **219145-002,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_009**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 6:09:15 PM
Analysis Date: 4/6/2010 4:10:29 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
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

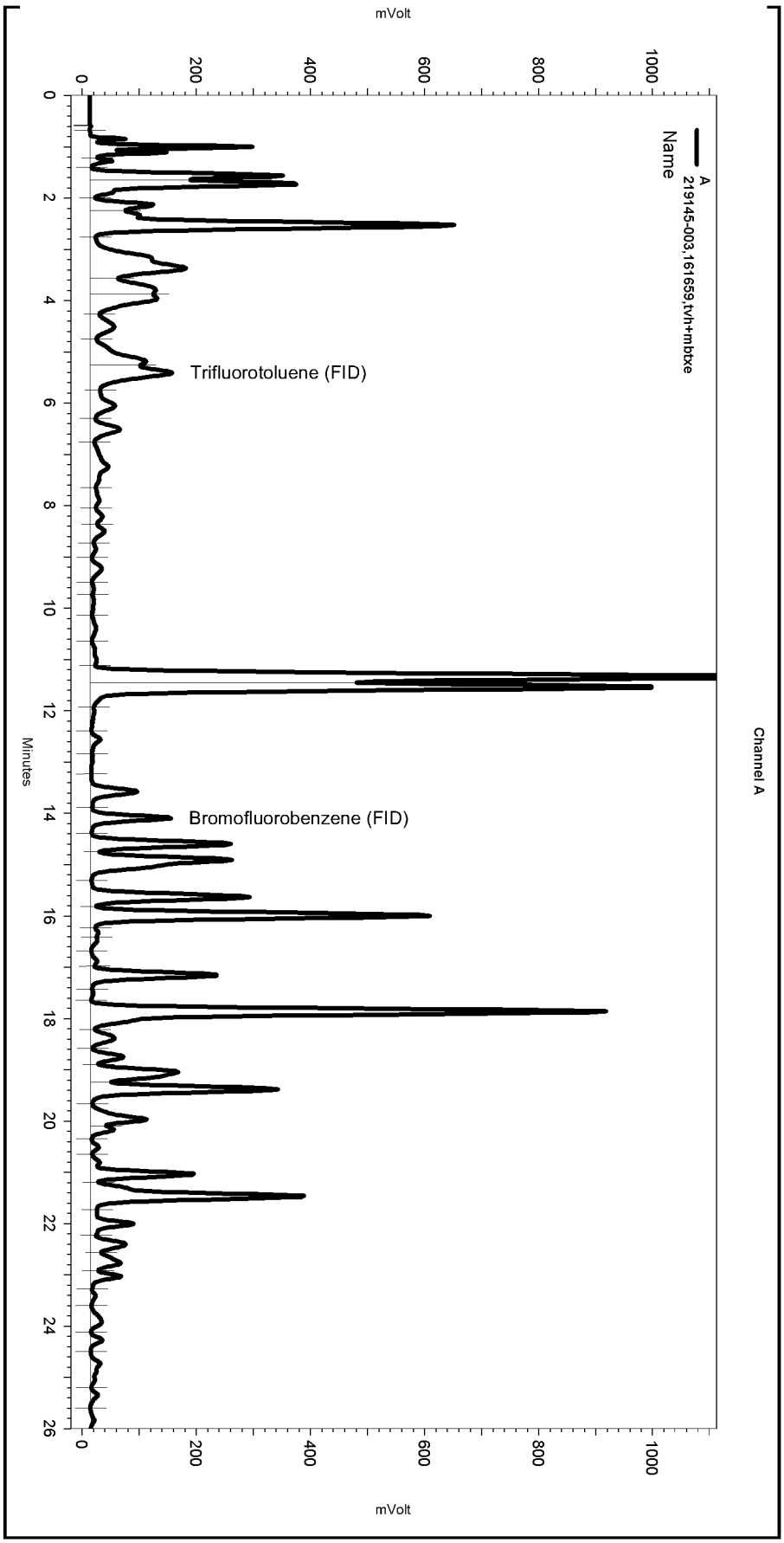
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_009

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0	26.017	0

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **219145-003,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_010**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 6:46:55 PM
Analysis Date: 4/6/2010 4:10:35 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.0



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Integration Events

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

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_010

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **219145-004,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_014**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
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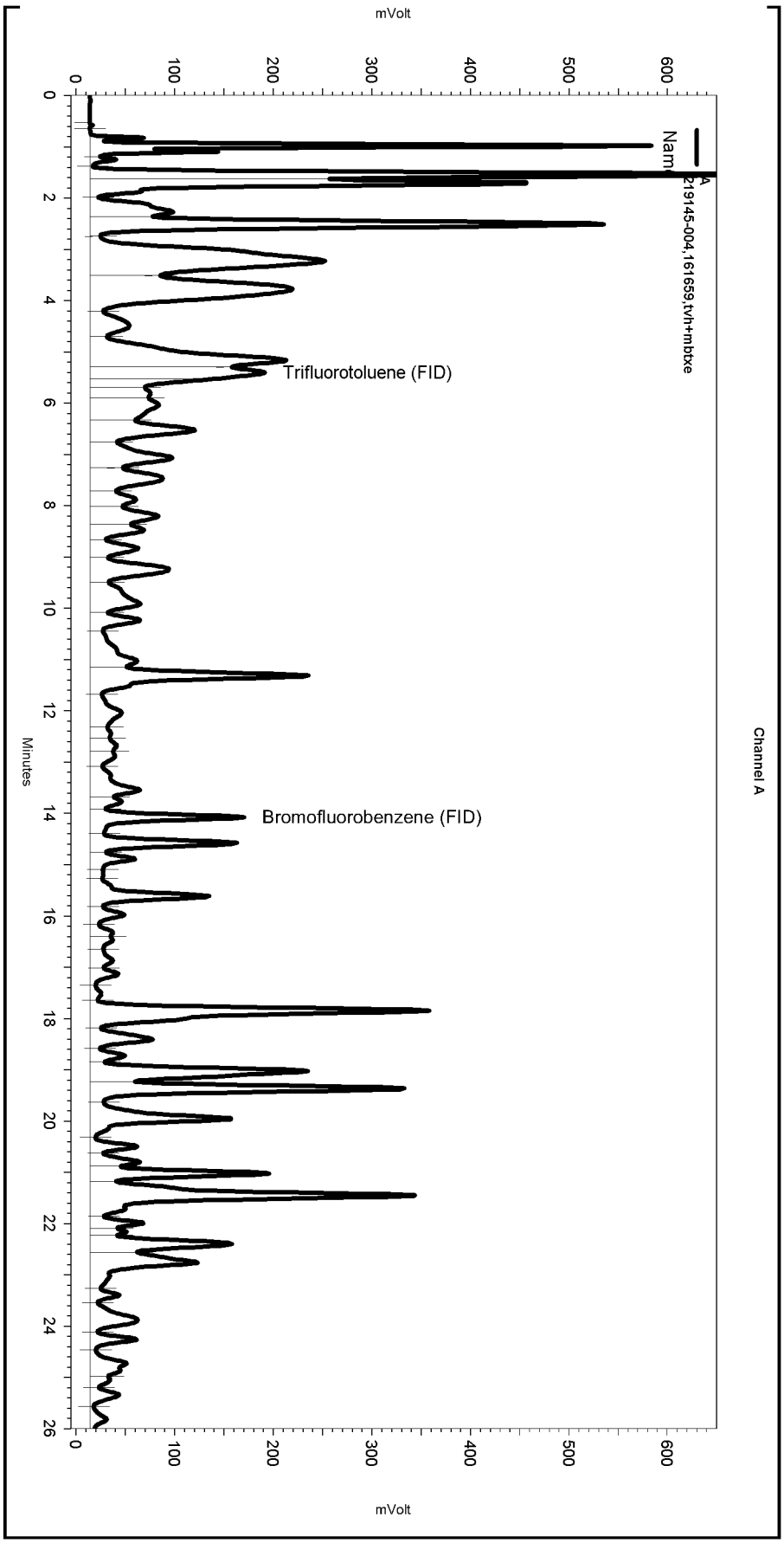
Analysis Date: 4/6/2010 4:22:56 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.0



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Integration Events

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

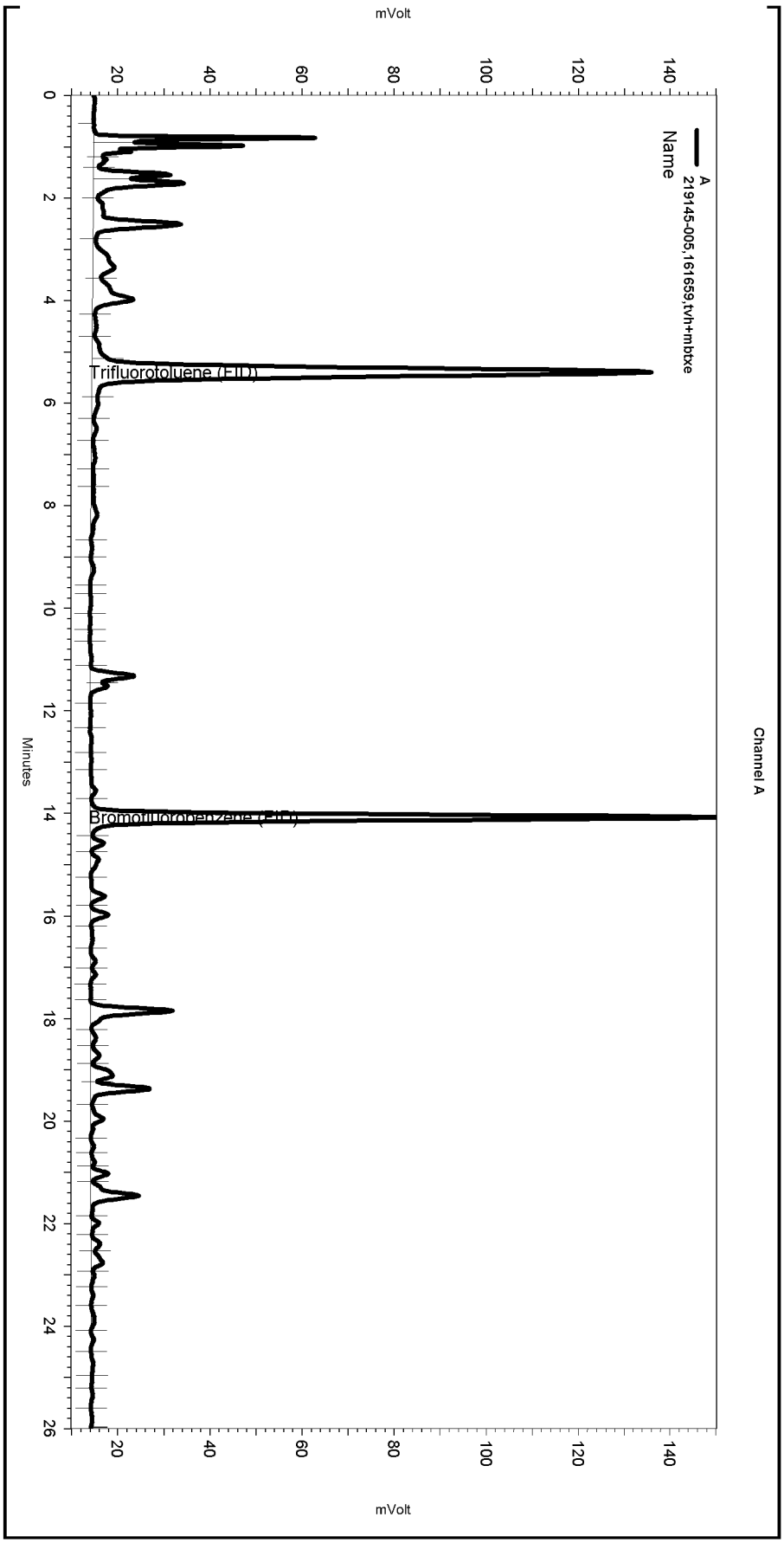
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_014

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0	26.017	0
Yes	Split Peak	5.529	0	0

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **219145-005,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_015**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 9:55:00 PM
Analysis Date: 4/6/2010 4:23:03 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.0



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Integration Events

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

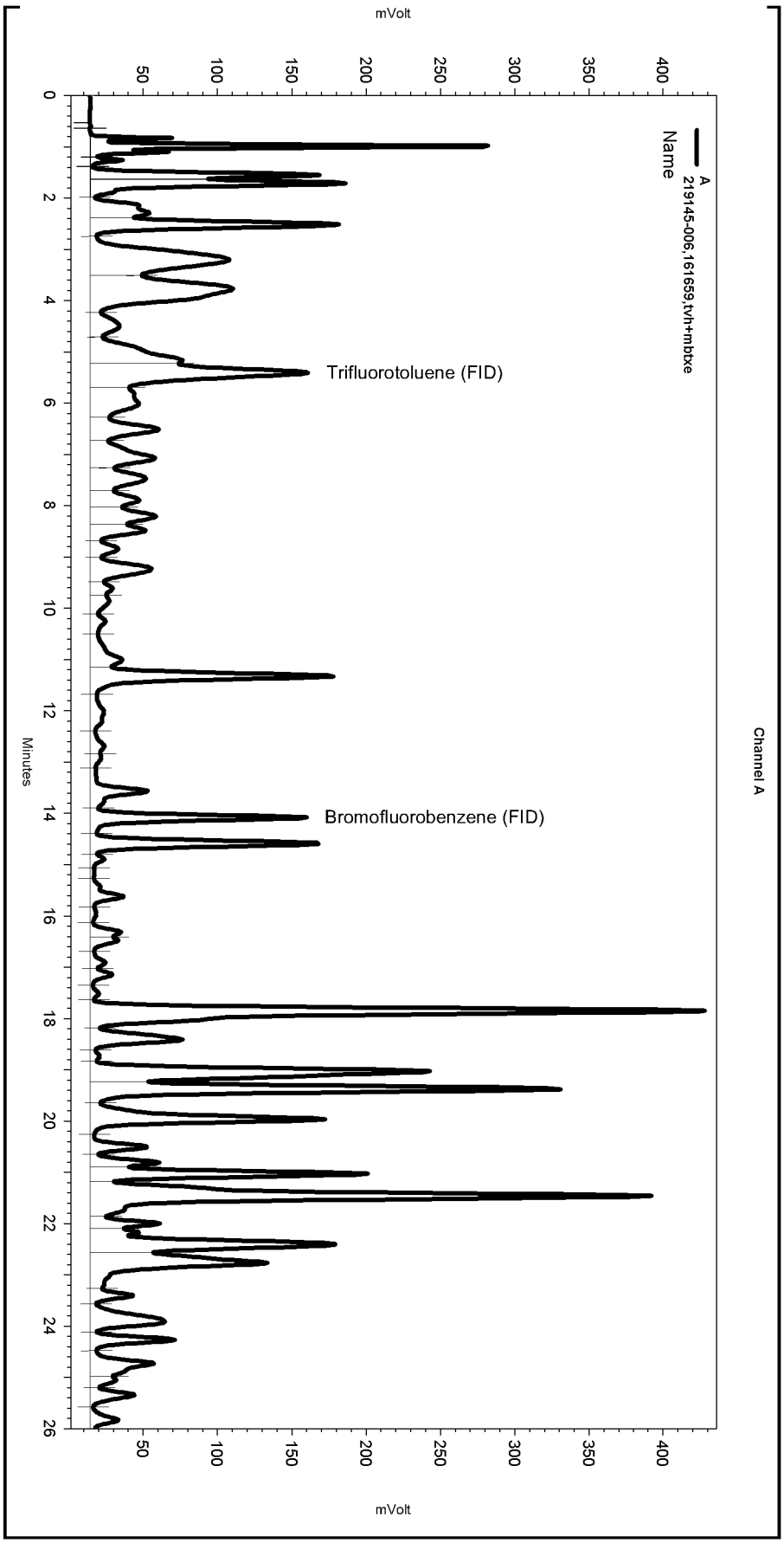
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_015

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.139	0	0

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **219145-006,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_016**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 10:32:34 PM
Analysis Date: 4/6/2010 4:23:11 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.0



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Integration Events

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

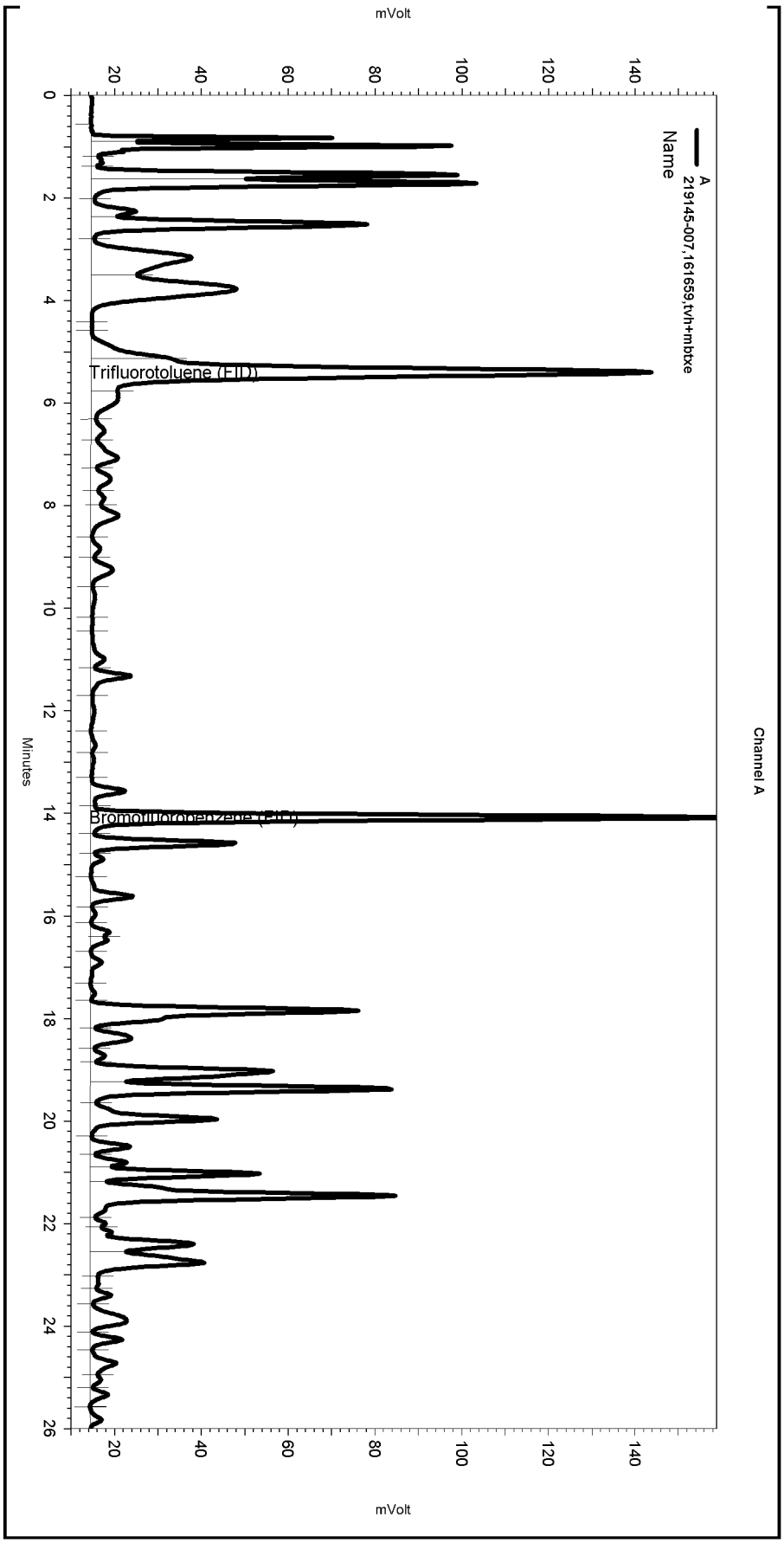
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_016

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0	26.017	0
Yes	Split Peak	5.231	0	0

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **219145-007,161659,tvh+mbtxe**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_017**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 11:10:06 PM
Analysis Date: 4/6/2010 4:23:18 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: a1.0



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Integration Events

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

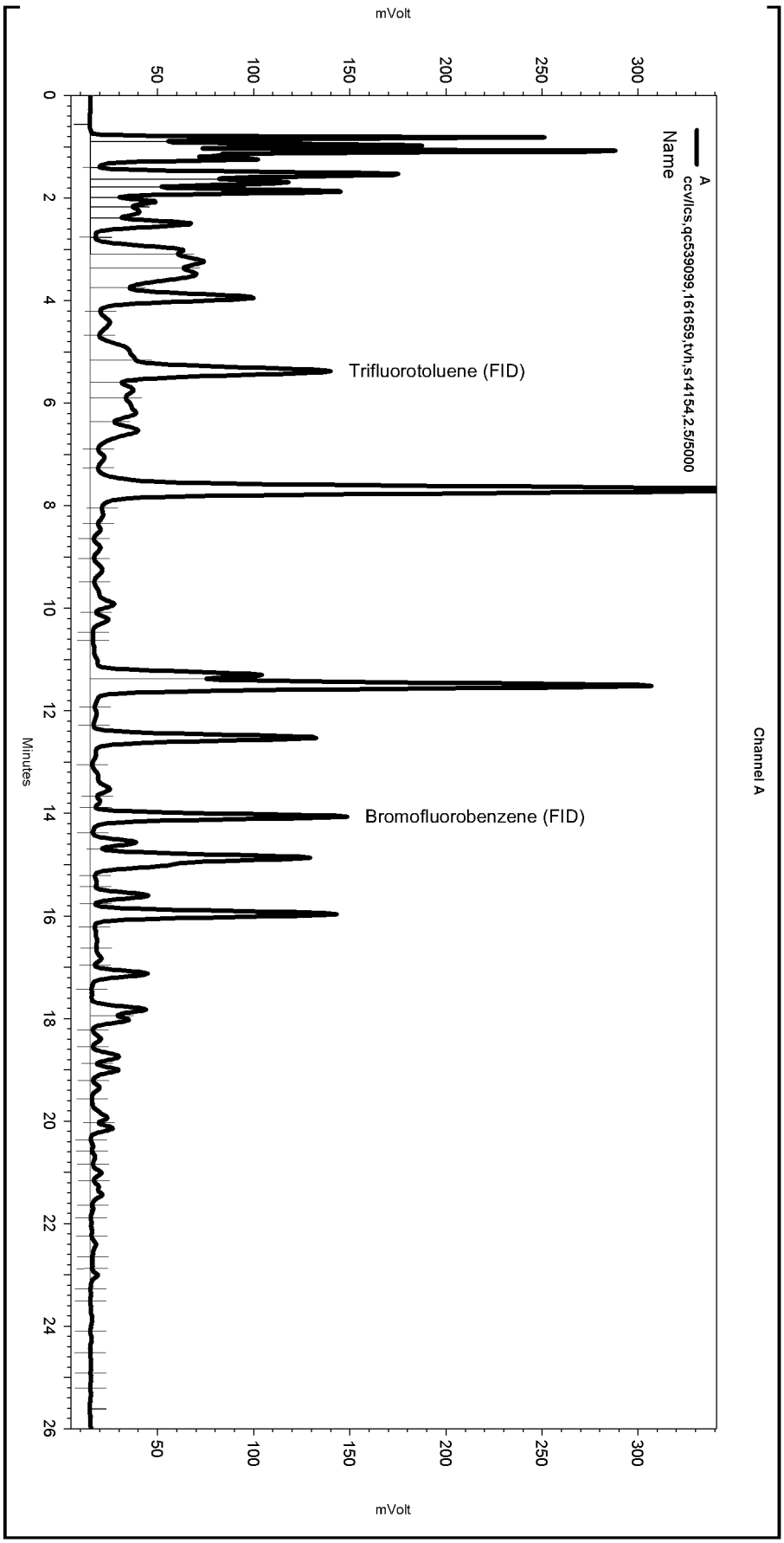
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_017

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.136	0	0

Sequence File: **\\Lims\gdrive\ezchrom\Projects\GC19\Sequence\095.seq**
Sample Name: **ccv/lcs,qc539099,161659,tvh,s14154,2.5/5000**
Data File: **\\Lims\gdrive\ezchrom\Projects\GC19\Data\095_003**
Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe091.met

Software Version 3.1.7
Run Date: 4/5/2010 10:24:13 AM
Analysis Date: 4/6/2010 3:49:25 PM
Sample Amount: 5 Multiplier: 5
Vial & pH or Core ID: {Data Description}



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Integration Events

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

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\095_003

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.166	0	0

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Prepared:	03/31/10
Batch#:	161523	Analyzed:	04/01/10

Field ID: MW-2 Lab ID: 219145-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	4,300	50

Surrogate	%REC	Limits
o-Terphenyl	115	39-150

Field ID: MW-7 Lab ID: 219145-002
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	6,100	50

Surrogate	%REC	Limits
o-Terphenyl	112	39-150

Field ID: MW-8 Lab ID: 219145-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	5,700	50

Surrogate	%REC	Limits
o-Terphenyl	114	39-150

Field ID: MW-9 Lab ID: 219145-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	3,400	50

Surrogate	%REC	Limits
o-Terphenyl	106	39-150

Field ID: MW-10 Lab ID: 219145-005
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	280 Y	50

Surrogate	%REC	Limits
o-Terphenyl	121	39-150

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Prepared:	03/31/10
Batch#:	161523	Analyzed:	04/01/10

Field ID: MW-11 Lab ID: 219145-006
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	3,400	50

Surrogate	%REC	Limits
o-Terphenyl	116	39-150

Field ID: MW-12 Lab ID: 219145-007
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	380 Y	50

Surrogate	%REC	Limits
o-Terphenyl	109	39-150

Type: BLANK Lab ID: QC538529

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	100	39-150

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC538530	Batch#:	161523
Matrix:	Water	Prepared:	03/31/10
Units:	ug/L	Analyzed:	04/01/10

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,631	105	34-144

Surrogate	%REC	Limits
o-Terphenyl	116	39-150

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	219145	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-12	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	161523
MSS Lab ID:	219133-003	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	ug/L	Prepared:	03/31/10
Diln Fac:	1.000	Analyzed:	04/02/10

Type: MS
Lab ID: QC538531
Cleanup Method: EPA 3630C

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	12.95	2,500	2,458	98	21-160

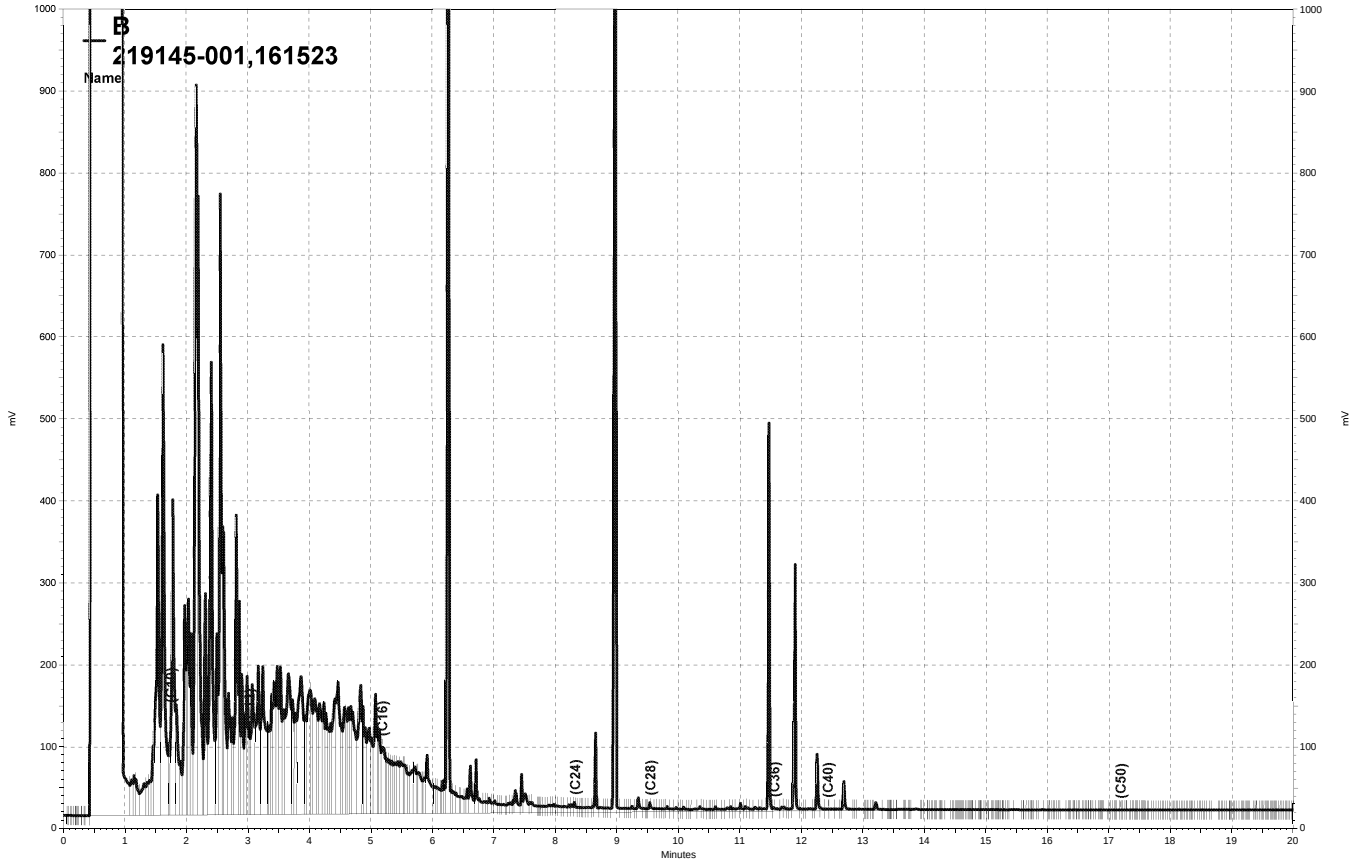
Surrogate	%REC	Limits
o-Terphenyl	107	39-150

Type: MSD
Lab ID: QC538532
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,590	103	21-160	5	58

Surrogate	%REC	Limits
o-Terphenyl	114	39-150

RPD= Relative Percent Difference



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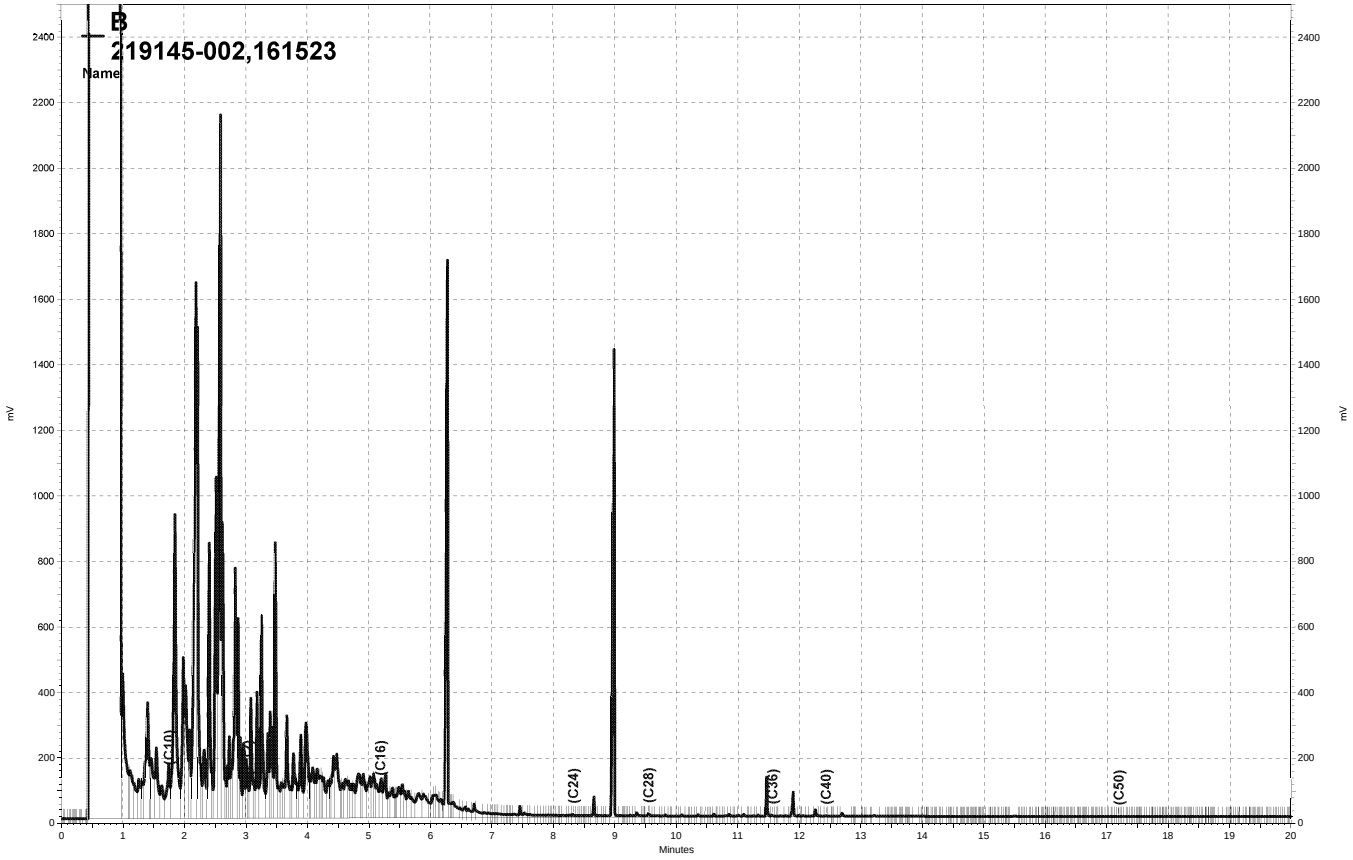

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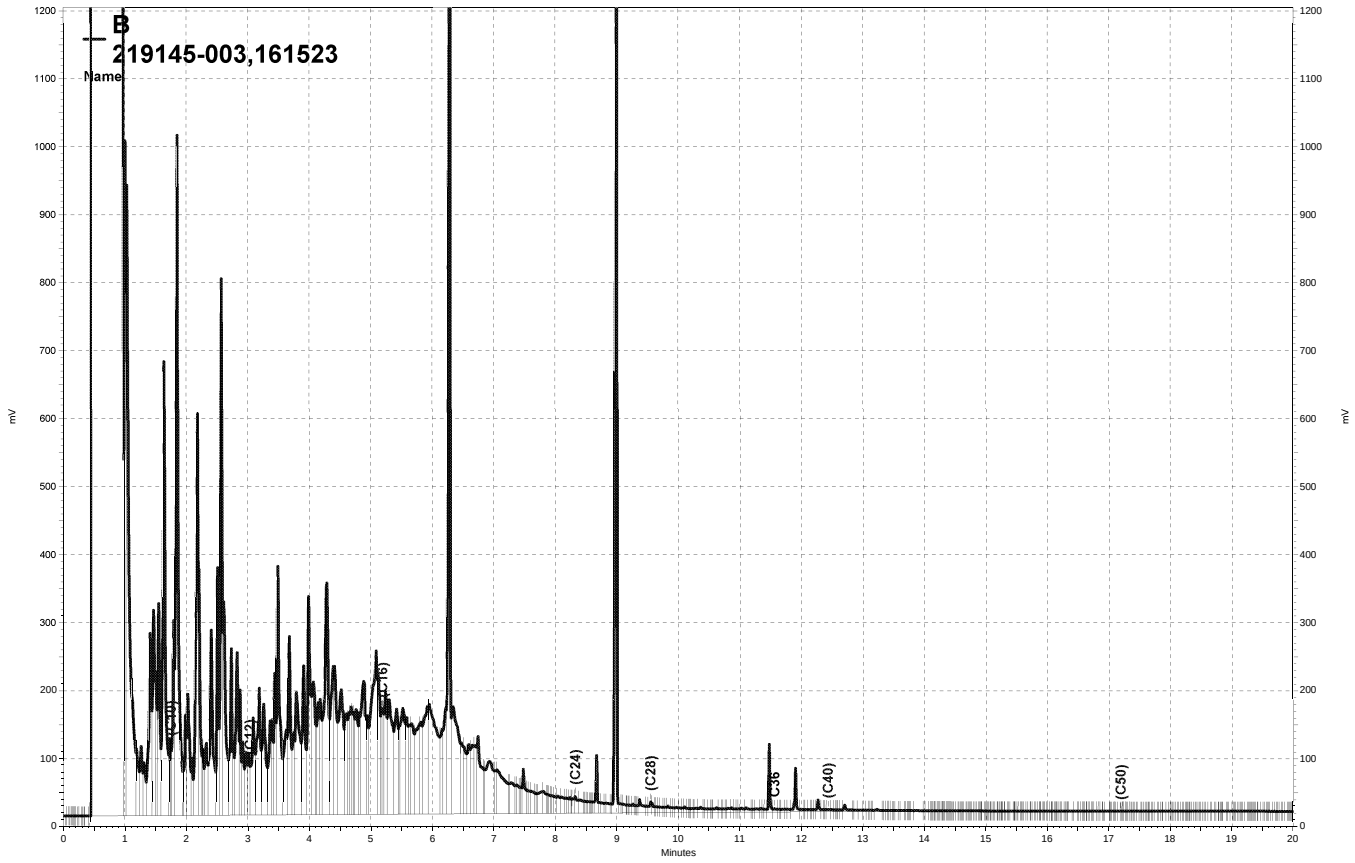

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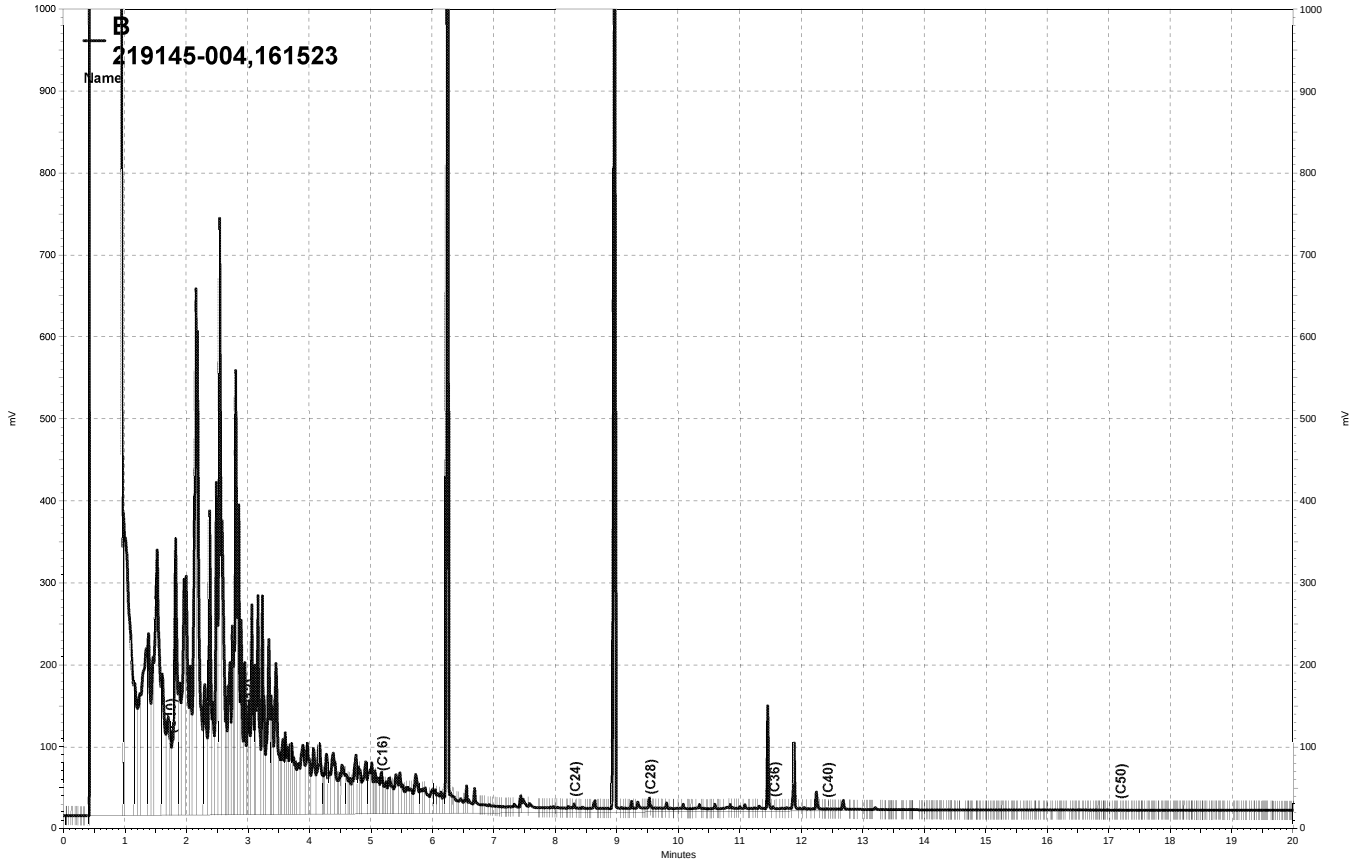

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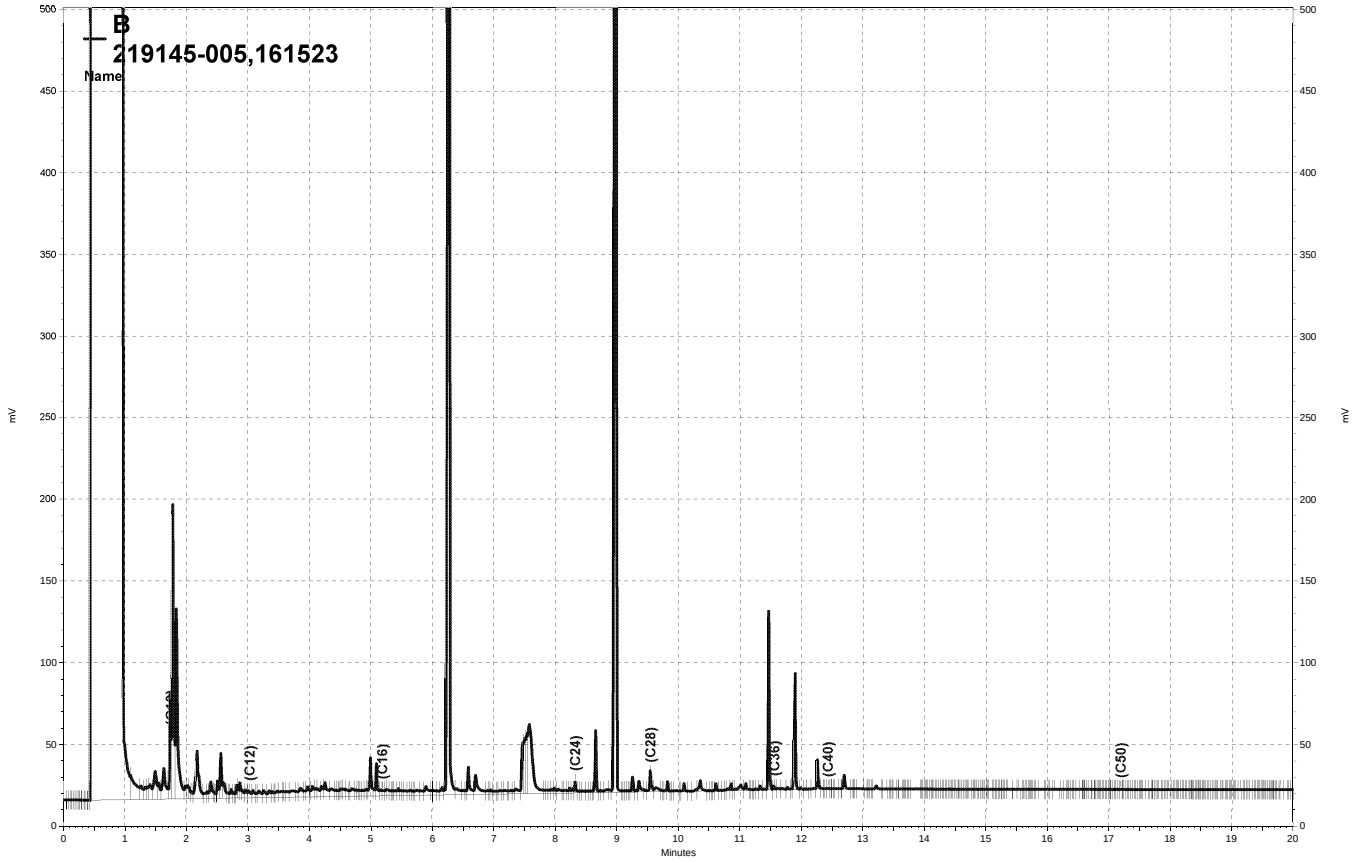

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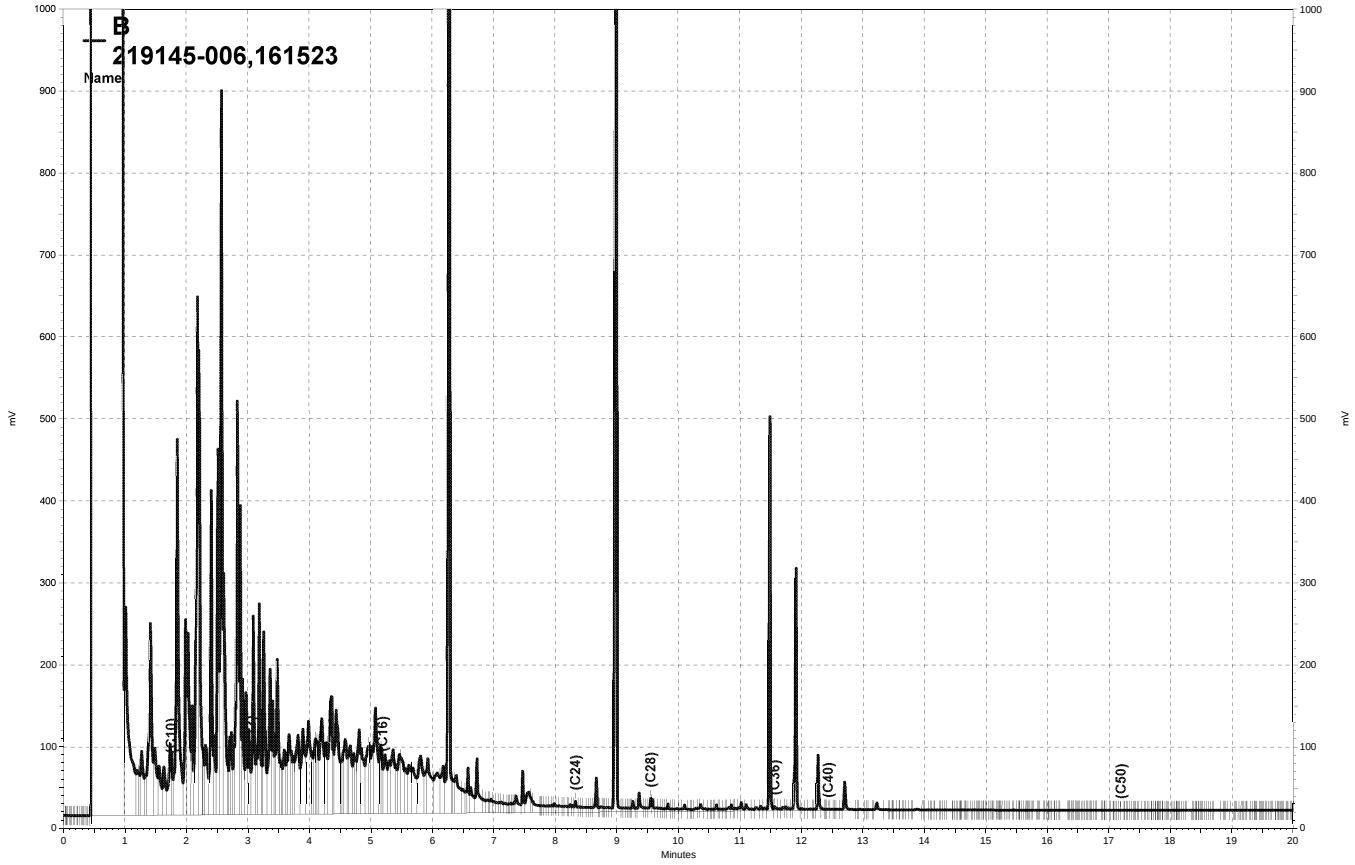

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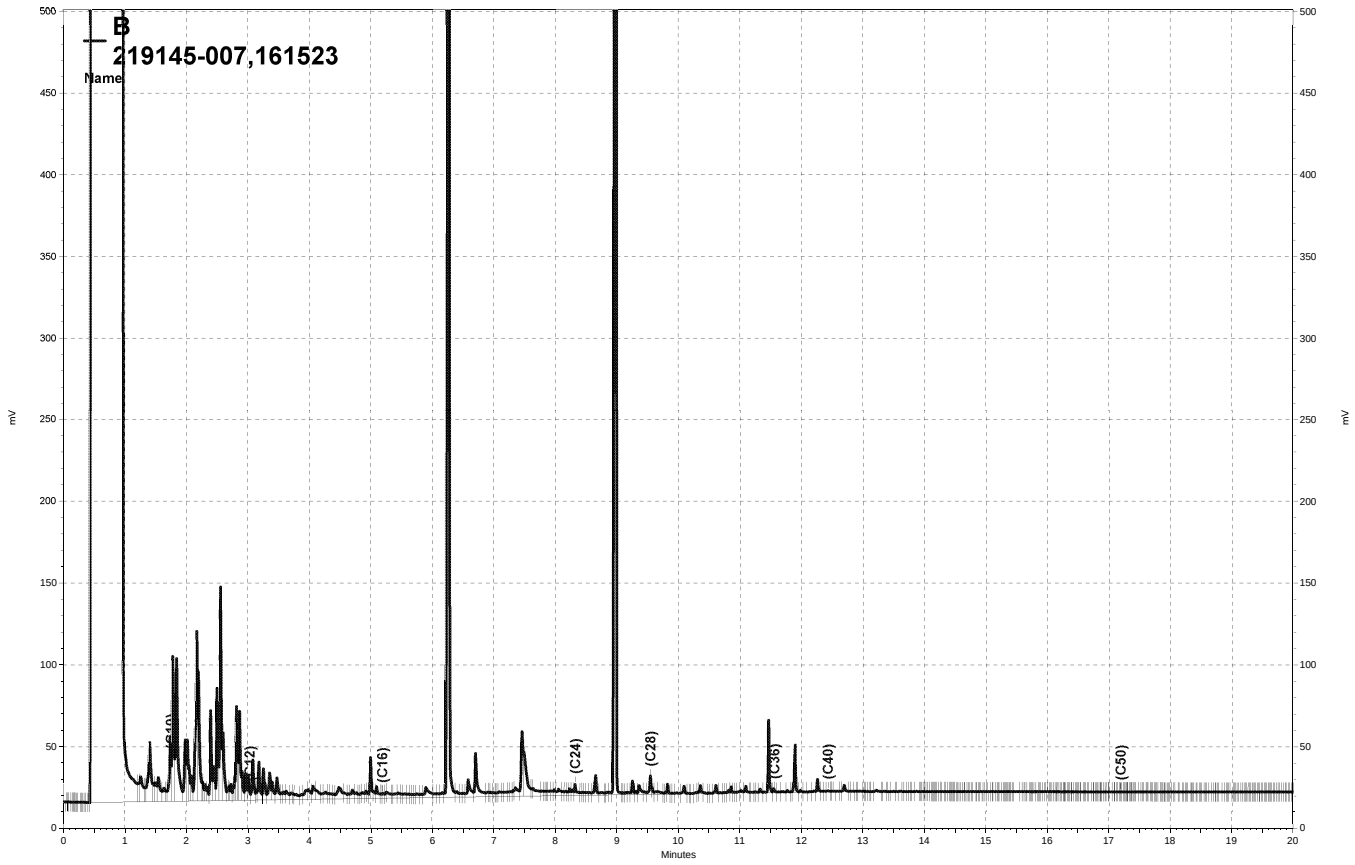

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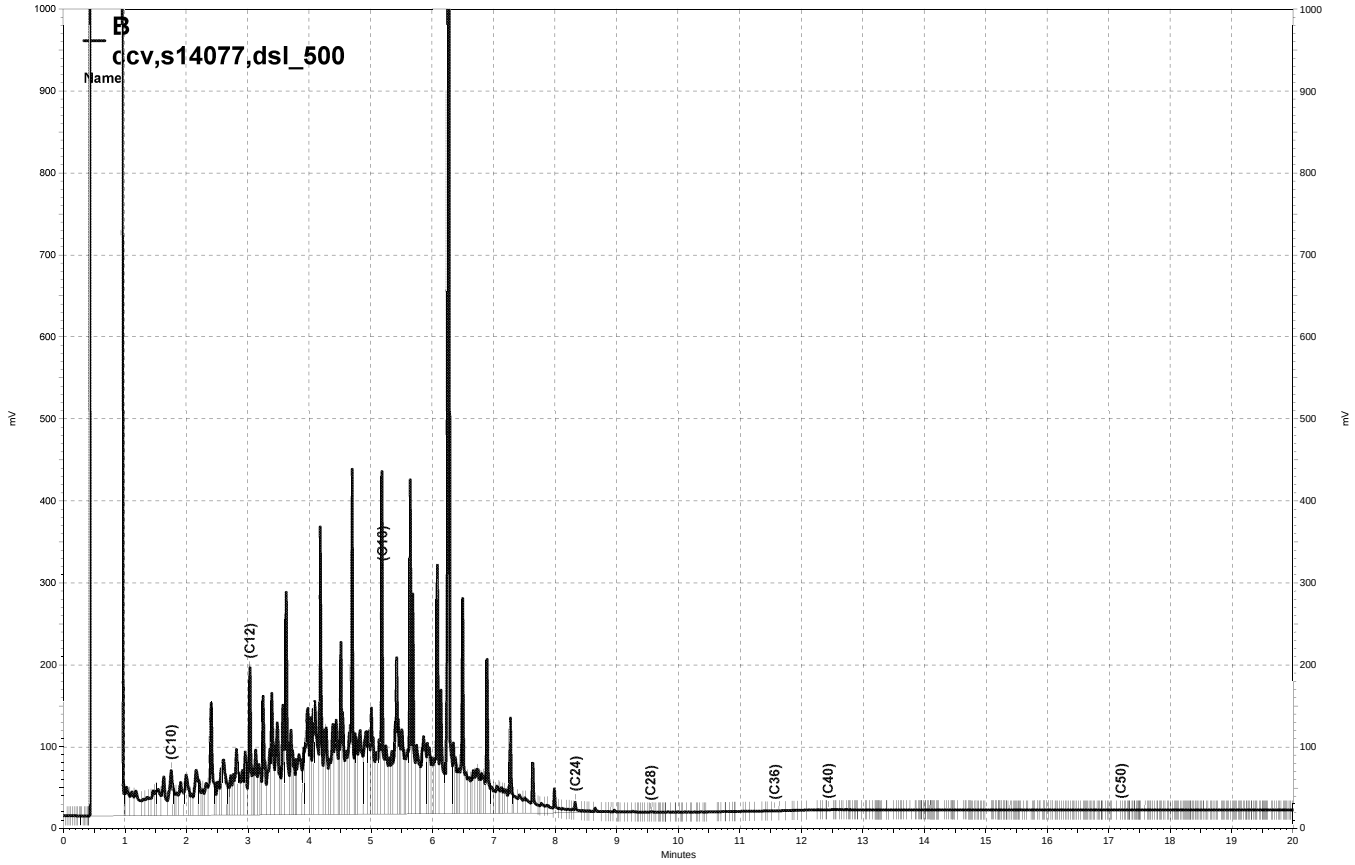

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Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 219146
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2010-02
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
SW-2	219146-001
SW-3	219146-002

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: _____ Date: 04/06/2010
Project Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**219146**
Client:	**Stellar Environmental Solutions**
Project:	**2010-02**
Location:	**Redwood Regional Park**
Request Date:	**03/29/10**
Samples Received:	**03/29/10**

This data package contains sample and QC results for two water samples, requested for the above referenced project on 03/29/10. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Z19146

Chain of Custody Record

Lab job no. _____

Date _____

Page 1 of 1

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

Project Owner East Bay Regional Park District
Site Address 7867 Redwood Road
Oakland, California
Redwood Regional Park
Project Name
Project Number 2010-02

Method of Shipment Hand Delivery
Shipment No. _____
Airbill No. _____
Cooler No. _____
Project Manager Richard Makdisi
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: *(Signature)*

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH, BTEX	Analysis Required: ICPd, MO	Remarks
SW-2	Creek	3-29-10	1100	W	3 VOA, 250mL	Y	Yes (a)	N	5	X	X	
SW-3	Creek	3-29-10	1130	W	↓	Y	Yes (a)	↓	5	X	X	

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature	3-29-10	Signature	12-18-09	Signature	3/29/10	Signature	3/29/10
Printed Teal Glass	Time	Printed Ben Pannell	Time	Printed Ben Pannell	Time	Printed Pat Gonzalez	Time
Company Stellar Environmental	1145	Company Blaine Tech	1145	Company Blaine Tech	1545	Company C&T	15:45

Turnaround Time: Standard - 5 Day
Comments: (a) VOA w/ HCL

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

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 219146 Date Received 3-29-10 Number of coolers 1
Client STEVENS Project REDWOOD REGIONAL PARK

Date Opened 3-29-10 By (print) S. EVANS (sign)
Date Logged in By (print) (sign)

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02		
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000		

Field ID:	SW-2	Batch#:	161615
Type:	SAMPLE	Analyzed:	04/03/10
Lab ID:	219146-001		

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	99	48-162	EPA 8015B
Bromofluorobenzene (FID)	101	52-158	EPA 8015B
Trifluorotoluene (PID)	95	21-180	EPA 8021B
Bromofluorobenzene (PID)	99	26-167	EPA 8021B

Field ID:	SW-3	Batch#:	161659
Type:	SAMPLE	Analyzed:	04/06/10
Lab ID:	219146-002		

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	102	48-162	EPA 8015B
Bromofluorobenzene (FID)	104	52-158	EPA 8015B
Trifluorotoluene (PID)	90	21-180	EPA 8021B
Bromofluorobenzene (PID)	91	26-167	EPA 8021B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02		
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000		

Type: BLANK
Lab ID: QC538909
Batch#: 161615
Analyzed: 04/03/10

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	100	48-162	EPA 8015B
Bromofluorobenzene (FID)	100	52-158	EPA 8015B
Trifluorotoluene (PID)	99	21-180	EPA 8021B
Bromofluorobenzene (PID)	100	26-167	EPA 8021B

Type: BLANK
Lab ID: QC539098
Batch#: 161659
Analyzed: 04/05/10

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

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	102	48-162	EPA 8015B
Bromofluorobenzene (FID)	93	52-158	EPA 8015B
Trifluorotoluene (PID)	89	21-180	EPA 8021B
Bromofluorobenzene (PID)	85	26-167	EPA 8021B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC538910	Batch#:	161615
Matrix:	Water	Analyzed:	04/03/10
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,003	100	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	118	48-162
Bromofluorobenzene (FID)	107	52-158

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02	Analysis:	EPA 8015B
Field ID:	SW-2	Batch#:	161615
MSS Lab ID:	219146-001	Sampled:	03/29/10
Matrix:	Water	Received:	03/29/10
Units:	ug/L	Analyzed:	04/03/10
Diln Fac:	1.000		

Type: MS Lab ID: QC538911

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<10.56	2,000	1,926	96	49-129

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	48-162
Bromofluorobenzene (FID)	104	52-158

Type: MSD Lab ID: QC538912

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,064	103	49-129	7	19

Surrogate	%REC	Limits
Trifluorotoluene (FID)	119	48-162
Bromofluorobenzene (FID)	106	52-158

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	161615
Units:	ug/L	Analyzed:	04/03/10
Diln Fac:	1.000		

Type: BS Lab ID: QC538913

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	11.46	115	36-168
Benzene	10.00	10.42	104	69-121
Toluene	10.00	10.73	107	64-132
Ethylbenzene	10.00	10.36	104	64-136
m,p-Xylenes	10.00	11.04	110	63-138
o-Xylene	10.00	10.80	108	64-135

Surrogate	%REC	Limits
Trifluorotoluene (PID)	96	21-180
Bromofluorobenzene (PID)	99	26-167

Type: BSD Lab ID: QC538914

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	11.75	117	36-168	2	35
Benzene	10.00	10.59	106	69-121	2	24
Toluene	10.00	10.95	109	64-132	2	27
Ethylbenzene	10.00	10.48	105	64-136	1	27
m,p-Xylenes	10.00	11.47	115	63-138	4	32
o-Xylene	10.00	11.05	111	64-135	2	27

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	21-180
Bromofluorobenzene (PID)	101	26-167

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC539099	Batch#:	161659
Matrix:	Water	Analyzed:	04/05/10
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	985.5	99	73-121

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	48-162
Bromofluorobenzene (FID)	100	52-158

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	161659
MSS Lab ID:	219145-001	Sampled:	03/29/10
Matrix:	Water	Received:	03/29/10
Units:	ug/L	Analyzed:	04/05/10
Diln Fac:	1.000		

Type: MS Lab ID: QC539100

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,033	2,000	3,715	84	49-129

Surrogate	%REC	Limits
Trifluorotoluene (FID)	134	48-162
Bromofluorobenzene (FID)	120	52-158

Type: MSD Lab ID: QC539101

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	3,744	86	49-129	1	19

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	48-162
Bromofluorobenzene (FID)	117	52-158

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	161659
Units:	ug/L	Analyzed:	04/05/10
Diln Fac:	1.000		

Type: BS Lab ID: QC539102

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	11.08	111	36-168
Benzene	10.00	10.09	101	69-121
Toluene	10.00	10.26	103	64-132
Ethylbenzene	10.00	10.65	106	64-136
m,p-Xylenes	10.00	10.51	105	63-138
o-Xylene	10.00	10.90	109	64-135

Surrogate	%REC	Limits
Trifluorotoluene (PID)	89	21-180
Bromofluorobenzene (PID)	88	26-167

Type: BSD Lab ID: QC539103

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	10.98	110	36-168	1	35
Benzene	10.00	10.14	101	69-121	0	24
Toluene	10.00	10.61	106	64-132	3	27
Ethylbenzene	10.00	10.31	103	64-136	3	27
m,p-Xylenes	10.00	10.66	107	63-138	1	32
o-Xylene	10.00	10.74	107	64-135	1	27

Surrogate	%REC	Limits
Trifluorotoluene (PID)	90	21-180
Bromofluorobenzene (PID)	89	26-167

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2010-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/29/10
Units:	ug/L	Received:	03/29/10
Diln Fac:	1.000	Prepared:	03/31/10
Batch#:	161523		

Field ID: SW-2 Lab ID: 219146-001
Type: SAMPLE Analyzed: 04/01/10

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	110	39-150

Field ID: SW-3 Lab ID: 219146-002
Type: SAMPLE Analyzed: 04/02/10

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	98	39-150

Type: BLANK Analyzed: 04/01/10
Lab ID: QC538529

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	100	39-150

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2010-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC538530	Batch#:	161523
Matrix:	Water	Prepared:	03/31/10
Units:	ug/L	Analyzed:	04/01/10

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,631	105	34-144

Surrogate	%REC	Limits
o-Terphenyl	116	39-150

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	219146	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2010-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	161523
MSS Lab ID:	219133-003	Sampled:	03/30/10
Matrix:	Water	Received:	03/30/10
Units:	ug/L	Prepared:	03/31/10
Diln Fac:	1.000	Analyzed:	04/02/10

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC538531

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	12.95	2,500	2,458	98	21-160

Surrogate	%REC	Limits
o-Terphenyl	107	39-150

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC538532

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,590	103	21-160	5	58

Surrogate	%REC	Limits
o-Terphenyl	114	39-150

RPD= Relative Percent Difference

APPENDIX D

Historical Groundwater and Surface Water Analytical Results

HISTORICAL GROUNDWATER MONITORING WELLS ANALYTICAL RESULTS

REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA

(all concentrations in ug/L, equivalent to parts per billion [ppb])

Well MW-2									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Nov-94	**66**	*< 50*	**3.4**	*< 0.5*	*< 0.5*	**0.9**	**4.3**	*NA*
2	Feb-95	**89**	*< 50*	**18**	**2.4**	**1.7**	**7.5**	**30**	*NA*
3	May-95	*< 50*	*< 50*	**3.9**	*< 0.5*	**1.6**	**2.5**	**8.0**	*NA*
4	Aug-95	*< 50*	*< 50*	**5.7**	*< 0.5*	*< 0.5*	*< 0.5*	**5.7**	*NA*
5	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Aug-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Dec-96	*< 50*	*< 50*	**6.3**	*< 0.5*	**1.6**	*< 0.5*	**7.9**	*NA*
8	Feb-97	*< 50*	*< 50*	**0.69**	*< 0.5*	**0.55**	*< 0.5*	**1.2**	*NA*
9	May-97	**67**	*< 50*	**8.9**	*< 0.5*	**5.1**	*< 1.0*	**14**	*NA*
10	Aug-97	*< 50*	*< 50*	**4.5**	*< 0.5*	**1.1**	*< 0.5*	**5.6**	*NA*
11	Dec-97	**61**	*< 50*	**21**	*< 0.5*	**6.5**	**3.9**	**31**	*NA*
12	Feb-98	**2,000**	**200**	**270**	**92**	**150**	**600**	**1,112**	*NA*
13	Sep-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**7.0**
14	Apr-99	**82**	**710**	**4.2**	*< 0.5*	**3.4**	**4.0**	**12**	**7.5**
15	Dec-99	**57**	*< 50*	**20**	**0.6**	**5.9**	*<0.5*	**27**	**4.5**
16	Sep-00	*< 50*	*< 50*	**0.72**	*< 0.5*	*< 0.5*	*< 0.5*	**0.7**	**7.9**
17	Jan-01	**51**	*< 50*	**8.3**	*< 0.5*	**1.5**	*< 0.5*	**9.8**	**8.0**
18	Apr-01	**110**	*< 50*	**10**	*< 0.5*	**11**	**6.4**	**27**	**10**
19	Aug-01	**260**	**120**	**30**	**6.7**	**1.6**	**6.4**	**45**	**27**
20	Dec-01	**74**	**69**	**14**	**0.8**	**3.7**	**3.5**	**22**	**6.6**
21	Mar-02	*< 50*	*< 50*	**2.3**	**0.51**	**1.9**	**1.3**	**8.3**	**8.2**
22	Jun-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**7.7**
23	Sep-02	**98**	*< 50*	**5.0**	*< 0.5*	*< 0.5*	*< 0.5*	—	**13**
24	Dec-02	*< 50*	*< 50*	**4.3**	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
25	Mar-03	**130**	**82**	**39**	*< 0.5*	**20**	**4.1**	**63**	**16**
26	Jun-03	*< 50*	*< 50*	**1.9**	*< 0.5*	*< 0.5*	*< 0.5*	**1.9**	**8.7**
27	Sep-03	**120**	*< 50*	**8.6**	**0.51**	**0.53**	*< 0.5*	**9.6**	**23**
28	Dec-03	**282**	*<100*	**4.3**	**1.6**	**1.3**	**1.2**	**8.4**	**9.4**
29	Mar-04	**374**	*<100*	**81**	**1.2**	**36**	**7.3**	**126**	**18**
30	Jun-04	*< 50*	*< 50*	**0.75**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**15**
31	Sep-04	**200**	*< 50*	**23**	*< 0.5*	*< 0.5*	**0.70**	**24**	**16**
32	Dec-04	**80**	*< 50*	**14**	*< 0.5*	*2.9*	**0.72**	**18**	**20**
33	Mar-05	**190**	**68**	**27**	*<0.5*	**14**	**11**	**52**	**26**
34	Jun-05	**68**	*< 50*	**7.1**	*< 0.5*	**6.9**	**1.8**	**16**	**24**
35	Sep-05	*< 50*	*< 50*	**2.5**	*< 0.5*	*< 0.5*	*< 1.0*	**2.5**	**23**
36	Dec-05	*< 50*	*< 50*	**3.9**	*< 0.5*	*< 0.5*	*< 1.0*	**3.9**	**23**
37	Mar-06	**1300**	**300**	**77**	**4.4**	**91**	**250**	**422**	**18**
38	Jun-06	*< 50*	**60**	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	**17**
39	Sep-06	**270**	**52**	**31**	*< 0.5*	**15**	**6.69**	**53**	**17**
40	Dec-06	*< 50*	*< 50*	**2.1**	*< 0.5*	*< 0.5*	*< 0.5*	**2**	**16**
41	Mar-07	**59**	*< 50*	**4**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**14**
42	Jun-07	*<50*	*<50*	**3.5**	*<0.5*	*<0.5*	*<0.5*	**3.5**	**8**
43	Sep-07	**2,600**	**260**	**160**	**44**	**86**	**431**	**721**	**15**
44	Dec-07	**16,000**	**5,800**	**23**	**91**	**230**	**2,420**	**2764**	**16**
44a	Jan-08	**480**	**200**	**1.1**	**3.2**	**5.5**	**68**	**77.8**	**11**
45	Mar-08	**20,000**	**24,000**	**21**	**39**	**300**	**2,620**	**2980**	**13**
45a	Apr-08	**800**	**640**	**2.6**	**2.1**	**13**	**155**	**172.7**	**13**
46a	May-08	**7,100**	**3,900**	**14**	**8.8**	**140**	**710**	**872.8**	**11**
46	Jun-08	**5,700**	**1,000**	**9.4**	**5.2**	**80**	**550**	**644.6**	**11**
46a	Jul-08	**6,400**	**2,200**	**13**	**5.1**	**140**	**570**	**728.1**	**2.9**
46b	Jul-08	**390**	**55**	**1.3**	**0.77**	**4.6**	**44.4**	**51.07**	**9**
46c	Aug-08	**28,000**	**7,100**	**12**	**19**	**260**	**2,740**	**3031**	*<20*
46d	Aug-08	**8,700**	**2,700**	**5.7**	**7.4**	**130**	**900.0**	**1043.1**	**3.5**
47	Sep-08	**40,000**	**9,100**	**1.6**	*<0.5*	**110**	**910.0**	**1021.6**	**9.5**
48	Dec-08	**9,200**	**2,200**	**0.52**	*<0.5*	*<0.5*	**201.0**	**201.52**	**12**
49	Mar-09	**3,100**	**37,000**	**1.1**	**1.4**	**7.9**	**35.0**	**45.4**	**14**
50	May-09	**5,000**	**15,000**	**1.5**	*<0.5*	**9.8**	**39.0**	**50**	**13**
51	Jun-09	**2,400**	**8,000**	**5.4**	*<0.5*	**11**	**20.2**	**36.6**	**13**
52	Aug-09	**1,900**	**3,100**	**1.6**	**1.8**	**11**	**23.8**	**38.2**	**7.1**
53	Sep-09	**1,400**	**1,800**	*<0.5*	*<0.5*	*<0.5*	**4.2**	**4.24**	**12**
54	Dec-09	**590**	**1,800**	*<0.5*	*<0.5*	**1.2**	**1.2**	**2.4**	**3.6**
55	Mar-10	**1,900**	**3,200**	*<0.5*	*<0.5*	*<0.5*	**2.2**	**2.2**	**2.2**
56	Mar-10	**2,000**	**4,300**	*<0.5*	*<0.5*	*<0.5*	**3.5**	**3.45**	*<2.0*

Well MW-4									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Nov-94	**2,600**	**230**	**120**	**4.8**	**150**	**88**	**363**	*NA*
2	Feb-95	**11,000**	**330**	**420**	**17**	**440**	**460**	**1,337**	*NA*
3	May-95	**7,200**	**440**	**300**	**13**	**390**	**330**	**1,033**	*NA*
4	Aug-95	**1,800**	**240**	**65**	**6.8**	**89**	**67**	**227**	*NA*
5	May-96	**1,100**	**140**	**51**	*< 0.5*	*< 0.5*	**47**	**98**	*NA*
6	Aug-96	**3,700**	**120**	**63**	**2.0**	**200**	**144**	**409**	*NA*
7	Dec-96	**2,700**	**240**	**19**	*< 0.5*	**130**	**93**	**242**	*NA*
8	Feb-97	**3,300**	*< 50*	**120**	**1.0**	**150**	**103**	**374**	*NA*
9	May-97	**490**	*< 50*	**2.6**	**6.7**	**6.4**	**6.7**	**22**	*NA*
10	Aug-97	**1,900**	**150**	**8.6**	**3.5**	**78**	**53**	**143**	*NA*
11	Dec-97	**1,000**	**84**	**4.6**	**2.7**	**61**	**54**	**123**	*NA*
12	Feb-98	**5,300**	**340**	**110**	**24**	**320**	**402**	**856**	*NA*
13	Sep-98	**1,800**	*< 50*	**8.9**	*< 0.5*	**68**	**27**	**104**	**23**
14	Apr-99	**2,900**	**710**	**61**	**1.2**	**120**	**80**	**263**	**32**
15	Dec-99	**1,000**	**430**	**4.0**	**2.0**	**26**	**14**	**46**	*< 2.0*
16	Sep-00	**570**	**380**	*< 0.5*	*< 0.5*	**16**	**4.1**	**20**	**2.4**
17	Jan-01	**1,600**	**650**	**4.2**	**0.89**	**46**	**13.8**	**65**	**8.4**
18	Apr-01	**1,700**	**1,100**	**4.5**	**2.8**	**48**	**10.7**	**66**	**5.0**
19	Aug-01	**1,300**	**810**	**3.2**	**4.0**	**29**	**9.7**	**46**	*< 2.0*
20	Dec-01	*< 50*	**110**	*< 0.5*	*< 0.5*	*< 0.5*	**1.2**	**1.2**	*< 2.0*
21	Mar-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
22	Jun-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
23	Sep-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
24	Dec-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
25	Mar-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
26	Jun-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
27	Sep-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
28	Dec-03	*<50*	*<100*	*<0.3*	*<0.3*	*<0.3*	*<0.6*	—	*< 5.0*
29	Mar-04	*<50*	*<100*	*<0.3*	*<0.3*	*<0.3*	*<0.6*	—	*< 5.0*
30	Jun-04	*<50*	**2,500**	*<0.3*	*<0.3*	*<0.3*	*<0.6*	—	*< 5.0*
31	Sep-04	*<50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	*< 2.0*
32	Dec-04	*<50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	*< 2.0*
33	Mar-05	*<50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	*< 2.0*
34	Jun-05	*<50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	*< 2.0*
35	Sep-05	*<50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	*< 2.0*
Groundwater monitoring in this well discontinued with Alameda County Health Care Services Agency approval.									

Well MW-5									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Nov-94	**50**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
2	Feb-95	**70**	*< 50*	**0.6**	*< 0.5*	*< 0.5*	*< 0.5*	**0.6**	*NA*
3	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
4	Aug-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
5	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Aug-96	**80**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
8	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
9	May-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
10	Aug-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
11	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
12	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
13	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2*
Groundwater monitoring in this well discontinued in 1998 with Alameda County Health Care Services Agency approval. Subsequent groundwater monitoring conducted to confirm plume's southern limit									
14	Jun-04	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**5.9**
15	Sep-04	*<50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	*< 2.0*

Well MW-7									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Jan-01	**13,000**	**3,100**	**95**	**4**	**500**	**289**	**888**	**95**
2	Apr-01	**13,000**	**3,900**	**140**	*< 0.5*	**530**	**278**	**948**	**52**
3	Aug-01	**12,000**	**5,000**	**55**	**25**	**440**	**198**	**718**	**19**
4	Dec-01	**9,100**	**4,600**	**89**	*< 2.5*	**460**	**228**	**777**	*< 10*
5	Mar-02	**8,700**	**3,900**	**220**	**6.2**	**450**	**191**	**867**	**200**
6	Jun-02	**9,300**	**3,500**	**210**	**6.3**	**380**	**155**	**751**	**18**
7	Sep-02	**9,600**	**3,900**	**180**	*< 0.5*	**380**	**160**	**720**	*< 2.0*
8	Dec-02	**9,600**	**3,700**	**110**	*< 0.5*	**400**	**189**	**699**	*< 2.0*
9	Mar-03	**10,000**	**3,600**	**210**	**12**	**360**	**143**	**725**	**45**
10	Jun-03	**9,300**	**4,200**	**190**	*< 10*	**250**	**130**	**570**	**200**
11	Sep-03	**10,000**	**3,300**	**150**	**11**	**300**	**136**	**597**	*< 2.0*
12	Dec-03	**9,140**	**1,100**	**62**	**45**	**295**	**184**	**586**	**89**
13	Mar-04	**8,170**	**600**	**104**	**41**	**306**	**129**	**580**	**84**
14	Jun-04	**9,200**	**2,700**	**150**	*< 0.5*	**290**	**91**	**531**	*< 2.0*
15	Sep-04	**9,700**	**3,400**	**98**	*< 0.5*	**300**	**125**	**523**	*< 2.0*
16	Dec-04	**8200**	**4,000**	**95**	*< 0.5*	**290**	**124**	**509**	*< 2.0*
17	Mar-05	**10,000**	**4,300**	**150**	*<0.5*	**370**	**71**	**591**	*<2.0*
18	Jun-05	**10,000**	**3,300**	**210**	*<1.0*	**410**	**56**	**676**	*<4.0*
19	Sep-05	**7,600**	**2,700**	**110**	*<1.0*	**310**	**54**	**474**	*<4.0*
20	Dec-05	**2,900**	**3,300**	**31**	*<1.0*	**140**	**41**	**212**	*<4.0*
21	Mar-06	**6,800**	**3,000**	**110**	*< 1.0*	**280**	**42**	**432**	**110**
22	Jun-06	**6,900**	**3,600**	**63**	*< 2.5*	**290**	**43**	**396**	*< 10*
23	Sep-06	**7,900**	**3,600**	**64**	*< 0.5*	**260**	**58**	**382**	49
24	Dec-06	**7,300**	**2,400**	**50**	*< 0.5*	**220**	**42**	**312**	*< 2.0*
25	Mar-07	**6,200**	**2,900**	**34**	*< 0.5*	**190**	**15**	**239**	*< 2.0*
26	Jun-07	**6,800**	**3,000**	**30**	*<1.0*	**160**	**27**	**217**	*<4.0*
27	Sep-07	**6,400**	**3,000**	*<0.5*	*<0.5*	**170**	**43**	**213**	*<2.0*
28	Dec-07	**4,800**	**2,800**	*<0.5*	*<0.5*	**100**	**26.5**	**126.5**	*2.7*
30	Mar-08	**5,400**	**5,900**	**21**	*<0.5*	**150**	**15**	**186**	**51**
31	Jun-08	**4,800**	**3,500**	**55**	*<0.5*	**140**	**7.03**	**202**	*<2.0*
32	Sep-08	**6,400**	**2,800**	**22**	*<0.5*	**100**	**9.30**	**131**	*<2.0*
33	Dec-08	**3,500**	**3,600**	**5**	*<0.5*	**100**	**9.10**	**114**	*<2.0*
34	Mar-09	**5,100**	**6,700**	**19**	*<0.5*	**140**	**12.30**	**171**	**51**
35	Jun-09	**4,600**	**5,400**	**40**	*< 0.5*	**140**	**5.12**	**185**	**260**
36	Sep-09	**4,400**	**4,700**	*<0.5*	*<0.5*	**96**	**5.60**	**102**	**3.5**
37	Dec-09	**4,900**	**4,500**	*< 0.5*	*< 0.5*	**90**	**2.90**	**93**	**57.0**
38	Mar-10	**5,300**	**4,300**	**17**	*<0.5*	**110**	**2.60**	**130**	**16.0**
39	Mar-10	**2,600**	**6,100**	**11**	*<0.5*	**76**	**4.50**	**92**	*<2.0*

Well MW-8									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Jan-01	**14,000**	**1,800**	**430**	**17**	**360**	**1230**	**2,037**	**96**
2	Apr-01	**11,000**	**3,200**	**320**	**13**	**560**	**1,163**	**2,056**	**42**
3	Aug-01	**9,600**	**3,200**	**130**	**14**	**470**	**463**	**1,077**	**14**
4	Dec-01	**3,500**	**950**	**69**	**2.4**	**310**	**431**	**812**	*< 4.0*
5	Mar-02	**14,000**	**3,800**	**650**	**17**	**1,200**	**1,510**	**3,377**	**240**
6	Jun-02	**2,900**	**1,100**	**70**	**2.0**	**170**	**148**	**390**	**19**
7	Sep-02	**1,000**	**420**	**22**	*< 0.5*	**64**	**50**	**136**	*< 2.0*
8	Dec-02	**3,300**	**290**	**67**	*< 0.5*	**190**	**203**	**460**	*< 2.0*
9	Mar-03	**13,000**	**3,500**	**610**	**12**	**1,100**	**958**	**2,680**	*< 10*
10	Jun-03	**7,900**	**2,200**	**370**	**7.4**	**620**	**562**	**1,559**	*< 4.0*
11	Sep-03	**3,600**	**400**	**120**	**3.3**	**300**	**221**	**644**	*< 2.0*
12	Dec-03	**485**	**100**	**19**	**1.5**	**26**	**36**	**83**	*< 5.0*
13	Mar-04	**16,000**	**900**	**592**	**24**	**1,060**	**1,870**	**3,546**	**90**
14	Jun-04	**5,900**	**990**	**260**	**9.9**	**460**	**390**	**1,120**	*< 10*
15	Sep-04	**2,000**	**360**	**100**	*< 2.5*	**180**	**102**	**382**	*< 10*
16	Dec-04	**15,000**	**4,000**	**840**	**21**	**1,200**	**1,520**	**3,581**	*< 10*
17	Mar-05	**24,000**	**7,100**	**840**	**51**	**1,800**	**2,410**	**5,101**	*<10*
18	Jun-05	**33,000**	**5,700**	**930**	**39**	**2,500**	**3,860**	**7,329**	*<20*
19	Sep-05	**5,600**	**1,200**	**270**	**6.6**	**400**	**390**	**1,067**	*<20*
20	Dec-05	**3,700**	**1,300**	**110**	*< 5.0*	**320**	**356**	**786**	*<20*
21	Mar-06	**22,000**	**4,300**	**550**	**30**	**1,800**	**2,380**	**4,760**	*<20*
22	Jun-06	**19,000**	**5,000**	**500**	**28**	**1,800**	**1,897**	**4,225**	*<20*
23	Sep-06	**9,000**	**820**	**170**	**7.7**	**730**	**539**	**1,447**	*<10*
24	Dec-06	**4,400**	**800**	**75**	**4.2**	**320**	**246**	**645**	*< 2.0*
25	Mar-07	**15,000**	**4,500**	**340**	**19**	**1,300**	**1,275**	**2,934**	*< 20*
26	Jun-07	**10,000**	**3,500**	**220**	**11**	**670**	**675**	**1,576**	*<4.0*
27	Sep-07	**9,400**	**3,400**	**200**	**6.9**	**1,000**	**773**	**1,980**	*<8.0*
28	Dec-07	**1,200**	**500**	**15**	**0.88**	**95**	**57.7**	**168.58**	*<2.0*
30	Mar-08	**11,000**	**13,000**	**150**	**13**	**1,100**	**950.0**	**2,213**	**76**
31	Jun-08	**2,000**	**1,700**	**27**	**2.5**	**190**	**113.2**	**333**	*<2.0*
32	Sep-08	**5,500**	**4,400**	**89**	**3.9**	**630**	**194.4**	**917**	*<2.0*
33	Dec-08	**520**	**400**	**1.5**	*<0.5*	**20**	**4.4**	**26**	**4.5**
34	Mar-09	**4,600**	**7,300**	**55**	*<5.0*	**410**	**639.0**	**1,104**	*<20*
35	Jun-09	**2,100**	**3,400**	**32**	*< 0.5*	**260**	**80.8**	**373**	**55**
36	Sep-09	**440**	**1,700**	**2.8**	*<0.5*	**33**	**2.7**	**39**	**3.7**
37	Dec-09	**560**	**540**	**1.5**	*< 0.5*	**39**	**7.1**	**48**	**4.2**
38	Mar-10	**220**	**270**	**0.8**	*<0.5*	**14**	**3.1**	**18**	**3.9**
39	Mar-10	**3,400**	**5,700**	**28.0**	*<0.5*	**340**	**255.7**	**624**	*<2.0*

Well MW-9									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Aug-01	**11,000**	**170**	**340**	**13**	**720**	**616**	**1,689**	**48**
2	Dec-01	**9,400**	**2,700**	**250**	**5.1**	**520**	**317**	**1,092**	*< 10*
3	Mar-02	**1,700**	**300**	**53**	**4.2**	**120**	**67**	**244**	**20**
4	Jun-02	**11,000**	**2,500**	**200**	**16**	**600**	**509**	**1,325**	**85**
5	Sep-02	**3,600**	**2,800**	**440**	**11**	**260**	**39**	**750**	*< 4.0*
6	Dec-02	**7,000**	**3,500**	**380**	**9.5**	**730**	**147**	**1,266**	*< 10*
7	Mar-03	**4,400**	**1,400**	**320**	**6.9**	**400**	**93**	**820**	*< 2.0*
8	Jun-03	**7,600**	**1,600**	**490**	**10**	**620**	**167**	**1,287**	*< 4.0*
9	Sep-03	**8,300**	**2,900**	**420**	**14**	**870**	**200**	**1,504**	*< 10*
10	Dec-03	**7,080**	**700**	**287**	**31**	**901**	**255**	**1,474**	*< 10*
11	Mar-04	**3,550**	**600**	**122**	**15**	**313**	**84**	**534**	**35**
12	Jun-04	**6,800**	**1,700**	**350**	*< 2.5*	**620**	**99**	**1,069**	*< 10*
13	Sep-04	**7,100**	**1,900**	**160**	*8.1*	**600**	**406**	**1,174**	*< 10*
14	Dec-04	**4,700**	**2,800**	**160**	*< 2.5*	**470**	*< 0.5*	**630**	*< 10*
15	Mar-05	**4,200**	**1,600**	**97**	*<2.5*	**310**	**42**	**449**	*< 10*
16	Jun-05	**9,900**	**2,000**	**170**	*<2.5*	**590**	**359**	**1,119**	*< 10*
17	Sep-05	**3,600**	**1,200**	**250**	*<0.5*	**330**	**36**	**616**	*< 2.0*
18	Dec-05	**8,700**	**1,500**	**150**	**4**	**650**	**551**	**1,355**	*< 4.0*
19	Mar-06	**3,600**	**880**	**37**	*<1.0*	**210**	**165**	**412**	*< 4.0*
20	Jun-06	**3,200**	**1,300**	**39**	*<1.0*	**220**	**144**	**403**	**4.2**
21	Sep-06	**12,000**	**3,300**	**130**	**8**	**850**	**604**	**1,592**	*<1.0*
22	Dec-06	**12,000**	**2,800**	**140**	**9.4**	**880**	**634**	**1,663**	*< 10*
23	Mar-07	**9,600**	**2,900**	**120**	**8.7**	**780**	**453**	**1,362**	*< 10*
24	Jun-07	**7,100**	**2,200**	**75**	**5.2**	**480**	**298**	**858**	*<4.0*
25	Sep-07	**4,500**	**2,100**	**60**	**3.8**	**420**	**227**	**710**	*<4.0*
26	Dec-07	**6,200**	**2,000**	**51**	*<0.5*	**340**	**128.8**	**519.8**	*<2.0*
27	Mar-08	**6,400**	**3,500**	**67**	**5.2**	**480**	**177.6**	**724.6**	**38**
28	Jun-08	**10,000**	**3,400**	**89**	*<2.5*	**510**	**231.0**	**830.0**	*<10*
29	Sep-08	**4,800**	**2,700**	**53**	*<0.5*	**250**	**66.4**	**369.4**	*<2.0*
30	Dec-08	**4,300**	**2,300**	**45**	*<0.5*	**330**	**39.1**	**414.1**	*<2.0*
31	Mar-09	**4,000**	**2,200**	*<2.0*	*<0.5*	**160**	**34.9**	**194.9**	*<2.0*
32	Jun-09	**4,100**	**3,600**	**62**	*< 0.5*	**280**	**41.7**	**383.7**	**160**
33	Sep-09	**2,200**	**2,900**	**15**	*<0.5*	**110**	**11.8**	**136.8**	*<2.0*
34	Dec-09	**2,500**	**4,000**	**27**	*<0.5*	**170**	**8.7**	**205.7**	*<2.0*
35	Mar-10	**3,300**	**2,600**	**15**	*<0.5*	**140**	**12.0**	**167.0**	**8.6**
36	Mar-10	**2,500**	**3,400**	**16**	*<0.5*	**70**	**15.4**	**101.4**	**2.1**

Well MW-10									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Aug-01	**550**	**2,100**	**17**	*< 0.5*	**31**	**44**	**92**	**40**
2	Dec-01	*< 50*	**81**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**25**
3	Mar-02	*< 50*	*< 50*	**0.61**	*< 0.5*	*< 0.5*	*< 0.5*	**0.61**	**6.0**
4	Jun-02	*< 50*	*< 50*	**0.59**	*< 0.5*	**0.58**	*< 0.5*	**1.2**	**9.0**
5	Sep-02	**160**	**120**	**10**	*< 0.5*	**6.7**	**3.6**	**20**	**26**
6	Dec-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**16**
7	Mar-03	**110**	*< 50*	**11**	*< 0.5*	**12**	**1.3**	**24**	**15**
8	Jun-03	**110**	*< 50*	**9.6**	*< 0.5*	**6.8**	*< 0.5*	**16**	**9.0**
9	Sep-03	*< 50*	*< 50*	**1.1**	*< 0.5*	**1.5**	*< 0.5*	**2.6**	**7.0**
10	Dec-03	**162**	*<100*	**6.9**	*<0.3*	**8.0**	*<0.6*	**15**	**9.9**
11	Mar-04	**94**	*<100*	**2.8**	*<0.3*	**5.7**	**7.0**	**16**	*<5.0*
12	Jun-04	**150**	**56**	**11**	*< 0.5*	**12**	*< 0.5*	**23**	**15**
13	Sep-04	*< 50*	*< 50*	**1.6**	*< 0.5*	**1.9**	*< 1.0*	**3.5**	**5.8**
14	Dec-04	**64**	*< 50*	**3.7**	*< 0.5*	**3.7**	**0.7**	**8.1**	**10**
15	Mar-05	**95**	**98**	**8.3**	*<0.5*	**7.7**	**0.77**	**17**	**13**
16	Jun-05	**150**	**57**	**14**	*<0.5*	**10**	**1.0**	**25**	*<2.0*
17	Sep-05	**87**	*< 50*	**5.0**	*<0.5*	**3.6**	*<1.0*	**8.6**	*<2.0*
18	Dec-05	*< 50*	*< 50*	**1.2**	*<0.5*	*<0.5*	*<1.0*	**1.2**	**7.8**
19	Mar-06	**58**	**71**	**3.2**	*<0.5*	**2.2**	*<1.0*	**5.4**	**8.8**
20	Jun-06	**73**	**140**	**4.9**	*<0.5*	**2.5**	*<1.0*	**7.4**	**5.3**
21	Sep-06	**88**	**51**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	**9.6**
22	Dec-06	*<50*	*<50*	**0.61**	*<0.5*	**0.55**	*<0.5*	**1.2**	**3.7**
23	Mar-07	**57**	*<50*	**3.6**	*<0.5*	**2.2**	*<0.5*	**5.8**	**3.1**
24	Jun-07	**60**	**65**	**2.4**	*<0.5*	**1.6**	*<0.5*	**4.0**	**4.0**
25	Sep-07	**84**	*<50*	**3.6**	*<0.5*	**2.3**	**0.52**	**6.4**	**3.6**
26	Dec-07	**130**	**67**	**0.77**	*<0.5*	**340**	**0.83**	**341.6**	*<2.0*
27	Mar-08	**78**	**170**	**1.7**	*<0.5*	**3.1**	**0.97**	**5.8**	**2.4**
28	Jun-08	**230**	**320**	**12**	*<0.5*	**9.9**	**3.50**	**25.4**	*<2.0*
29	Sep-08	**80**	*<50*	**1.6**	*<0.5*	**0.52**	*<0.5*	**2.1**	**3.0**
30	Dec-08	*<50*	**66**	**0.89**	*<0.5*	*<0.5*	*<0.5*	**0.9**	**2.1**
31	Mar-09	**76**	**230**	*<2.0*	*<0.5*	**1.4**	*<0.5*	**1.4**	*<2.0*
32	Jun-09	**72**	**120**	**2.0**	*< 0.5*	**4.4**	**1.3**	**7.7**	*<2.0*
33	Sep-09	**74**	**220**	**1.6**	*<0.5*	*<0.5*	*<0.5*	**1.6**	*<2.0*
34	Dec-09	**72**	**150**	**0.6**	*<0.5*	**1.6**	**1.2**	**3.4**	*<2.0*
36	Mar-10	**63**	**280**	**1.3**	*<0.5*	**48**	**<0.5**	**49.3**	*<2.0*

Well MW-11									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	17,000	7,800	390	17	820	344	1,571	< 10
2	Dec-01	5,800	2,800	280	7.8	500	213	1,001	< 10
3	Mar-02	100	94	< 0.5	< 0.5	0.64	< 0.5	0.64	2.4
4	Jun-02	8,200	2,600	570	13	560	170	1,313	< 4
5	Sep-02	12,000	4,400	330	13	880	654	1,877	< 10
6	Dec-02	18,000	4,500	420	< 2.5	1,100	912	2,432	< 10
7	Mar-03	7,800	2,600	170	4.7	530	337	1,042	53
8	Jun-03	14,000	3,800	250	< 2.5	870	693	1,813	< 10
9	Sep-03	10,000	3,000	250	9.9	700	527	1,487	< 4
10	Dec-03	15,000	1,100	314	60	1,070	802	2,246	173
11	Mar-04	4,900	400	72	17	342	233	664	61
12	Jun-04	10,000	2,300	210	2.8	690	514	1,417	< 10
13	Sep-04	7,200	2,300	340	< 2.5	840	75	1,255	< 10
14	Dec-04	11,000	3,900	180	5.1	780	695	1,660	< 10
15	Mar-05	4,600	1,900	69	<2.5	300	206	575	< 10
16	Jun-05	1,400	590	85	<0.5	110	8.2	203	< 2.0
17	Sep-05	12,000	3,100	220	< 1.0	840	762	1,822	< 4.0
18	Dec-05	2,500	2,100	120	< 2.5	260	16	396	< 10
19	Mar-06	2,200	1,300	27	<2.5	130	5.2	162	< 10
20	Jun-06	3,700	1,900	170	<1.0	230	14	414	< 4.0
21	Sep-06	3,600	2,100	80	<0.5	230	8.8	319	< 2.0
22	Dec-06	6,000	3,500	83	<1.0	260	16.4	359	< 4.0
23	Mar-07	4,500	1,900	110	< 0.5	170	7.9	288	< 2.0
24	Jun-07	4	2,200	120	<0.5	140	6.6	267	<4.0
25	Sep-07	5,500	2,700	86	<0.5	180	16.1	282	<2.0
26	Dec-07	7,100	4,000	68	<0.5	140	14	222	35
27	Mar-08	5,300	4,000	130	<0.5	120	13	263	8.8
28	Jun-08	3,600	4,200	190	<0.5	140	11	341	<2.0
29	Sep-08	7,300	4,600	130	<0.5	110	4.5	245	<2.0
30	Dec-08	2,800	1,600	93	<0.5	82	0.69	176	<2.0
31	Mar-09	4,100	4,600	18	<0.5	82	8	108	8.0
32	Jun-09	2,100	2,700	38	< 0.5	80	3.3	121	3.3
33	Sep-09	830	2,400	11	<0.5	19	<0.5	30	<2.0
34	Dec-09	2,200	3,100	19	<0.5	46	0.78	66	14.0
35	Mar-10	2,300	2,500	13	<0.5	59	0.79	73	3.4
36	Mar-10	1,500	3,400	12	<0.5	48	<0.5	60	<2.0

Well MW-12									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Dec-05	1,300	700	< 0.5	< 0.5	33	5.6	39	< 2.0
2	Mar-06	1,100	540	<0.5	<0.5	8.5	1.5	10	49
3	Jun-06	680	400	<0.5	<0.5	5.8	1.4	7.2	< 2.0
4	Sep-06	910	480	<0.5	<0.5	9.9	1.5	11.4	21
5	Dec-06	770	230	< 0.5	< 0.5	7.4	2.0	9.4	< 2.0
6	Mar-07	390	110	< 0.5	< 0.5	1.7	1.7	3.4	< 2.0
7	Jun-07	590	280	<0.5	<0.5	4.5	0.9	5.4	<2.0
8	Sep-07	390	180	<0.5	<0.5	2.4	2.4	4.8	<2.0
9	Dec-07	210	140	<0.5	<0.5	2.1	1.3	3.4	<2.0
10	Mar-08	720	500	<0.5	4.4	9.0	2.8	16.2	<2.0
11	Jun-08	220	50	<0.5	<0.5	2.0	<0.5	2.0	<2.0
12	Sep-08	370	95	<0.5	<0.5	2.8	0.98	3.8	<2.0
13	Dec-08	93	170	<0.5	<0.5	0.76	<0.5	0.8	<2.0
14	Mar-09	180	130	<0.5	<0.5	1.70	<0.5	1.7	<2.0
15	Jun-09	300	280	< 0.5	< 0.5	4.60	< 0.5	4.6	<2.0
16	Sep-09	330	270	<0.5	<0.5	2.30	<0.5	2.3	<2.0
17	Dec-09	76	170	<0.5	<0.5	<0.5	<0.5	0.0	<2.0
18	Mar-10	240	380	<0.5	<0.5	2.7	<0.5	2.7	<2.0

HISTORICAL SURFACE WATER ANALYTICAL RESULTS
REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA

(all concentrations in ug/L, equivalent to parts per billion [ppb])

Sampling Location SW-1 (Upstream of Contaminated Groundwater Discharge Location SW-2)									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Feb-94	**50**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
2	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
3	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
4	Aug-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
5	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Aug-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
8	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
9	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
10	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
11	Apr-99	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
Sampling at this location discontinued after April 1999 with Alameda County Health Services Agency approval.									

Sampling Location SW-2 (Area of Historical Contaminated Groundwater Discharge)									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Feb-94	**130**	*< 50*	**1.9**	*< 0.5*	**4.4**	**3.2**	**9.5**	*NA*
2	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
3	Aug-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
4	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
5	Aug-96	**200**	*< 50*	**7.5**	*< 0.5*	**5.4**	*< 0.5*	**13**	*NA*
6	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
7	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
8	Aug-97	**350**	**130**	**13**	**0.89**	**19**	**11**	**44**	*NA*
9	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
10	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*NA*
11	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
12	Apr-99	**81**	*<50*	**2.0**	*< 0.5*	**2.5**	**1.3**	**5.8**	**2.3**
13	Dec-99	**1,300**	**250**	**10**	**1.0**	**47**	**27**	**85**	**2.2**
14	Sep-00	**160**	**100**	**2.1**	*< 0.5*	**5.2**	**1.9**	**9.2**	**3.4**
15	Jan-01	*< 50*	*< 50*	*< 0.5*	*< 0.5*	**0.53**	*< 0.5*	**0.5**	*< 2.0*
16	Apr-01	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
17	Sep-01	**440**	**200**	**2.1**	*< 0.5*	**17**	**1.3**	**20**	**10**
18	Dec-01	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
19	Mar-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
20	Jun-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
21	Sep-02	**220**	**590**	**10**	*< 0.5*	**13**	*< 0.5*	**23**	*< 2.0*
22	Dec-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
23	Mar-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	**0.56**	*< 0.5*	**0.56**	**2.8**
24	Jun-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*<0.5*	*< 2.0*
25	Sep-03	**190**	**92**	**2.1**	*< 0.5*	**4.2**	*< 0.5*	**6.3**	*< 2.0*
26	Dec-03	**86**	*< 100*	*< 0.3*	*< 0.3*	*< 0.3*	*< 0.6*	*<0.6*	*< 5.0*
27	Mar-04	*<50*	*<100*	*<0.3*	*<0.3*	**1.1**	*<0.6*	**1.1**	*< 5.0*
28	Jun-04	*<50*	*<50*	*<0.5*	*<0.5*	**0.83**	*<0.5*	**0.83**	*< 2.0*
29	Sep-04	**260**	**370**	**4.4**	*<0.5*	**6.3**	*< 1.0*	**11**	*< 2.0*
30	Dec-04	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*1.0*	*< 2.0*
31	Mar-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
32	Jun-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
33	Sep-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
34	Dec-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
35	Mar-06	*<50*	**62**	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
36	Jun-06	*<50*	**110**	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
37	Sep-06	**62**	**94**	*<0.5*	*<0.5*	**0.81**	*<0.5*	**0.8**	*< 2.0*
38	Dec-06	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
39	Mar-07	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
40	Jun-07	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<1.0*	*<2.0*
41	Sep-07	*<50*	**77**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	<1.0	*<2.0*
42	Dec-07	**130**	**430**	*<0.5*	*<0.5*	**1.5**	*<0.5*	**1.5**	*<2.0*
43	Mar-08	*<50*	**130**	*<0.5*	*<0.5*	*<0.5*	**0.61**	**0.61**	*<2.0*
44	Jun-08	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
45	Sep-08	**530**	**690**	*<0.5*	*<0.5*	**4.3**	*<0.5*	**4.3**	*<2.0*
46	Dec-08	*<50*	**83**	*<5.0*	*<5.0*	*<5.0*	*<5.0*	**<0.5**	*<2.0*
47	Mar-09	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<1.0*	*<2.0*
48	Jun-09	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*
49	Sep-09	**110**	**220**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
50	Dec-09	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*
51	Mar-10	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*

Sampling Location SW-3 (Downstream of Contaminated Groundwater Discharge Location SW-2)									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	May-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
2	Aug-95	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
3	May-96	*< 50*	**74**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
4	Aug-96	**69**	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
5	Dec-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
6	Feb-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
7	Aug-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
8	Dec-97	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
9	Feb-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*NA*
10	Sep-98	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
11	Apr-99	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
12	Dec-99	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
13	Sep-00	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
14	Jan-01	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
15	Apr-01	*< 50*	*<50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
16	Sep-01	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*< 0.5*	*NS*
17	Dec-01	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
18	Mar-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
19	Jun-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**2.4**
20	Sep-02	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
21	Dec-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
22	Mar-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
23	Jun-03	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	*< 2.0*
24	Sep-03	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
25	Dec-03	**60**	*< 100*	*< 0.3*	*< 0.3*	*< 0.3*	*< 0.6*	*<0.6*	*< 5.0*
26	Mar-04	*<50*	*<100*	*<0.3*	*<0.3*	*<0.6*	*<0.6*	*<0.6*	*< 5.0*
27	Jun-04	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
28	Sep-04	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
29	Dec-04	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
30	Mar-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
31	Jun-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
32	Sep-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
33	Dec-05	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
34	Mar-06	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
35	Jun-06	*<50*	**120**	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
36	Sep-06	*<50*	**120**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*0.5*	**7.8**
37	Dec-06	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	*< 2.0*
38	Mar-07	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*< 1.0*	*<1.0*	**3.3**
39	Jun-07	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*0.5*	*<2.0*
40	Sep-07	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
41	Dec-07	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
42	Mar-08	*<50*	**200**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
43	Jun-08	*<50*	**55**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
44	Sep-08	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
45	Dec-08	*<50*	**360**	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<2.0*
46	Mar-09	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*0.5*	*<2.0*
47	Jun-09	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<2.0*
48	Sep-09	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
49	Dec-09	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*
50	Mar-10	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*

NS = Not Sampled (no surface water present during sampling event)

APPENDIX E

Photodocumentation of ORC™ Injection Activity

Subject: Geopobe drill with rods connected to ORC™ feed hose	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-2
Photographer: H. Pietropaoli	Photo No.: 01

Subject: ORC™ mixing truck in treament zone 3	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 02

Subject: Inside the ORC™ mixing unit	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 03

Subject: Injection borehole locations marked for utility clearance in treatment zone 4	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 04

Subject: Geopobe mixing truck connected to ORC™ feed hose in lower area	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-2
Photographer: H. Pietropaoli	Photo No.: 05

Subject: Drill rig injecting in lower zone boerehole	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 06

Subject: Drill and mixing rigs set up in upper area treatment zone 2	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 2, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 07

Subject: Drill and mixing rigs set up in upper area treatment zone 1	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 2, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 08

Subject: View of 1-foot injector tip	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-2
Photographer: H. Pietropaoli	Photo No.: 09

Subject: Grouting of borehole after injection	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: February 1, 2010	Project No.: SES 2010-02
Photographer: H. Pietropaoli	Photo No.: 10

APPENDIX F

City of Berkeley Drilling Permit and Waste Disposal Documentation

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: 01/20/2010 By jamesy

Permit Numbers: W2010-0050
Permits Valid from 01/26/2010 to 02/10/2010

Application Id: 1263412510061 **City of Project Site:** Oakland
Site Location: Redwood Regional Park Service Corporation Yard
7867 REDWOOD Road
Oakland, CA
94619
Project Start Date: 01/26/2010 **Completion Date:** 02/10/2010
Assigned Inspector: Contact Vicky Hamlin at (510) 670-5443 or vickyh@acpwa.org

Applicant: Stellar Environmental Solutions, Inc - Henry Pietropaoli **Phone:** 510-644-3123 x12
2198 Sixth Street, Berkeley, CA 94710
Property Owner: Neal Fujita/Dee Rosario East Bay Regional Park District **Phone:** 510-544-2327 x258
P.O. Box 5381, Oakland, CA 94605
Client: Henry Pietropaoli Stellar Environmental Solutions **Phone:** 510-644-3123 x12
2198 Sixth Street, Berkeley, Calif, CA 94710
Contact: Henry Pietropaoli **Phone:** 510-644-3123
Cell: 510-926-9416

Total Due: $265.00
Receipt Number: WR2010-0019 **Total Amount Paid:** $265.00
Payer Name : Henry Pietropaoli Paid By: VISA **PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Investigation-Environmental/Monitorinig Study - 24 Boreholes
Driller: Vironex - Lic #: 705927 - Method: DP **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2010-0050	01/20/2010	04/26/2010	24	2.25 in.	31.00 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. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@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.

5. 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.

6. 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.

7. 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.

Generator, Mail a copy to: DTSC P.O. Box 400 Sacramento, Ca. 95812-0400 within 30 days

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAC 002 650 405	1	1-800-424-9300	005762067 JJK

GENERATOR

5. Generator's Name and Mailing Address
EAST BAY REGIONAL PARK DISTRICT
2950 PERALTA OAKS COURT
OAKLAND, CA 94605
Generator's Phone: (510) 644-2327

Generator's Site Address (if different than mailing address)
EAST BAY REGIONAL PARK DISTRICT
7865 REDWOOD ROAD
OAKLANDS, CA 94619

6. Transporter 1 Company Name: Evergreen Environmental Services
U.S. EPA ID Number: CAD982413262

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address: Evergreen Oil, Inc.
6880 Smith Ave.
Newark, Ca. 94560
510-795-4400
U.S. EPA ID Number: CAD980887418
Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. WASTE CORROSIVE LIQUIDS, BASIC, INORGANIC, N.O.S. (CALCIUM HYDROXIDE), 8, UN3266, PG II ERG # 154	001	DM	0030	G	D002 122
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information
9(1) 1X55 GAL

WEAR APPROPRIATE PROTECTIVE CLOTHING & EQUIPMENT

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: X SALLY CAHILL
Signature: X Sally S. Cahill
Month 12 Day 26 Year 10

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: X Malcom Smith
Signature: X Malcom Smith
Month 12 Day 26 Year 10

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name
Signature
Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)