SECOND SEMIANNUAL 2012 GROUNDWATER MONITORING AND ANNUAL SUMMARY REPORT

REDWOOD REGIONAL PARK
SERVICE YARD
OAKLAND, CALIFORNIA

Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

November 2012

STELLAR
ENVIRONMENTAL SOLUTIONS, INC.
GEOSCIENCE & ENGINEERING CONSULTING

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Prepared by:

STELLAR ENVIRONMENTAL SOLUTIONS, INC.
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November 13, 2012

Project No. 2010-02

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November 13, 2012

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: Second Semiannual 2012 Groundwater Monitoring and Annual Summary 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 Semiannual 2012 groundwater and surface water monitoring activities conducted on September 19, 2012. In addition to the activities typically conducted during a monitoring event, the water quality parameters including dissolved oxygen and oxygen reduction potential were taken to assess the effectiveness of the oxygen release product injection conducted during February 2010.

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 Geochemist/President

Matt Graul, Stewardship Manager
East Bay Regional Park District

cc: State of California GeoTracker database
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). This report presents the second semiannual groundwater monitoring report that includes the annual trend analyses and recommendations for future work.

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) for the second 2012 semiannual period between June 30, 2012 and December 31, 2012:

- 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

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 an assessment 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.
- A total of 58 groundwater monitoring events have been conducted since project inception (February 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 Remedial Action Workplan (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 during First Quarter 2010 (on February 1-2), followed by 30-day post-injection monitoring and sampling of key site wells (on March 2).
- Conversion of surface and groundwater monitoring frequency from quarterly to semiannual by ACEH at the request of Stellar Environmental on behalf of Park District occurred in June 2011.
- In concurrence with ACEH, the site bioventing system having accomplished its' design purpose, was discontinued on July 18, 2011.

SITE DESCRIPTION

The site slopes to the west—from an elevation of approximately 564 feet above mean sea level at the eastern edge of the service yard to approximately 530 feet above mean sea level 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. 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. ACEH-approved revisions to the groundwater sampling program as of this date include:

- 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.
- Conversion of surface and groundwater monitoring frequency from quarterly to semiannual by ACEH, at the request of Stellar Environmental on behalf of Park District occurred in June 2011.
- Shut down of the site bioventing system In June 2011.

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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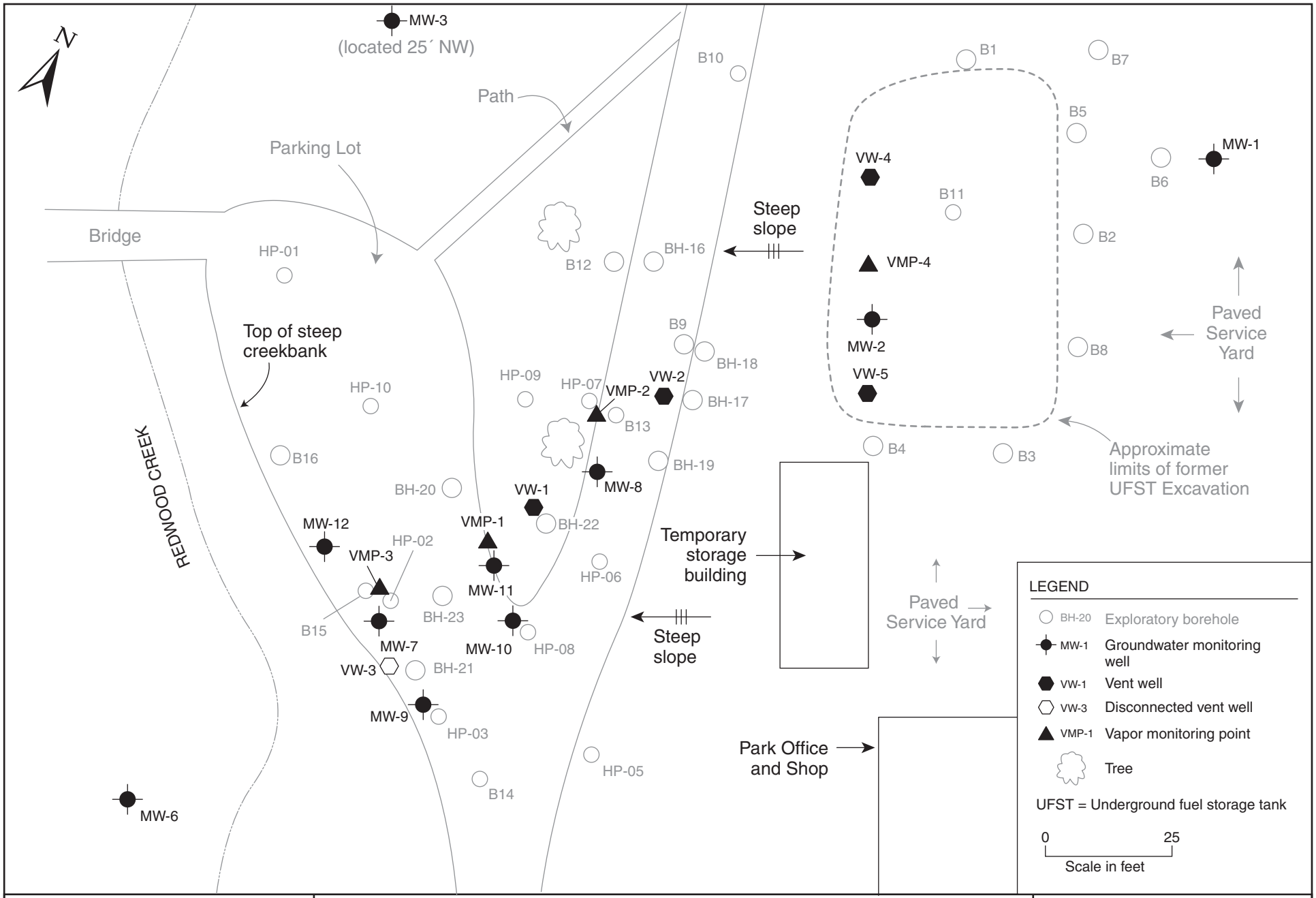
2006-17-01



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

Figure 2

by: MJC | APRIL 2011

2010-02-13

2.0 PHYSICAL SETTING

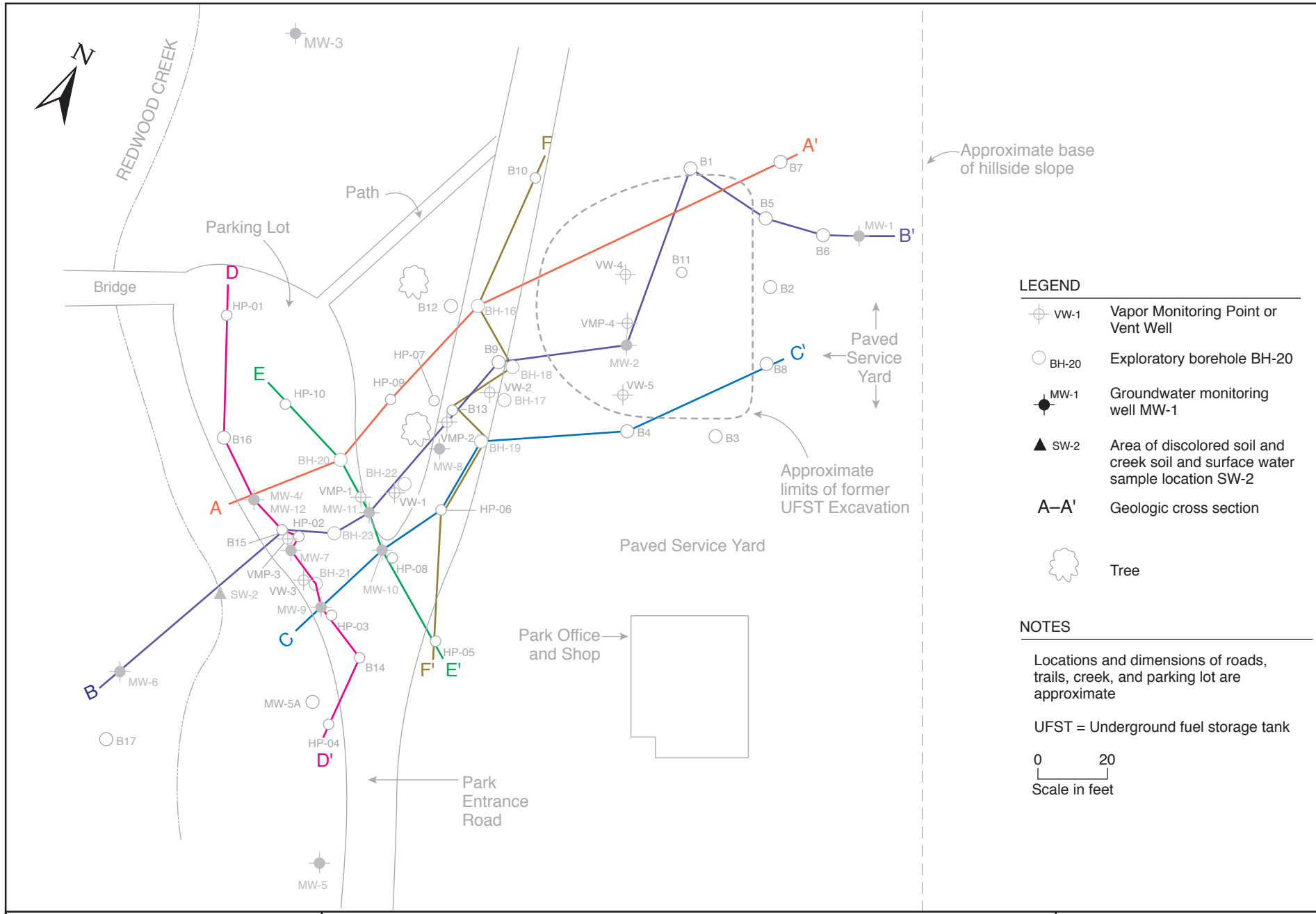
This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous Stellar Environmental reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH requested, via email, 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 location 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 (i.e., soil type and bedrock depth). Additional information on water level depths, historical range of water levels, and inferred thickness of soil contamination were 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 are inferred to be landslide debris.

A previous Stellar Environmental report (Stellar Environmental, 2004c) presented a bedrock surface isopleth map (elevation contours for the top of the bedrock surface) in the contaminant plume area. The isopleth map indicates the following (as shown in Figures 4 and 5): 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 slopes gently from east to west in the downgradient portion of the site (under the gravel parking area) toward Redwood Creek.



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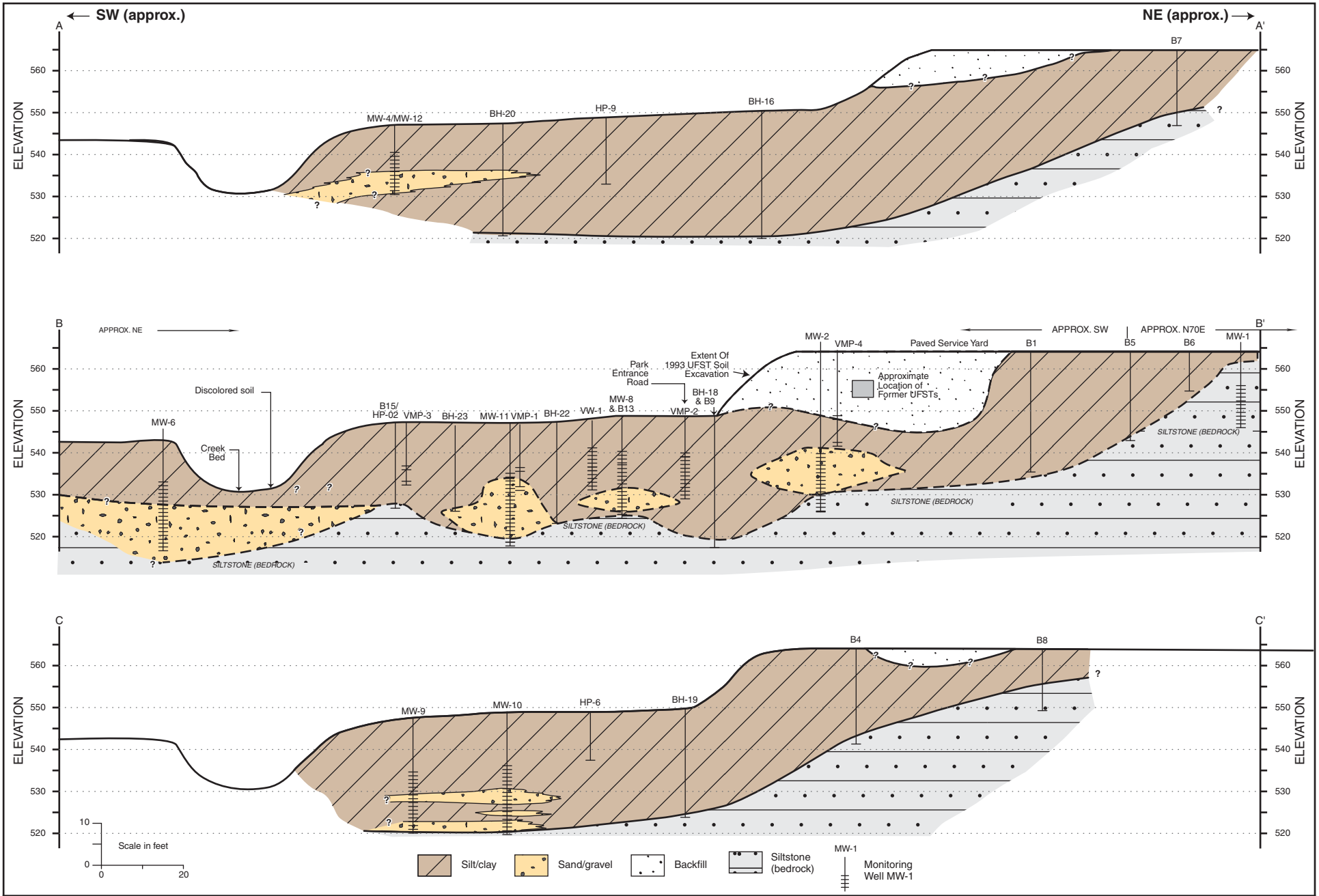
GEOLOGIC CROSS-SECTION LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 3

by: MJC | MARCH 2008

2008-02-05



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

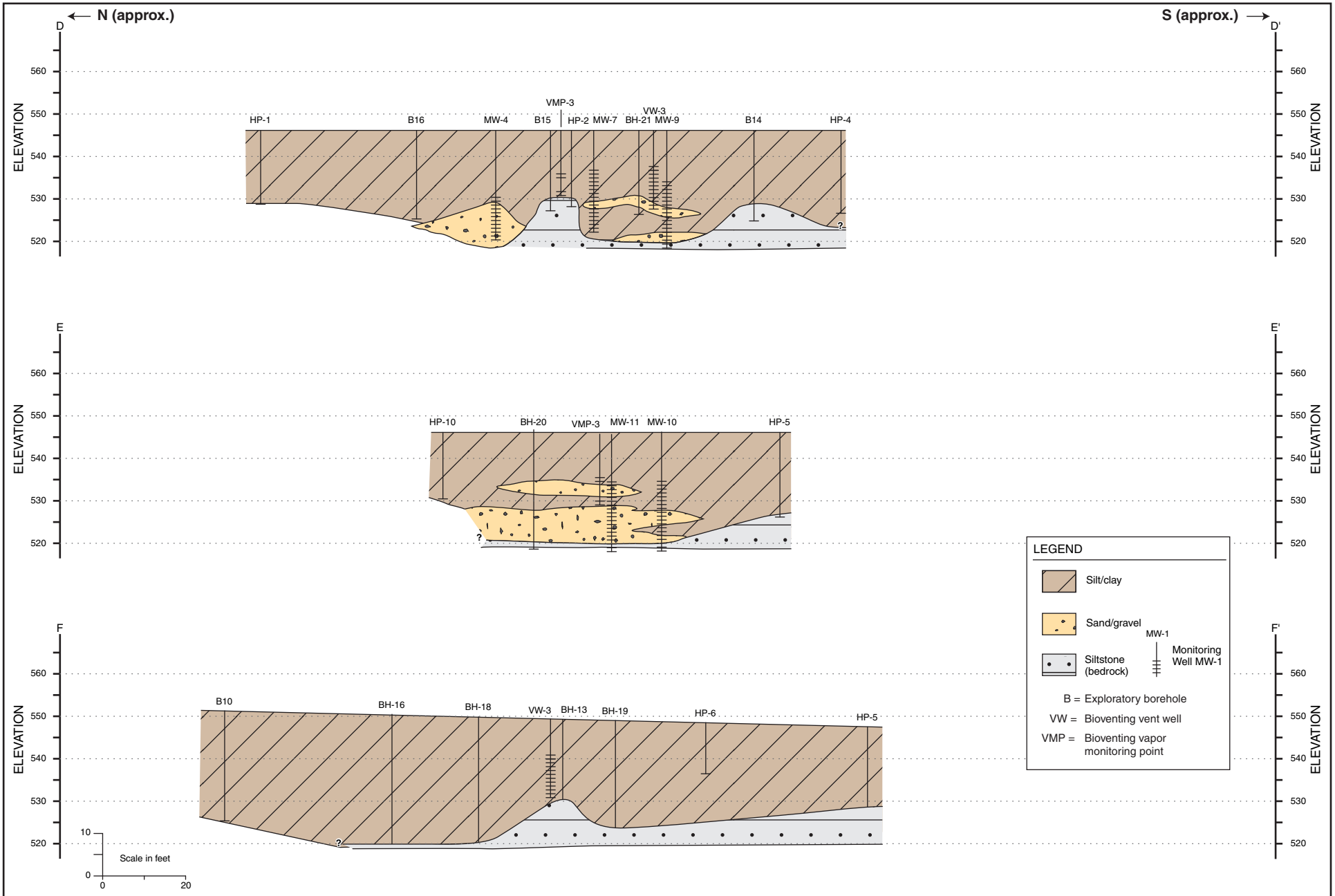
Redwood Regional Park Service Yard, Oakland, CA

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

This general gradient corresponds to the local groundwater flow direction. On the 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 the bedrock surface may have at one time 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 hummocky bedrock 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 estimate 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 UST 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 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 monitoring data contained in Section 4.0 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 was measured at approximately 0.26 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek) the groundwater gradient was approximately 0.07 feet per foot. The average groundwater elevation was 2.37 feet lower than the previous (March 2012) event, with the greatest decrease of 4.59 feet measured in MW-2 and the lowest increase measured in MW-7 of 1.16 feet. 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 groundwater 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 2 (in Section 5.0), 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 3 (in Section 5.0), 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 macro-invertebrate 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 SECOND SEMIANNUAL 2012 ACTIVITIES

This section presents the creek surface water and groundwater sampling procedures and methods for the current monitoring event (Second Semiannual 2012), conducted on September 19, 2012. 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 Stellar Environmental workplan (Stellar Environmental, 1998a).

The current monitoring activities included:

- Measuring static water levels in all 11 site wells;
- Collecting post-purge groundwater samples for laboratory analysis of site contaminants and as well as the water quality parameters pH, temperature, conductivity, and turbidity during purging 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);
- Post-purge measurement of dissolved oxygen (DO) and redox to monitor the effects of the February 2010 remedial ORC™ application. In addition, Stellar Environmental also analyzed wells MW-2, MW-7, MW-8 and MW-12 for alternate electron acceptors including nitrates, sulfates, biological oxygen demand (BOD), and chemical oxygen demand (COD) to determine the effect of the treatment;
- Collecting Redwood Creek surface water samples for laboratory analysis from locations SW-2 and SW-3; and
- Shut down of the site bioventing system.

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.

Well construction information and current equilibrated groundwater elevation data are summarized in Table 1. Figure 6 is a groundwater elevation map constructed from the current event monitoring well groundwater elevation data.

Table 1
Groundwater Monitoring Well Construction and Groundwater Elevation Data – September 19, 2012 Monitoring Event
Redwood Regional Park Corporation Yard, Oakland, California

Well	Well Depth	Screened Interval	Groundwater Depth (feet bgs)	Groundwater Elevation *
MW-1	18	7 to 17	4.90	560.93
MW-2	36	20 to 35	24.59	541.83
MW-3	42	7 to 41	23.28	537.53
MW-5	26	10 to 25	16.81	530.60
MW-6	26	10 to 25	13.52	531.91
MW-7	24	9 to24	14.01	533.55
MW-8	23	8 to 23	14.25	534.88
MW-9	26	11 to 26	16.33	532.95
MW-10	26	11 to 26	12.89	534.33
MW-11	26	11 to 26	13.58	534.17
MW-12	25	10 to 25	10.50	534.17

* Elevations are expressed in feet above mean sea level.

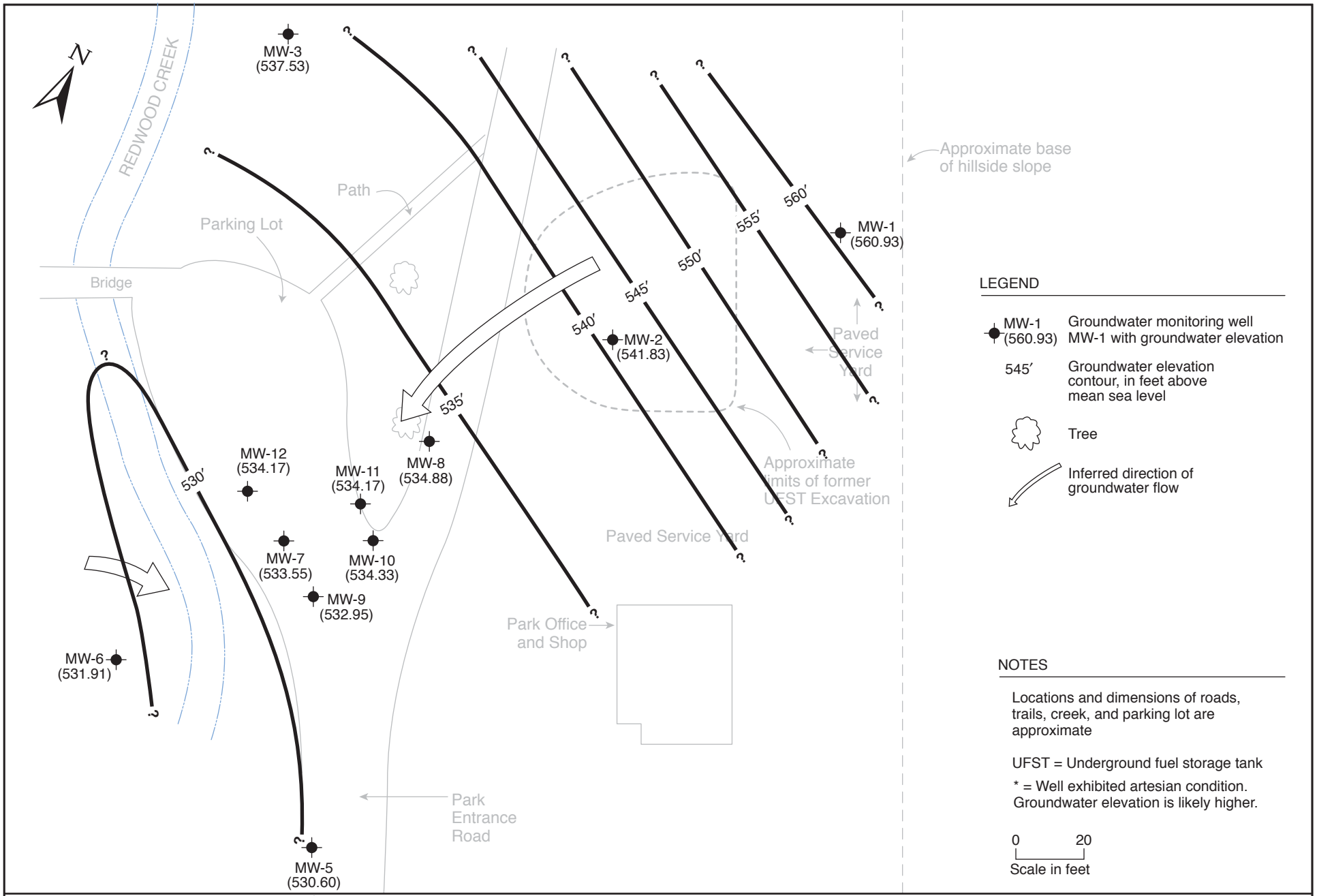
bgs = below ground surface

GROUNDWATER LEVEL MONITORING AND SAMPLING

Groundwater monitoring well water level measurements, purging, sampling, and field measurements were conducted by Blaine Tech Services under the supervision of Stellar Environmental personnel. 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. 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 event).

The sampling-derived purge water and decontamination rinseate (approximately 60 gallons) from the current event was containerized in the onsite above-ground storage tank. Purgewater is accumulated in the onsite tank until it is full, at which time the water is transported offsite for proper disposal.



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GROUNDWATER ELEVATION MAP—September 19, 2012
Redwood Regional Park Service Yard, Oakland, CA

Figure 6

by: MJC | NOVEMBER 2012

2010-02-19

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by Blaine Tech Services under the supervision of Stellar Environmental personnel. on September 19, 2012. 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 seasonally low stage with water ponded with areas of very slight flow less than 6 inches deep. Blaine Tech personnel did observe orange algae at location SW-2 but no sheen or petroleum odors were detected during this event.

BIOVENTING-RELATED ACTIVITIES

On July 18, 2011, in concurrence with ACEH, the site bioventing system, having accomplished its' design purpose, was discontinued.

ORC™ INJECTION EFFECTIVENESS INDICATORS

In Q1-2010, ORC™ was injected into a total of 24 boreholes in four zones throughout the plume and at various depths using direct-push drilling technology. Approximately 2,075 pounds of Advanced ORC™ was mixed in a 30 percent water/slurry mix and injected from the depth of the borehole to the subsurface. This was designed to treat and/or intercept accessible subsurface groundwater hydrocarbon contamination. One year later, this in-situ treatment appears to have been only marginally effective. The alternate electron acceptors measured during this sampling event; which included nitrates, sulfates, biological oxygen demand (BOD), and chemical oxygen demand (COD) were analyzed 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 nitrates and sulfates can then be estimated to evaluate its equivalent to the oxygen demand exerted by the contaminants of concern. Table 2 includes the results of these additional analyses.

The main active ingredient in Advanced ORC™ is calcium oxy-hydroxide. The optimal pH for hydrocarbon reduction is between seven and nine. The groundwater measured in site wells during this event had a pH range of 6.09 to 7.55, mostly within the optimum range. Under these conditions, the Advanced ORC™ remedy product will react to release hydrogen peroxide and oxygen. This allows for the initial chemical oxidation to take place; starting the breakup of the

contaminants. The oxygen input for the Q1-2010 injections timeframes likely dissipated, the ORC having a general lifespan of 1 to 2 years.

Because only a moderate reduction in hydrocarbon contaminant concentrations has been observed in the key site wells since the injection, it is suspected that in addition to lithologic restraints, non-hydrocarbon utilizing microorganisms are utilizing the ORC™, preventing the breakdown of the residual hydrocarbons. This hypothesis is supported by the only rapid decrease in concentrations being observed in well MW-2, located in fill material in the historical excavation area, which would generally contain fewer microorganisms and lithologic restraints. This hypothesis can be tested by continuing to collect additional site chemical parameters in subsequent semiannual monitoring events. This is also corroborated by the only high oxygen measurements being in well MW-2.

Table 2 contains the results from the parameter analysis conducted during this sampling event.

Table 2
Electron Acceptors and Oxygen Demand in Key Wells
September 19, 2012 Analytical Results

Location	Concentrations				
	Nitrates	Sulfates	BOD	DO	COD
MW-2	1.9	110	<5.0	22.57	23
MW-7	<0.05	1.2	10	0.16	28
MW-8	<0.05	42	<10	0.94	41
MW-12	<0.05	20	<5.0	0.15	33

COD = Chemical oxygen demand; BOD = Biological oxygen demand; DO = Dissolved Oxygen

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used in aerobic biodegradation of hydrocarbons. Active aerobic biodegradation of petroleum hydrocarbon compounds requires at least one to two milligrams per liter (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.

The highest hydrocarbon concentrations (> 40 mg/L) were reported in well MW-2 in early 2008 before the initial injection of ORC™ in Q1-2009 which resulted in steady decreases in both TPHg and TEHd. The current DO in MW-2 is relatively high with relatively low hydrocarbon

concentrations (< 1,000 μg/L) in this well. This suggests both that the ORC™ was effective there and that active aerobic biodegradation is currently occurring. Conversely at monitoring wells MW-7, MW-8, MW-9, MW-11 and MW-12, with higher concentration of hydrocarbons, lower DO concentrations were measured. In these areas, the ORC™ was likely not as effective at being in contact with the hydrocarbon contamination in and around the well. Thus, low DO concentration can also signify a lack of effective aerobic biodegradation occurring as a result of less ORC™ penetration or utilization by the hydrocarbons.

During the First Quarter 2010 sampling event, DO concentrations in site wells ranged from 0.28 mg/L to 2.41 mg/L. During the Second Quarter 2010 sampling event, DO concentrations ranged from 0.30 mg/L to 24.01 mg/L. During the Q1-2011 event, DO concentrations ranged from 0.44 mg/L to 27.3 mg/L, from 0.72 mg/L to 24.38 mg/L in March 2102 and 0.15 mg/L to 22.57 mg/L during this last event. The highest DO measurements are all associated with MW-2.

5.0 SECOND SEMIANNUAL 2012 ANALYTICAL RESULTS

This section presents the field and laboratory results of the current monitoring event. Table 3 summarizes the contaminant analytical results. Figure 7 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

Second Semiannual 2012 groundwater contaminant concentrations were as follows: The ESL for TVHg and TEHd for residential areas where groundwater is a drinking water resource was exceeded in all of the seven wells sampled. The ESL for benzene was exceeded in 3 of the 4 wells in which it was detected. Ethylbenzene was detected in all of the wells except MW-2 and above the ESL in all wells in which it was detected except MW-10 and MW-12. Total xylenes were detected in wells MW-8, MW-9 and MW-10 and below the ESL. Toluene was not detected above the laboratory detection limit in any of the seven wells sampled. MTBE was detected only in well MW-8 and was above the ESL.

Well MW-9 contained both the maximum TVHg and TEHd groundwater. MW-9 is located in the downgradient area of the plume, adjacent to Redwood Creek. The northern edge of this 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.

There were no contaminants detected in SW-2 and SW-3 above the laboratory detection limit.

Table 3
Groundwater and Surface Water Samples
Analytical Results –September 19, 2012
Redwood Regional Park Corporation Yard, Oakland, California

Location	Dissolved Oxygen	Contaminant Concentrations						
		TEHd	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES								
MW-2	22.57	**190**	**160**	<0.5	<0.5	<0.5	<0.5	<2.0
MW-7	0.16	**3,000**	**5,700**	<0.5	<0.5	**84**	<0.5	<2.0
MW-8	0.94	**440**	**730**	**4.7**	<0.5	**45**	3.8	**9.2**
MW-9	0.35	**8,600**	**10,000**	**25**	<0.5	**260**	19	<2.0
MW-10	2.21	**200**	**170**	<0.5	<0.5	2.0	0.94	<2.0
MW-11	0.13	**1,800**	**2,400**	**7.7**	<0.5	29	<0.5	<2.0
MW-12	0.15	**210**	**340**	<0.5	<0.5	1.1	<0.5	<2.0
Groundwater ESLs [a]		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]		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).

Samples in **bold-face type** exceed the ESLs and/or surface water screening levels where groundwater is a potential drinking water resource.

NA = not analyzed
NLP = no level published

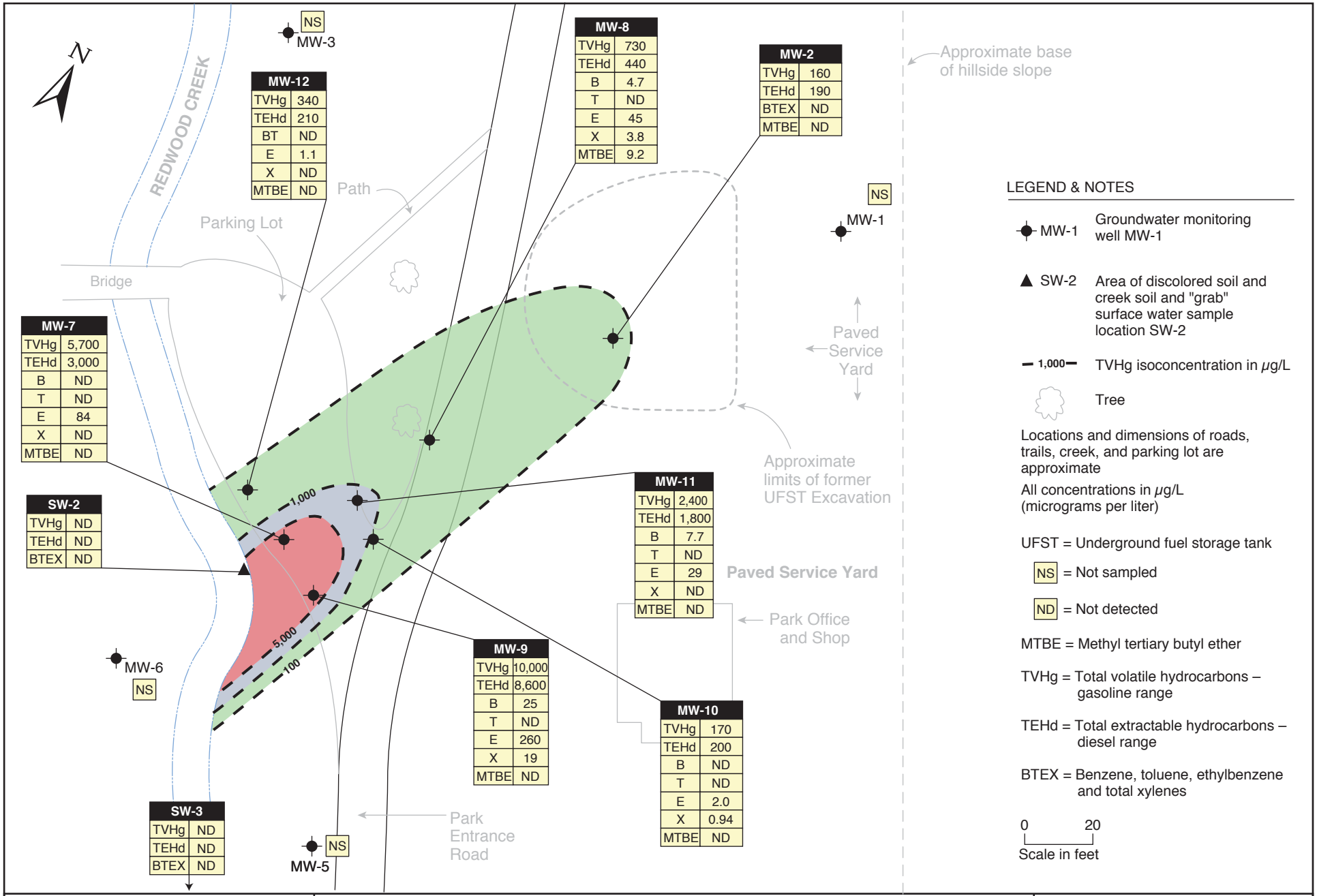
MTBE = methyl tertiary-butyl ether
TVHg = total volatile hydrocarbons – gasoline range
TEHd = total extractable hydrocarbons – diesel range

All contaminant concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion.

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).



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ANALYTICAL RESULTS AND GASOLINE PLUME—SEPTEMBER 2012

Redwood Regional Park Service Yard, Oakland, CA

Figure 7

by: MJC | NOVEMBER 2012

2010-02-20

6.0 EVALUATION OF HYDROCHEMICAL TRENDS AND PLUME STABILITY

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

CONTAMINANT SOURCE ASSESSMENT

Site UFSTs were removed (i.e., discharge was discontinued) in 1993, and some but not all of the source area excavation contaminated soil was removed. That residual hydrocarbon contamination entrained in the soil and capillary fringe has been extremely hard to mitigate, with only partial success achieved through the bioventing and oxygen providing product in-situ injection that has been implemented since 2005.

Success at reducing the significant contamination in the mid-field plume area represented by well MW-8 has been achieved along with mitigation of the 2007 timeframe increase at the upper plume area represented by well MW-2. But the lower plume area represented by the "guard" wells MW-7 and MW-9 have not been significantly reduced by the combination of bioventing and recent March 2010 ORC™ injection.

Borehole soil sampling has provided data on the extent and magnitude of soil contamination in the vicinity of the former UFSTs ("source area") and the outlying area (in the capillary fringe above the groundwater plume). Soil contamination appears constrained to the unsaturated zone and the underlying saturated sediments on the weathered bedrock surface. The 2010 ORC™ injection effort was aimed at mitigating the apparent large mass of residual TPH contamination in the unsaturated zone, primarily in the area between the former UFSTs and the park entrance roadway, with the contaminated zone thinning toward Redwood Creek. Seasonal desorption of contamination in this unsaturated zone occurs during the rainy season and during high-water periods, acting as a long-term source of dissolved contamination. Previous ORC™ injection programs—which resulted in permanent reductions at the peripheral plume margins, but were followed by rebound (to pre-injection conditions) within the central portions of the plume—

indicate that site conditions support aerobic biodegradation. However, biodegradation is limited by oxygen deficiency in the unsaturated zone.

Based on this conceptual model—and using conservative assumptions for equilibrium partitioning, contaminant geometry, soil moisture, and previous laboratory analytical results for TPH in soil—estimates of TPH mass in soil were calculated based on 2004 and earlier borehole data. Residual TPH in vadose zone soil is estimated at 1,400 to 7,000 pounds (100 to 600 gallons of gasoline), compared to a mass of TPH in groundwater estimated at 1 to 10 pounds (0.1 to 1.0 gallon of gasoline). The hydrocarbon mass in groundwater is likely higher than originally estimated (based on post-2004 data).

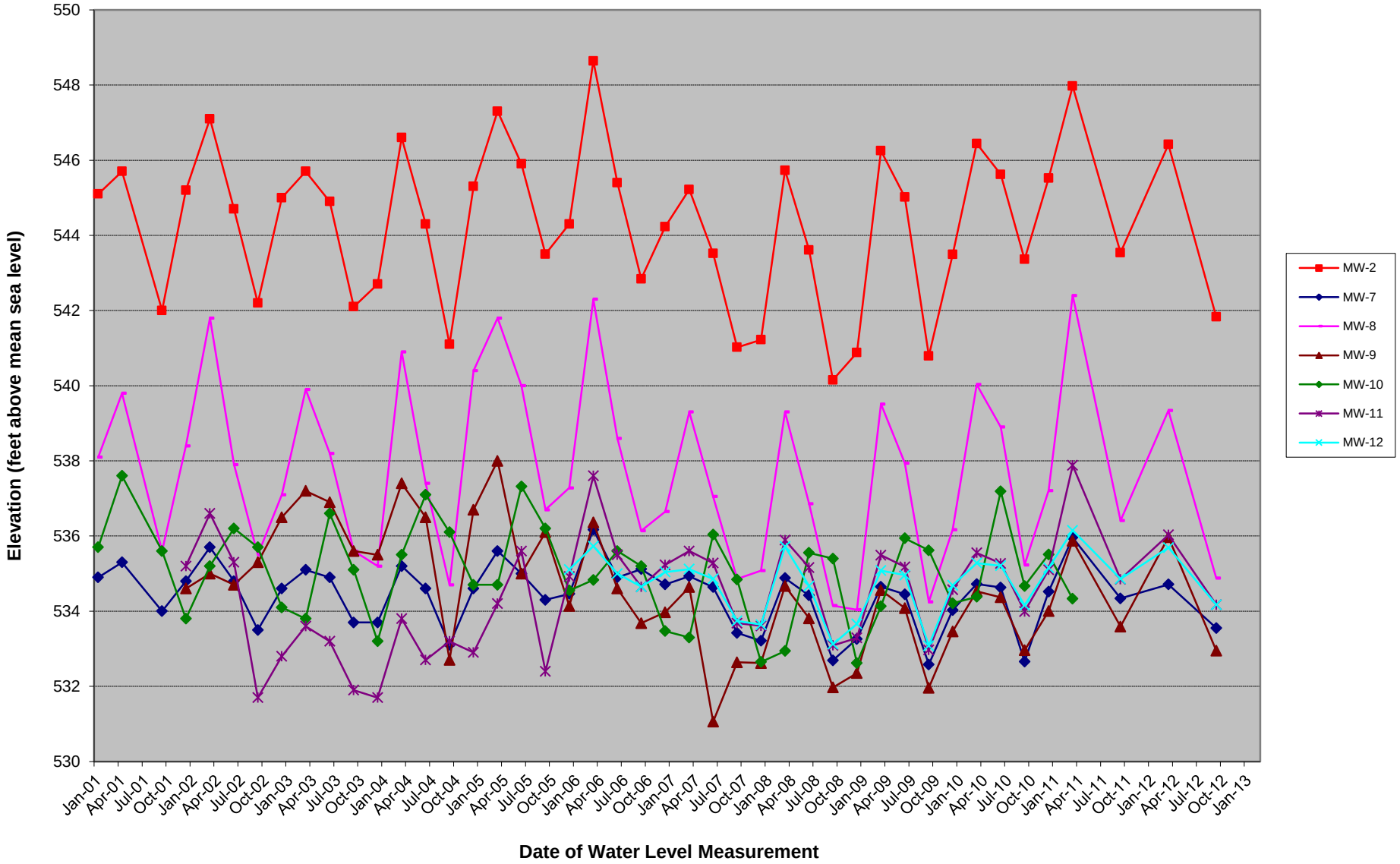
Soil and groundwater contamination distribution and site lithologic and hydrogeologic conditions have shown that residual soil contamination, unless abated, will continue to be a source of long-term groundwater contamination via seasonal desorption and migration. The most effective way it appears to mitigate against the hydrocarbon impact to the Redwood Creek is to install a reactive wall to treat the plume on the downgradient border.

WATER LEVEL TRENDS

Appendix D contains historical groundwater elevation data. Figure 8 shows a trendline of site groundwater elevations in key wells (those within the contaminant plume). The data support the following conclusions:

- Groundwater elevations in all of the monitored site wells showed a seasonal fluctuation in 2011-2012—from an average increase of 1.5 feet (from September 2011 to March 2012) to an average decrease of 2.4 feet (from March 2012 to September 2012).
- In all wells, the lowest elevations have generally been observed during the end of the dry season and the highest elevations at the peak of the rainy season. This is a common seasonal trend observed in the upper water-bearing zone in the Bay Area.
- Groundwater elevation trends and magnitudes are similar between wells.
- Overall groundwater flow direction is consistently to the west-southwest (toward Redwood Creek). Localized (on the scale of tens of feet) groundwater flow direction appears to vary within the general flow direction, likely controlled by bedrock surface topography.
- The historical groundwater gradient in the area of the contaminant plume is consistently around 0.1 feet/foot.

Figure 8: Historical Groundwater Elevations in Site Wells
Redwood Regional Park Service Yard - Oakland, California



HYDROCHEMICAL TRENDS

Concentrations of contaminants in an individual well can fluctuate over time for one or more reasons—contaminant migration, seasonal effects due to fluctuating groundwater levels (i.e., desorption from the unsaturated zone and/or dilution of saturated zone contamination), and/or natural attenuation (plus enhancement by active remediation measures such as ORC™ injection and bioventing). These hydrochemical trends can result in changes in the lateral extent and magnitude of a dissolved contaminant plume.

The most consistent trend in the wells located within the centerline of the plume has been a seasonal influence of desorption following winter rains, with a resultant increase in dissolved hydrocarbon concentration in the groundwater.

Because the quarter-to-quarter comparisons can be unduly influenced by seasonal effects that mask longer trends, it is useful to compare same-season data over time to determine if concentrations are increasing, decreasing, or remaining stable. Our evaluation of hydrochemical trends focuses on gasoline and diesel, which, when combined, represent the majority of the contaminant mass. To more closely evaluate plume stability differences, the following discussion focuses on four separate portions of the plume relative to the long axis (along the hydraulic gradient): "upgradient" (trailing edge of plume); "mid-plume"; "downgradient"; and "plume fringe."

Important components of plume stability include: degree of contaminant fluctuations in individual wells over time; changes in the lateral extent of the plume; and changes in the location of the center of contaminant mass within the plume.

Historically, the contaminant plume appeared to have disconnected from the source such that historical downgradient concentrations were higher than upgradient (near the source) concentrations. However, a significant increase in gasoline and diesel concentrations in source area well MW-2 was observed beginning in approximately September 2007. The increase continued, even after individual purging events, into 2010. Stellar Environmental commenced with ORC™ injection near this well and in the general area of the plume in February 2010. Based on that apparent success, In March 2010, a wider ORC™ injection into areas of the plume was initiated. This has not resulted in the same success at reducing concentrations in the lower plume area as it did in the upper and mid-field of the plume. The two guard wells MW-7 and MW-9 generally have comparative TPHg + TEHd, however there was a large difference over the last year. Well MW-7 showed a combined 9,100 µg/L TPHg + TEHd in September 2011 compared with 8,700 µg/L TPHg + TEHd in September 2012, which is pretty comparable. But well MW-9 showed a combined 4,500 µg/L TPHg + TEHd in September 2011 compared with a significant increase to 18,600 µg/L TPHg + TEHd in September 2012.

To evaluate plume stability with regard to changes in the center of contaminant mass, we evaluated concentrations of TPH (gasoline and diesel combined) in individual wells over time. The data show no obvious correlation between maximum TPH concentrations and well locations, suggesting high plume instability. Since January 2001, maximum TPH concentrations have been variously detected in upgradient, mid-plume, and downgradient wells. These variations are likely due in large part to differing contaminant mass in unsaturated zone soils at particular locations, resulting in variable amounts of desorbed mass to the plume during high water conditions. The following discusses hydrochemical trends in each of the upgradient, mid-plume, and downgradient portions of the site, as well as at the fringes of the plume.

Upgradient Hydrochemical Trends

MW-2. As described in Section 4.0, this source area well historically has shown low to trace (sometimes non-detectable) contaminant levels. However, since September 2007, well MW-2 concentrations increased dramatically, suggesting desorption from the original upgradient source area as a result of the drought-induced drop in water levels. In September 2008, a new historic maximum of 40,000 µg/L of gasoline was observed in MW-2 and a new historic maximum of diesel at 37,000 µg/L was observed in March 2009. In March 2010, Stellar Environmental conducted a limited ORC™ injection, which has dramatically decreased concentrations of both gasoline and diesel over time. In this September 2012 event, the diesel concentration measured 190 µg/L and the gasoline concentration measured 180 µg/L. Figure 9 shows hydrochemical trends for gasoline and diesel in MW-2.

Mid-Plume Trends

MW-8. Concentrations of TVHg in MW-8, located approximately 60 feet downgradient of MW-2, have been generally decreasing since 2005: from a historic high of 33,000 TPHg µg/L observed in June 2005 to the lowest TPHg concentration of 180 µg/L in December 2010 to 1,700 µg/L in this latest event. TEHd concentrations had remained fairly stable until a TEHd spike of 13,000 µg/L was observed in March 2008; however, the concentration has since decreased to the 260 µg/L observed in this latest event. This fluctuation demonstrates that significant contaminant mass entrained in the soil continues to "feed" the dissolved concentration, as demonstrated by periods of recharge represented during the March 2008 sampling event. As contaminant concentrations decrease in upgradient well MW-2, contaminant concentrations in this well will most likely decrease as the plume migrates downgradient. Both gasoline and diesel concentrations have fluctuated widely but follow a well-established seasonal fluctuation pattern. The strong seasonal effect is visually apparent, with annual maximum concentrations generally occurring in late winter/early spring (usually the March event), and annual minimum concentrations generally occurring in the fall/winter (usually the September or December events). Figure 10 features gasoline and diesel hydrochemical trends in MW-8.

Figure 9: Gasoline and Diesel Hydrochemical Trends: Well MW-2, 2005 to 2012

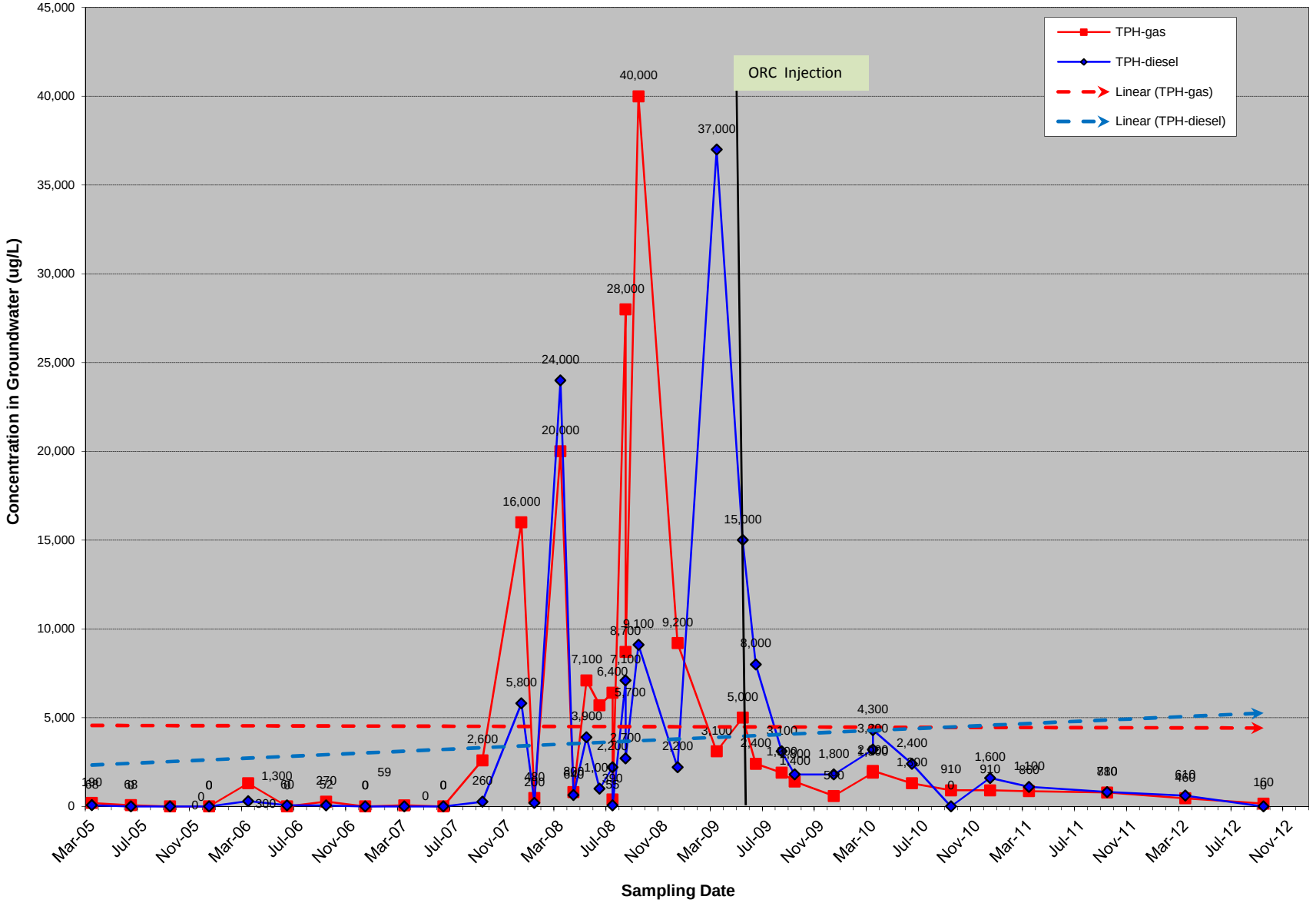
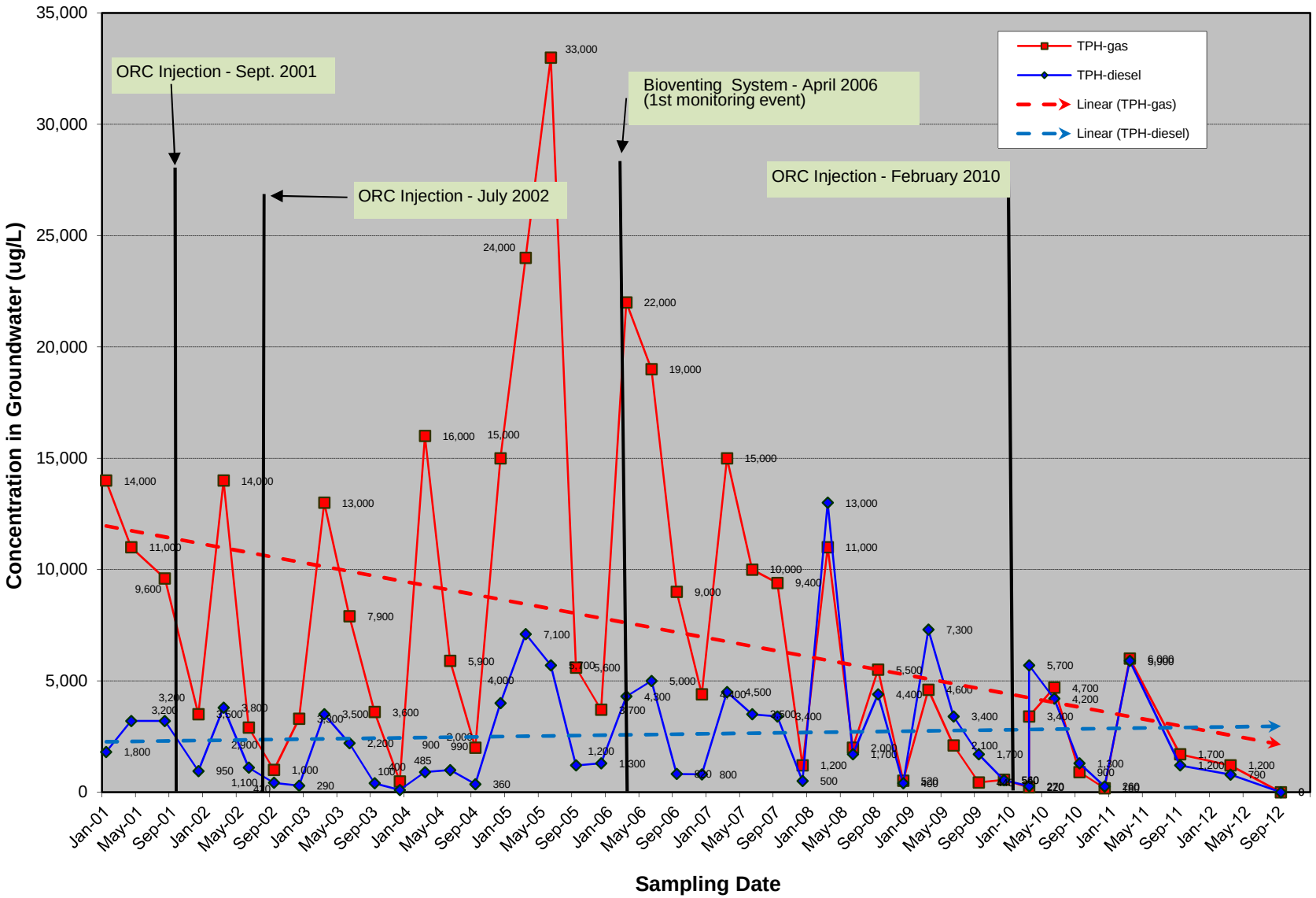


Figure 10: Gasoline and Diesel Hydrochemical Trends: Well MW-8
Redwood Regional Park Service Yard, Oakland, California



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MW-11. This well is located in the lower part of the mid plume zone, along the plume centerline, approximately midway between upgradient well MW-8 and downgradient guard well MW-7. Figure 11 shows hydrochemical trends for gasoline and diesel in this well. Gasoline and diesel concentrations were greatly reduced in 2001, and this was followed by an equally large increase by late 2002. Since that time, concentrations have fluctuated widely, with a strong seasonal effect. However, both diesel and gasoline concentrations in this well demonstrated a generally decreasing trend since 2008.

Downgradient Hydrochemical Trends

MW-7 and MW-9. These wells represent the high-concentration area of the central plume at the downgradient area approximately 20 feet from Redwood Creek. Both of these well show increases relative to the last monitoring event with gasoline on a overall downward trendline and diesel on a slightly increasing one.

Figure 12 shows hydrochemical trends for gasoline and diesel in MW-7. Gasoline has shown strong fluctuations in concentration, but with a general downward trend. However, the diesel concentration trend has historically been fairly stable to slightly increasing trend. Figure 13 shows hydrochemical trends for gasoline and diesel in MW-9, with a rise in concentration relative to the April 2012 sampling but a significant decrease compared to the historical maximum of 13,000 µg/L was observed two years ago in September 2010.

Plume Fringe Zone Trends

MW-10. This well is located on the southern edge of the plume, in the mid-plume portion relative to the longitudinal axis. Figure 14 shows hydrochemical trends for gasoline and diesel in this well. Concentrations of gasoline generally remained stable compared to 2009, with only slight increases observed above 100 µg/L. The diesel concentration trend appears stable with a slightly increasing trend. The historic maximum of 2,100 µg/L diesel was recorded in 2001 and and the second highest of 1,200 µg/L diesel was observed during in March 2011.

MW-4 (former). This well was located on the northern edge of the plume, just upgradient of Redwood Creek. Other than anomalous diesel detection in June 2004, no contamination had been detected in this well since December 2001. Due to poor recharge in this well, the well was destroyed in November 2005 and replaced by well MW-12 (in an adjacent position).

MW-12. The initial sampling of MW-12 showed elevated petroleum concentrations up to 1,300 µg/L, but those concentrations declined until March 2008 when a spike was observed. Concentrations have fluctuated since then, but are below the historical maximum observed and show a decreasing contaminant trend. Figure 15 shows hydrochemical trends for gasoline and diesel in this well.

Figure 11: Gasoline and Diesel Hydrochemical Trends: Well MW-11
Redwood Regional Park Service Yard, Oakland, California

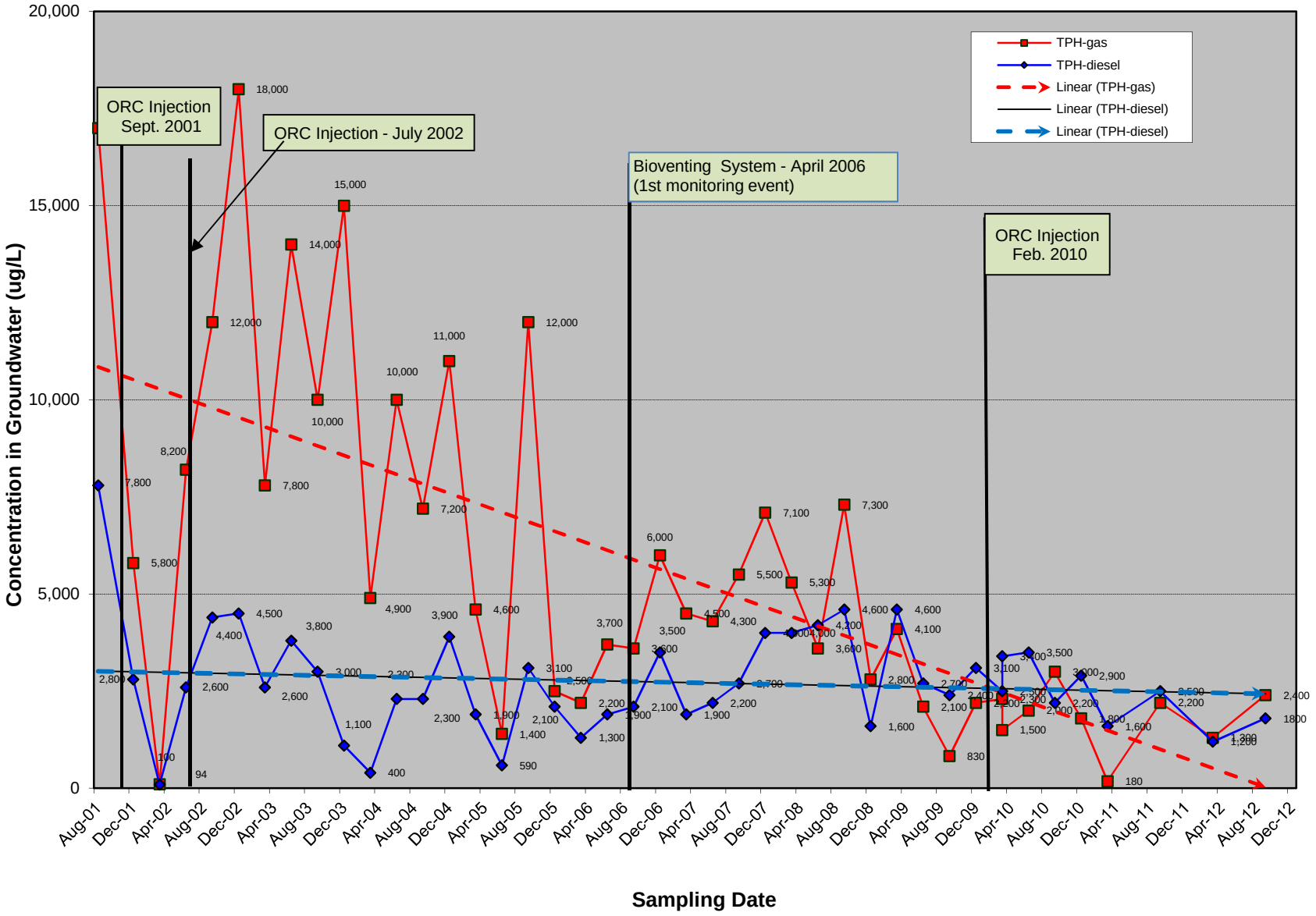

Figure 12: Gasoline and Diesel Hydrochemical Trends: 2011-2012
Well MW-7, Redwood Regional Park Service Yard, Oakland, California

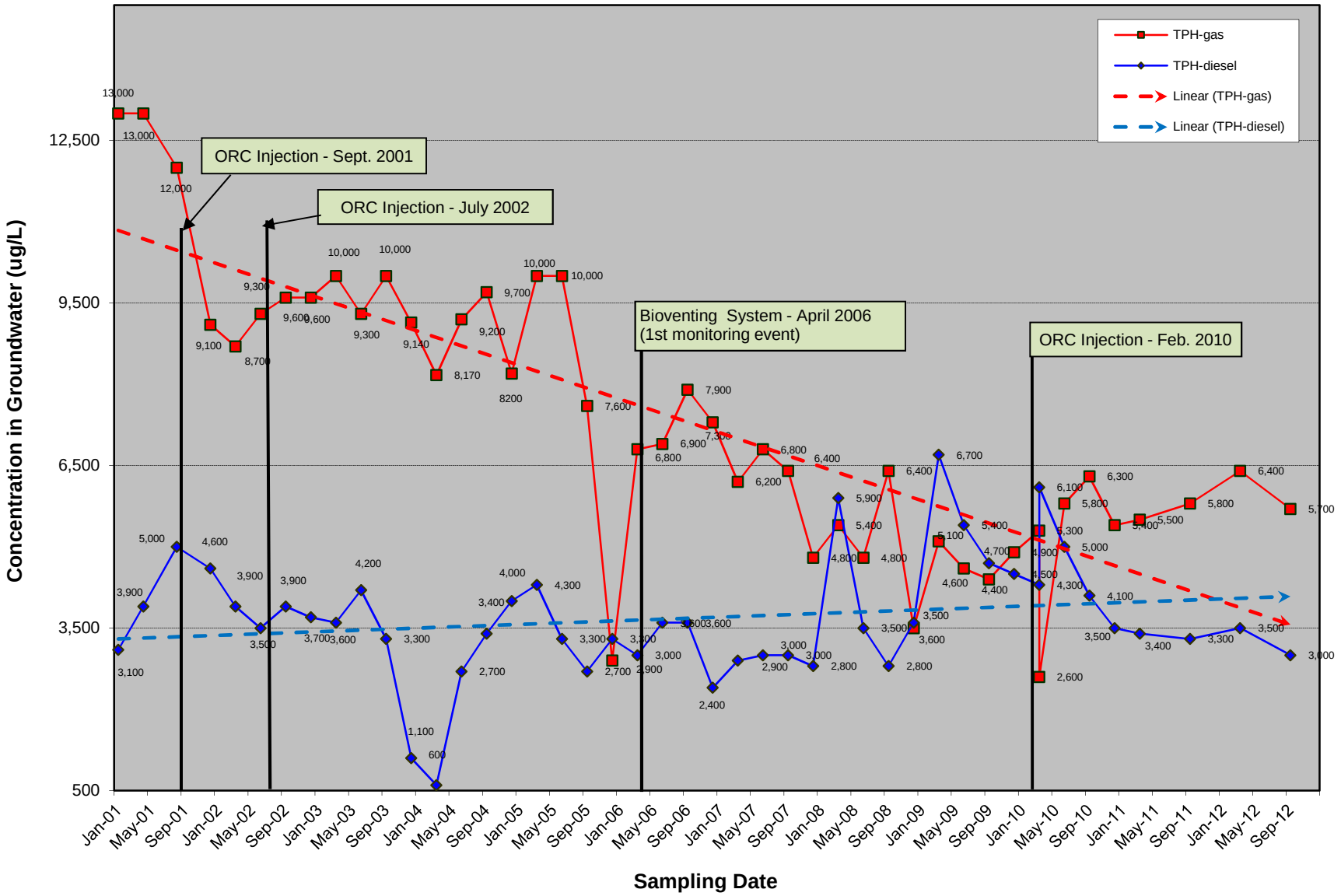

Figure 13: TPH-gasoline and TPH-diesel Hydrochemical Trends: 2001-2012
Well MW-9, Redwood Regional Park Service Yard, Oakland, California

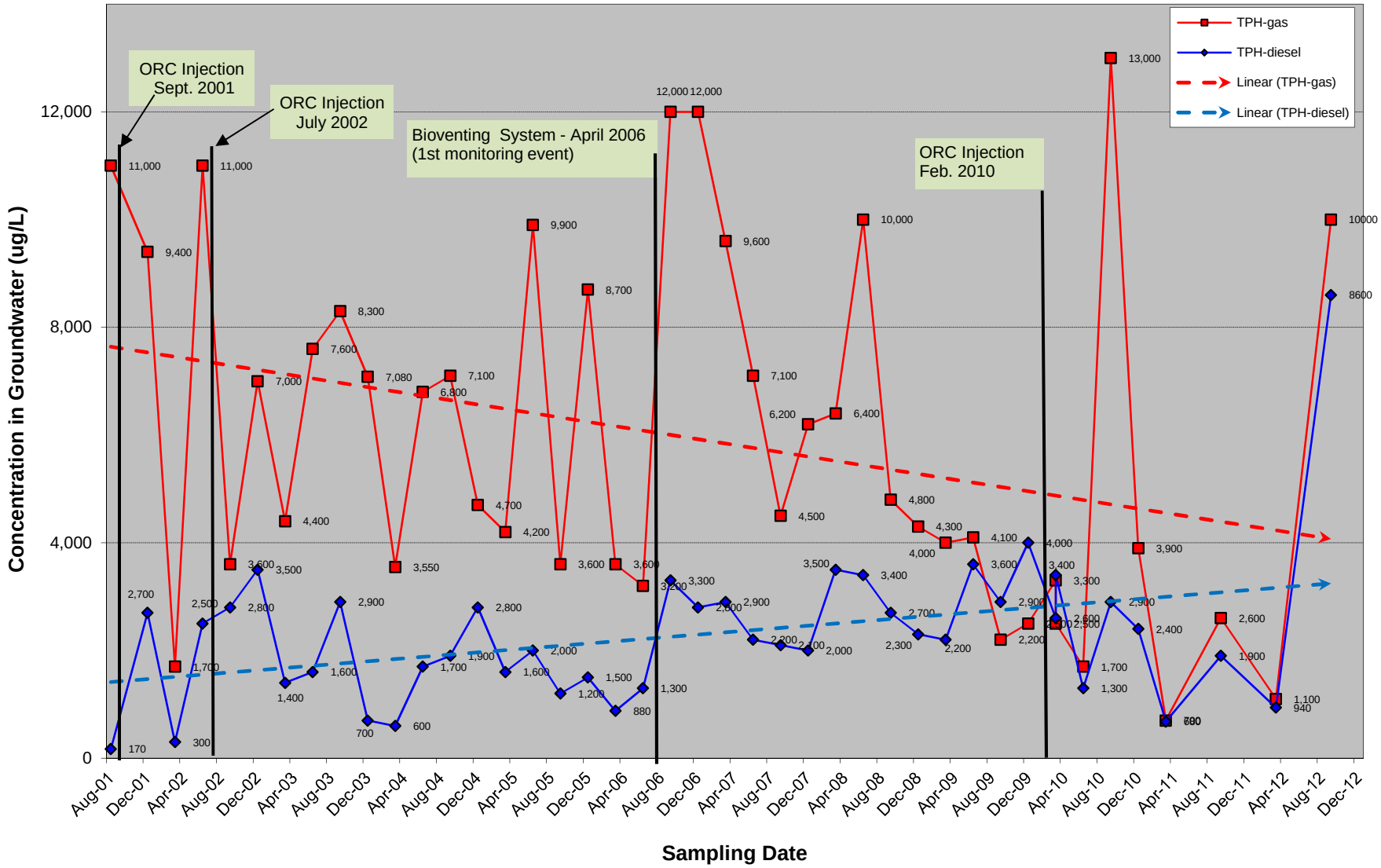

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Figure 14: Gasoline and Diesel Hydrochemical Trends: 2001-2012
Well MW-10, Redwood Regional Park Service Yard, Oakland, California

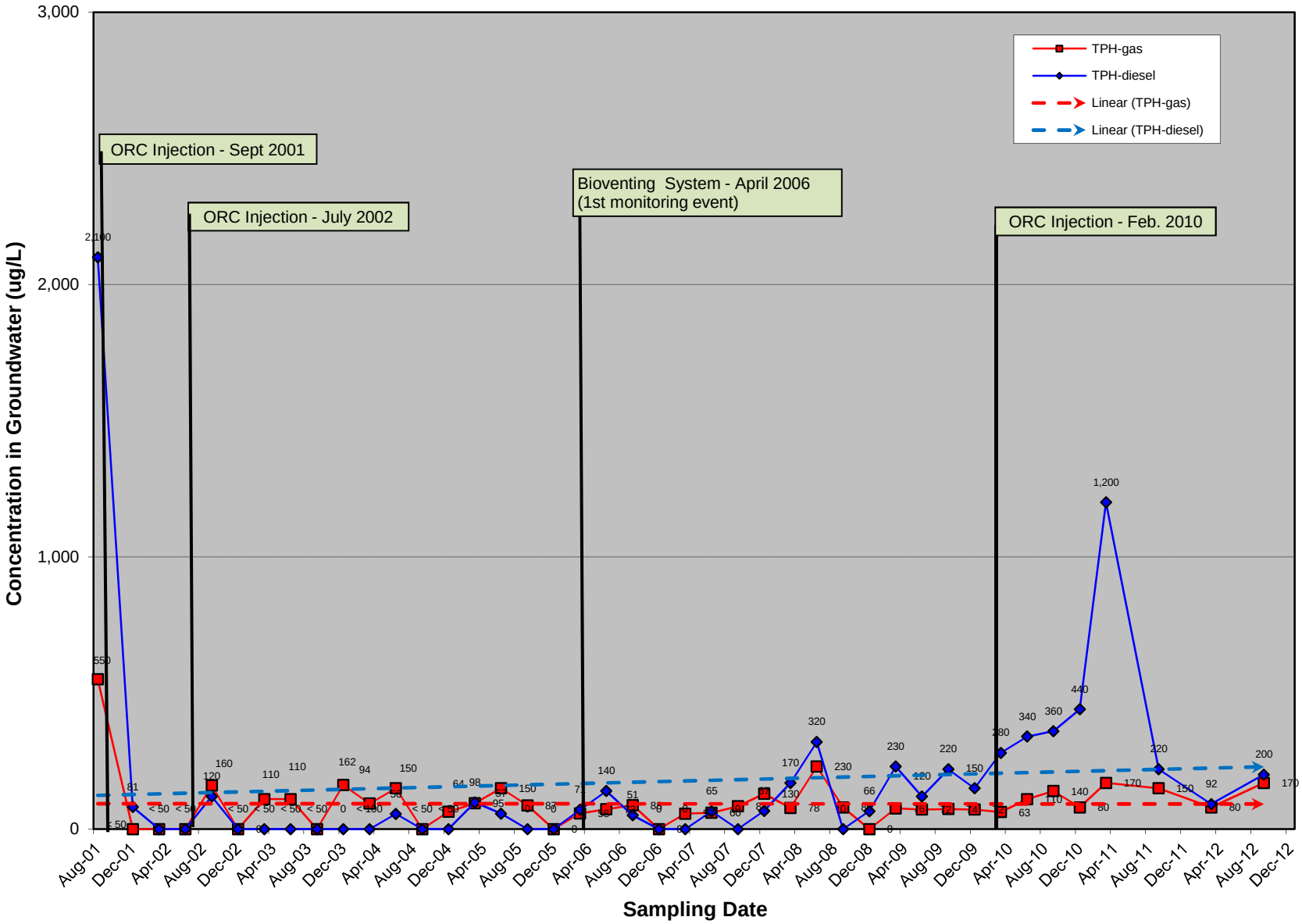
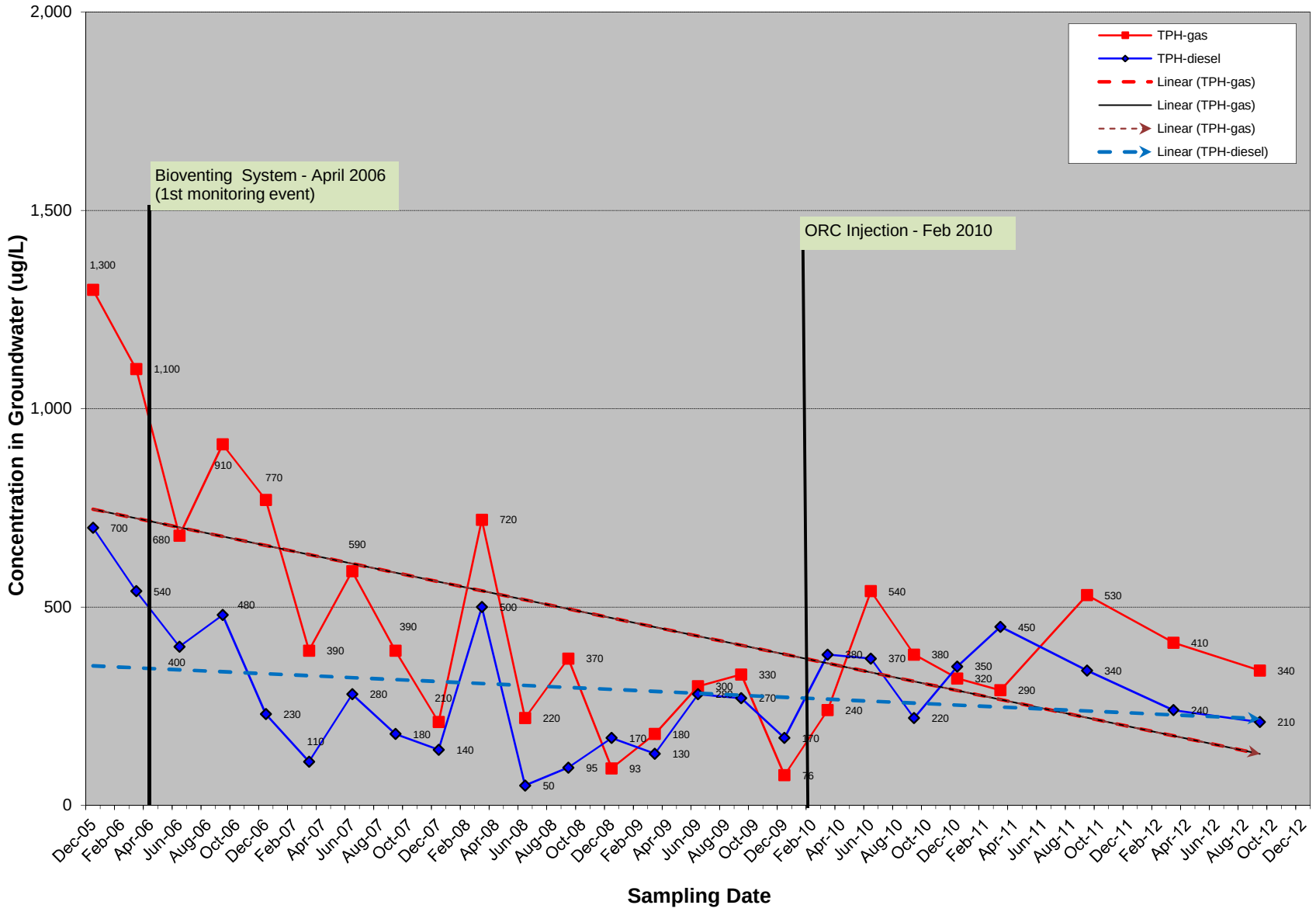


Figure 15: Gasoline and Diesel Hydrochemical Trends: 2005-2012
Well MW-12, Redwood Regional Park Service Yard, Oakland, California



PLUME GEOMETRY AND MIGRATION INDICATIONS

The plume of groundwater contamination above screening levels appears to be approximately 130 feet long and approximately 50 feet wide. The zone of greatest contamination fluctuates between the upper portion of the plume (MW-2), the mid-portion of the plume (near MW-8), and the downgradient portion of the plume (at MW-7 and MW-9).

The plume geometry has not varied substantially over the past years of monitoring, although seasonal fluctuations in contaminant concentrations have been observed. This is exhibited by higher concentrations in downgradient wells in some events, and in mid-plume or upgradient wells in other events.

CLOSURE CRITERIA ASSESSMENT AND PROPOSED ACTIONS

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

1. ***The contaminant source has been removed (i.e., the source of the discharge and obviously-contaminated soil***). This criterion has not been partially met. While the UFSTs have been removed, along with contaminated soil, borehole soil sampling has shown a substantial mass of residual source area soil contamination that will act as an ongoing source of groundwater contamination. A bioventing system was installed and began operating in December 2005 as a corrective action to reduce gross contaminant mass in soil. The bioventing system resulted in an estimated magnitude drop in soil contaminant concentrations and thus having accomplished its' design purpose, was turned off in June 2011.
2. ***The groundwater contaminant plume is well characterized, and is stable or reducing in magnitude and extent.*** As discussed above, in our professional opinion, this criterion has not been met, and continued groundwater monitoring will be needed to demonstrate plume stability.
3. ***If residual contamination (soil or groundwater) exists, there is no reasonable risk to sensitive receptors (i.e., contaminant discharge to surface water or water supply wells) or to site occupants.*** This criterion is generally met by conducting a Risk-Based Corrective Action assessment that models the fate and transport of residual contamination in the context of potential impacts to sensitive receptors (e.g., water wells, residential and use). For this site, Redwood Creek is considered the primary sensitive receptor. The proposed reactive wall corrective action is designed to remedy the magnitude and duration of future contaminated groundwater discharge to Redwood Creek.

7.0 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

- Groundwater monitoring has been conducted since November 1994. A total of 11 site wells are available for monitoring, 7 of which are currently being monitored for contamination.
- Conversion of surface and groundwater monitoring frequency from quarterly to semiannual by ACEH at the request of Stellar Environmental on behalf of the Park District occurred in June 2011. Prior to June 2011, monitoring had been conducted on a quarterly basis since November 1994.
- Site contaminants of concern include gasoline, diesel, BTEX, and MTBE. Current groundwater concentrations exceed regulatory screening levels for gasoline, diesel, benzene and ethylbenzene in groundwater.
- On July 18, 2011, in concurrence with ACEH, the site bioventing system having accomplished its' design purpose, was discontinued.
- The primary environmental risk is discharge of contaminated groundwater to the adjacent Redwood Creek. An in-stream bioassessment conducted in 1999 to 2000, concluded that there were no direct impacts to the surface water benthic macro-invertebrate 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, benzene, total xylenes, and ethylbenzene but generally only under low creek flow conditions.
- 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) 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.
- The plume of groundwater contamination above screening levels appears to be approximately 130 feet long and approximately 50 feet wide. The zone of greatest

contamination (greater than 1,000 µg/L of TVHg) is currently centered around wells MW-7, MW-9, and MW-11 which are in the downgradient area of the plume. However, prior to the ORC™ injection in March 2010, the greatest zone of contamination was observed in MW-2, the historical source area well.

- 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. Historical remedial efforts indicate 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.
- A September 2003 exploratory borehole program confirmed that sorbed-phase contamination in the seasonally unsaturated zone is a primary source of long-term contaminant contribution to the groundwater plume. Reduction/removal of this contamination will be necessary to eliminate continued discharge of contaminated groundwater to Redwood Creek, and to ultimately obtain site closure.
- Second Semiannual 2012 site groundwater contaminant concentrations exceeded the groundwater ESL for TVHg and TEHd in all of the seven wells sampled. The ESL for benzene was exceeded in monitoring wells MW-8, MW-9 and MW-11; the ESL for ethylbenzene was exceeded in wells MW-7, MW-8, MW-9 and MW-11; and the ESL for MTBE was exceeded in well MW-8.
- No contaminants were detected in surface water samples SW-2 and SW-3 during this Second Semiannual 2012 event.
- The overall objective of the March 2010 in-situ ORC™ injection remedial action was to continue to reduce the residual hydrocarbons in the source area and in the downgradient slope area leading to Redwood Creek. The injection program was relatively effective in treating the upper and mid-plume area zone but not effective in the lower plume zone. Injection of ORC^{TM} has been limited by lithologic restraints and non-hydrocarbon-utilizing microorganisms. It worked very well around the permeable backfilled zone of the former UFST excavation area as seen in earlier results at MW-2, but shows very limited effectiveness in the midfield and downgradient wells.

PROPOSED ACTIONS

The EBRPD proposes to implement the following actions to address the current site conditions and regulatory concerns:

- Schedule implementation of the workplan, dated November 28, 2011 to install the bioremediation reactive wall transverse to the plume in the downgradient area of the plume to treat the groundwater and minimize contaminants reaching Redwood Creek as described in
- Complete pre-and post smapling at selected wells in association with the installation of the bioremediation reactive wall.
- Continue to implement the full groundwater and surface water monitoring events on the same semiannual frequency.
- Continue to inform regulators of site progress and seek their concurrence with proposed actions.
- Continue to make the required electronic data and report uploads to the State of California GeoTracker database, and upload an electronic copy of technical reports to ACEH's ftp database.

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Stellar Environmental Solutions, Inc. (SES), 1998b. Site Investigation and Closure Assessment Report, Redwood Regional Park Service Yard, Oakland, California. December 4.

9.0 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 SES since September 1998. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES 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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	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	(b)	529.98	Dry	532.58	534.25	531.96	532.62	532.97	533.08
12/21/2009	560.93	543.49	541.22	(b)	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	(b)	531.52	532.58	534.72	540.03	534.53	535.94	535.55	535.28
6/22/2010	561.17	545.62	541.40	(b)	531.26	532.41	534.63	538.90	534.37	535.62	535.27	535.21
9/28/2010	560.32	543.36	537.91	(b)	530.6	532.02	532.66	535.23	532.96	534.21	533.99	534.16
12/16/2010	561.33	545.52	541.51	(b)	531.11	532.31	534.52	537.21	534.00	534.38	535.10	535.15
3/23/2011	563.68	547.97	542.49	(b)	532.78	534.43	535.96	542.40	535.87	537.19	537.88	536.15
9/23/2011	561.03	543.54	539.52	(b)	530.81	532.31	534.34	536.41	533.59	534.67	534.85	534.86
3/22/2012	562.25	546.42	542.02	(b)	531.83	533.13	534.71	539.34	535.97	535.51	536.03	535.69
9/19/2012	560.93	541.83	537.53	(b)	530.6	531.91	533.55	534.88	532.95	534.33	534.17	534.17

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

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

Project Name Redwood Regional Park
Project Number ~~2006-16~~ 2008-02

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)* Patrick

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH-g (8015m)	BTEX/MTBE (8021)	TEPH-D (8015)	Nitrate	Sulfate	BOD	COD	Remarks
MW-10		9/19/12	1046	W	2x1L AG NP 40ml VOA		NP HCl			X	X	X					
MW-7			1113		* + 1x1L P. NP 1x500ml P		H_2SO_4			X	X	X	X	X	X	X	
MW-12			1210		* 1x250ml P Add'l Bottles		"			X	X	X	X	X	X	X	
MW-9			1308							X	X	X					
MW-8			1300		* Add'l bottles see above		HCl			X	X	X	X	X	X	X	
MW-11			1344							X	X	X					
MW-2			1425		* Add'l Bottles see Above		H_2SO_4			X	X	X	X	X	X	X	
SW2			1405							X	X	X					
SW3			1355							X	X	X					

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature Patrick	9/19/12	Signature Pat Gonzalez	9/19/12	Signature		Signature	
Printed Pete Lamish	Time	Printed Pat Gonzalez	Time	Printed	Time	Printed	Time
Company Stellar Environmental	342 pm	Company CET	342 pm	Company		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	

2000-03-01

WELL GAUGING DATA

Project # 120919-R01 Date 9/18/12 Client Stellar

Site Redwood Regional Parks Service Yard, Oakland

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or (TOC)	Notes
MW-1	0850	4					4.90	19.10		
MW-2	0855	4					24.59	36.92		
MW-3	0901	4					23.28	4.96		
MW-5	0906	4					16.81	26.84		
MW-6	0912	4					13.52	14.49		
MW-7	0924	2					14.01	25.18		
MW-8	0940	2					14.25	22.18		
MW-9	0936	2					16.33	30.11		
MW-10	0920	2					12.89	28.11		
MW-11	0946	2					13.58	28.59		
MW-12	0928	2					10.50	23.50	↓	

WELLHEAD INSPECTION CHECKLIST

Date 9/19/12 Client Stellar

Site Address Redwood Regional Parks Service Yard, Oakland

Job Number 120919-PC1 Technician P. Cornish

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					X	
MW-9	X							
MW-10							X	
MW-11	X							
MW-12	X							

NOTES: MW-1 standpipe lid detached @ hinge.
MW-8 3/3 bolts missing.
MW-10 2/2 tabs stripped

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME RRPST, Oakland - Stellar				PROJECT NUMBER 120919-PC1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
Myron	621 0912	9/19/12 0628	4/7/10 pH 3900 µs 237.5 mv @ 20°C	4.0/7.01/10.02 3900 240.0	Y	22.0 22.2 22.0	R
YSI 550A		0635	DO → 100%	99.7	Y	23.1	R

WELL MONITORING DATA SHEET

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 36.92	Depth to Water (DTW): 24.59
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]: 27.06	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; X Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

8 (Gals.) X 3 = 24 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
1000	14.3	6.33	867.8	>1000	8	
1002		Well dewatered				
1428	15.7	7.36	8373	205	-	

Did well dewater? (Yes) No Gallons actually evacuated: 9

Sampling Date: 9/19/12 Sampling Time: 1428 Depth to Water: 30.79 2 Hr.

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

Analyzed for: TPH-G (BTEX) (MTBE) (TPH-D) Oxygenates (5) Other: TVH-G/BTEX/MTBE SOC (ox

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):	17.40 ✓✓	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	45	mV

WELL MONITORING DATA SHEET

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 25.18	Depth to Water (DTW): 14.01
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]:	

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

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

1.8 (Gals.) X	3	=	5.4 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 uS)	Turbidity (NTUs)	Gals. Removed	Observations
1056	13.0	6.84	709.8	282	1.8	
1100	12.9	6.73	706.7	173	3.6	
1103	12.8	6.74	700.0	156	5.4	

Did well dewater? Yes (No) Gallons actually evacuated: 5.4

Sampling Date: 9/19/12 Sampling Time: 1110 Depth to Water:

Sample I.D.: MW-7 Laboratory: Kiff CalScience Other (C&T)

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.46 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-104 mV

W[illegible]L MONITORING DATA SHE[illegible]

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 22.18	Depth to Water (DTW): 14.25
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]: 15.84	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

1.3 (Gals.) X	3	= 3.9 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
1246	13.7	7.02	791.7	374	1.3	color
1250	13.6	6.90	781.1	250	2.6	"
1254	13.7	6.92	780.2	141	3.9	"

Did well dewater? Yes (No) Gallons actually evacuated: 3.9

Sampling Date: 9/19/12 Sampling Time: 1300 Depth to Water: 15.29

Sample I.D.: MW-8 Laboratory: Kiff CalScience Other C&T

Analyzed for: TPH-G (BTEX MTBE TPH-D) Oxygenates (5) Other: TVH-G 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:)	0.42	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-86	mV

W L MONITORING DATA SHE T

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 30.11	Depth to Water (DTW): 16.35
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]: 19.08	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2.2 (Gals.) X	3	=	6.6 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
1220	13.5	7.11	872.6	210	2.2	odor, sheen
1226	13.3	7.02	804.1	132	4.4	" "
1232	13.2	6.93	835.3	197	6.6	" "

Did well dewater? Yes (No) Gallons actually evacuated: 6.6

Sampling Date: 9/19/12 Sampling Time: 1308 Depth to Water: 17.18

Sample I.D.: MW-9 Laboratory: Kiff CalScience Other C&T

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

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:)	0.44	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-101	mV

WELL MONITORING DATA SHEET

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 28.11	Depth to Water (DTW): 12.89
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]: 13.93	

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

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

2.4 (Gals.) X 3 = 7.2 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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1031	13.4	7.30	766.3	333	2.4	
1036	13.4	7.04	835.4	125	4.8	
1041	13.4	7.10	760.1	61	7.2	

Did well dewater? Yes (No) Gallons actually evacuated: 7.2

Sampling Date: 9/19/12 Sampling Time: 1046 Depth to Water: 15.89

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

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

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:)	2.08	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-47	mV

W L MONITORING DATA SHE T

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 28.59	Depth to Water (DTW): 13.58
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]: 16.58	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2.4 (Gals.) X 3 = ~~20.1~~ 7.2 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
1320	13.7	6.89	799.3	>1000	2.4	
1326	13.6	6.68	795.4	>1000	4.8	
1332	13.6	6.65	786.7	660	7.2	

Did well dewater? Yes (No) Gallons actually evacuated: 7.2

Sampling Date: 9/19/12 Sampling Time: 1344 Depth to Water: 14.09

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

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

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:)	0.37	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-71	mV

W L MONITORING DATA SHE T

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: MW-12	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 23.50	Depth to Water (DTW): 10.50
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]: 13.10	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2.1 (Gals.) X 3 = 6.3 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
1120	13.1	6.94	668.0	814	~~2~~ 2.1	
1125	12.7	6.40	652.3	443	~~3.6~~ 4.2	
1130	12.7	6.59	662.6	667	~~5.4~~ 6.3	

Did well dewater? Yes (No) Gallons actually evacuated: 6.3

Sampling Date: 9/19/12 Sampling Time: 1210 Depth to Water: 12.81

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

Analyzed for: TPH-G (BTEX MTBE TPH-D) Oxygenates (5) Other: (TVH-G) 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:)	0.47	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-2	mV

WELL MONITORING DATA SHEET

Project #: 120919-PC1	Client: Stellar Env. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: SW2	Well Diameter: 2 3 4 6 8 surface point
Total Well Depth (TD): —	Depth to Water (DTW): —
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]:	

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:

_____(Gals.) X _____ = _____ 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
1405	14.4	7.94	522.3	9		
			Sample collected from			
			creek surface water point			

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: 9/19/12 Sampling Time: 1405 Depth to Water:

Sample I.D.: SW2 Laboratory: Kiff CalScience Other CET

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:	2.22 in cup mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	26 mV

WELL MONITORING DATA SHEET

Project #: 120919-PC1	Client: Stellar Env. Sol. Solutions
Sampler: PC	Date: 9/19/12
Well I.D.: SW3	~~Well Diameter~~: 2 3 4 6 8 —
Total Well Depth (TD): —	Depth to Water (DTW): —
~~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]:	

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: _____

_____ (Gals.) X _____ = _____ 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
1355	15.2	7.05	541.2	4		
			Sample collected from surface creek water point			

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: 9/19/12 Sampling Time: 1355 Depth to Water:

Sample I.D.: SW3 Laboratory: Kiff CalScience Other C&T

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	2.96 in cup	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	14	mV

APPENDIX C

Analytical Laboratory Report and Chain-of-Custody Record

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

Laboratory Job Number 239754
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2008-02
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-10	239754-001
MW-7	239754-002
MW-12	239754-003
MW-9	239754-004
MW-8	239754-005
MW-11	239754-006
MW-2	239754-007
SW2	239754-008
SW3	239754-009

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: Tracy Babjar Date: 09/27/2012

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**239754**
Client:	**Stellar Environmental Solutions**
Project:	**2008-02**
Location:	**Redwood Regional Park**
Request Date:	**09/19/12**
Samples Received:	**09/19/12**

This data package contains sample and QC results for nine water samples, requested for the above referenced project on 09/19/12. 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.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Chemical Oxygen Demand (SM5220D):
No analytical problems were encountered.

Carbonaceous BOD (SM5210B):
No analytical problems were encountered.

239754

Chain of Custody Record

Lab job no. _____

Date _____

Page 1 of 1

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

Method of Shipment Hand Delivery
Shipment No. _____
Airbill No. _____
Cooler No. _____

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

Project Manager Richard Makdisi
Telephone No. (510) 644-3123
Fax No. (510) 644-3859

Project Name Redwood Regional Park
Project Number ~~2006-16~~ 2008-02

Samplers: *(Signature)* Pat Li

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TPH-G (8015M)	Analysis Required: BTEX/MTBE (8021)	Analysis Required: TEPH-D (8015)	Analysis Required: NITRATE	Analysis Required: SULFATE	Analysis Required: BOD	Analysis Required: COD	Remarks
1 MW-10		9/19/12	1046	W	2x1L AG, NP 40ml VOA		NP HCl			X	X	X					
2 MW-7			1113		* + 1x1L P. NP 1x500ml P		H_2SO_4			X	X	X	X	X	X	X	
3 MW-12			1210		* 1x250ml P * Add'l Bottles		L			X	X	X	X	X	Y	X	
4 MW-9			1308							X	X	X					
5 MW-8			1300		* Add'l bottles see above		H_2SO_4			X	X	X	X	X	X	X	
6 MW-11			1344							X	X	X					
7 MW-2			1428		* Add'l Bottles see Above		H_2SO_4			X	X	X	X	X	X	X	
8 SW2			1405							X	X	X					
9 SW3			1355							X	X	X					

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature Pat Li	9/19/12	Signature Pat Gonzalez	9/19/12	Signature		Signature Adnan Ahmad	9/19/12
Printed Pete Cornish	Time 3:42 pm	Printed Pat Gonzalez	Time 3:42 pm	Printed	Time	Printed Adnan Ahmad	Time 1542
Company Stellar Environmental		Company C&T		Company		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

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 239754 Date Received 9/19/12 Number of coolers 2
Client Stellar Environmental/Project Redwood Regional Park

Date Opened 9/19/12 By (print) AM (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: * Notify PM if temperature exceeds 6°C

   Type of ice used: ☐ Wet ☐ Blue/Gel ☐ None Temp(°C) 3

   ☑ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

   ☑ 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 there any missing / extra samples? YES (NO)
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? (YES) NO
13. Do the sample labels agree with custody papers? (YES) NO
14. Was sufficient amount of sample sent for tests requested? (YES) NO
15. Are the samples appropriately preserved? (YES) NO N/A
16. Did you check preservatives for all bottles for each sample? (YES) NO N/A
17. Did you document your preservative check? (YES) NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? (YES) NO N/A
21. Was the client contacted concerning this sample delivery? YES (NO)
   If YES, Who was called? By Date:

COMMENTS

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 239754

Sample	pH: <2	>9	>12	Other
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[✓]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[✓]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
-005a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[✓]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
-007a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[✓]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____

Analyst: JH

Date: 9/19/12

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Matrix:	Water	Sampled:	09/19/12
Units:	ug/L	Received:	09/19/12

Field ID: MW-10 Lab ID: 239754-001
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	170 Y	50	190818	09/21/12	EPA 8015B
MTBE	ND	2.0	190792	09/20/12	EPA 8021B
Benzene	ND	0.50	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	190792	09/20/12	EPA 8021B
Ethylbenzene	2.0	0.50	190792	09/20/12	EPA 8021B
m,p-Xylenes	0.94	0.50	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	89	75-124	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	94	62-134	190792	09/20/12	EPA 8021B

Field ID: MW-7 Lab ID: 239754-002
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	5,700 Y	50	190818	09/21/12	EPA 8015B
MTBE	ND	2.0	190792	09/20/12	EPA 8021B
Benzene	ND	0.50	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	190792	09/20/12	EPA 8021B
Ethylbenzene	84	0.50	190792	09/20/12	EPA 8021B
m,p-Xylenes	ND	0.50	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	101	75-124	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	90	62-134	190792	09/20/12	EPA 8021B

Field ID: MW-12 Lab ID: 239754-003
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	340 Y	50	190818	09/21/12	EPA 8015B
MTBE	ND	2.0	190792	09/20/12	EPA 8021B
Benzene	ND	0.50	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	190792	09/20/12	EPA 8021B
Ethylbenzene	1.1	0.50	190792	09/20/12	EPA 8021B
m,p-Xylenes	ND	0.50	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	92	75-124	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	81	62-134	190792	09/20/12	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Matrix:	Water	Sampled:	09/19/12
Units:	ug/L	Received:	09/19/12

Field ID: MW-9 Lab ID: 239754-004
Type: SAMPLE

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Analysis
Gasoline C7-C12	10,000 Y	500	10.00	190818	09/21/12	EPA 8015B
MTBE	ND	2.0	1.000	190792	09/20/12	EPA 8021B
Benzene	25	0.50	1.000	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	1.000	190792	09/20/12	EPA 8021B
Ethylbenzene	260	0.50	1.000	190792	09/20/12	EPA 8021B
m,p-Xylenes	19 C	0.50	1.000	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	1.000	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	97	75-124	10.00	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	106	62-134	1.000	190792	09/20/12	EPA 8021B

Field ID: MW-8 Lab ID: 239754-005
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	730 Y	50	190818	09/21/12	EPA 8015B
MTBE	9.2	2.0	190792	09/20/12	EPA 8021B
Benzene	4.7	0.50	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	190792	09/20/12	EPA 8021B
Ethylbenzene	45	0.50	190792	09/20/12	EPA 8021B
m,p-Xylenes	3.8	0.50	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	93	75-124	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	88	62-134	190792	09/20/12	EPA 8021B

Field ID: MW-11 Lab ID: 239754-006
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	2,400 Y	50	190818	09/21/12	EPA 8015B
MTBE	ND	2.0	190792	09/20/12	EPA 8021B
Benzene	7.7 C	0.50	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	190792	09/20/12	EPA 8021B
Ethylbenzene	29	0.50	190792	09/20/12	EPA 8021B
m,p-Xylenes	ND	0.50	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	104	75-124	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	104	62-134	190792	09/20/12	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Matrix:	Water	Sampled:	09/19/12
Units:	ug/L	Received:	09/19/12

Field ID:	MW-2	Lab ID:	239754-007
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	160 Y	50	190818	09/21/12	EPA 8015B
MTBE	ND	2.0	190792	09/20/12	EPA 8021B
Benzene	ND	0.50	190792	09/20/12	EPA 8021B
Toluene	ND	0.50	190792	09/20/12	EPA 8021B
Ethylbenzene	ND	0.50	190792	09/20/12	EPA 8021B
m,p-Xylenes	ND	0.50	190792	09/20/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/20/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	91	75-124	190818	09/21/12	EPA 8015B
Bromofluorobenzene (PID)	89	62-134	190792	09/20/12	EPA 8021B

Field ID:	SW2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	09/21/12
Lab ID:	239754-008		

Analyte	Result	RL	Batch#	Analysis
Gasoline C7-C12	ND	50	190818	EPA 8015B
MTBE	ND	2.0	190792	EPA 8021B
Benzene	ND	0.50	190792	EPA 8021B
Toluene	ND	0.50	190792	EPA 8021B
Ethylbenzene	ND	0.50	190792	EPA 8021B
m,p-Xylenes	ND	0.50	190792	EPA 8021B
o-Xylene	ND	0.50	190792	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analysis
Bromofluorobenzene (FID)	88	75-124	190818	EPA 8015B
Bromofluorobenzene (PID)	86	62-134	190792	EPA 8021B

Field ID:	SW3	Lab ID:	239754-009
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	ND	50	190818	09/22/12	EPA 8015B
MTBE	ND	2.0	190792	09/21/12	EPA 8021B
Benzene	ND	0.50	190792	09/21/12	EPA 8021B
Toluene	ND	0.50	190792	09/21/12	EPA 8021B
Ethylbenzene	ND	0.50	190792	09/21/12	EPA 8021B
m,p-Xylenes	ND	0.50	190792	09/21/12	EPA 8021B
o-Xylene	ND	0.50	190792	09/21/12	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	86	75-124	190818	09/22/12	EPA 8015B
Bromofluorobenzene (PID)	87	62-134	190792	09/21/12	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Matrix:	Water	Sampled:	09/19/12
Units:	ug/L	Received:	09/19/12

Type:	BLANK	Batch#:	190792
Lab ID:	QC657436	Analyzed:	09/20/12
Diln Fac:	1.000	Analysis:	EPA 8021B

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	Result	%REC	Limits
Bromofluorobenzene (FID)	NA		
Bromofluorobenzene (PID)		78	62-134

Type:	BLANK	Batch#:	190818
Lab ID:	QC657562	Analyzed:	09/21/12
Diln Fac:	1.000	Analysis:	EPA 8015B

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	Result	%REC	Limits
Bromofluorobenzene (FID)		85	75-124
Bromofluorobenzene (PID)	NA		

C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	190792
Units:	ug/L	Analyzed:	09/20/12
Diln Fac:	1.000		

Type: BS Lab ID: QC657440

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.154	92	39-161
Benzene	10.00	9.621	96	80-120
Toluene	10.00	8.656	87	80-120
Ethylbenzene	10.00	8.755	88	80-120
m,p-Xylenes	10.00	8.702	87	80-120
o-Xylene	10.00	8.907	89	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	81	62-134

Type: BSD Lab ID: QC657441

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	10.09	101	39-161	10	69
Benzene	10.00	9.584	96	80-120	0	30
Toluene	10.00	9.317	93	80-120	7	20
Ethylbenzene	10.00	9.301	93	80-120	6	20
m,p-Xylenes	10.00	9.214	92	80-120	6	20
o-Xylene	10.00	9.271	93	80-120	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	85	62-134

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC657561	Batch#:	190818
Matrix:	Water	Analyzed:	09/21/12
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	934.8	93	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	90	75-124

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	190818
MSS Lab ID:	239751-022	Sampled:	09/19/12
Matrix:	Water	Received:	09/19/12
Units:	ug/L	Analyzed:	09/21/12
Diln Fac:	1.000		

Type: MS Lab ID: QC657602

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<12.82	2,000	1,902	95	71-120

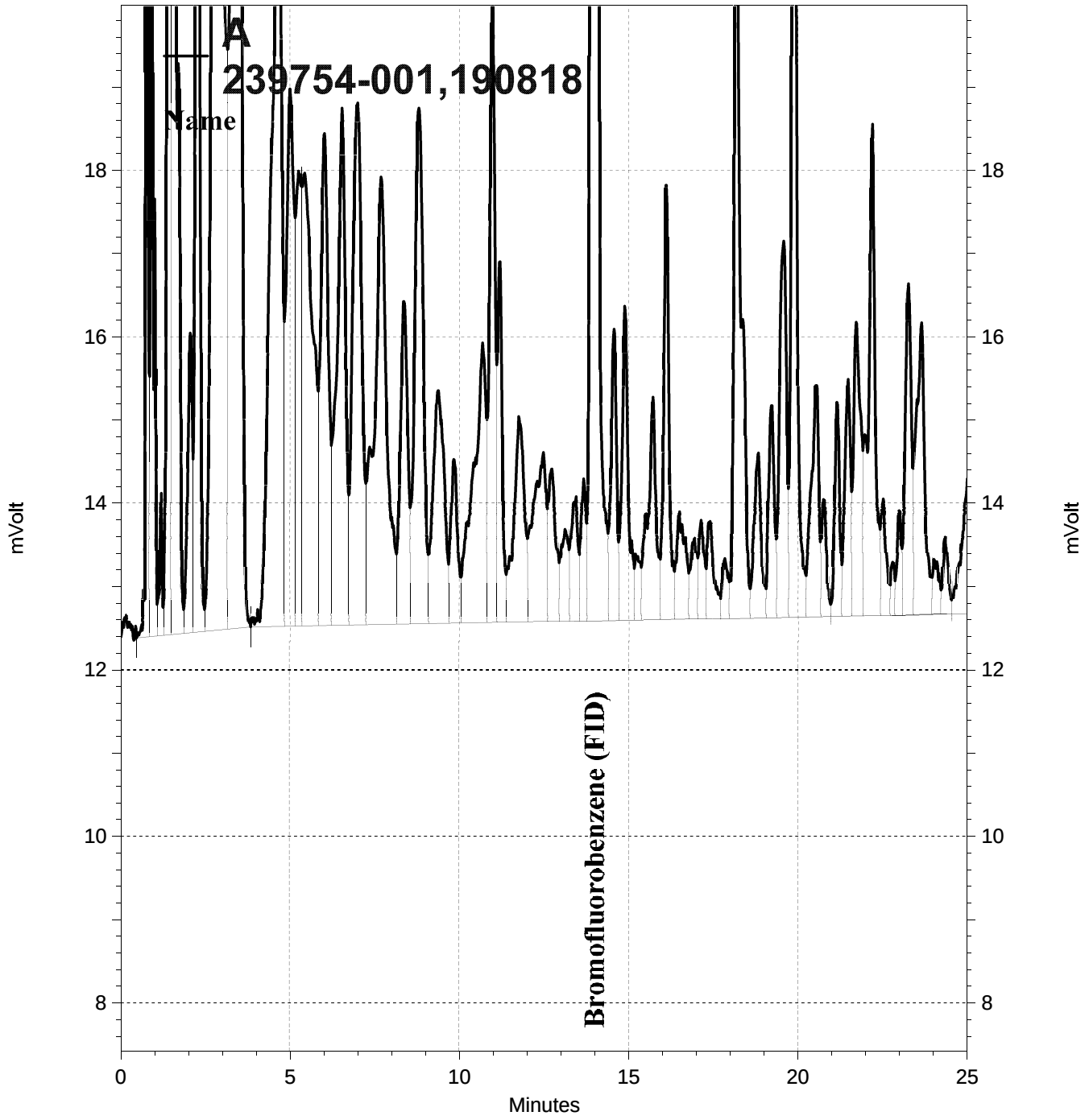
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	75-124

Type: MSD Lab ID: QC657603

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,789	89	71-120	6	22

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	75-124

RPD= Relative Percent Difference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12
10
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5
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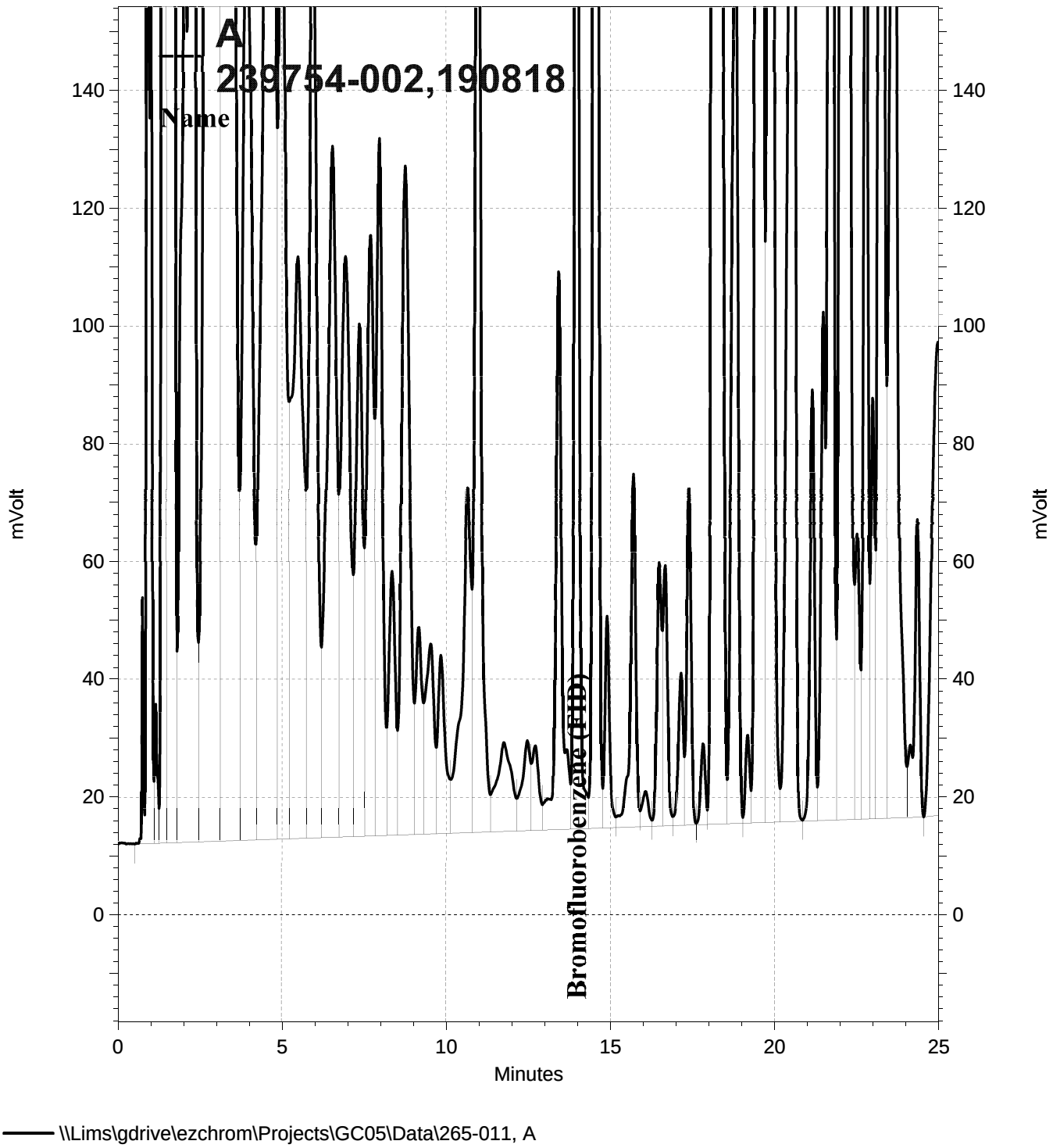
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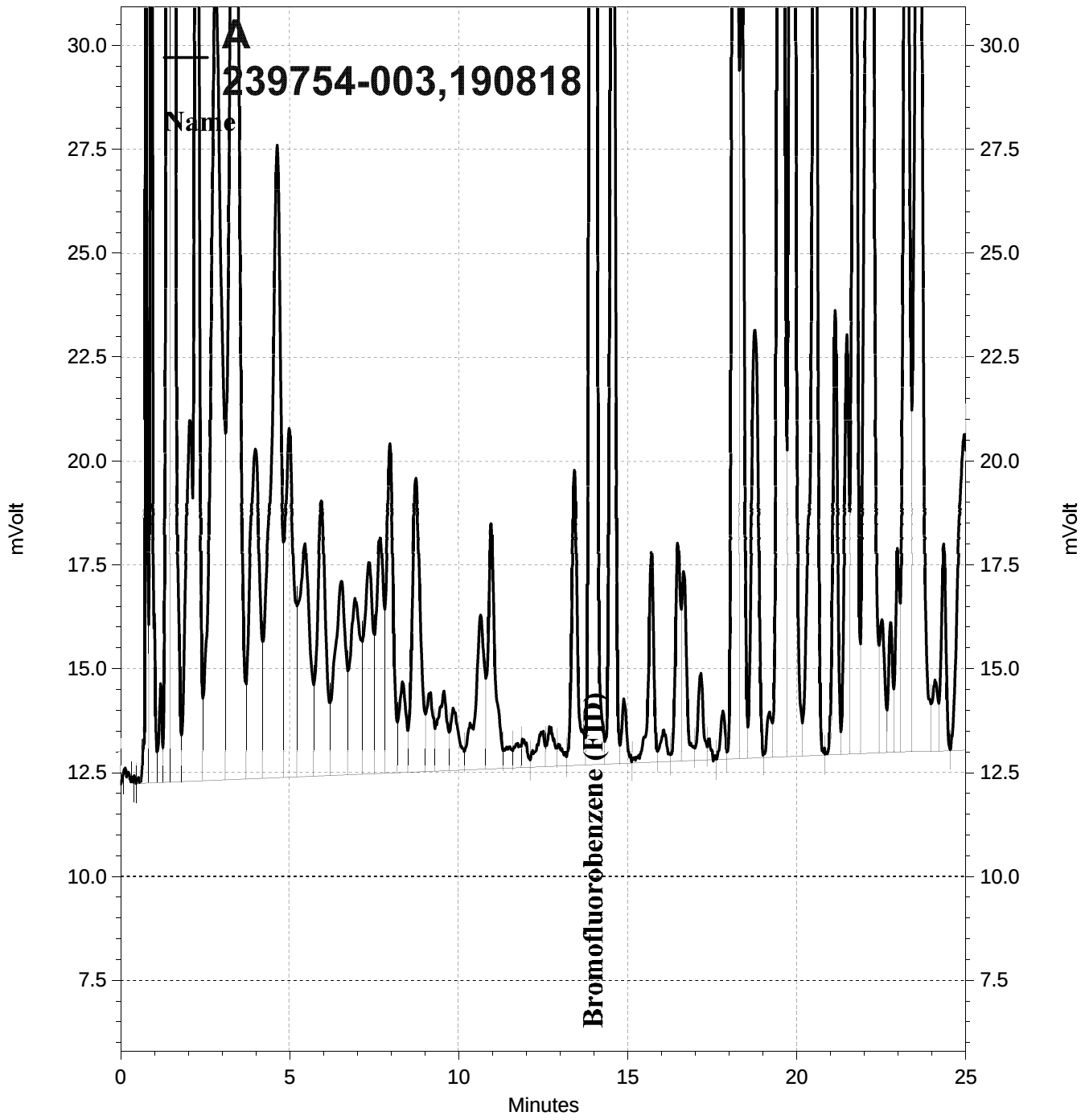

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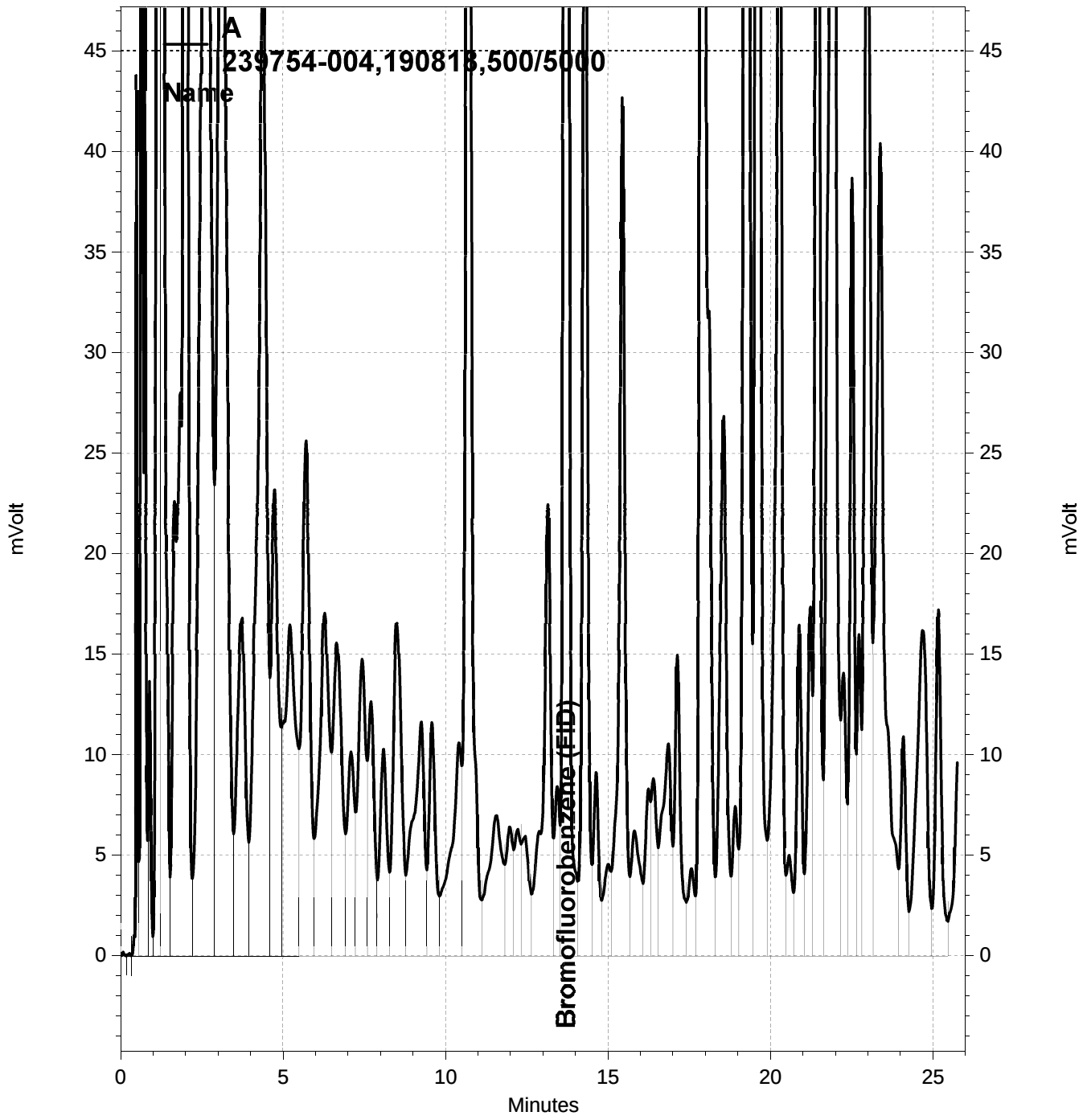

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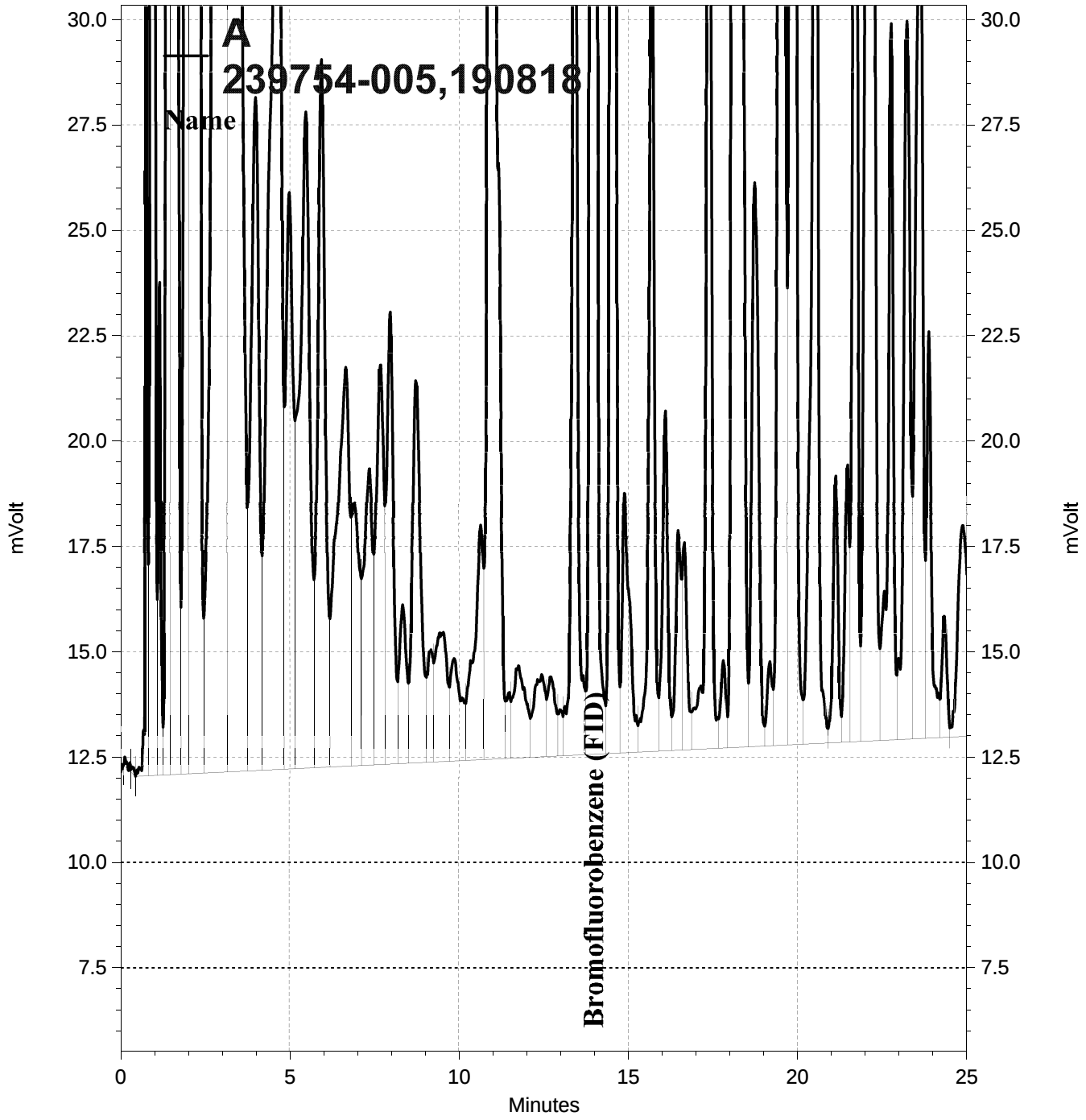
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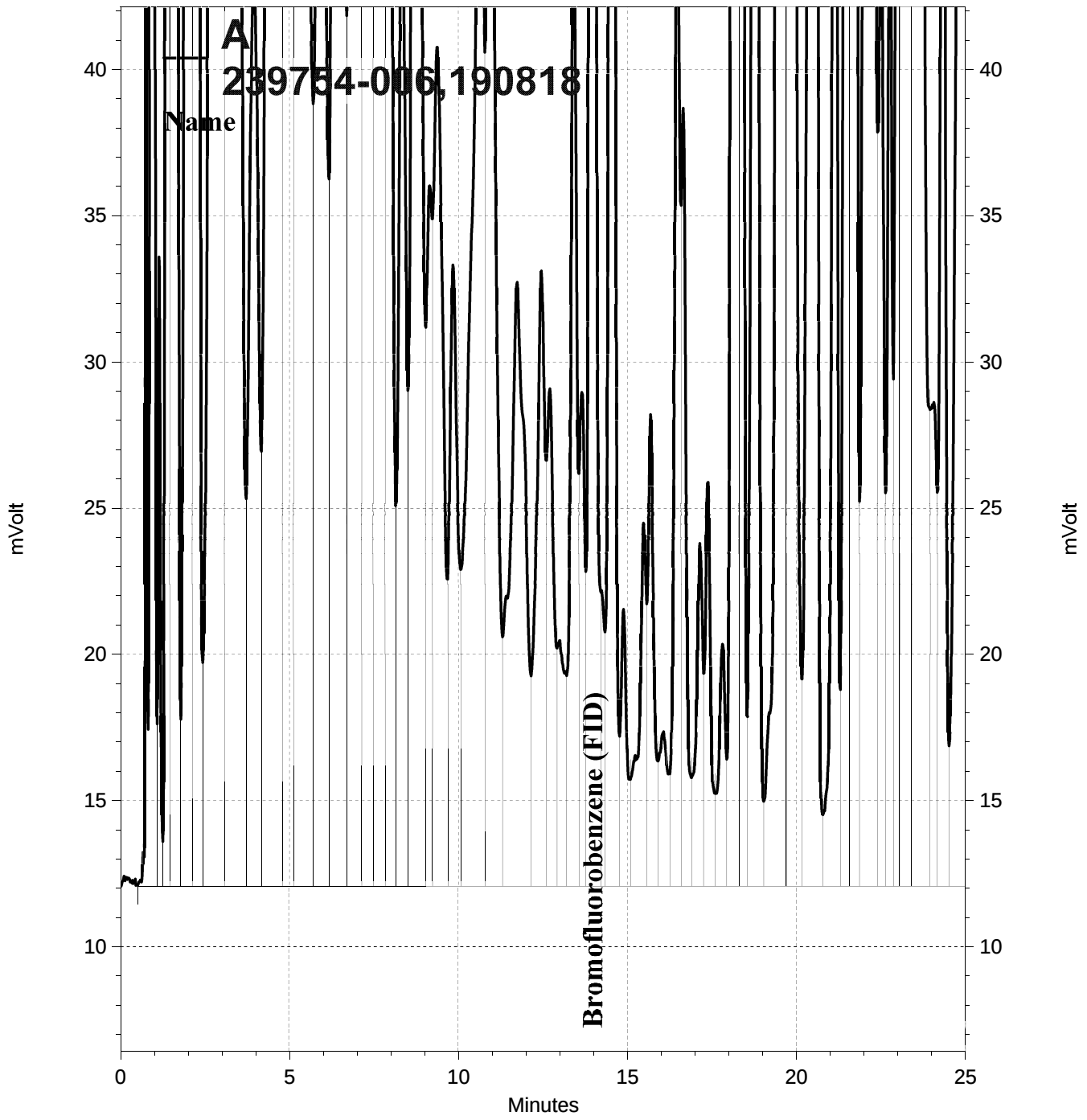
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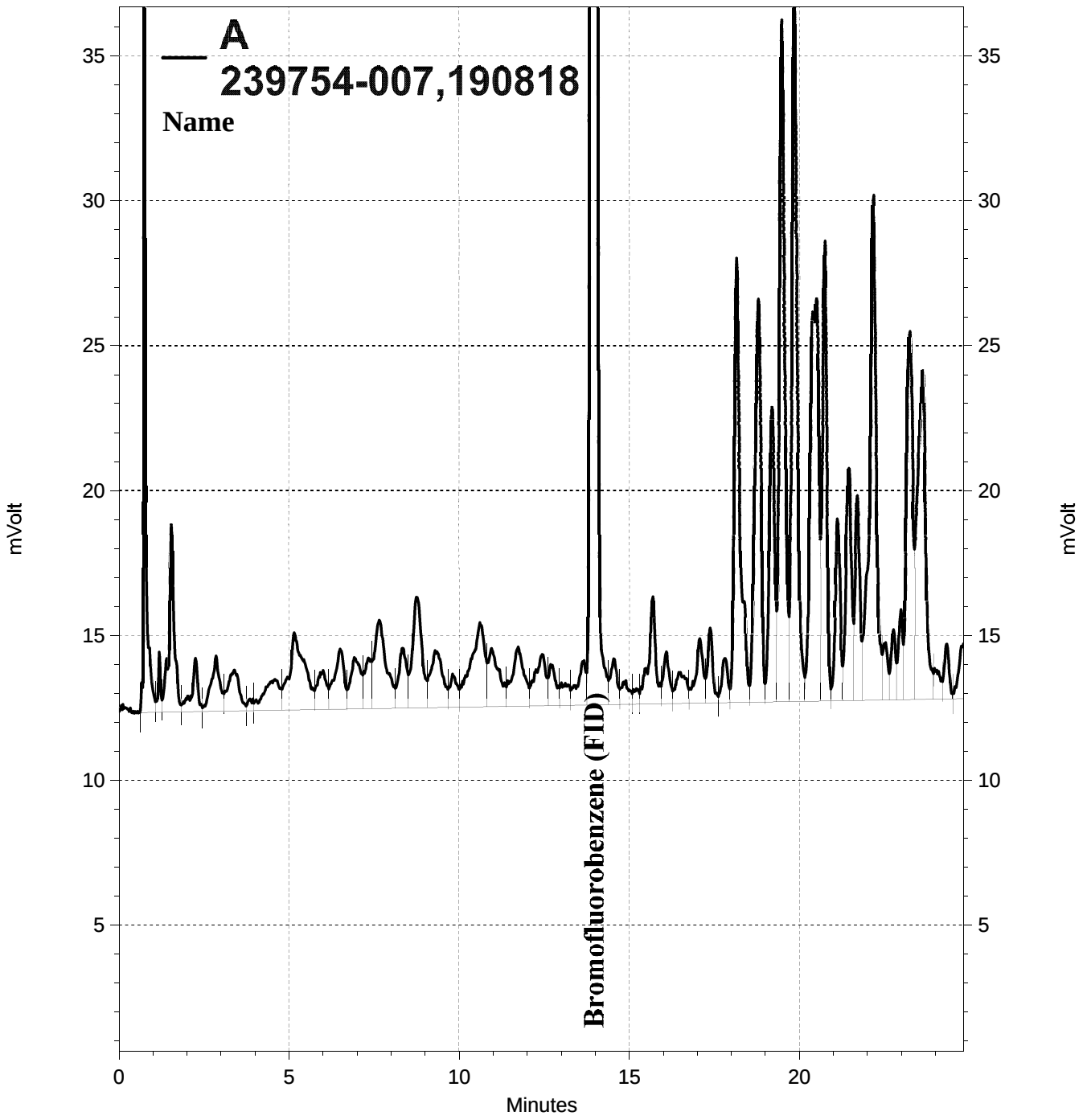
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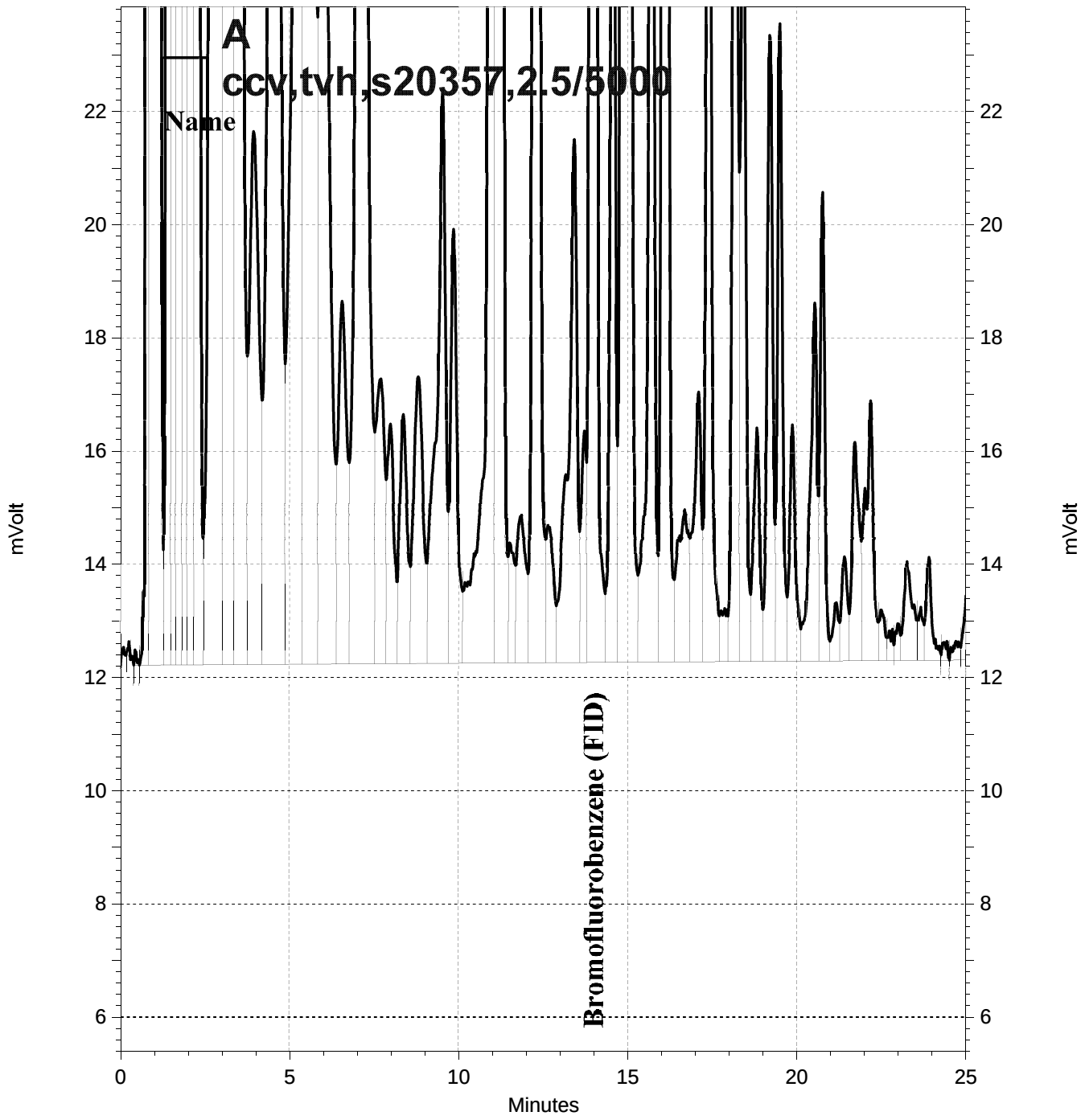
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22
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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/19/12
Units:	ug/L	Received:	09/19/12
Diln Fac:	1.000	Prepared:	09/20/12
Batch#:	190772	Analyzed:	09/21/12

Field ID: MW-10 Lab ID: 239754-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	200 Y	50

Surrogate	%REC	Limits
o-Terphenyl	100	61-134

Field ID: MW-7 Lab ID: 239754-002
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	3,000 Y	50

Surrogate	%REC	Limits
o-Terphenyl	91	61-134

Field ID: MW-12 Lab ID: 239754-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	210 Y	50

Surrogate	%REC	Limits
o-Terphenyl	97	61-134

Field ID: MW-9 Lab ID: 239754-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	8,600	50

Surrogate	%REC	Limits
o-Terphenyl	98	61-134

Field ID: MW-8 Lab ID: 239754-005
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	440	50

Surrogate	%REC	Limits
o-Terphenyl	96	61-134

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/19/12
Units:	ug/L	Received:	09/19/12
Diln Fac:	1.000	Prepared:	09/20/12
Batch#:	190772	Analyzed:	09/21/12

Field ID: MW-11 Lab ID: 239754-006
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	1,800	50

Surrogate	%REC	Limits
o-Terphenyl	93	61-134

Field ID: MW-2 Lab ID: 239754-007
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	190	50

Surrogate	%REC	Limits
o-Terphenyl	89	61-134

Field ID: SW2 Lab ID: 239754-008
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	83	61-134

Field ID: SW3 Lab ID: 239754-009
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	90	61-134

Type: BLANK Lab ID: QC657351

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	106	61-134

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 #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC657352	Batch#:	190772
Matrix:	Water	Prepared:	09/20/12
Units:	ug/L	Analyzed:	09/21/12

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,148	86	60-120

Surrogate	%REC	Limits
o-Terphenyl	103	61-134

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	190772
MSS Lab ID:	239741-003	Sampled:	09/18/12
Matrix:	Water	Received:	09/19/12
Units:	ug/L	Prepared:	09/20/12
Diln Fac:	1.000		

Type:	MS	Analyzed:	09/22/12
Lab ID:	QC657353	Cleanup Method:	EPA 3630C

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	13.18	2,500	2,410	96	44-135

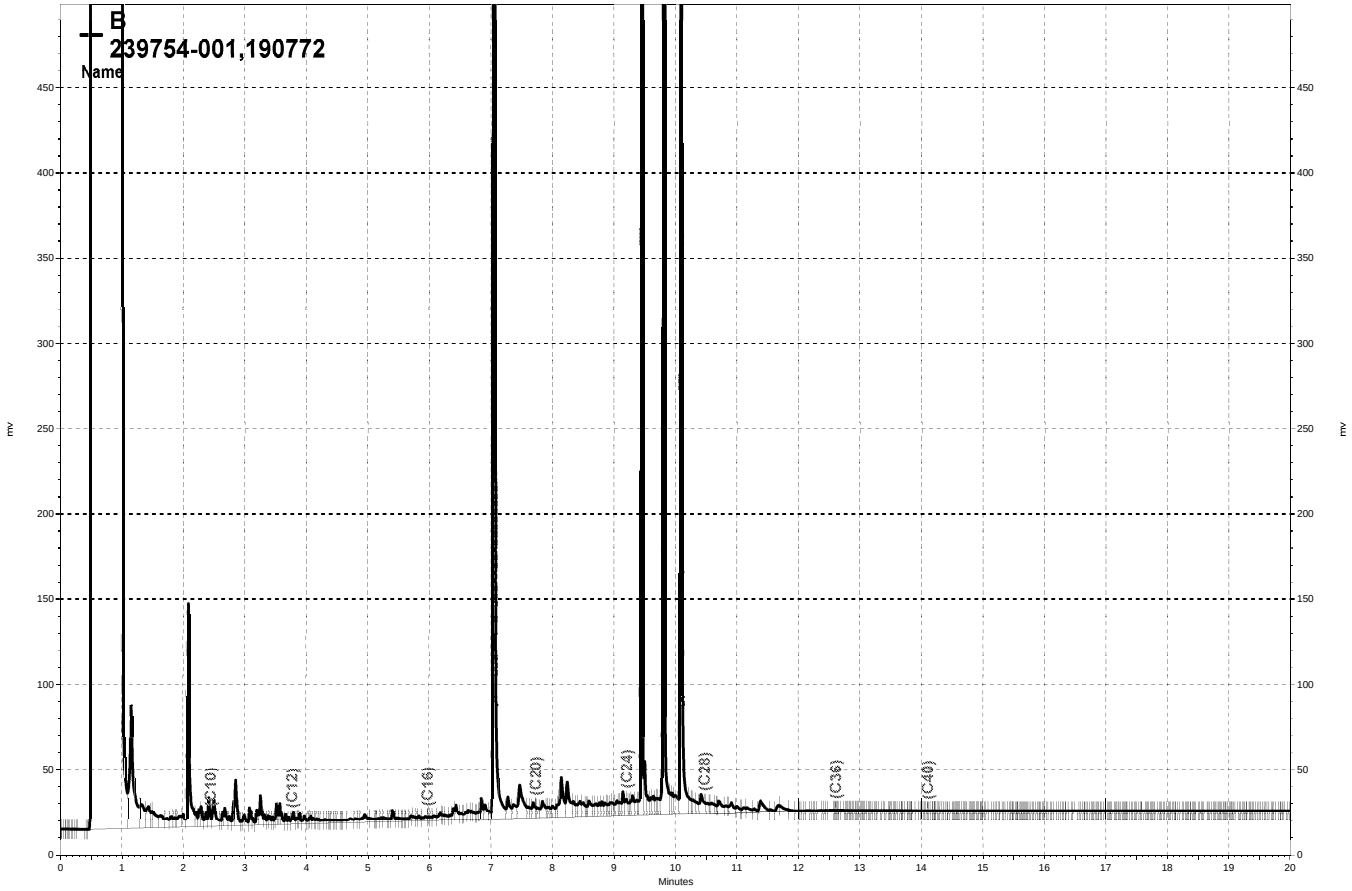
Surrogate	%REC	Limits
o-Terphenyl	125	61-134

Type:	MSD	Analyzed:	09/21/12
Lab ID:	QC657354	Cleanup Method:	EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,615	104	44-135	8	42

Surrogate	%REC	Limits
o-Terphenyl	125	61-134

RPD= Relative Percent Difference



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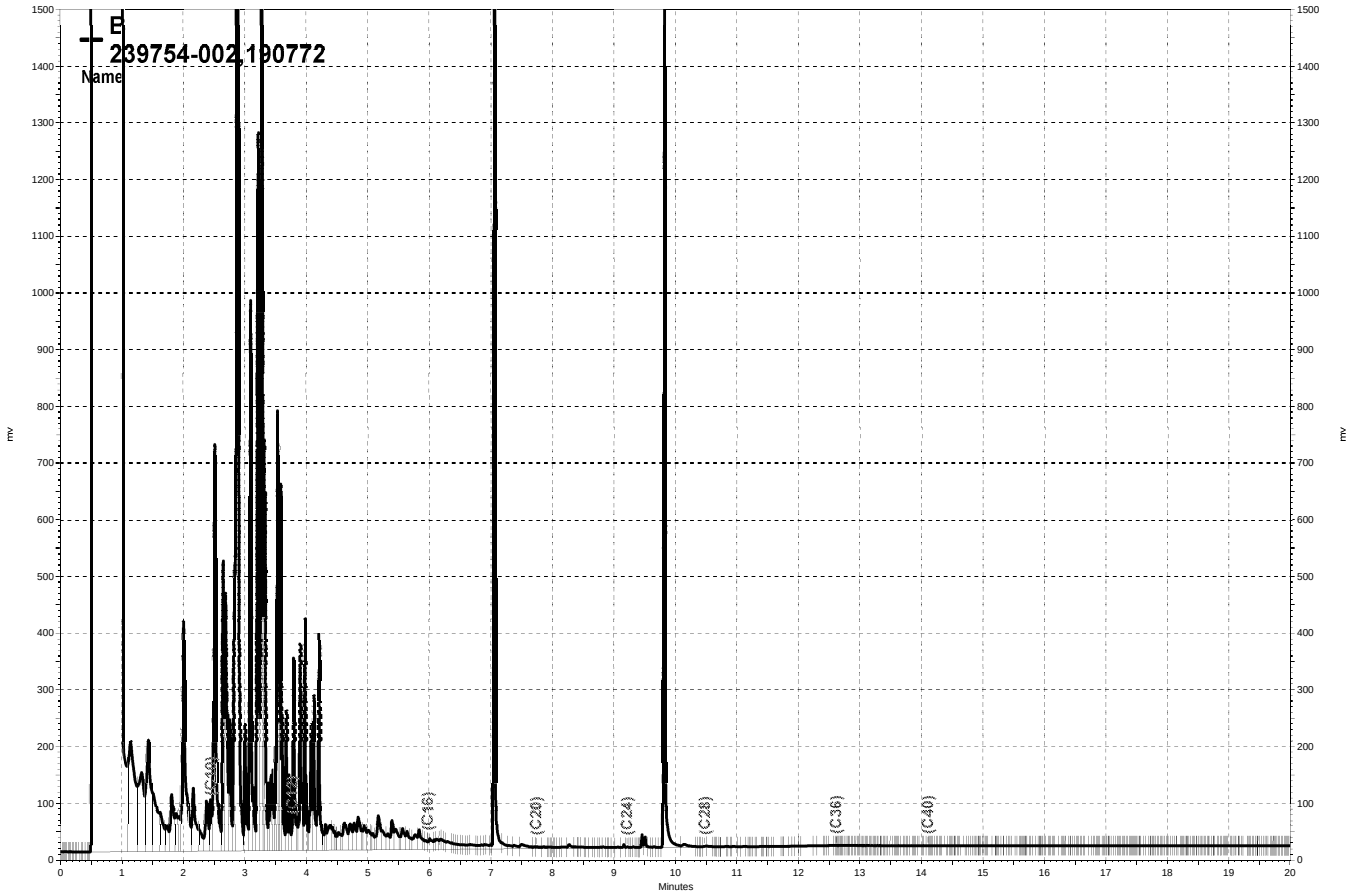

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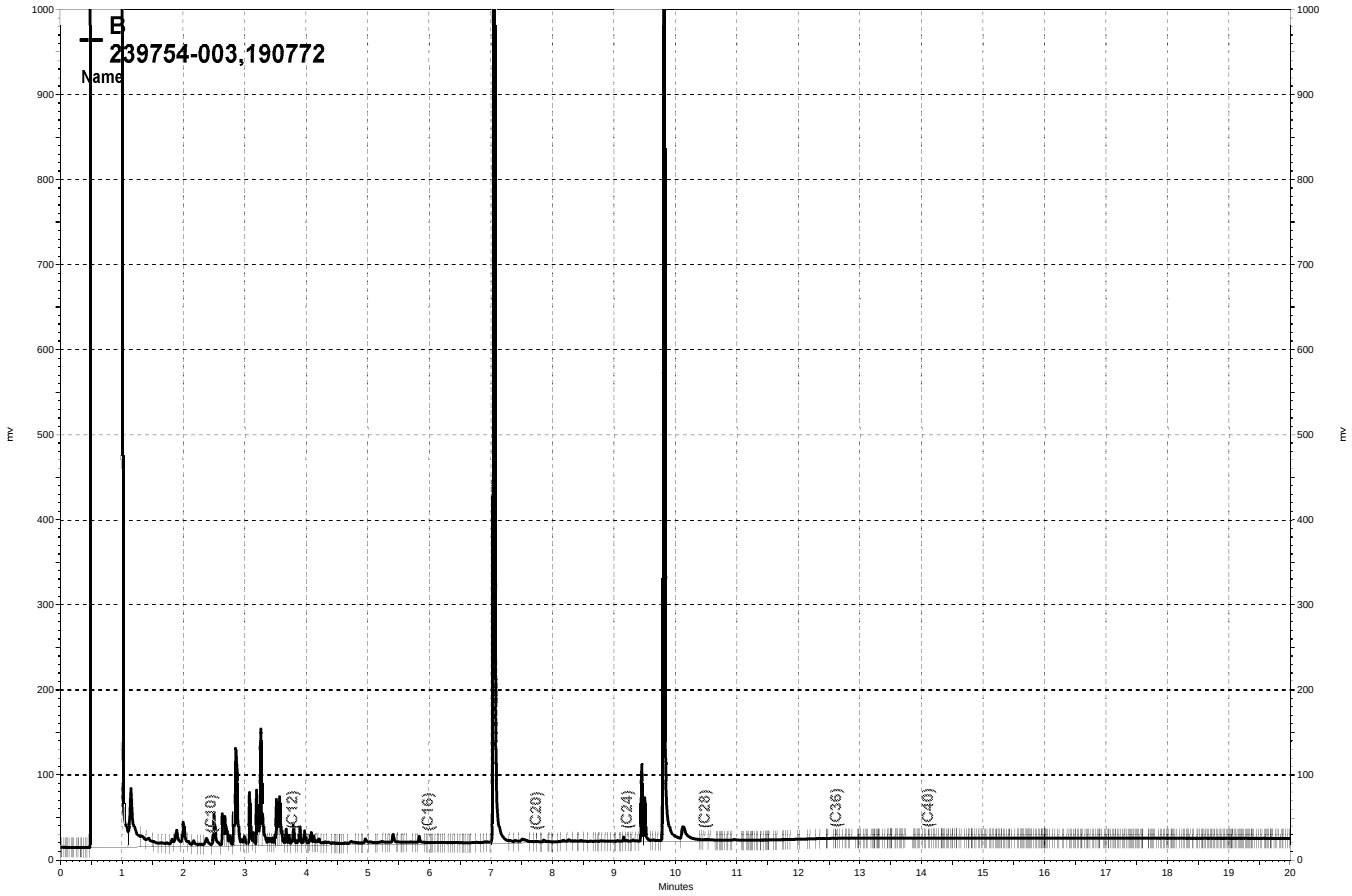

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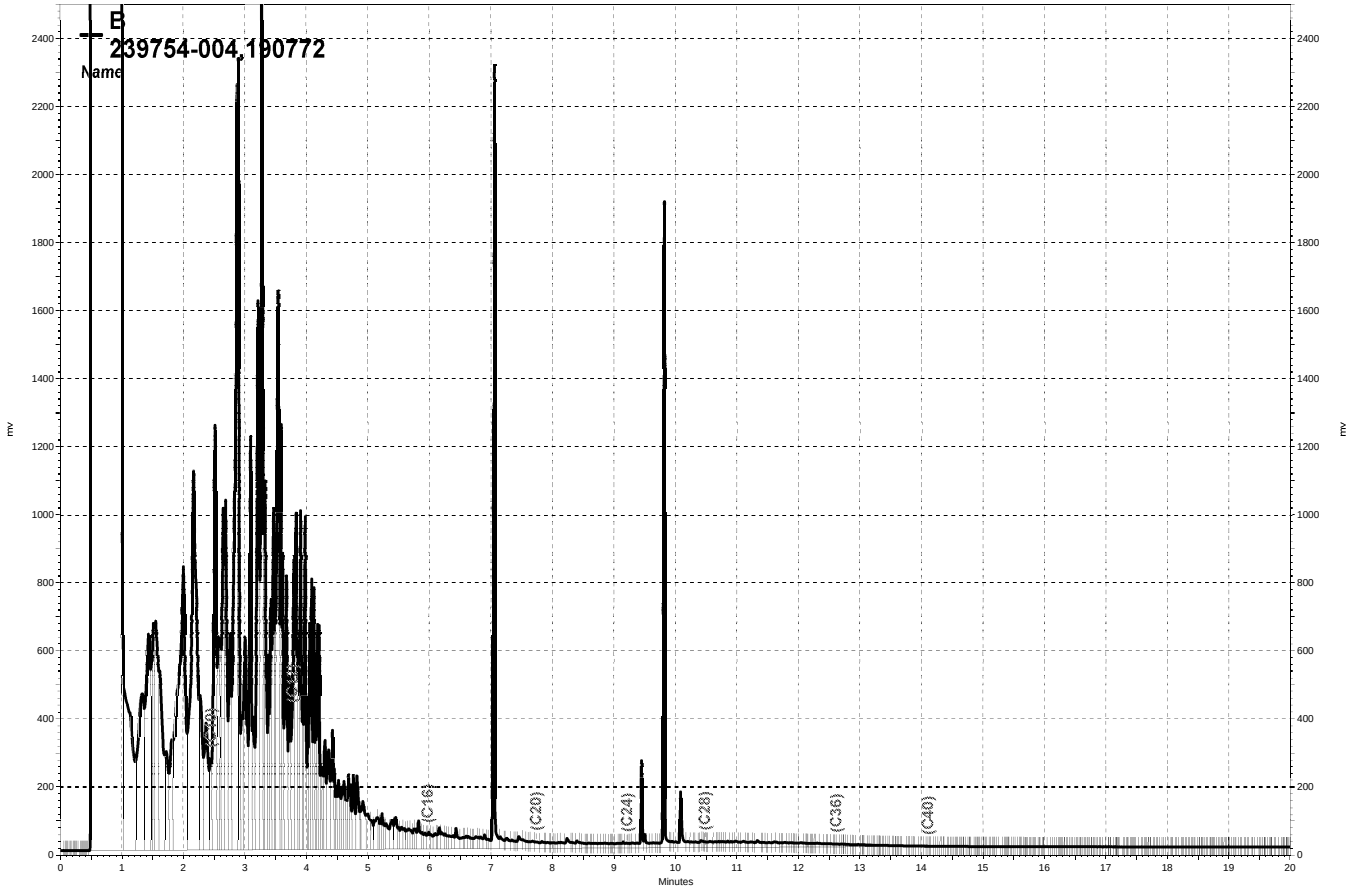

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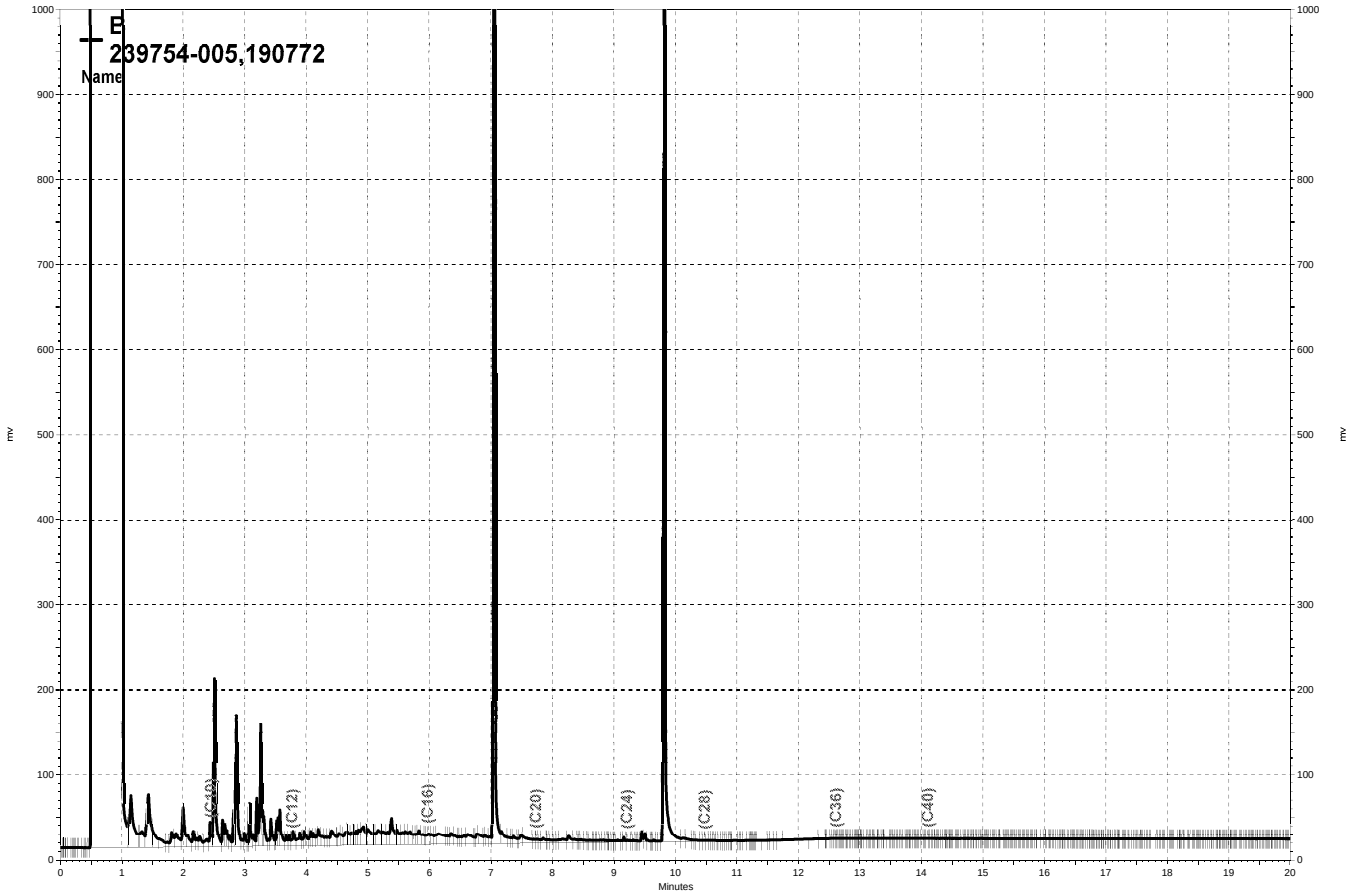

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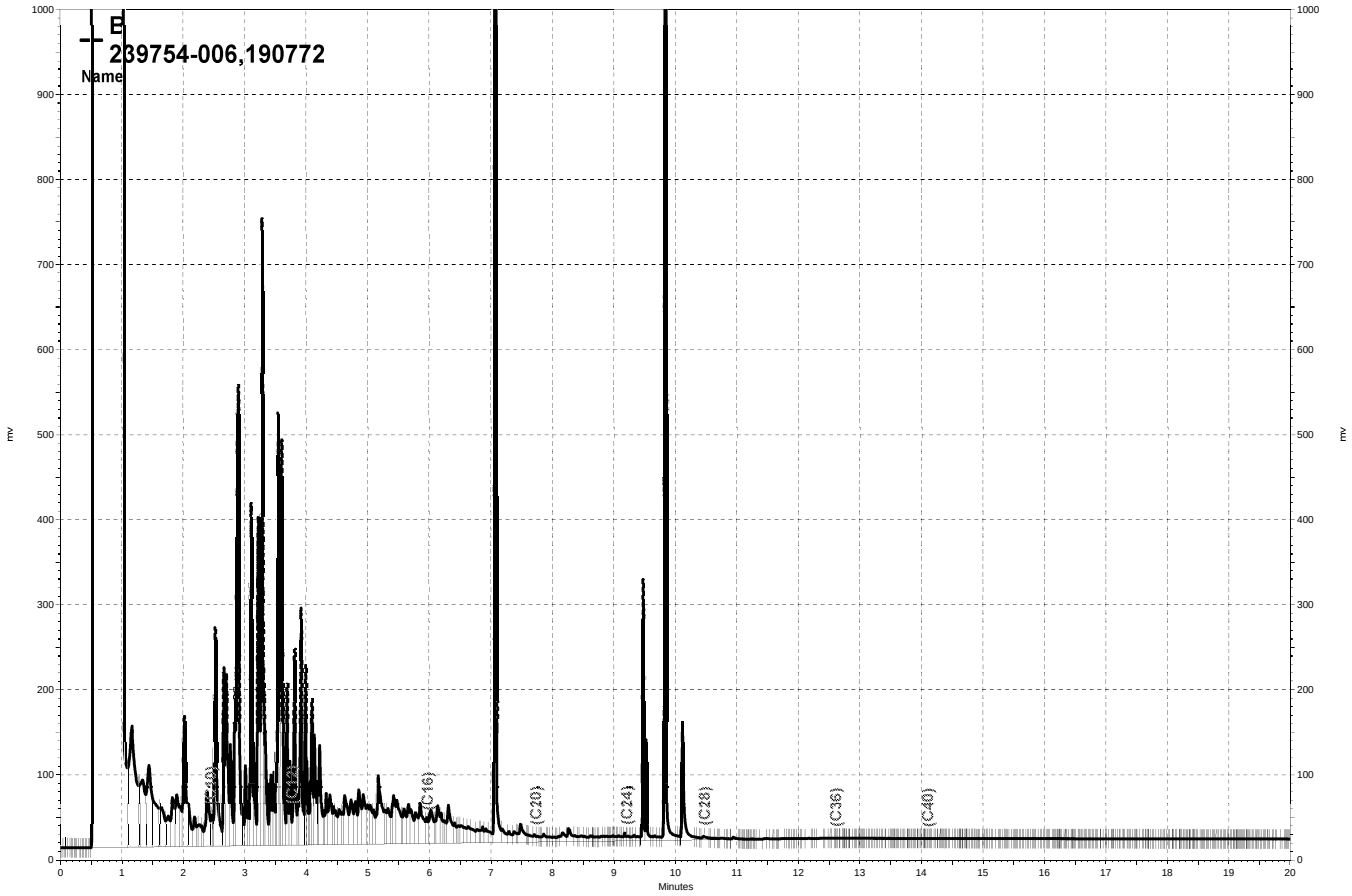

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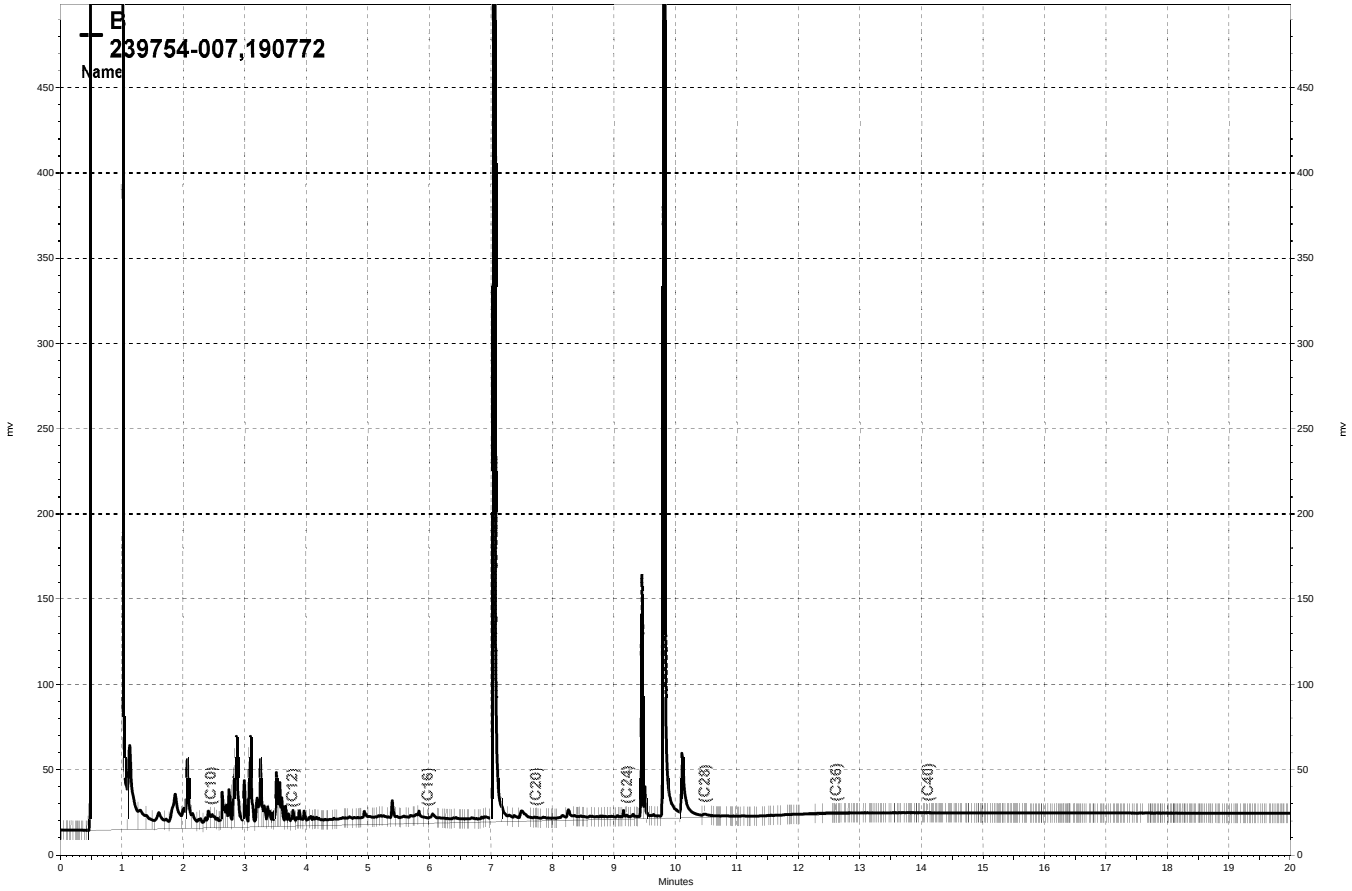

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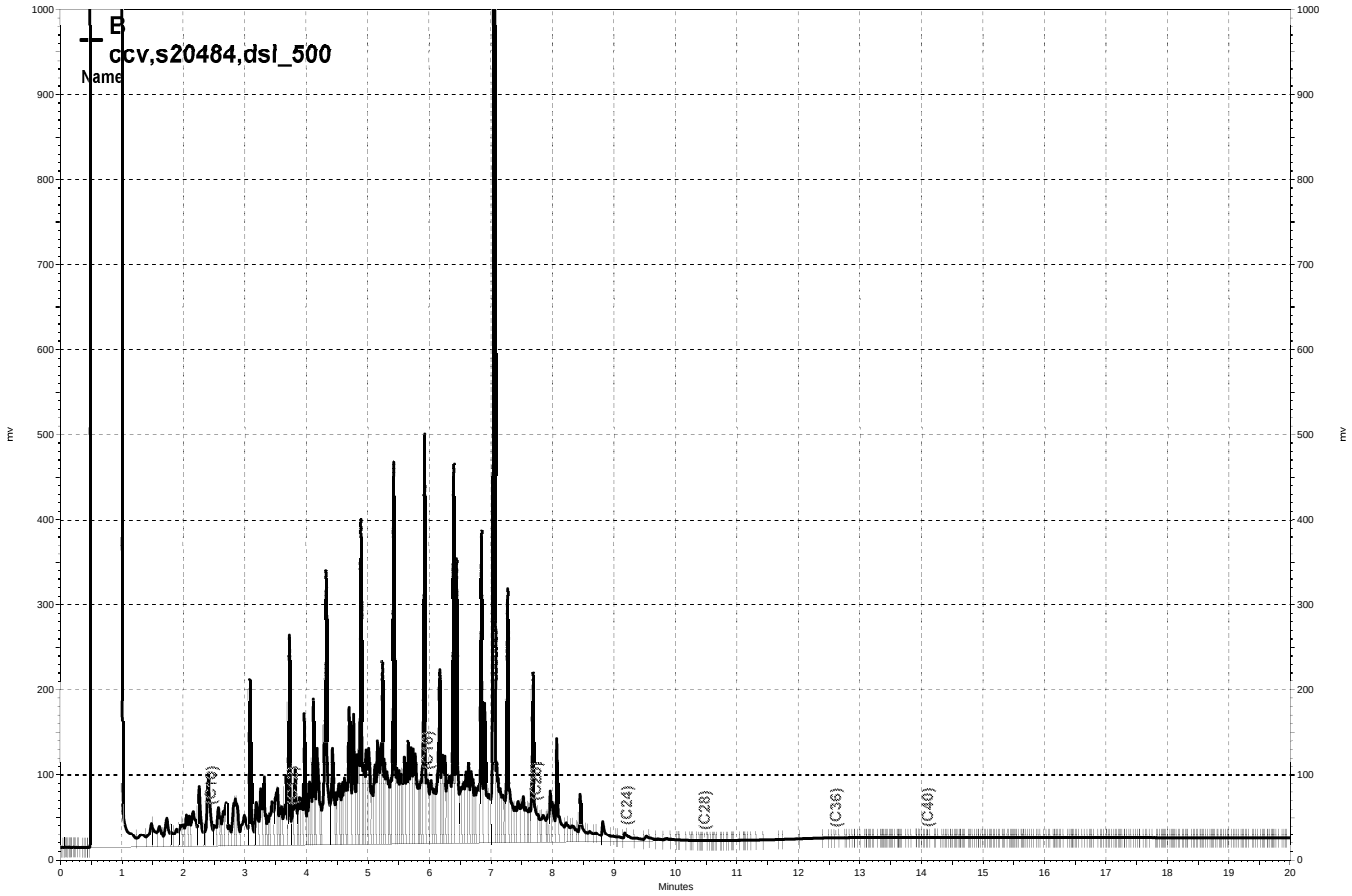

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Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	190663
Units:	mg/L	Received:	09/19/12

Field ID: MW-7 | Diln Fac: 1.000
Type: SAMPLE | Sampled: 09/19/12 11:10
Lab ID: 239754-002 | Analyzed: 09/19/12 21:30

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	1.2	0.50

Field ID: MW-12 | Diln Fac: 1.000
Type: SAMPLE | Sampled: 09/19/12 12:10
Lab ID: 239754-003 | Analyzed: 09/19/12 22:25

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	20	0.50

Field ID: MW-8 | Diln Fac: 1.000
Type: SAMPLE | Sampled: 09/19/12 13:00
Lab ID: 239754-005 | Analyzed: 09/19/12 23:20

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	42	0.50

Field ID: MW-2 | Lab ID: 239754-007
Type: SAMPLE | Sampled: 09/19/12 14:28

Analyte	Result	RL	Diln Fac	Analyzed
Nitrogen, Nitrate	1.9	0.05	1.000	09/20/12 01:10
Sulfate	110	2.5	5.000	09/20/12 01:37

Type: BLANK | Diln Fac: 1.000
Lab ID: QC656913 | Analyzed: 09/19/12 11:25

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC656914	Batch#:	190663
Matrix:	Water	Analyzed:	09/19/12 11:52
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	1.000	0.9869	99	80-120
Sulfate	10.00	10.14	101	80-120

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	5.000
MSS Lab ID:	239589-001	Batch#:	190663
Matrix:	Water	Sampled:	09/12/12 13:30
Units:	mg/L	Received:	09/12/12

Type: MS Analyzed: 09/20/12 02:32
Lab ID: QC657156

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	0.7848	2.500	3.313	101	80-120
Sulfate	38.75	25.00	61.92	93	80-120

Type: MSD Analyzed: 09/20/12 03:00
Lab ID: QC657157

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Nitrogen, Nitrate	2.500	3.154	95	80-120	5	20
Sulfate	25.00	62.59	95	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Biochemical Oxygen Demand

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	190724
Matrix:	Water	Received:	09/19/12
Units:	mg/L	Prepared:	09/19/12 19:55
Diln Fac:	1.000	Analyzed:	09/24/12 18:47

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	239754-002	10	5.7	09/19/12 11:10
MW-12	SAMPLE	239754-003	ND	5.0	09/19/12 12:10
MW-8	SAMPLE	239754-005	ND	10	09/19/12 13:00
MW-2	SAMPLE	239754-007	ND	5.0	09/19/12 14:28
	BLANK	QC657166	ND	5.0	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Biochemical Oxygen Demand

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	190724
Field ID:	ZZZZZZZZZZ	Sampled:	09/18/12 08:39
MSS Lab ID:	239703-007	Received:	09/18/12
Matrix:	Water	Prepared:	09/19/12 19:55
Units:	mg/L	Analyzed:	09/24/12 18:47
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC657167		198.0	209.0		106	85-115		
BSD	QC657168		198.0	221.0		112	85-115	6	30
SDUP	QC657169	<20.00		<26.10	26.10			NC	24

NC= Not Calculated
RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chemical Oxygen Demand

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Received:	09/19/12
Matrix:	Water	Prepared:	09/26/12 12:00
Units:	mg/L	Analyzed:	09/26/12 14:00
Batch#:	191002		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled
MW-7	SAMPLE	239754-002	33	20	2.000	09/19/12 11:10
MW-12	SAMPLE	239754-003	99	10	1.000	09/19/12 12:10
MW-8	SAMPLE	239754-005	100	10	1.000	09/19/12 13:00
MW-2	SAMPLE	239754-007	58	10	1.000	09/19/12 14:28
	BLANK	QC658293	ND	10	1.000	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chemical Oxygen Demand

Lab #:	239754	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	191002
Field ID:	MW-2	Sampled:	09/19/12 14:28
MSS Lab ID:	239754-007	Received:	09/19/12
Matrix:	Water	Prepared:	09/26/12 12:00
Units:	mg/L	Analyzed:	09/26/12 14:00
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC658294		75.00	77.43	103	90-110		
MS	QC658295	57.60	300.0	360.6	101	58-130		
MSD	QC658296		300.0	354.7	99	58-130	2	20

RPD= Relative Percent Difference

APPENDIX D

Historical 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*
57	Jun-10	**1,300**	**2,400**	*<0.5*	*<0.5*	*<0.5*	**1.7**	**FALSE**	*<2.0*
58	Sep-10	**910**	*<50*	*<0.5*	*<0.5*	*<0.5*	**1.5**	**1.45**	*<2.0*
59	Dec-10	**910**	**1,600**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	**2.6**
60	Mar-11	**860**	**1,100**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	**0**	**3.1**
61	Sep-11	**780**	**810**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	**0**	*<2.0*
62	Mar-12	**460**	**610**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
63	Sep-12	**160**	**190**	<0.5	<0.5	<0.5	<0.5	<0.5	*<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**	**7.0**	**202**	*<2.0*
32	Sep-08	**6,400**	**2,800**	**22**	*<0.5*	**100**	**9.3**	**131**	*<2.0*
33	Dec-08	**3,500**	**3,600**	**5**	*<0.5*	**100**	**9.1**	**114**	*<2.0*
34	Mar-09	**5,100**	**6,700**	**19**	*<0.5*	**140**	**12.3**	**171**	**51**
35	Jun-09	**4,600**	**5,400**	**40**	*< 0.5*	**140**	**5.1**	**185**	**260**
36	Sep-09	**4,400**	**4,700**	*<0.5*	*<0.5*	**96**	**5.6**	**102**	**3.5**
37	Dec-09	**4,900**	**4,500**	*< 0.5*	*< 0.5*	**90**	**2.9**	**93**	**57.0**
38	Mar-10	**5,300**	**4,300**	**17**	*<0.5*	**110**	**2.6**	**130**	**16.0**
39	Mar-10	**2,600**	**6,100**	**11**	*<0.5*	**76**	**4.5**	**92**	*<2.0*
40	Jun-10	**5,800**	**5,000**	**20**	*<0.5*	**140**	**9.9**	**170**	*<2.0*
41	Sep-10	**6,300**	**4,100**	*<0.5*	*<0.5*	**93**	**6.0**	**99**	**69.0**
42	Dec-10	**5,400**	**3,500**	*<0.5*	*<0.5*	**99**	**9.2**	**108**	**87.0**
43	Mar-11	**5,500**	**3,400**	**11**	*<0.5*	**94**	**8.5**	**114**	*<2.0*
44	Sep-11	**5,800**	**3,300**	*<0.5*	*<0.5*	**97**	**3.1**	**100**	*<2.0*
45	Mar-12	**6,400**	**3,500**	*<0.5*	*<0.5*	**110**	**5.6**	**116**	*<2.0*
46	Sep-12	**5,700**	**3,000**	*<0.5*	*<0.5*	**84**	*<0.5*	**84**	*<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*
40	Jun-10	**4,700**	**4,200**	**27.0**	**2.9**	**400**	**103.2**	**533**	**27**
41	Sep-10	**900**	**1,300**	**2.9**	*<0.5*	**22**	*<2.5*	**25**	*<10*
42	Dec-10	**180**	**260**	*<0.5*	*<0.5*	**5**	**1.0**	**6.4**	**7.2**
43	Mar-11	**6,000**	**5,900**	**39**	*<0.5*	**510**	**431.0**	**980.0**	*<2.0*
44	Sep-11	**1,700**	**1,200**	**7**	**0.9**	**120**	**12.2**	**139.7**	*<2.0*
45	Mar-12	**1,200**	**790**	**11**	**0.9**	*<0.5*	**99.0**	**110.9**	*<2.0*
46	Sep-12	**730**	**430**	**4.7**	*<0.5*	**45**	**3.8**	**53.5**	**9.2**

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
37	Jun-10	1,700	1,300	13	<0.5	48	4.9	65.9	11
38	Sep-10	13,000	2,900	43	<0.5	300	47.9	390.9	43
39	Dec-10	3,900	2,400	32	<0.5	240	20.5	292.5	82
40	Mar-11	700	680	1.6	<0.5	10	3.5	15.1	14
41	Sep-11	2,600	1,900	12	<0.5	160	10.2	182.2	<2.0
42	Mar-12	1,100	940	9	<0.5	25	1.6	35.6	<2.0
43	Sep-12	10,000	8,600	25	<0.5	260	19.0	304.0	<2.0

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*
37	Jun-10	**110**	**340**	**1.4**	*<0.5*	**2.6**	**0.74**	**4.7**	**2.4**
38	Sep-10	**140**	**360**	**2.1**	*<0.5*	**1.4**	<0.5	**3.5**	**4.3**
39	Dec-10	**80**	**440**	*<0.5*	*<0.5*	**0.69**	<0.5	**0.7**	**4.1**
40	Mar-11	**170**	**1,200**	**1.0**	*<0.5*	**3.7**	**1.8**	**6.5**	**6.3**
41	Sep-11	**150**	**220**	**0.8**	*<0.5*	**1.9**	**1**	**3.7**	*<2.0*
42	Mar-12	**80**	**92**	**0.81**	*<0.5*	**1.5**	*<0.5*	**2.3**	**3.4**
43	Sep-12	**170**	**200**	*<0.5*	*<0.5*	**2**	**0.94**	**2.9**	*<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	**4,300**	**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*
37	Jun-10	**2,000**	**3,500**	**14**	*<0.5*	**42**	**0.92**	**57**	**7.9**
38	Sep-10	**3,000**	**2,200**	**18**	*<0.5*	**41**	**0.55**	**60**	**8.0**
39	Dec-10	**1,800**	**2,900**	**13**	*<0.5*	**49**	**1.9**	**64**	**15.0**
40	Mar-11	**180**	**1,600**	*<0.5*	*<0.5*	**1.2**	*<0.5*	**1.2**	**6.9**
41	Sep-11	**2,200**	**2,500**	**12**	*<0.5*	**44**	**2.2**	**58.2**	*<2.0*
42	Mar-12	**1,300**	**1,200**	**8.7**	*<0.5*	**29**	*<0.5*	**37.7**	*<2.0*
43	Sep-12	**2,400**	**1,800**	**7.7**	*<0.5*	**29**	*<0.5*	**36.7**	*<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*
19	Jun-10	**540**	**370**	*<0.5*	*<0.5*	**3.5**	**0.92**	**4.4**	**7.9**
20	Sep-10	**380**	**220**	*<0.5*	*<0.5*	**1.7**	*<0.5*	**1.7**	**8**
21	Dec-10	**320**	**350**	*<0.5*	*<0.5*	**1.5**	*<0.5*	**1.5**	**3.9**
22	Mar-11	**290**	**450**	*<0.5*	**0.74**	**1.3**	*<0.5*	**2.0**	**11**
23	Sep-11	**530**	**340**	*<0.5*	*<0.5*	**2.2**	*<0.5*	**2.2**	*<2.0*
24	Mar-12	**410**	**240**	*<0.5*	*<0.5*	**1.9**	*<0.5*	**1.9**	*<2.0*
25	Sep-12	**340**	**210**	*<0.5*	*<0.5*	**1.1**	*<0.5*	**1.1**	*<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*
52	Jun-10	*<50*	**240**	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*
53	Sep-10	*<50*	**66**	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*
54	Dec-10	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*NA*
55	Mar-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*NA*
56	Sep-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*NA*
57	Mar-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
58	Sep-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<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*
51	Jun-10	*<50*	*<50*	*<5.0*	*<5.0*	*<5.0*	*<5.0*	*<0.5*	*<2.0*
52	Sep-10	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
53	Dec-10	*<50*	*<50*	*<0.5*	**0.57**	*<0.5*	**0.81**	**1.4**	*NA*
54	Mar-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*NA*
55	Sep-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*NA*
57	Mar-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
58	Sep-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*

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