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RECEIVED
By Alameda County Environmental Health 1:14 pm, Jun 02, 2017

June 2, 2017

Ms. Anne Jurek
Alameda County Health Care Services Agency
Environmental Health Services
Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Submittal Acknowledgement regarding First Semiannual 2017 Groundwater Monitoring Report of the Redwood Regional Park Service Yard Site – Oakland, California (ACEH Fuel Leak Case No. RO0000246)

Dear Ms. Jurek:

We have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on our behalf to ACDEH's FTP server and the SWRCB's Geotracker website.

Sincerely,

Matthew Graul

Matthew Graul
EBRPD Representative

FIRST SEMIANNUAL 2017 GROUNDWATER MONITORING REPORT

REDWOOD REGIONAL PARK
SERVICE YARD
OAKLAND, CALIFORNIA

Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

April 2017

STELLAR ENVIRONMENTAL SOLUTIONS, INC.
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2198 SIXTH STREET, SUITE 201·BERKELEY, CA 94710
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April 30, 2017

Ms. Anne Jurek.
Local Oversight Program
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: First Semiannual 2017 Groundwater Monitoring Report of the Redwood Regional Park Service Yard Site – Oakland, California (ACEH Fuel Leak Case No. RO0000246)

Dear Ms. Jurek:

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 the First Semiannual 2017 groundwater and surface water monitoring and sampling conducted on March 20, 2017.

We 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 at 510-644-3123.

Sincerely,

Richard S. Makdisi, P.G.
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

FIRST SEMIANNUAL 2017
GROUNDWATER MONITORING REPORT

REDWOOD REGIONAL PARK
SERVICE YARD
OAKLAND, CALIFORNIA

Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

Prepared by:

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

April 30, 2017

Project No. 2017-02

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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 extensive 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 first semiannual 2017 groundwater monitoring report along with the annual trend analyses and recommendations for future work.

OBJECTIVES AND SCOPE OF WORK

The overall objective of site monitoring and the latest remedial action is to continue trying to reduce the site residual hydrocarbons. 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 scheduled activities coordinated by Stellar Environmental Solutions, Inc. (Stellar Environmental) for the First 2017 semiannual period from January 1, 2017 to June 30, 2017:

- Collecting water levels in site wells to determine shallow groundwater flow direction
- Sampling site wells for contaminant analysis
- 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. The References section 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 65 groundwater monitoring events have been conducted since project inception (February 1994). A total of 12 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. Bioventing activities conducted to date have been discussed in bioventing-specific technical reports, and updates were 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.

- A Permeable Reactive Barrier (PRB) Remedial Action Workplan (RAW), dated November 28, 2011 prepared by Stellar Environmental was approved by ACEH in their letter dated December 29, 2011, The PRB was installed in November 2013 and followed with 30-day post-installation and quarterly monitoring of key downgradient site wells; MW-7, MW-9 and MW-12. Drought conditions in 2013 to 2014 resulted in the PRB being less then optimally effective and 3 years after its installation its effectiveness at reducing hydrocarbon impacted groundwater moving through it was absent. The monitoring of key wells to evaluate the effect of PRB was conducted from December 2013 to December 2016 and included additional analysis of nitrates, sulfates, biological oxygen demand, and chemical oxygen demand.

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 surface water quality impacts to Redwood Creek, however two creek bioassessments conducted in 1999 and 2000 found no surface water quality impacts to aquatic organisms. The ACEH-approved revisions to the site monitoring 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 occurred 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.

3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS

750 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84

N

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

Redwood Regional Park
Service Yard, Oakland, CA

By: MJC | APRIL 2017

Figure 1

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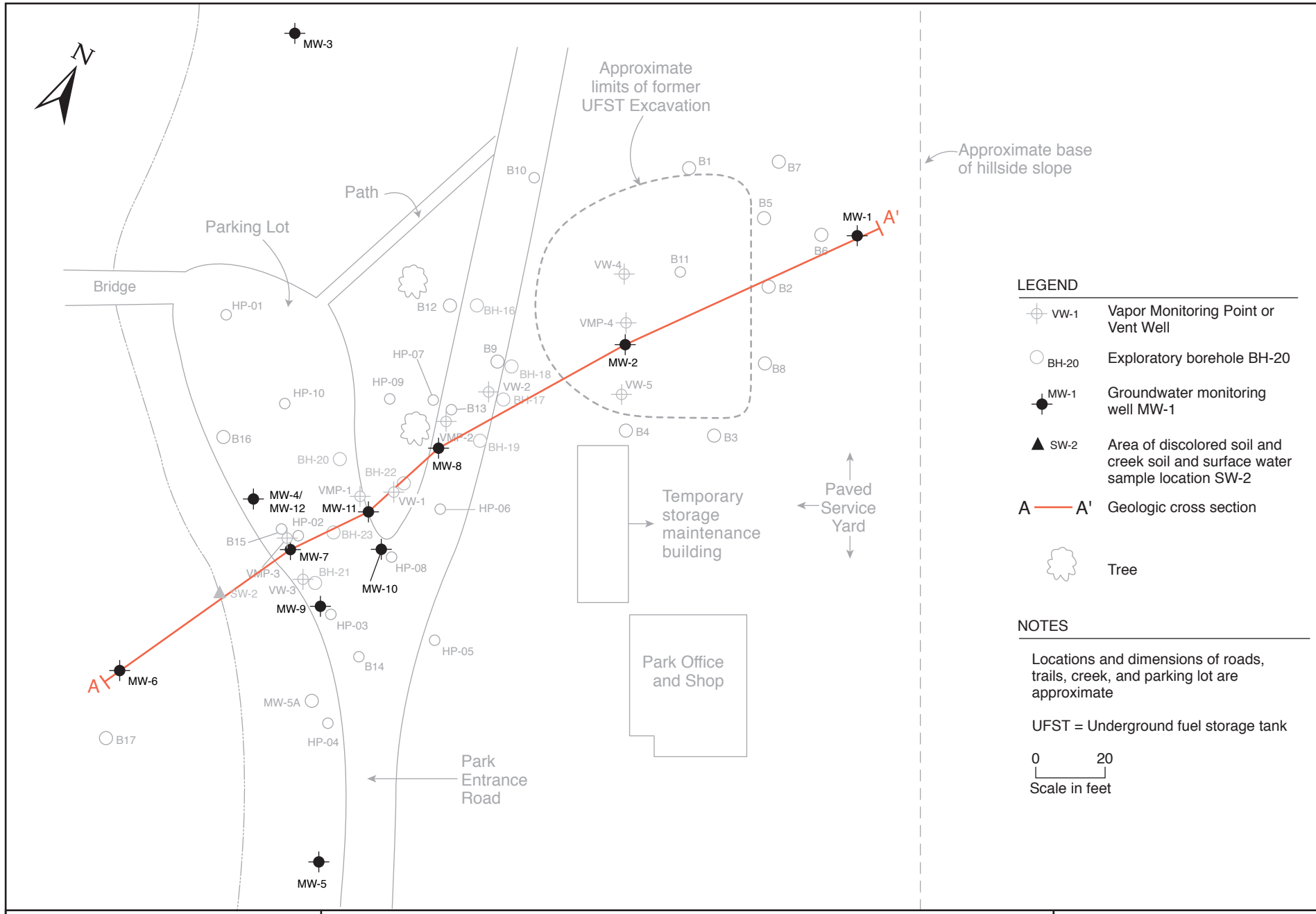
2017-02-01



LEGEND

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

NOTES

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

UFST = Underground fuel storage tank

0 20

Scale in feet

STELLAR ENVIRONMENTAL SOLUTIONS, INC
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SITE PLAN SHOWING HISTORICAL BORINGS, WELLS AND GEOLOGIC CROSS-SECTION LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 2

by: MJC | APRIL 2017

2017-02-02

2.0 PHYSICAL SETTING

This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous Stellar Environmental reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH requested, 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 (Stellar Environmental 2004c). These additional geologic cross-sections have been presented in previous reports.

SITE LITHOLOGY

Figure 3 shows the location of geologic cross-section (A-A') along the long axis of the groundwater contaminant plume (i.e., along local groundwater flow direction). The cross-section represented by Figure 4 shows the generalized subsurface features, the inferred thickness of the saturated soil contamination zone and the location of the permeable reactive barrier treatment wall. The PRB shown on the cross-section was constructed with the inoculated treatment zone located from 10-22 feet bgs which correlates to an elevation ranging from 525.5 – 537.5 feet amsl.

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 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.

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 and at downgradient location B15/HP-02. 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.

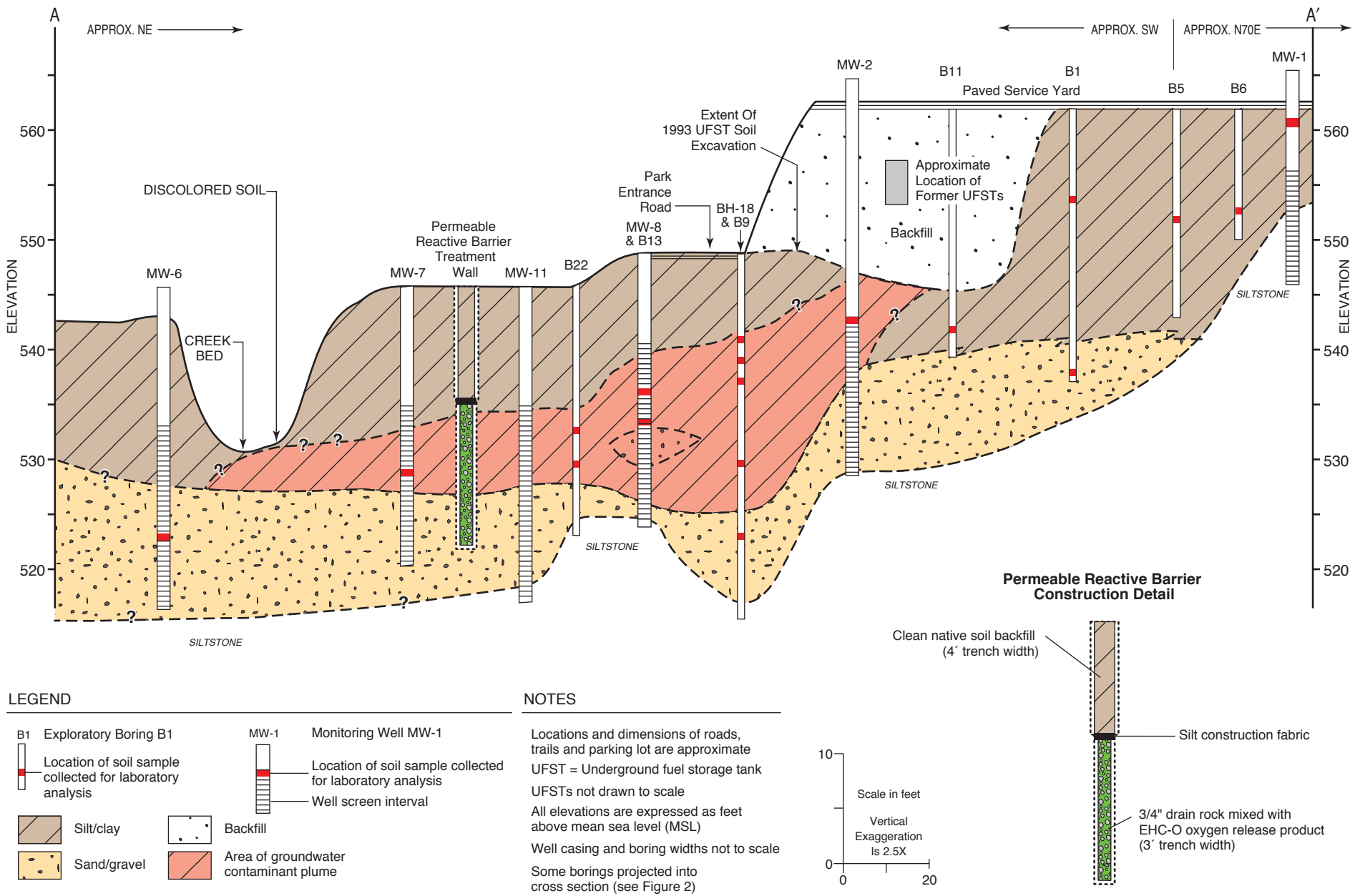
HYDROGEOLOGY

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 0.16 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek) the groundwater gradient was approximately 0.104 feet per foot. This March 2017 monitoring and sampling is following years of drought conditions and a 2016-2017 rainfall season that is considered to be one of the wettest rainy seasons on record for the San Francisco Bay Area (NOAA, 2017). The average groundwater elevation was 0.93 feet higher than the previous (March 2016) event, with the greatest increase of 2.76 feet measured in MW-2. 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.



LEGEND

- B1 — Exploratory Boring B1
- Location of soil sample collected for laboratory analysis
- MW-1 — Monitoring Well MW-1
- Location of soil sample collected for laboratory analysis
- Well screen interval
- Silt/clay
- Sand/gravel
- Backfill
- Area of groundwater contaminant plume

NOTES

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

UFST = Underground fuel storage tank

UFSTs not drawn to scale

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

Well casing and boring widths not to scale

Some borings projected into cross section (see Figure 2)

10 — Scale in feet — Vertical Exaggeration Is 2.5X — 0 — 0 — 20

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CROSS SECTION A-A' SHOWING LOCATION OF TREATMENT WALL AND CONSTRUCTION DETAIL
Redwood Regional Park Service Yard, Oakland, CA

Figure 3

by: MJC

APRIL 2017

2017-02-05

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 is considered a potential source of drinking water unless otherwise approved by the Water Board, and is 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 3 (in Section 5.0), site groundwater contaminant levels are compared to the Water Board Tier 1 Environmental Screening Level (ESL) criteria for residential sites where groundwater is a current or potential drinking water source (Water Board, 2013).

As stipulated in the ESL guidance, 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 Water Board December 2013 ESL for fresh water habitat. As discussed in the ESL document (Water Board, 2013), 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 FIRST SEMIANNUAL 2017 ACTIVITIES

This section presents the creek surface water and groundwater sampling procedures and methods for the groundwater monitoring event (First Semiannual 2017), conducted on March 20, 2017, along with the analytical results. 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 period activities included:

- Measuring static water levels in all 12 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, MW-12, SW-2 and SW-3); and
- Collecting Redwood Creek surface water samples for laboratory analysis from locations SW-2 and SW-3.

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 the March 2017 groundwater elevation data are summarized in Table 1. Figure 4 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 – March 20, 2017

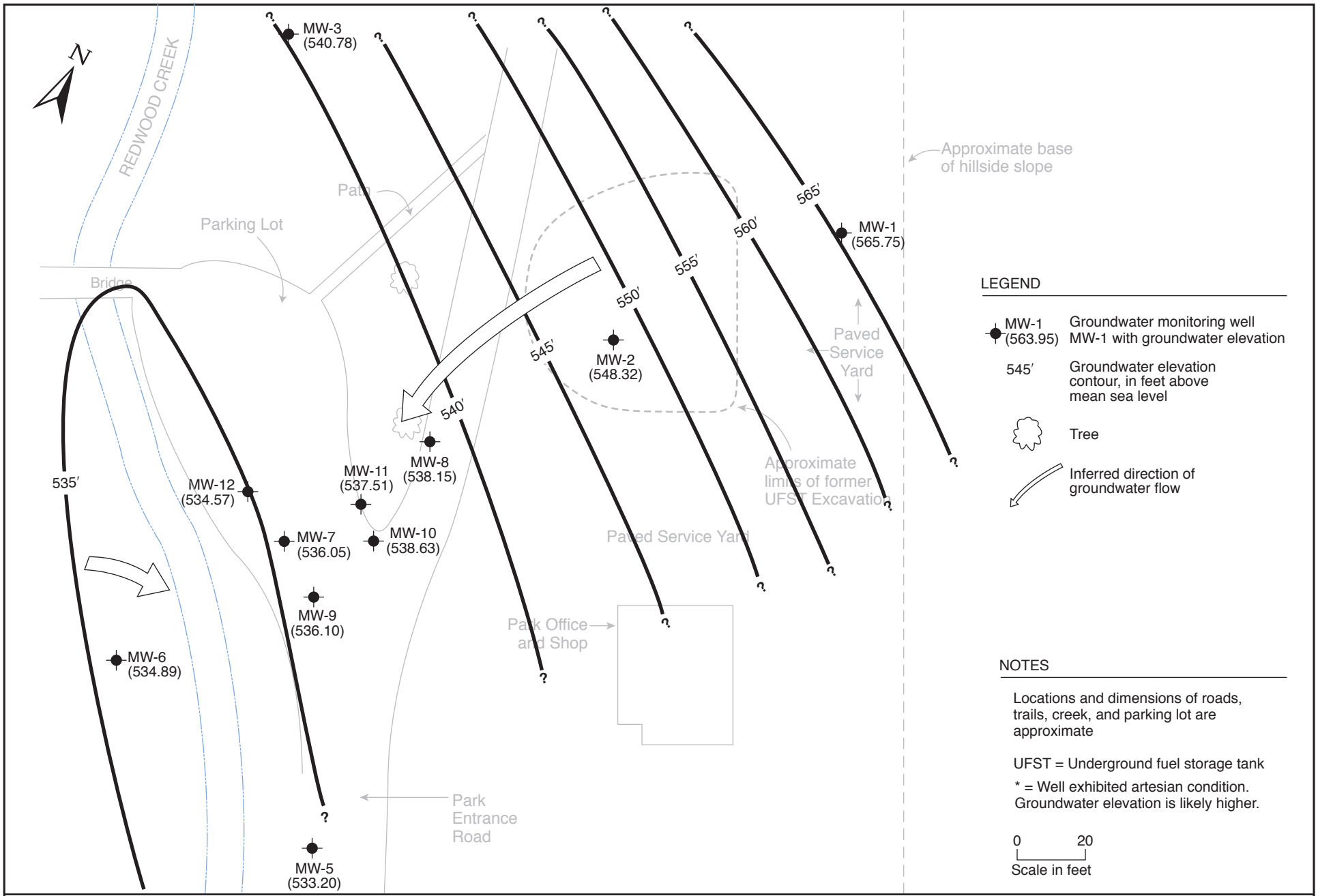
Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Depth (bgs)	Groundwater Elevation
MW-1	18	7 to17	565.83	0.004	565.75
MW-2	36	20 to 35	566.42	18.40	548.02
MW-3	42	7 to 41	560.81	20.03	540.78
MW-5	26	10 to 25	547.41	14.21	533.20
MW-6	26	10 to 25	545.43	10.54	534.89
MW-7	24	9 to24	547.56	11.51	536.05
MW-8	23	8 to 23	549.13	10.98	538.15
MW-9	26	11 to 26	549.28	13.18	536.10
MW-10	26	11 to 26	547.22	8.59	538.63
MW-11	26	11 to 26	547.75	10.24	537.51
MW-12	25	10 to 25	544.67	10.10	534.57

Notes:
All measurements expressed in feet
TOC = top of casing
bgs = below ground surface
Wells MW-1 through MW-6 are 4-inch diameter; all other wells are 2-inch diameter.
All elevations are expressed in feet above mean sea level (amsl). (U.S. Geological Survey)

GROUNDWATER 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 82 gallons) from the current event was containerized in the onsite above-ground storage tank. Purge water 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—MARCH 20, 2017

Redwood Regional Park Service Yard, Oakland, CA

Figure 4

by: MJC | APRIL 2017

2017-02-03

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by Blaine Tech Services under the supervision of Stellar Environmental personnel on March 20, 2017. 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.

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. However, no significant reduction of total hydrocarbons has been recorded so far.

Monitoring wells MW-7, MW-8 and MW-9, downgradient of the PRB, of which MW-8 and MW-9 currently show the highest concentrations of hydrocarbons. The DO at wells MW-7 and MW-8 are relatively low (0.64 – 0.89 mg/L) showing an inverse relationship to hydrocarbons that suggests there is active aerobic biodegradation as the PRB is designed to promote. DO at MW-9 was not measured.

Oxidation-Reduction Potential

The oxidation-reduction potential (ORP) of groundwater is a measure of electron activity, and is an indicator of the relative tendency of a solute species to gain or lose electrons. The ORP of groundwater generally ranges from -400 millivolts (mV) to +800 mV. In oxidizing (aerobic) conditions favorable to bioremediation, the ORP of groundwater is typically positive; in reducing (anaerobic) conditions, the ORP is typically negative (or less positive).

Measurement of the baseline ORP during this sampling event ranged from -117 to -17 mV in wells MW-7 and MW-8 located within 15 feet downgradient of the PRB and from -109 to -42 in wells MW-10 and MW-11, respectfully, located within 15 feet upgradient of the PRB, respectfully. As with the DO, the ORP trend is monitored to evaluate the effectiveness of the PRB. Measurements collected during the March 2017 monitoring event are included in Table 2.

GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS

The semiannual monitoring event was conducted on March 20 2017. Table 2 summarizes the analytical laboratory results of site contaminants. Figure 5 shows the distribution of contaminants and the inferred limits of the groundwater contaminant 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.

This rainy season, concurrent to the March 2017 monitoring and sampling event, above average rainfall has been recorded to date of this groundwater monitoring report (NOAA, 2017). The above average rainfall is reflected in the groundwater elevations measured at each site monitoring well, having risen on average 2.76 feet from the previous monitoring event in March of 2016. Groundwater recharge can affect perceived plume concentrations with the effect of dilution or by way of the dynamic action of entraining contaminant of concern that was once contained in the previously depressed capillary fringe. The effects of dilution are exhibited with a perceived decrease in plume concentration and the effects of the recharging groundwater interacting with new soil media which exhibit a perceived increase in plume concentration in the groundwater.

First Semiannual 2017 groundwater contaminant concentrations were as follows: The ESL for TVHg and TEHd for direct exposure where groundwater is a drinking water resource was exceeded in three of the seven wells sampled: MW-7, MW-8 and MW-9. Benzene was detected in wells MW-7, MW-8 and MW-9 but the ESL was only exceeded only in wells MW-7 and MW-9. Toluene was not detected above the laboratory detection limit in any of the seven wells sampled. Ethylbenzene was detected in wells MW-8 and MW-9, but exceeding the ESL in only MW-8 and MW-9. Well MW-9 contained both the maximum TVHg and TEHd concentrations in site groundwater. Total xylenes were detected in wells MW-8 and MW-9 but below the ESL in both wells. MTBE was not detected above its ESL in any of the wells, however in well MW-8, MW-10, and MW-12.

Well MW-9 contained both the maximum TVHg and TEHd concentrations in groundwater, being 3,100 and 1,100 µg/L respectively. MW-9 is located in the downgradient central area of the plume, adjacent to Redwood Creek. Though MW-9 shows site maximum concentrations of TVHg and TEHd, TVHg and TEHd concentrations show a major decrease when compared to the 4,000 µg/L and 2,600 µg/L shown in the March 2016 analytical data. When comparing the March 2017 and the September 2016 monitoring events, a major decrease from 120,000 µg/L TVHg is shown at MW-9. The September 2016 concentration of TVHg is anomalous, being far above any historical concentration measured since 2001; however, it does follow the trend of relative spikes in TVHg and TEHd concentrations during the summer every couple of years. This

March 2017 analytical data shows a return to the trend for historical concentrations of TVHg and TVHd at MW-9.

There is notable decrease in TVHg and TEHd concentration at MW-11. When compared to the March 2016 analytical data, concentrations decreased from 720 µg/L and 610 µg/L to non-detect concentrations shown in March 2017 for TVHg and TEHd respectively. Though this is on the overall reducing trend shown at MW-11 the non-detect concentrations shown in March 2017 are isolated.

No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this March 2017 sampling event.

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).

ADDTONAL REMEDY PROPOSED TO ADDRESS PERSISTENT HYDROCARBONS IN RESIDUAL SOURCE AREA THAT IMPACTS GROUNDWATER

The semiannual monitoring events since the reactive wall was installed has shown it to have been of ,limited effectiveness, in large part because of drought conditions limiting the hydrocarbon in groundwater mobility and thus treatment wall effectiveness. The remedy conceptually proposed that is to be articulated in detail in a work plan is to inject into the upland area beneath the former UST excavation where residual contamination is still indicated to be entrained in the soil and contributes to the groundwater contamination observed.

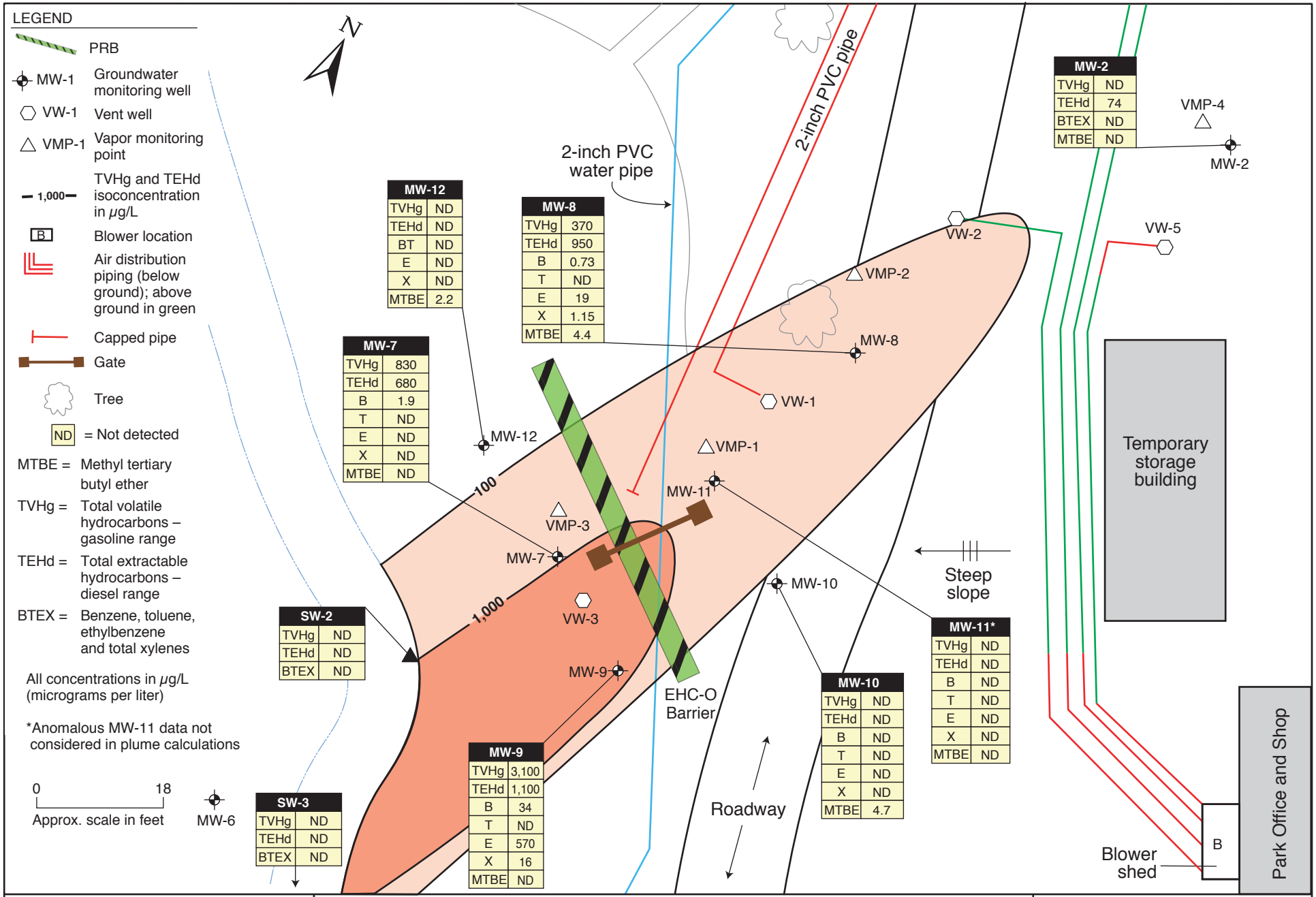
Table 2
Groundwater and Surface Water Samples
Analytical Results –March 20, 2017

Location	Dissolved Oxygen	ORP	Contaminant Concentrations						
			TEHd	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES									
MW-2	4.26	-53	74 Y	<50	<0.5	<0.5	<0.5	<0.5	<2.0
MW-7	0.89	-117	**680 Y**	**830 Y**	**1.9**	<0.5	<0.5	<0.5	<2.0
MW-8	0.64	-17	**950 Y**	**370**	0.73 C	<0.5	**19**	1.15 C	4.4 C
MW-9	NS	NS	**1,100 Y**	**3,100**	**34 C**	<0.5	**570**	16	<2.0
MW-10	1.44	-109	<50	<50	<0.5	<0.5	<0.5	<0.5	4.7
MW-11	1.19	-42	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
MW-12	1.19	-17	<50	<50	<0.5	<0.5	<0.5	<0.5	2.2
Groundwater ESLs [(a)]			100	100	1.0	40	13	20	5.0
REDWOOD CREEK SURFACE WATER SAMPLES									
SW-2	0.49	-27	<50	<50	<0.5	<0.5	<0.5	<0.5	2.8 b
SW-3	0.59	-30	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0 b
Surface Water Screening Levels [(b)]			100	100	1.0	40	13	20	5.0

Notes:
[(a)] ESLs = Water Board Environmental Screening Levels (where groundwater *is* a potential drinking water resource) (Water Board, 2016).
[(b)] Water Board Surface Water Screening Levels for freshwater habitats (Water Board, 2013).
Samples in **bold-face type** exceed the ESLs and/or surface water screening levels where groundwater is a potential drinking water resource.
Analytical results shown as < and indicate a non-detection or less than the laboratory detection limit.

NS = not sampled
MTBE = methyl tertiary-butyl ether
TVHg = total volatile hydrocarbons – gasoline range
TEHd = total extractable hydrocarbons – diesel range
ORP = redox or oxidation reduction potential measured in millivolts (mV)
Dissolved oxygen concentrations are expressed in milligrams per liter (mg/L); post-purge measurement in all wells.
Y= Laboratory flag for sample exhibits chromatographic pattern which does not resemble standard
b= Laboratory flag for low response was observed in the CCV analyzed.
C= Laboratory flag for presence confirmed, but RPD between columns exceeds 40%

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



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

PLAN VIEW OF REMEDIAL EHC-O PRB TREATMENT WALL & TPH PLUME — MARCH 20, 2017
7867 Redwood Rd, Oakland, CA

Figure 5

by: MJC | APRIL 2017

2017-02-04

5.0 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 sampling has been conducted on an approximately quarterly basis from November 1994 to June 2011 and on a semiannual basis since September 2011. A total of twelve site wells are available for monitoring; seven of the available wells are currently monitored for contamination.
- Site contaminants of concern include gasoline, diesel, BTEX, and MTBE. Current groundwater concentrations exceed regulatory screening levels for gasoline, diesel, benzene and ethylbenzene in groundwater.
- 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 well MW-9 in the downgradient area of the plume. However, prior to March 2010, the greatest contamination was observed in MW-2, the historical source area well.
- The contaminant plume has historically appeared neither stable and reducing, the 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. Contaminants in upgradient source area well MW-2 have steadily decreased since March 2010 following the in-situ bioremediation compound injection event with no contaminant detections except for THEd at 74 µg/L this March 2017 event.

- 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.
- First Semiannual 2017 groundwater contaminant concentrations exceeded the groundwater ESLs for TVHg and TEHd in three of the seven wells sampled: MW-7, MW-8 and MW-9. Benzene was detected in wells MW-7, MW-8 and MW-9 but the ESL was only exceeded only in wells MW-7 and MW-9. Toluene was not detected above the laboratory detection limit in any of the seven wells sampled. Ethylbenzene was detected in wells MW-8 and MW-9, but exceeding the ESL in only MW-8 and MW-9. Well MW-9 contained both the maximum TVHg and TEHd concentrations in site groundwater. Total xylenes were detected in wells MW-8 and MW-9 but below the ESL in both wells. MTBE was not detected above its ESL in any of the wells, however in well MW-8, MW-10, and MW-12.
- The current March 2017 event showed a general decrease in contaminant concentrations in downgradient wells MW-7, MW-9 and MW-12. Well MW-9 contained both the maximum TVHg and TEHd concentrations in groundwater but was within historical range.
- There is notable decrease in TVHg and TEHd concentration at MW-11. When compared to the March 2016 analytical data, concentrations decreased from 720 µg/L and 610 µg/L to non-detect concentrations shown in March 2017 for TVHg and TEHd respectively. Though this is on the overall reducing trend shown at MW-11 the non-detect concentrations shown in March 2017 are isolated.
- No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this March 2017 sampling event.

PROPOSED ACTIONS

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

- Continue to inform regulators of site progress and seek their concurrence with proposed actions;
- In concurrence with the EBRPD, Stellar Environmental recommends having a meeting at the site with the newly assigned ACEH regulator, Ms. Anne Jurek to discuss the conceptual remedy before presenting it as a workplan to allow for Ms. Jurek to appreciate the lay of the land and various constraints;
- Provide a workplan to inject into the upland area beneath the former UST excavation where residual contamination is still indicated to be entrained in the soil and contributes to the groundwater contamination observed; and
- 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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10.0 LIMITATIONS

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

The findings and conclusions presented in this report are based on the review of previous investigators' findings at the site, as well as onsite activities conducted by 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

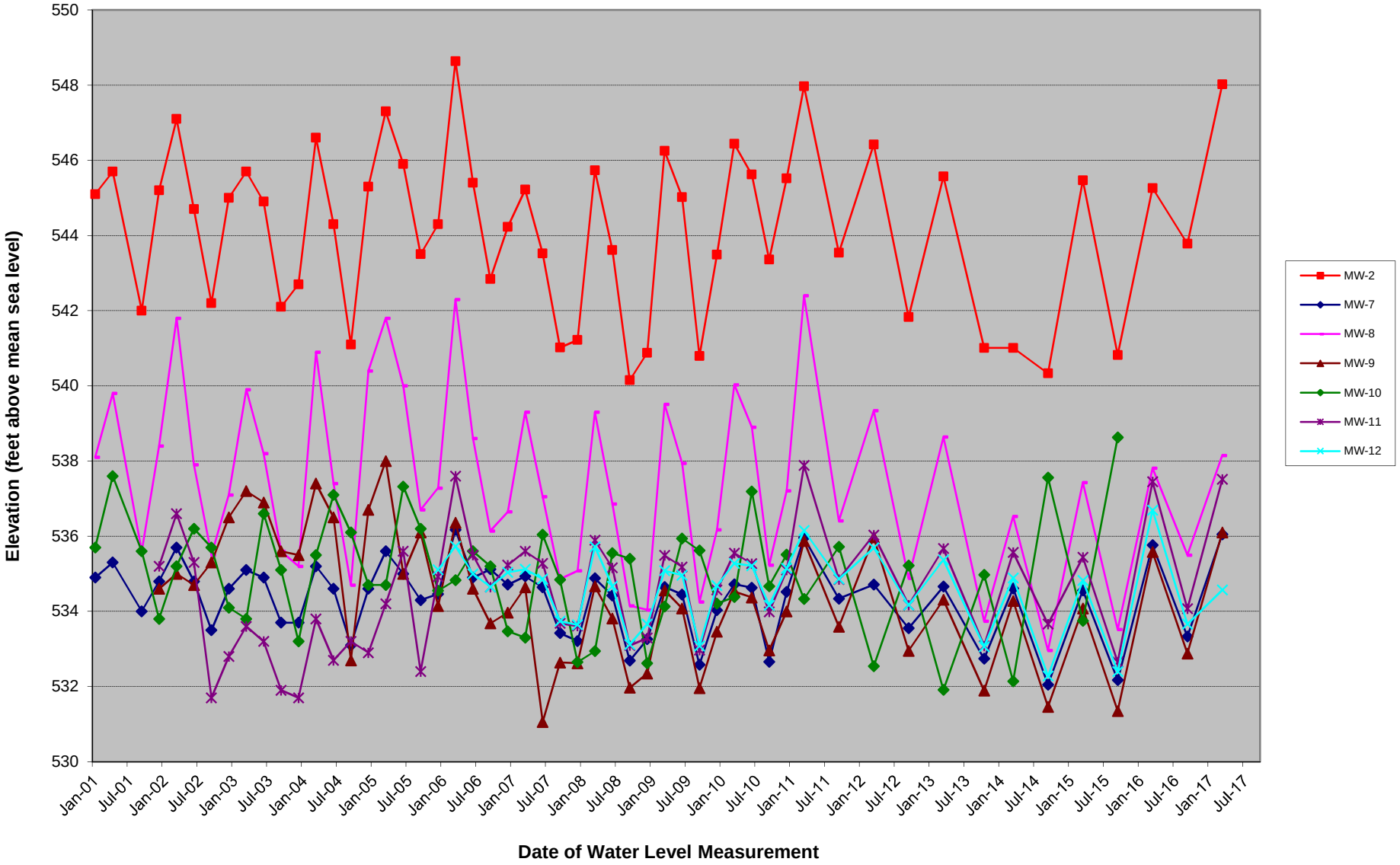
Historical Groundwater Monitoring Well Water Level Data

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
3/14/2013	561.80	545.57	541.74	(b)	531.01	532.11	534.66	538.64	534.31	535.72	535.67	535.37
10/3/2013	560.95	541.01	536.21	(b)	530.02	531.14	532.74	533.74	531.89	532.54	533.08	533.06
3/10/2014	561.68	541.01	541.67	(b)	531.99	532.02	534.61	536.53	534.28	535.22	535.57	534.89
9/19/2014	560.40	540.33	535.53	(b)	529.31	530.50	532.05	532.96	531.46	531.91	533.66	532.28
3/23/2015	561.41	545.47	541.46	(b)	531.01	532.09	534.56	537.43	534.08	534.97	535.44	534.82
9/24/2015	560.26	540.82	535.79	(b)	529.34	530.39	532.17	533.52	531.35	532.14	532.65	532.4
3/21/2016	563.95	545.26	539.95	(b)	533.22	534.16	535.76	537.81	535.58	537.56	537.45	536.69

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.
NM = not measured

Figure 6: Historical Groundwater Elevations in Site Wells
Redwood Regional Park Service Yard - Oakland, California



APPENDIX B

Groundwater Monitoring
Field Documentation

WELL GAUGING DATA

Project # 170320-BA1 Date 03/20/17 Client Stellar

Site Redwood Regional Parks Service Yard, Oakland CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or (TOC)	Notes
MW-1	1055	4					0.5"	19.12		over flow
MW-2*	1017	4					18.40	37.34		
MW-3	1008	4					20.03	~~27.43~~ 37.43 (BN)		
MW-5	1125	4					~~14.21~~ 14.21 (BN)	26.90		
MW-6	1131	4					10.54	27.50		
MW-7*	1147	2					11.51	25.38		
MW-8*	1340	2	odor				10.98	22.18		
MW-9*	1304	2	odor				13.18	30.17		
MW-10*	1102	2					5.59	27.93		
MW-11*	1410	2					10.24	28.71		
MW-12*	1212	2					10.10	23.80		

WELLHEAD INSPECTION CHECKLIST

Date 03/20/17 Client Stellar

Site Address Redwood Regional Parks Service Yard, Oakland CA

Job Number 170320-BM1 Technician BM

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	✓							
MW-2	✓		BM					
MW-3	✓							
MW-5	✓							
MW-6	✓							
MW-7	✓							
MW-8		✓						
MW-9	✓							
MW-10	✓							
MW-11		✓ BM						
MW-12	✓							

NOTES: Depth to MW-1 -> Water .5". MW-10 NO bolts, MW-8 NO Bolts water inside well.

WELL MONITORING DATA SHEET

Project #: ~~178A~~ 170320-BA1	Client: Stellar
Sampler: BA	Date: 03/20/17
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth (TD): 37.34	Depth to Water (DTW): 15.40 VV
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]: 22.19	

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: ____

12.3 (Gals.) X 3 = 37 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
1033	59.6	7.84	1055	40	12.5	cloudy
1036	60.7	7.64	1092	32	25	
1039	61.8	7.62	1121	17	37	

Did well dewater? Yes (No) Gallons actually evacuated: 37

Sampling Date: 03/20/17 Sampling Time: 1049 Depth to Water: 22.15

Sample I.D.: MW-2 Laboratory: Kiff CalScience (Other) Cert

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C

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:	4.26	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-53.4	mV

WELL MONITORING DATA SHEET

.#: 170320-BA1	Client: Stellar
pler: BA	Date: 03/20/17
ell I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 25.34	Depth to Water (DTW): 11.51
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 14.28	

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

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

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
1154	56.1	6.75	1022	43	2.2	
1158	56.3	6.72	1014	27	4.4	
1202	56.7	6.70	1006	25	6.6	

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

Sampling Date: 03/20/17 Sampling Time: 1207 Depth to Water: 14.00

Sample I.D.: MW-7 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:	0.89 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-116.9 mV

WELL MONITORING DATA SHEET

Project #: 170370-BA1	Client: Stellar
Sampler: BA	Date: 03/20/17
Well I.D.: MW-4	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 22.18	Depth to Water (DTW): 10.98
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.22	

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:_____

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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1343	55.4	6.39	701.1	>1000	2	
1347	55.0	6.43	722	>1000	3.5	
1351	55.0	6.44	742	>1000	5.5	

Did well dewater? Yes (No) Gallons actually evacuated: 5.5

Sampling Date: 03/20/17 Sampling Time: 1420 Depth to Water: 13.01

Sample I.D.: MW-4 Laboratory: Kiff CalScience (Other) Calscience

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C.

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:	0.64	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-17	mV

WELL MONITORING DATA SHEET

t#: 170320-B1A1	Client: Stellar
pler: BA	Date: 03/20/17
ell I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 30.17	Depth to Water (DTW): 13.18
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 17.18	

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:

2.7 (Gals.) X 3 = 8.1 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1305	56.7	7.00	967.7	240	2.8	
1314	56.6	6.88	978.1	199	5.6	
1320	56.6	6.86	987.2	198	8.2	

Did well dewater? Yes (No) Gallons actually evacuated: 8.2

Sampling Date: 03/20/17 Sampling Time: 1335 Depth to Water: 16.97

Sample I.D.: MW-9 Laboratory: Kiff CalScience (Other) CAL

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C

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

WELL MONITORING DATA SHEET

Project #: 170320-BA1	Client: Stellar
Sampler: BA	Date: 03/20/17
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 27.93	Depth to Water (DTW): 5.59
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]: 12.46	

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:_____

3.1 (Gals.) X	3	=	9.3 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
1107	57.5	7.69	795	5	3.2	
1114	58.3	7.63	799	8	6.4	
1121	58.7	7.59	807	13	9.5	

Did well dewater? Yes (No) Gallons actually evacuated: 9.5

Sampling Date: 03/20/17 Sampling Time: 1141 Depth to Water: 12.23

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

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	1.44 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-108.7 mV

WELL MONITORING DATA SHEET

Project #: 170320-B14	Client: Stellar
Sampler: BA	Date: 03/20/17
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 24.71	Depth to Water (DTW): 10.24
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 (Waterra) Disposable Bailer (Peristaltic) Positive Air Displacement (Extraction Pump) Electric Submersible Other____

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

3 (Gals.) X	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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1425	55.4	6.61	749	98	3	Raining
1430	55.2	6.57	751	112	6	
1435	55.0	6.55	753	121	9	

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

Sampling Date: 03/20/17 Sampling Time: 1450 Depth to Water: 13.70

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

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	1.19 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-41.8 mV

WELL MONITORING DATA SHEET

Project #: 170320-BA-1	Client: STELLAR
Sampler: BA	Date: 03/20/17
Well I.D.: MW-12	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 23.80	Depth to Water (DTW): 10.10
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.54	

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: ____

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
1217	56.6	7.47	634.0	55	2.2	
1220	56.5	7.38	651	53	4.4	
1223	56.5	7.36	657	53	6.6	

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

Sampling Date: 03/20/17 Sampling Time: 1255 Depth to Water: 12.33

Sample I.D.: MW-12 Laboratory: Kiff CalScience (Other) C ET

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	1.19 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-17 mV

WELL MONITORING DATA SHEET

Project #: 170320-BA	Client: Stellar
Sampler: DM	Date: 3/20/17
Well I.D.: SW-2	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 → CAP, (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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1340	16.4	6.81	564	2	—	

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

Sampling Date: 3/20/17 Sampling Time: 1340 Depth to Water: —

Sample I.D.: SW-2 Laboratory: Kiff CalScience (Other) CAT

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.49	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-27	mV

...LL MONITORING DATA SH... T

Project #: 170320-BA1	Client: Stellar
Sampler: DM	Date: 3/20/17
Well I.D.: SW-3	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: Cup

_____(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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1410	17.0	6.77	591	4	—	
		-	Grab sample -			

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

Sampling Date: 3/20/17 Sampling Time: 1410 Depth to Water: —

Sample I.D.: SW-3 Laboratory: Kiff CalScience (Other) CETI

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See C.O.C

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:	0.59	mg/L
...P. (if req'd):	Pre-purge:	mV	Post-purge:	-30	mV

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME	Redwood Regional Park Corp Yard	PROJECT NUMBER	170320 - BA1				
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI 556	06F200948D	03/20/17	DO: 100%	99.3%	✓	17.37 °C	BA
Utrameter 6P	6205460	03/20/17	pH 7 10 4	6.94 9.93 4.10	✓ ✓ ✓	64.8°F	↓

APPENDIX C

Analytical Laboratory Report and Chain-of-Custody Record


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

Laboratory Job Number 287261
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2013-02.
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-2	287261-001
MW-10	287261-002
MW-7	287261-003
MW-12	287261-004
MW-9	287261-005
MW-8	287261-006
MW-11	287261-007
SW-2	287261-008
SW-3	287261-009

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: _____ Date: 03/29/2017

Patrick McCarthy
Project Manager
patrick.mccarthy@ctberk.com
(510) 204-2236

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**287261**
Client:	**Stellar Environmental Solutions**
Project:	**2013-02.**
Location:	**Redwood Regional Park**
Request Date:	**03/22/17**
Samples Received:	**03/22/17**

This data package contains sample and QC results for nine water samples, requested for the above referenced project on 03/22/17. The samples were received cold and intact.

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

Low response was observed for MTBE in the CCV analyzed 03/28/17 20:34; affected data was qualified with "b". High surrogate recovery was observed for bromofluorobenzene (PID) in MW-9 (lab # 287261-005). Low surrogate recovery was observed for bromofluorobenzene (FID) in the method blank for batch 246021. Gasoline C7-C12 was detected above the RL in the method blank for batch 245975; this analyte was either not detected in samples at or above the RL, or detected at a level at least 10 times that of the blank. MW-9 (lab # 287261-005) was diluted due to client history of high non-target or organic acid interference. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

No analytical problems were encountered.

Chain of Custody Record

Lab job no. 28726.1

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 2013-02

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

	Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Cooler	Preservation Chemical	Filtered	No. of Containers	Analysis Required: TPH-G/MBTEX	Analysis Required: TPH-D	Remarks
1	MW-2		03/20/13	1049	W		✓	MIXED		5	X	X	
2	MW-10		03/20/13	1141	W		✓	MIXED		5	X	X	
3	MW-7		03/20	1207	W		✓	MIXED		5	X	X	
4	MW-12		03/20	1255	W		✓	MIXED		5	X	X	
5	MW-9		03/20	1335	W		✓	MIXED		5	X	X	
6	MW-8		03/20	1420	W		✓	MIXED		5	X	X	
7	MW-11		03/20	1450	W		✓	MIXED		5	X	X	
8	SW-2		03/20	1340	W		✓	MIXED		5	X	X	
9	SW-3		03/20	1410	W		✓	MIXED		5	X	X	

Relinquished by	Date	Received by	Date	Relinquished by	Date	Received by	Date
Signature	3/21/13	Signature	3/22	Signature	3/22	Signature	3/22
Printed Bianca Angulo	Time 1530	Printed Jacob Hahn	Time 13:30	Printed Jacob Holm	Time 17:20	Printed Erika Meadows	Time 1720
Company Stellar Environmental		Company CTL		Company CTL		Company CTL	

Turnaround Time: 5 Day TAT
Comments: Samples on ice

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

2000-00-01

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 28726 Date Received 3.22.17 Number of coolers 1
Client East Bay Regional Park District Project Redwood Regional Park

Date Opened 3.22.17 By (print) PC (sign)
Date Logged in 3/23 By (print) Tracy Babjo (sign) Tracy Babjo
Date Labeled _____ 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) 4.0

☐ Temperature blank(s) included? ☐ Thermometer# _____ ☒ IR Gun# A

☐ 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? (pH strip lot# _____) 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

_____
_____
_____
_____
_____
_____

Curtis & Tompkins, Ltd.

Detections Summary for 287261

Results for any subcontracted analyses are not included in this summary.

Client : Stellar Environmental Solutions
Project : 2013-02.
Location : Redwood Regional Park

Client Sample ID : MW-2 Laboratory Sample ID : 287261-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	74	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : MW-10 Laboratory Sample ID : 287261-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
MTBE	4.7		2.0	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B

Client Sample ID : MW-7 Laboratory Sample ID : 287261-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	830	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Benzene	1.9	C	0.50	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B
Diesel C10-C24	680	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : MW-12 Laboratory Sample ID : 287261-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
MTBE	2.2		2.0	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B

Client Sample ID : MW-9 Laboratory Sample ID : 287261-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	3,100		50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Benzene	34	C	8.3	ug/L	As Recd	16.67	EPA 8021B	EPA 5030B
Ethylbenzene	570		8.3	ug/L	As Recd	16.67	EPA 8021B	EPA 5030B
m,p-Xylenes	16		8.3	ug/L	As Recd	16.67	EPA 8021B	EPA 5030B
Diesel C10-C24	1,100	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : MW-8 Laboratory Sample ID : 287261-006

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	370	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
MTBE	4.4	C	2.0	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B
Benzene	0.73	C	0.50	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B
Ethylbenzene	19		0.50	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B
m,p-Xylenes	0.57		0.50	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B
o-Xylene	0.58	C	0.50	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B
Diesel C10-C24	950	Y	50	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C

Client Sample ID : MW-11 Laboratory Sample ID : 287261-007

No Detections

Client Sample ID : SW-2 Laboratory Sample ID : 287261-008

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
MTBE	2.8	b	2.0	ug/L	As Recd	1.000	EPA 8021B	EPA 5030B

Client Sample ID : SW-3 Laboratory Sample ID : 287261-009

No Detections

C = Presence confirmed, but RPD between columns exceeds 40%
Y = Sample exhibits chromatographic pattern which does not resemble standard
b = See narrative

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	03/28/17
Lab ID:	287261-001		

Analyte	Result	RL	Batch#	Analysis
Gasoline C7-C12	ND	50	246021	EPA 8015B
MTBE	ND	2.0	245975	EPA 8021B
Benzene	ND	0.50	245975	EPA 8021B
Toluene	ND	0.50	245975	EPA 8021B
Ethylbenzene	ND	0.50	245975	EPA 8021B
m,p-Xylenes	ND	0.50	245975	EPA 8021B
o-Xylene	ND	0.50	245975	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analysis
Bromofluorobenzene (FID)	95	80-122	246021	EPA 8015B
Bromofluorobenzene (PID)	107	80-124	245975	EPA 8021B

Field ID:	MW-10	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	03/28/17
Lab ID:	287261-002		

Analyte	Result	RL	Batch#	Analysis
Gasoline C7-C12	ND	50	246021	EPA 8015B
MTBE	4.7	2.0	245975	EPA 8021B
Benzene	ND	0.50	245975	EPA 8021B
Toluene	ND	0.50	245975	EPA 8021B
Ethylbenzene	ND	0.50	245975	EPA 8021B
m,p-Xylenes	ND	0.50	245975	EPA 8021B
o-Xylene	ND	0.50	245975	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analysis
Bromofluorobenzene (FID)	98	80-122	246021	EPA 8015B
Bromofluorobenzene (PID)	99	80-124	245975	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17

Field ID:	MW-7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	245975
Lab ID:	287261-003	Analyzed:	03/28/17

Analyte	Result	RL	Analysis
Gasoline C7-C12	830 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	1.9 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	84	80-122	EPA 8015B
Bromofluorobenzene (PID)	101	80-124	EPA 8021B

Field ID:	MW-12	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	245975
Lab ID:	287261-004	Analyzed:	03/28/17

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

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	82	80-122	EPA 8015B
Bromofluorobenzene (PID)	98	80-124	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17

Field ID:	MW-9	Lab ID:	287261-005
Type:	SAMPLE	Analyzed:	03/28/17

Analyte	Result	RL	Diln Fac	Batch#	Analysis
Gasoline C7-C12	3,100	50	1.000	246021	EPA 8015B
MTBE	ND	33	16.67	245975	EPA 8021B
Benzene	34 C	8.3	16.67	245975	EPA 8021B
Toluene	ND	8.3	16.67	245975	EPA 8021B
Ethylbenzene	570	8.3	16.67	245975	EPA 8021B
m,p-Xylenes	16	8.3	16.67	245975	EPA 8021B
o-Xylene	ND	8.3	16.67	245975	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analysis
Bromofluorobenzene (FID)	106	80-122	1.000	246021	EPA 8015B
Bromofluorobenzene (PID)	158 *	80-124	16.67	245975	EPA 8021B

Field ID:	MW-8	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	03/28/17
Lab ID:	287261-006		

Analyte	Result	RL	Batch#	Analysis
Gasoline C7-C12	370 Y	50	246021	EPA 8015B
MTBE	4.4 C	2.0	245975	EPA 8021B
Benzene	0.73 C	0.50	245975	EPA 8021B
Toluene	ND	0.50	245975	EPA 8021B
Ethylbenzene	19	0.50	245975	EPA 8021B
m,p-Xylenes	0.57	0.50	245975	EPA 8021B
o-Xylene	0.58 C	0.50	245975	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analysis
Bromofluorobenzene (FID)	100	80-122	246021	EPA 8015B
Bromofluorobenzene (PID)	107	80-124	245975	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17

Field ID:	MW-11	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	03/28/17
Lab ID:	287261-007		

Analyte	Result	RL	Batch#	Analysis
Gasoline C7-C12	ND	50	246021	EPA 8015B
MTBE	ND	2.0	245975	EPA 8021B
Benzene	ND	0.50	245975	EPA 8021B
Toluene	ND	0.50	245975	EPA 8021B
Ethylbenzene	ND	0.50	245975	EPA 8021B
m,p-Xylenes	ND	0.50	245975	EPA 8021B
o-Xylene	ND	0.50	245975	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analysis
Bromofluorobenzene (FID)	96	80-122	246021	EPA 8015B
Bromofluorobenzene (PID)	106	80-124	245975	EPA 8021B

Field ID:	SW-2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	03/28/17
Lab ID:	287261-008		

Analyte	Result	RL	Batch#	Analysis
Gasoline C7-C12	ND	50	246021	EPA 8015B
MTBE	2.8 b	2.0	246027	EPA 8021B
Benzene	ND	0.50	246027	EPA 8021B
Toluene	ND	0.50	246027	EPA 8021B
Ethylbenzene	ND	0.50	246027	EPA 8021B
m,p-Xylenes	ND	0.50	246027	EPA 8021B
o-Xylene	ND	0.50	246027	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analysis
Bromofluorobenzene (FID)	96	80-122	246027	EPA 8015B
Bromofluorobenzene (PID)	115	80-124	246027	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17

Field ID:	SW-3	Lab ID:	287261-009
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	ND	50	246021	03/29/17	EPA 8015B
MTBE	ND b	2.0	246027	03/28/17	EPA 8021B
Benzene	ND	0.50	246027	03/28/17	EPA 8021B
Toluene	ND	0.50	246027	03/28/17	EPA 8021B
Ethylbenzene	ND	0.50	246027	03/28/17	EPA 8021B
m,p-Xylenes	ND	0.50	246027	03/28/17	EPA 8021B
o-Xylene	ND	0.50	246027	03/28/17	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	91	80-122	246027	03/28/17	EPA 8015B
Bromofluorobenzene (PID)	107	80-124	246027	03/28/17	EPA 8021B

Type:	BLANK	Batch#:	245975
Lab ID:	QC878728	Analyzed:	03/27/17
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	59 b	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	87	80-122	EPA 8015B
Bromofluorobenzene (PID)	101	80-124	EPA 8021B

Type:	BLANK	Batch#:	246021
Lab ID:	QC878903	Analyzed:	03/28/17
Diln Fac:	1.000	Analysis:	EPA 8015B

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	Result	%REC	Limits
Bromofluorobenzene (FID)		78 *	80-122
Bromofluorobenzene (PID)	NA		

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17

Type:	BLANK	Batch#:	246027
Lab ID:	QC878926	Analyzed:	03/28/17
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
MTBE	ND b	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	80	80-122	EPA 8015B
Bromofluorobenzene (PID)	95	80-124	EPA 8021B

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

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC878723	Batch#:	245975
Matrix:	Water	Analyzed:	03/27/17
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,141	114	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	80-122

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	245975
Units:	ug/L	Analyzed:	03/27/17
Diln Fac:	1.000		

Type: BS Lab ID: QC878724

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	8.821	88	62-131
Benzene	10.00	9.955	100	80-120
Toluene	10.00	9.475	95	80-120
Ethylbenzene	10.00	9.803	98	79-120
m,p-Xylenes	10.00	10.11	101	80-120
o-Xylene	10.00	9.789	98	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	101	80-124

Type: BSD Lab ID: QC878725

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.55	93	62-131	5	38
Benzene	20.00	20.96	105	80-120	5	20
Toluene	20.00	20.24	101	80-120	7	20
Ethylbenzene	20.00	21.86	109	79-120	11	27
m,p-Xylenes	20.00	21.22	106	80-120	5	26
o-Xylene	20.00	21.17	106	80-120	8	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	102	80-124

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Field ID:	MW-2	Batch#:	245975
MSS Lab ID:	287261-001	Sampled:	03/20/17
Matrix:	Water	Received:	03/22/17
Units:	ug/L	Analyzed:	03/28/17
Diln Fac:	1.000		

Type: MS Lab ID: QC878726

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	74.83	2,000	2,050	99	79-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	93	80-122

Type: MSD Lab ID: QC878727

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,982	95	79-120	3	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	80-122

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC878900	Batch#:	246021
Matrix:	Water	Analyzed:	03/28/17
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	972.8	97	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	85	80-122

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	246021
MSS Lab ID:	287400-002	Sampled:	03/27/17
Matrix:	Water	Received:	03/27/17
Units:	ug/L	Analyzed:	03/29/17
Diln Fac:	1.000		

Type: MS Lab ID: QC878901

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	169.3	2,000	2,118	97	79-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	80-122

Type: MSD Lab ID: QC878902

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,260	105	79-120	6	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	80-122

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8021B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Batch#:	246027

Type: BS Analyzed: 03/28/17
Lab ID: QC878922

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	8.103 b	81	62-131
Benzene	10.00	10.22	102	80-120
Toluene	10.00	9.631	96	80-120
Ethylbenzene	10.00	10.30	103	79-120
m,p-Xylenes	10.00	10.11	101	80-120
o-Xylene	10.00	9.994	100	80-120

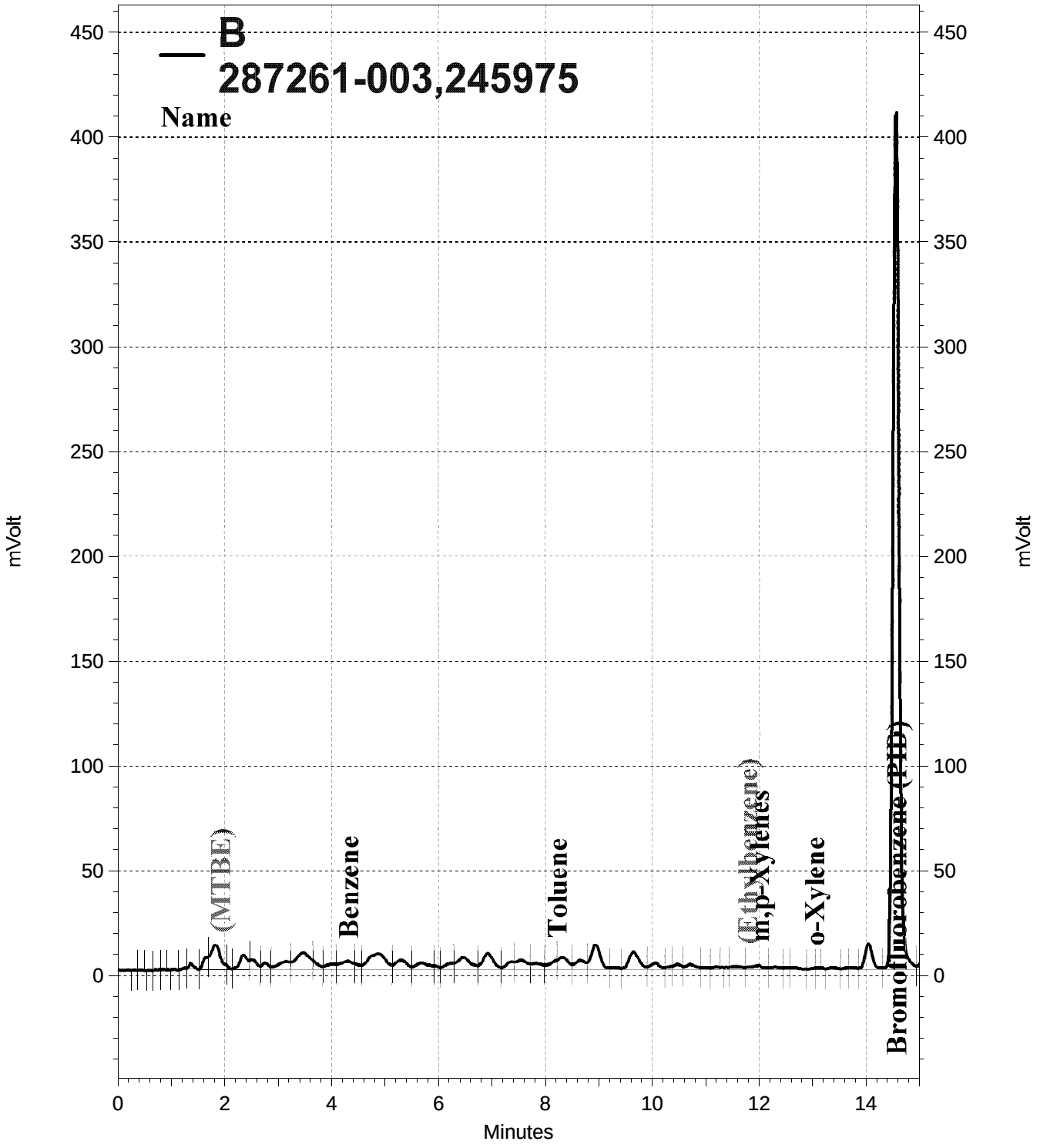
Surrogate	%REC	Limits
Bromofluorobenzene (PID)	106	80-124

Type: BSD Analyzed: 03/29/17
Lab ID: QC878923

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	16.81	84	62-131	4	38
Benzene	20.00	19.97	100	80-120	2	20
Toluene	20.00	18.73	94	80-120	3	20
Ethylbenzene	20.00	19.36	97	79-120	6	27
m,p-Xylenes	20.00	19.51	98	80-120	4	26
o-Xylene	20.00	19.00	95	80-120	5	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	94	80-124

b= See narrative
RPD= Relative Percent Difference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mVolt
mVolt
Minutes
(MTBE)
Benzene
Toluene
(Ethylbenzene)
m,p-Xylenes
o-Xylene
Bromofluorobenzene (PID)
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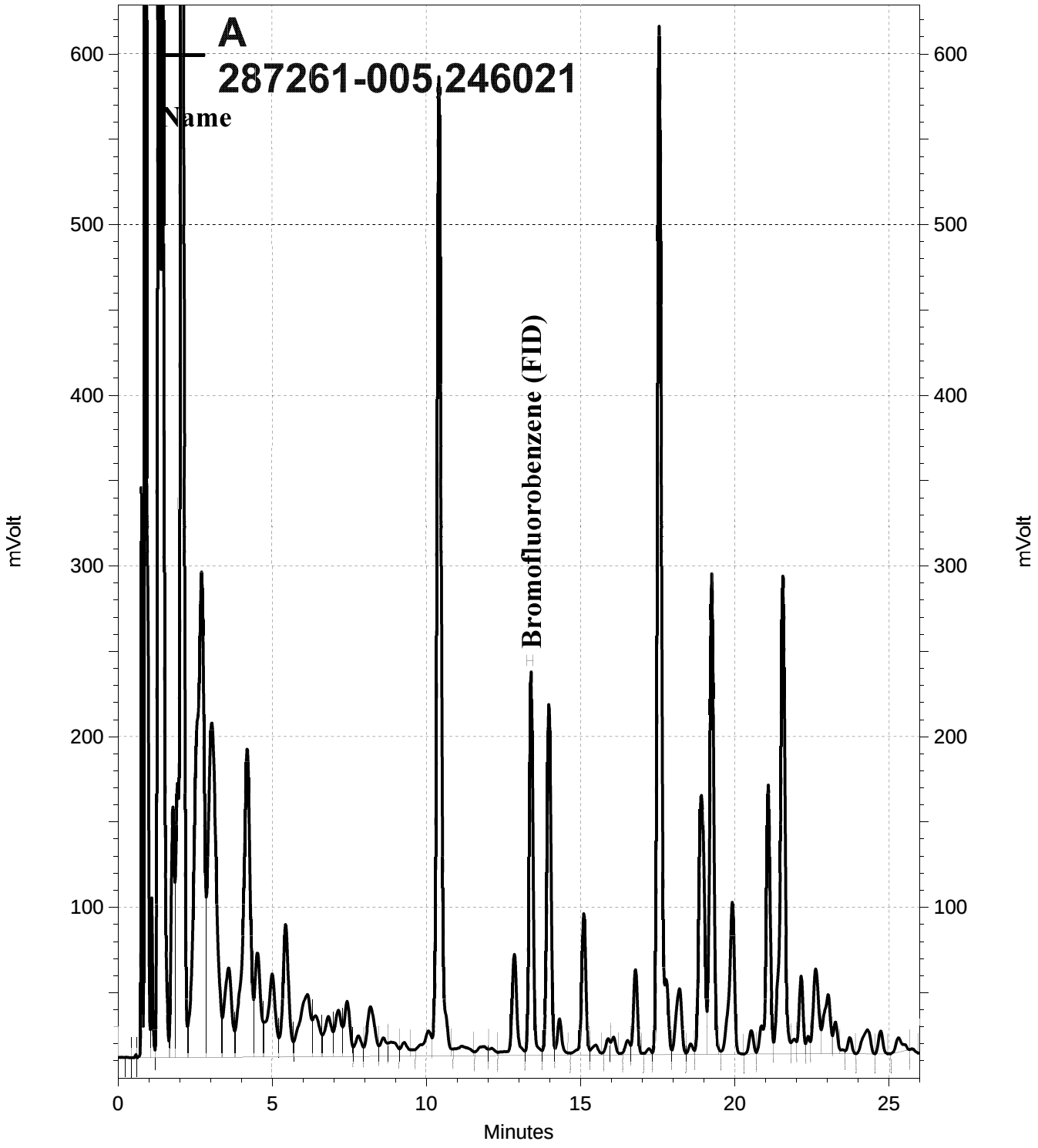
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Bromofluorobenzene (FID)
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mVolt
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500
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5
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20
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Minutes
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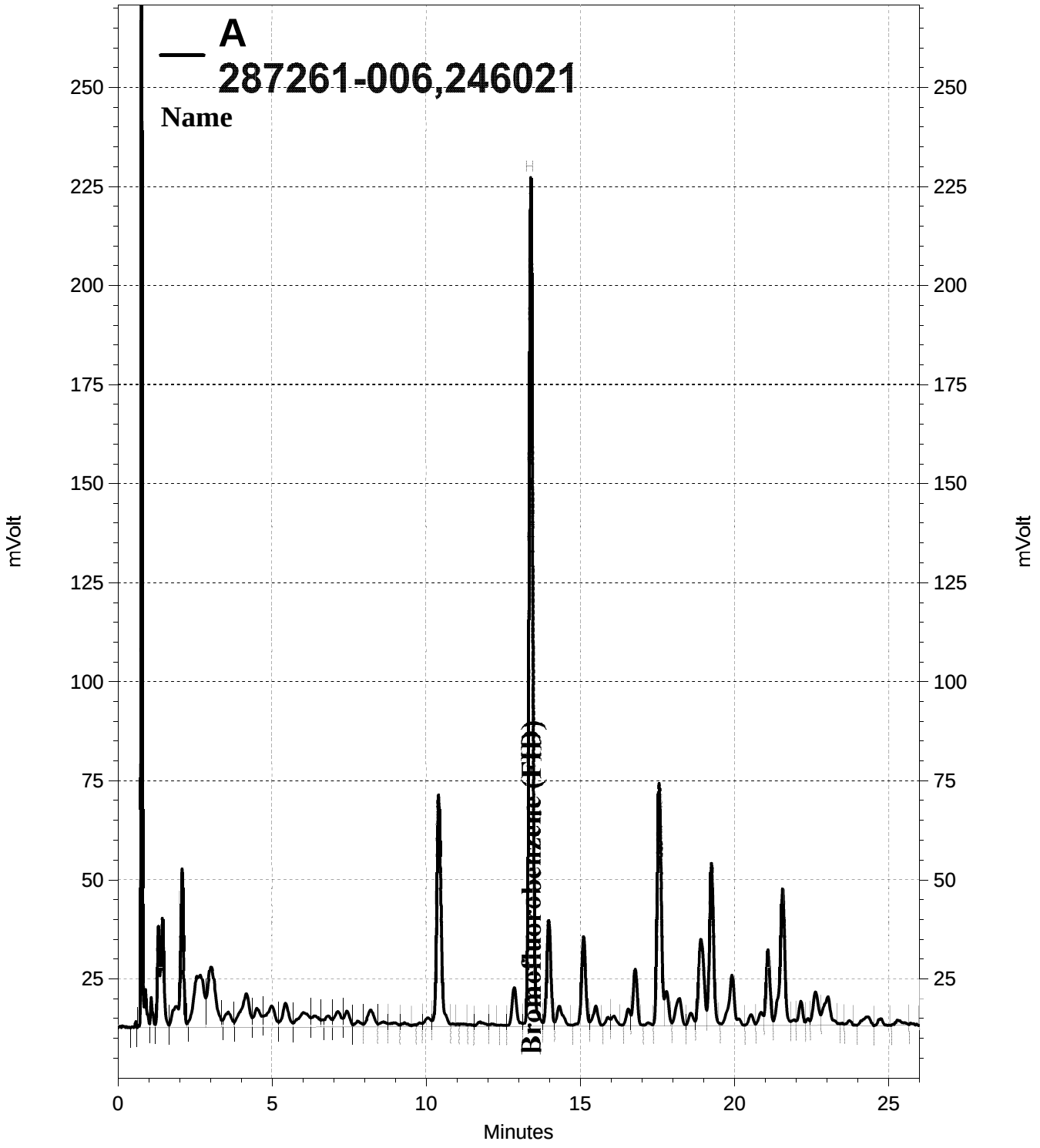

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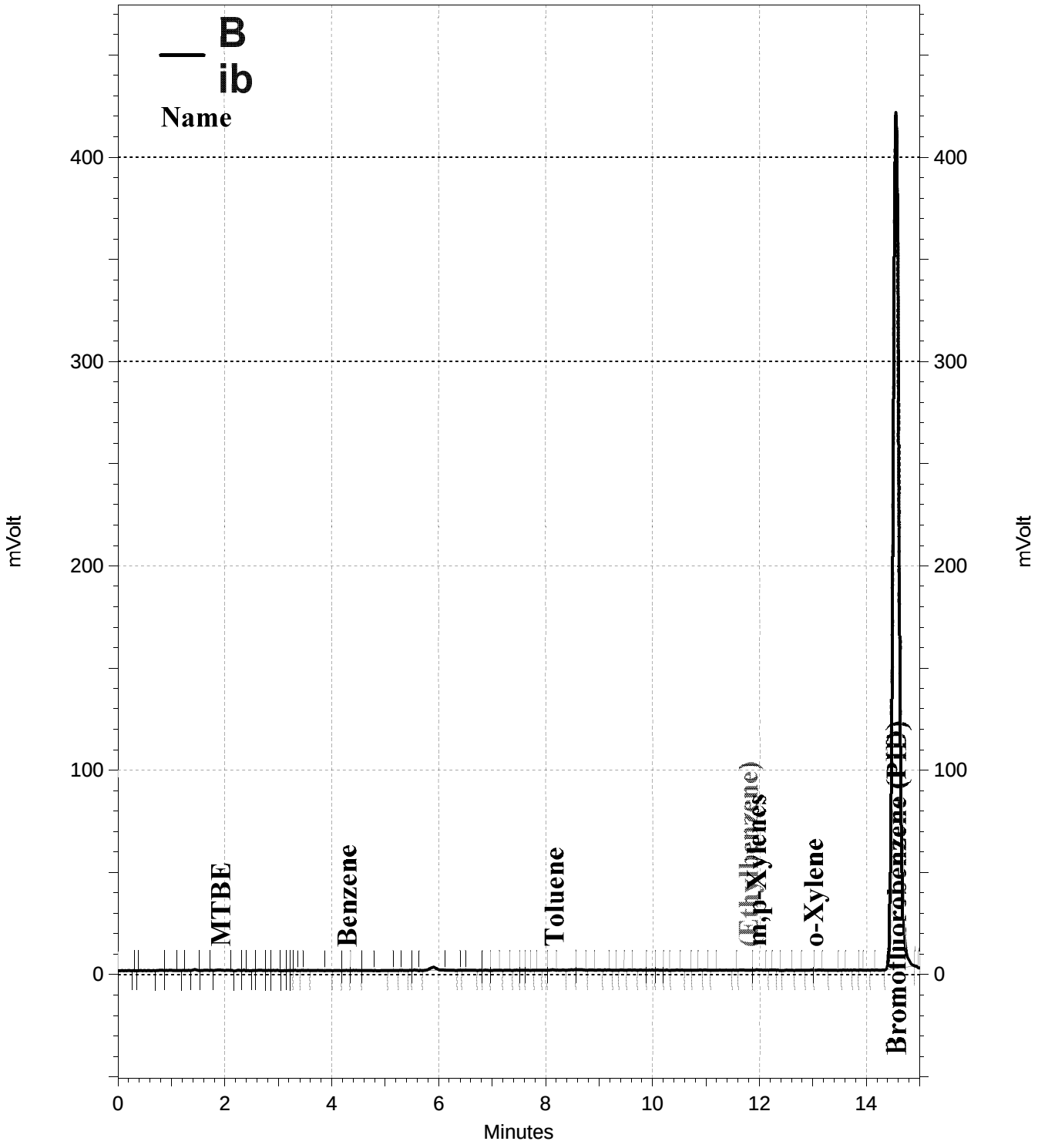
B
ib
Name
400
300
200
100
0
mVolt
MTBE
Benzene
Toluene
Ethylbenzene
m,p-Xylenes
o-Xylene
Bromofluorobenzene (PID)
0
2
4
6
8
10
12
14
Minutes
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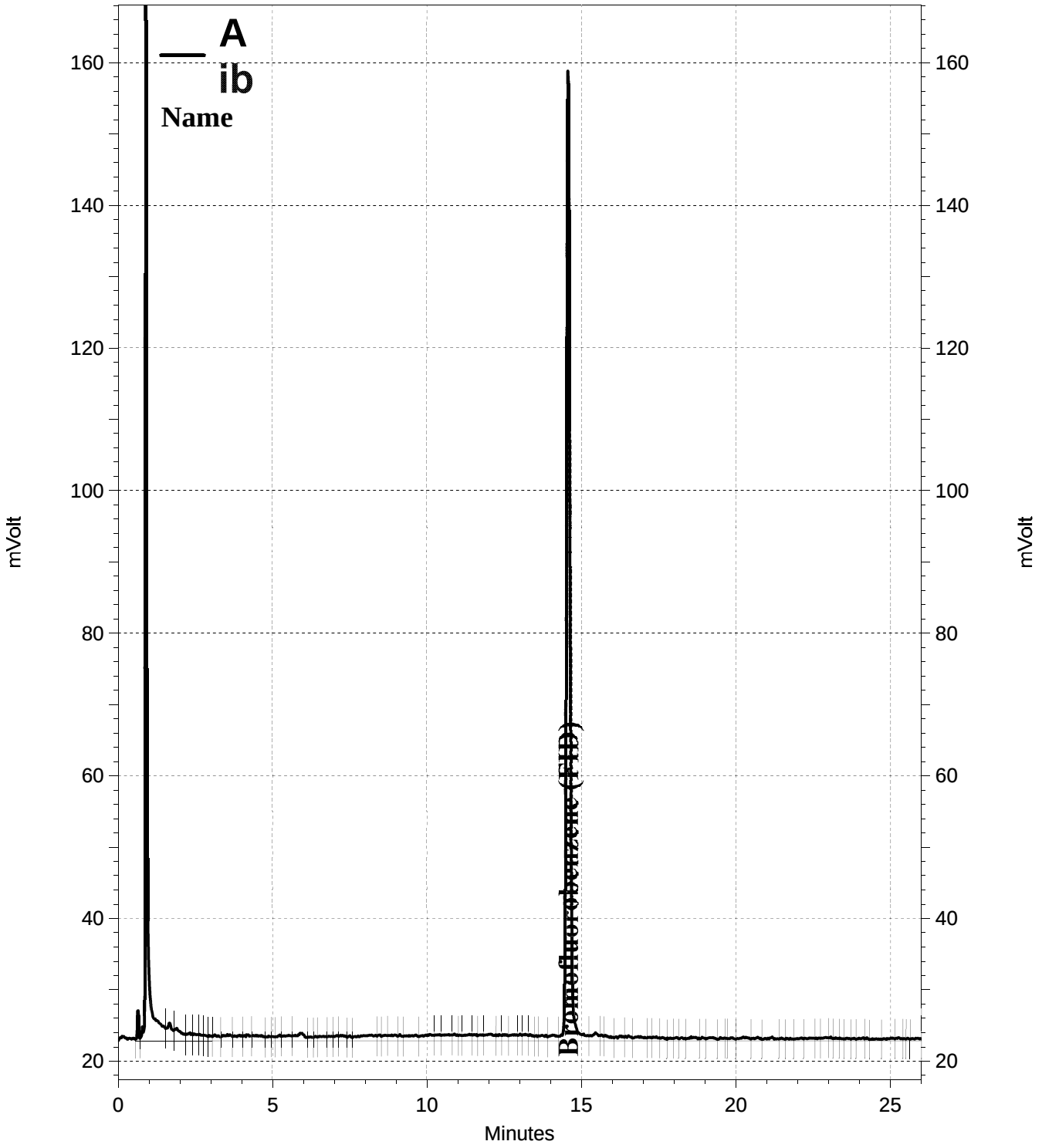

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Instrument: GC05 Vial: N/A Operator: lims2k3\tvh3
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Software Version 3.1.7
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Analysis Date: 3/28/2017 12:35:09 PM
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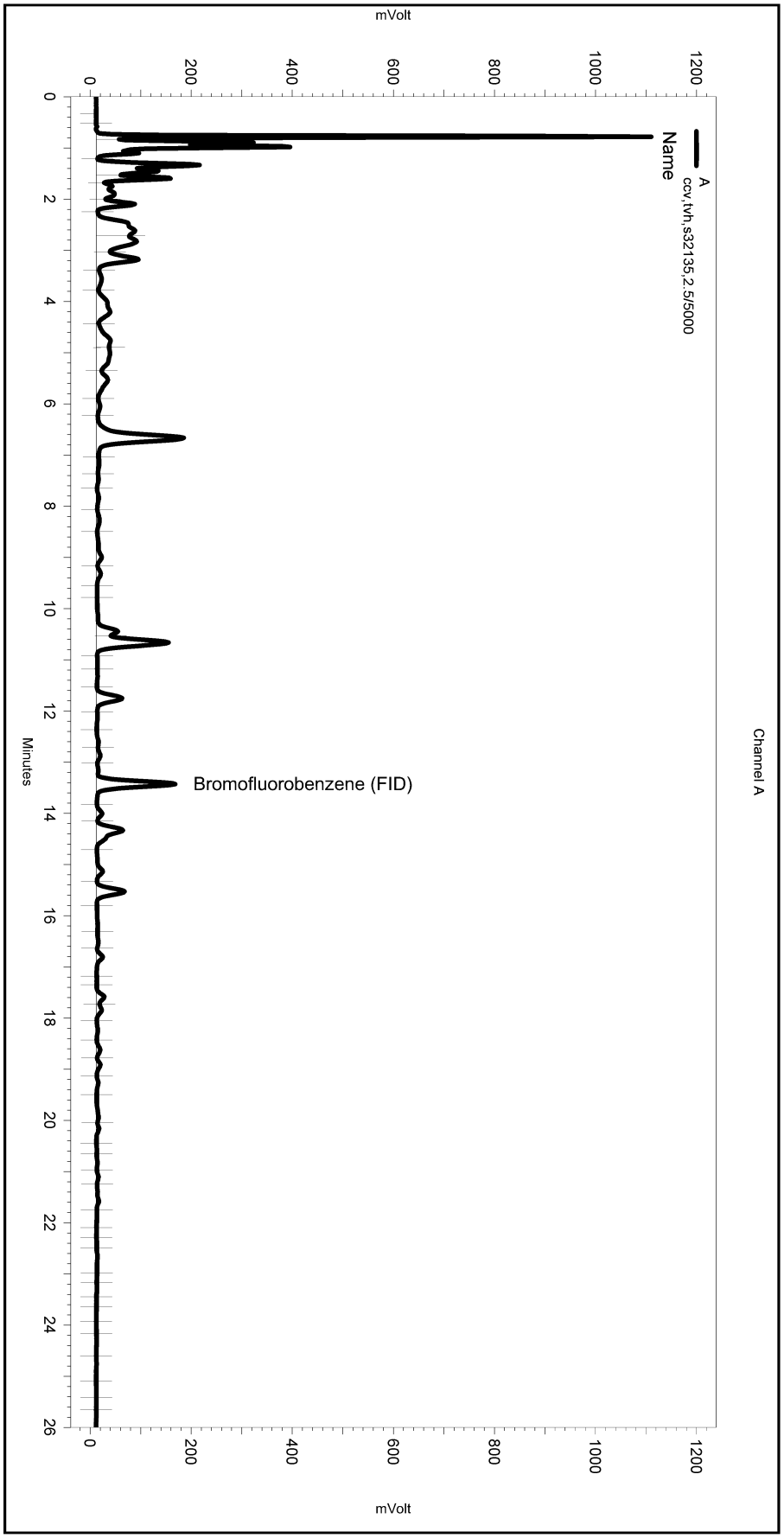
Vial & pH or Core ID: {Data Description}



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Manual Integration Fixes

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Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17
Diln Fac:	1.000	Prepared:	03/27/17
Batch#:	245976		

Field ID: MW-2 Lab ID: 287261-001
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	74 Y	50

Surrogate	%REC	Limits
o-Terphenyl	108	52-138

Field ID: MW-10 Lab ID: 287261-002
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	105	52-138

Field ID: MW-7 Lab ID: 287261-003
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	680 Y	50

Surrogate	%REC	Limits
o-Terphenyl	102	52-138

Field ID: MW-12 Lab ID: 287261-004
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	84	52-138

Field ID: MW-9 Lab ID: 287261-005
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	1,100 Y	50

Surrogate	%REC	Limits
o-Terphenyl	100	52-138

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/20/17
Units:	ug/L	Received:	03/22/17
Diln Fac:	1.000	Prepared:	03/27/17
Batch#:	245976		

Field ID: MW-8 Lab ID: 287261-006
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	950 Y	50

Surrogate	%REC	Limits
o-Terphenyl	95	52-138

Field ID: MW-11 Lab ID: 287261-007
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	98	52-138

Field ID: SW-2 Lab ID: 287261-008
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	102	52-138

Field ID: SW-3 Lab ID: 287261-009
Type: SAMPLE Analyzed: 03/29/17

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	103	52-138

Type: BLANK Analyzed: 03/28/17
Lab ID: QC878729

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	108	52-138

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 #:	287261	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	245976
Units:	ug/L	Prepared:	03/27/17
Diln Fac:	1.000	Analyzed:	03/28/17

Type: BS Lab ID: QC878730

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,158	86	52-124

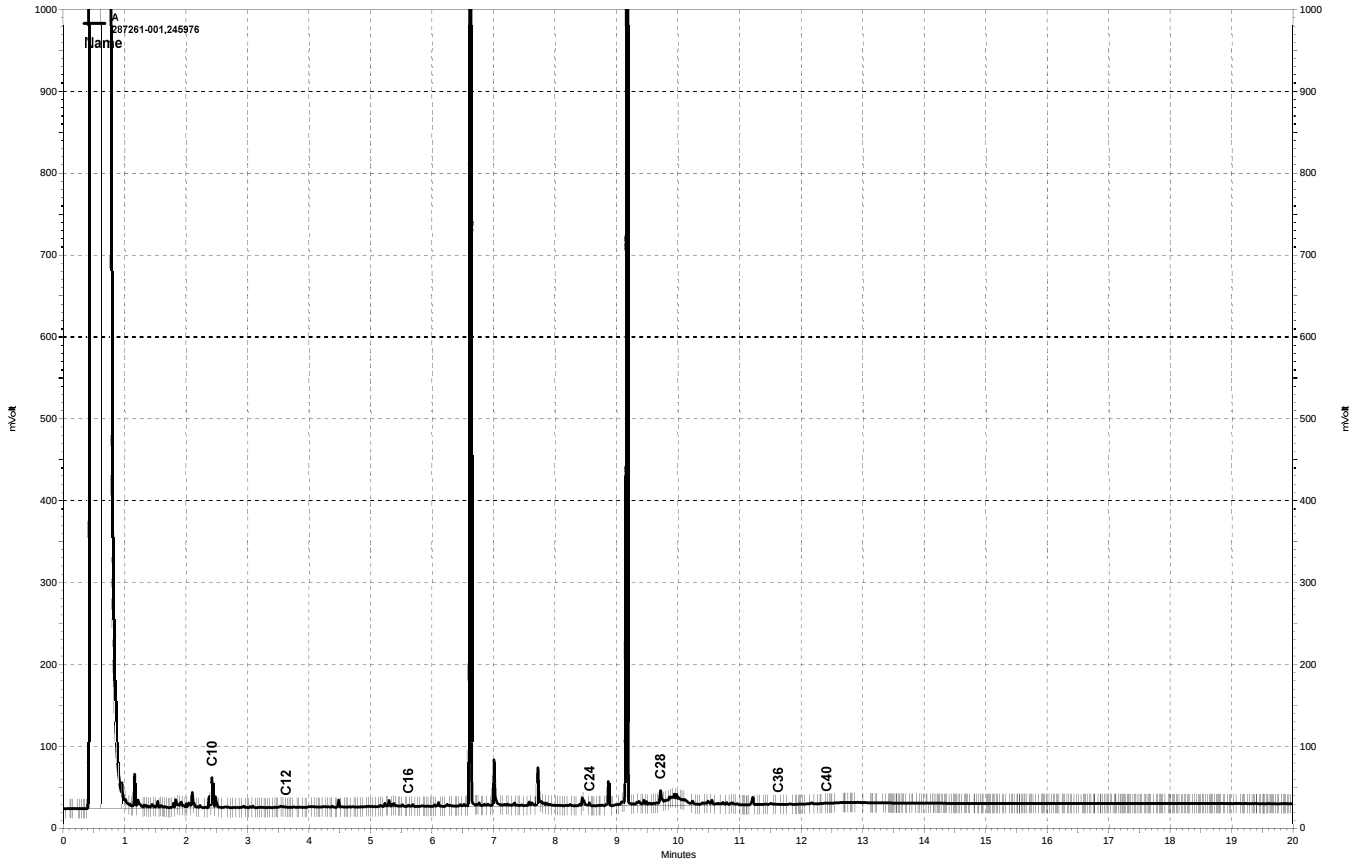
Surrogate	%REC	Limits
o-Terphenyl	105	52-138

Type: BSD Lab ID: QC878731

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,316	93	52-124	7	34

Surrogate	%REC	Limits
o-Terphenyl	112	52-138

RPD= Relative Percent Difference



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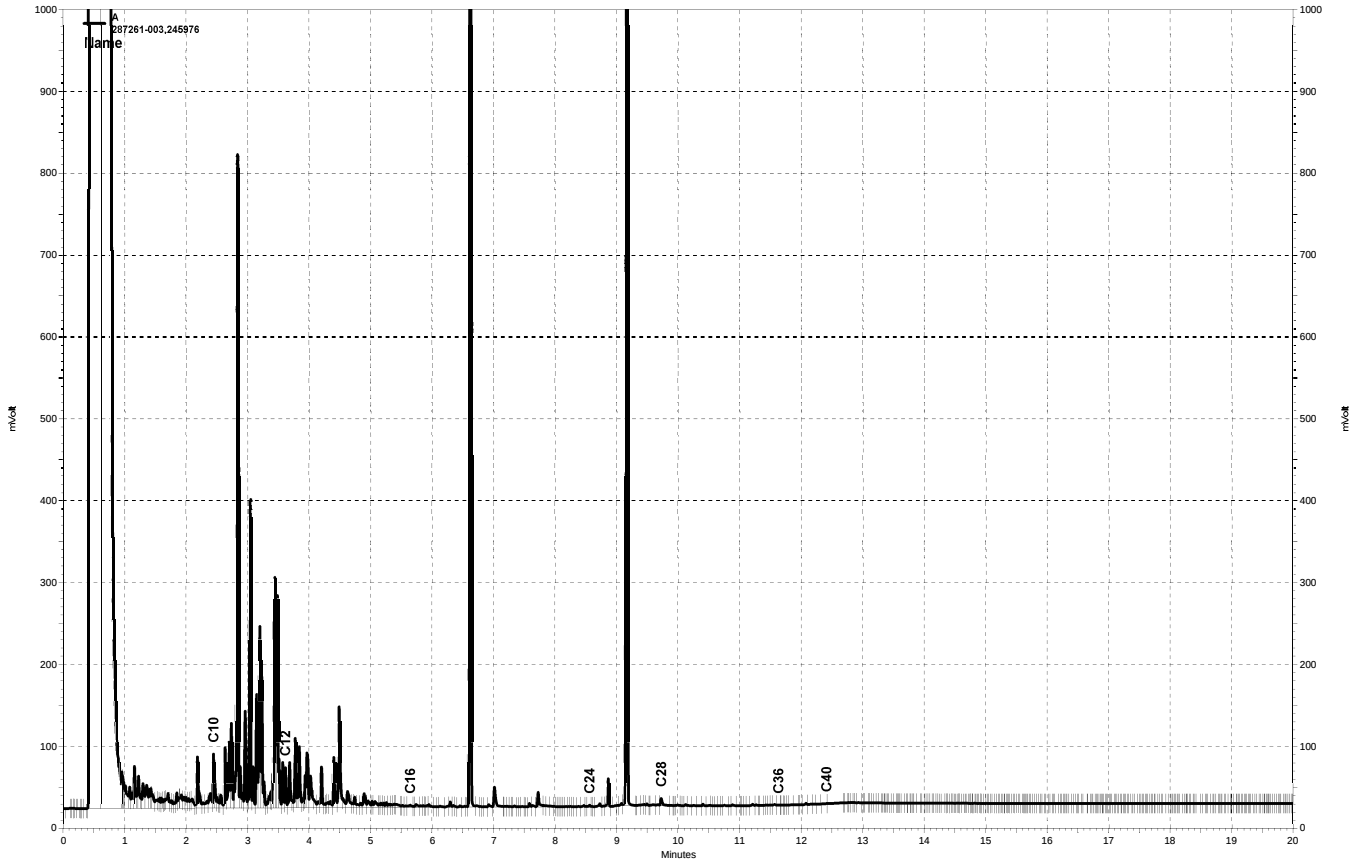

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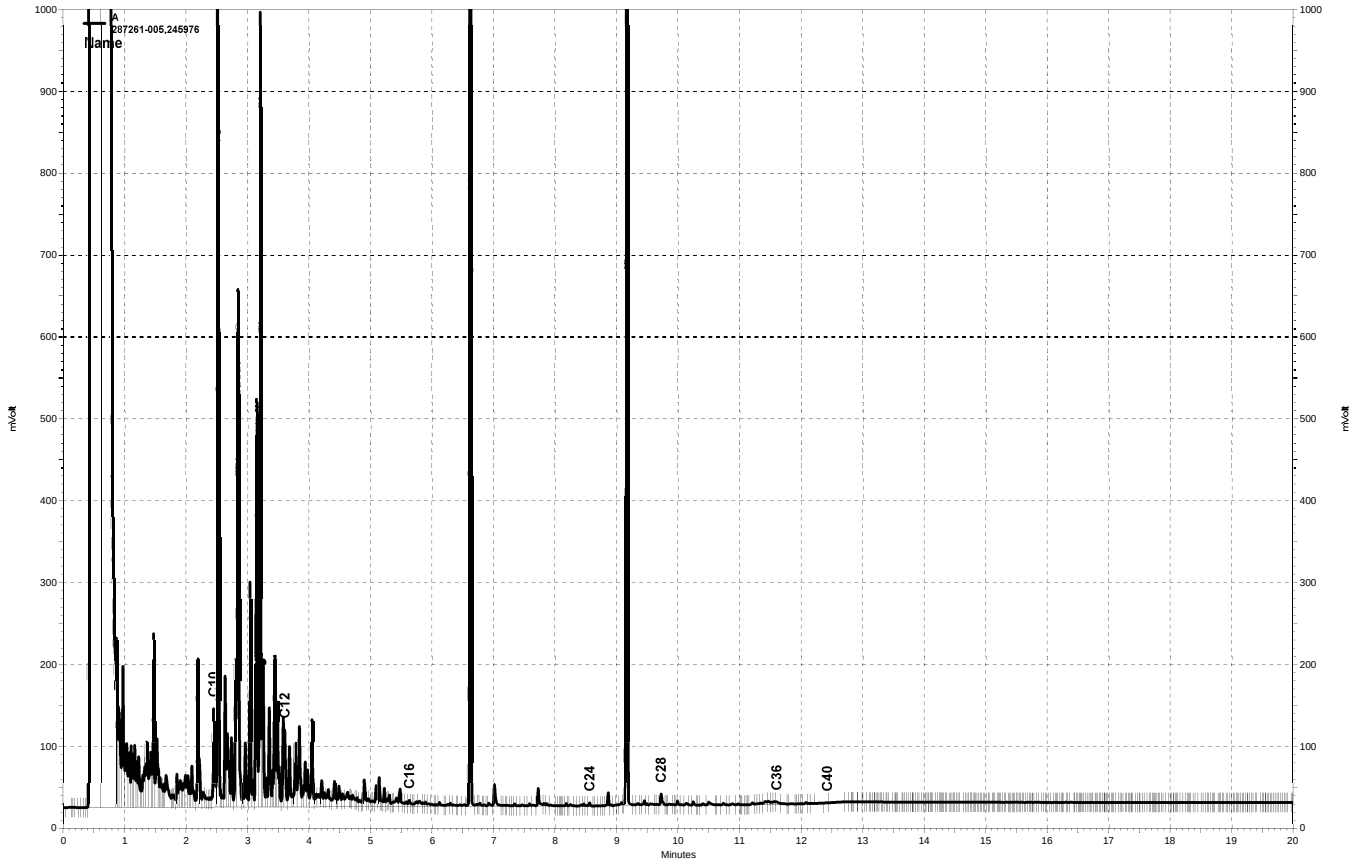

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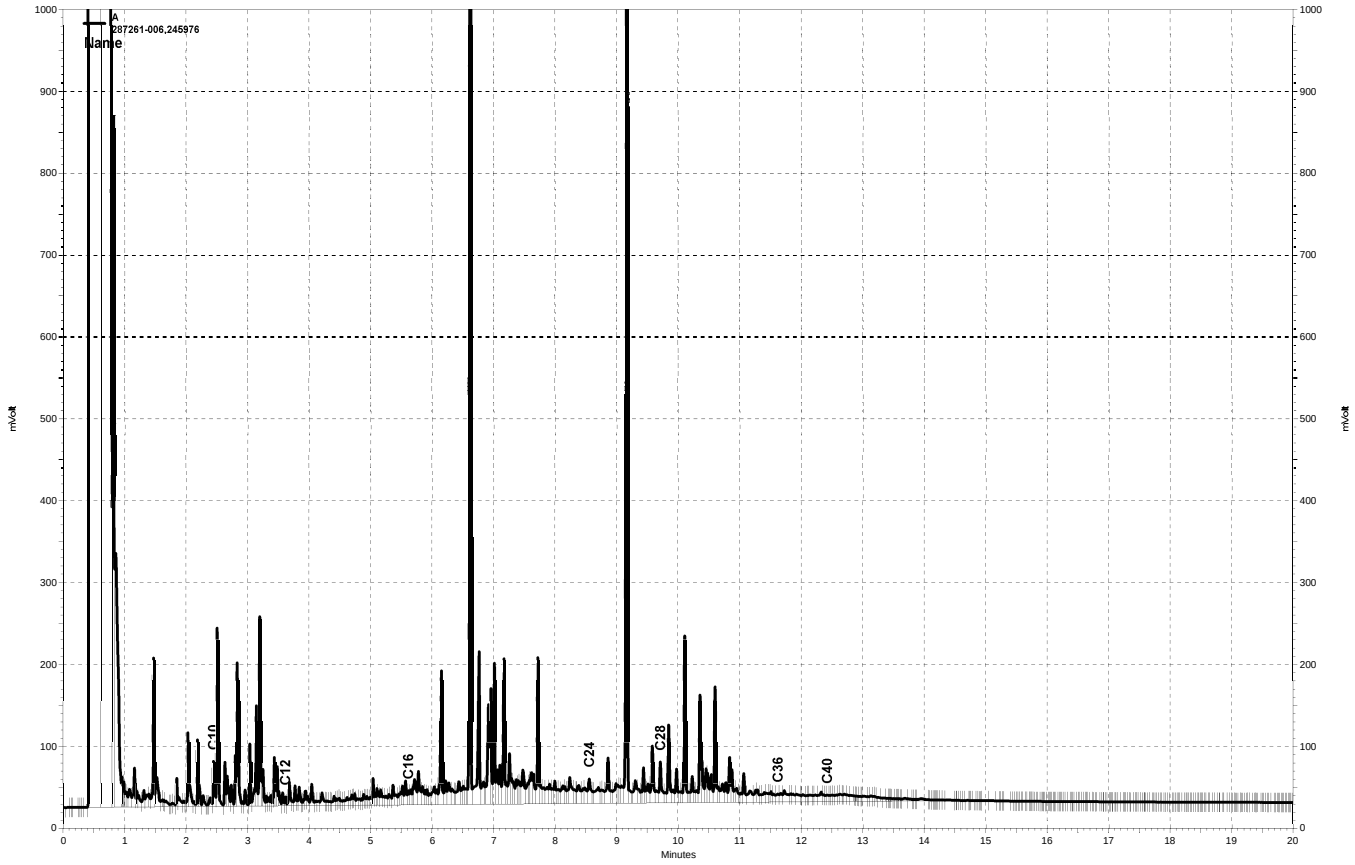

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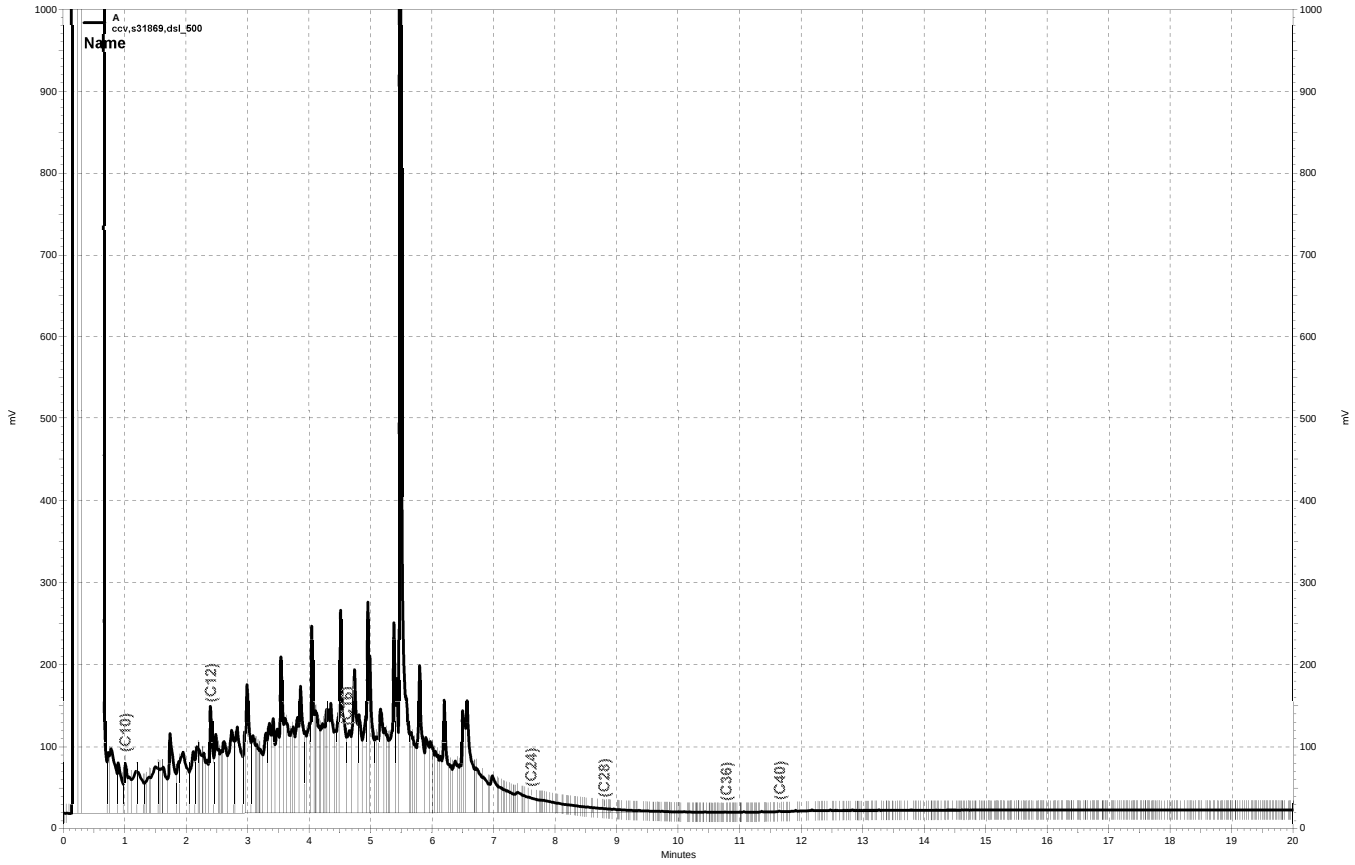

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APPENDIX D

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**

Well MW-2 Continued

Well MW-2									
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**

Well MW-2 Continued

Well MW-2									
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**	**-**	*<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*	—	**3.1**
61	Sep-11	**780**	**810**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
62	Mar-12	**460**	**610**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
63	Sep-12	**160**	**190**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
64	Mar-13	**470**	**810**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
65	Oct-13	**120**	**67**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	**2.3**
66	Mar-14	**320**	**290**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
67	Sep-14	**610**	**480**	*<0.5*	**1**	**4.7**	**1.9**	**7.6**	**3.7**
68	Mar-15	**370**	**450**	<0.5	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
69	Sep-15	**790**	**980**	*<0.5*	**0.6**	*<0.5*	**3.3**	—	*<2.0*
70	Mar-16	*< 50*	*< 50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
71	Sep-16	**410**	**400**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<2.0*
72	Mar-17	*<50*	74 Y	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<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**

Well MW-4 Continued

Well MW-4									
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*

Well MW-7 Continued

Well MW-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*
47	Mar-13	**6,000**	**3,300**	*<0.5*	*<0.5*	**82**	*<0.5*	**82**	*<2.0*
48	Oct-13	**6,400**	**6,000**	**35**	*<0.5*	**75**	**5.10**	**115**	*<2.0*
49	Dec-13	**6,000**	**4,200**	*<0.5*	*<0.5*	**100**	*<0.5*	**100**	*<2.0*
50	Mar-14	**7,500**	**4,900**	*<0.5*	*<0.5*	**130**	**2.0**	**132**	*<2.0*
51	Jun-14	**3,400**	**9,100**	*<0.5*	*<0.5*	**170**	**6.9**	**177**	*<2.0*
52	Sep-14	**6,500**	**6,000**	*<0.5*	*<0.5*	**150**	**5.1**	**155**	*<2.0*
53	Mar-15	**7,700**	**3,200**	*<0.5*	*<0.5*	**91**	*<0.5*	**91**	*<2.0*
54	Sep-15	**6,800**	**2,800**	*<0.5*	*<0.5*	**85**	*<0.5*	**85**	*<2.0*
55	Dec-15	**4,700**	**2,100**	*<0.5*	*<0.5*	**64**	*<0.5*	**64**	**43**
56	Mar-16	**1,500**	**850**	*<0.5*	*<0.5*	**12**	*<0.5*	**12**	*<2.0*
57	Sep-16	**6,800**	**2,100**	**69**	*<0.5*	*<0.5*	**5.3**	**74.3**	*<2.0*
58	Mar-17	**830**	**680**	**1.9**	*<0.5*	*<0.5*	*<0.5*	1.9	*<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**

Well MW-8 Continued

Well MW-8									
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**
47	Mar-13	**840**	**690**	**5.6**	*<0.5*	**47**	**9.9**	**62.51**	**15**
48	Oct-13	**150**	**140**	*<0.5*	*<0.5*	**3.3**	*<0.5*	**3.3**	*<2.0*
49	Mar-14	**79**	**120**	*<0.5*	*<0.5*	2.1	*<0.5*	**2.1**	*11*
50	Sep-14	**57**	**66**	*<0.5*	*<0.5*	**1.5**	**0.66**	**2.16**	**11**
51	Mar-15	**190**	**68**	*<0.5*	*<0.5*	**1.6**	*<0.5*	**1.6**	**11**
52	Sep-15	**<50**	**97**	*<0.5*	*<0.5*	**<0.5**	*<0.5*	**0**	**6**
53	Mar-16	**170**	**290**	**0.53**	*<0.5*	**3.6**	**5.52**	**9.65**	**3**
54	Sep-16	**220**	**430**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	**4.5**
55	Mar-17	**370**	**950**	*0.73*	*<0.5*	**19**	1.15	**20.88**	4.4

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*

Well MW-9 Continued

Well MW-9									
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**

Well MW-9 Continued

Well MW-9									
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*
44	Mar-13	**4,000**	**2,400**	**9.1**	<0.5	**73**	**9.7**	**91.8**	*<2.0*
45	Oct-13	**3,200**	**1,500**	**20**	<0.5	**51**	**6.6**	**77.6**	*<2.0*
49	Dec-13	**3,000**	**2,700**	**22**	*<0.5*	**120**	**4.6**	**147**	*<2.0*
50	Mar-14	**3,100**	**5,200**	**49**	*<0.5*	**420**	**83**	**552**	*<2.0*
51	Jun-14	**12,000**	**2,600**	**54**	<0.5	**610**	**160**	**824**	*<2.0*
52	Sep-14	**17,000**	**5,800**	**65**	**13.0**	**51**	**204**	**333**	*<2.0*
53	Mar-15	**4,300**	**2,000**	**24**	*<0.5*	**150**	**19**	**193**	*<2.0*
54	Sep-15	**3,000**	**950**	**25**	*<0.5*	**59**	**3**	**87**	**46**
55	Dec-15	**2,700**	**1,400**	**9.6**	*<0.5*	*<8.3*	*<8.3*	**10**	*<33*
56	Mar-16	**4,000**	**2,600**	**18.0**	*<8.3*	**84**	*<8.3*	**102**	*<33*
57	Sep-16	**120,000**	**6,400**	**550**	*<8.3*	**7,600**	**490**	**8,640**	*<33*
58	Mar-17	**3,100**	**1,100**	**34**	*<0.5*	**570**	16	**620**	*<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**

Well MW-10 Continued

Well MW-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*
44	Mar-13	**310**	**58**	*<0.5*	*<0.5*	**7.3**	**7.94**	**15.2**	*<2.0*
45	Oct-13	**69**	*<50*	*<0.5*	*<0.5*	**0.84**	*<0.5*	**0.8**	**4.8**
46	Dec-13	*<52*	**220**	*<0.5*	**0.61**	**2**	**1.5**	**4.1**	**3.7**
47	Mar-14	*<50*	87	*<0.5*	*<0.5*	**0.51**	*<0.5*	**0.5**	**3.7**
48	Jun-14	**55**	<50	*<0.5*	**0.61**	**2**	**1.5**	**4.1**	*<2.0*
49	Sep-14	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.0	**4.5**
50	Mar-15	**61**	*<49*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.0	**3.3**
51	Sep-15	*<50*	*<49*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.0	**2.6**
52	Dec-15	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.0	**2.6**
53	Mar-16	**90**	**110**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0.0	**<2.0**
54	Sep-16	**63**	**120**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*0*	**4.4**
55	Mar-17	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	4.7

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*

Well MW-11 Continued

Well MW-11									
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*
44	Mar-13	**1,500**	**1,900**	**4.8**	*<0.5*	**22**	*<0.5*	**26.8**	*<2.0*
45	Oct-13	**3,000**	**1,600**	**14**	*<0.5*	**35**	*<0.5*	**49**	*<2.0*
46	Dec-13	**2,500**	**2,000**	*<0.5*	**13**	*<0.5*	**0.68**	**13.7**	*<2.0*
47	Mar-14	**3,000**	**2,800**	**13**	*<0.5*	**34**	*<0.5*	**47.0**	*<2.0*
48	Jun-14	**2,300**	**1,400**	**6**	*<0.5*	**20**	**6.1**	**32.1**	*<2.0*
49	Sep-14	**190**	**3,400**	**6.8**	*<0.5*	***26***	*<0.5*	**32.8**	**3.7**
50	Mar-15	**1,300**	**1,500**	*<0.5*	*<0.5*	**8.4**	*<0.5*	**8.4**	*<2.0*
51	Sep-15	**2,500**	**1,800**	*<0.5*	*<0.5*	**25**	*<0.5*	**25.0**	*24.0*
52	Dec-15	**3,100**	**1,600**	*<0.5*	*<0.5*	**30**	*<0.5*	**30.0**	*<2.0*
53	Mar-16	**720**	**610**	*<0.5*	*<0.5*	**6.1**	*<0.5*	**6.1**	*<2.0*
54	Sep-16	**1,500**	**1,500**	*<0.5*	*<0.5*	**11**	**0.62**	**11.6**	*<2.0*
55	Mar-17	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<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*
26	Mar-13	**430**	**200**	*<0.5*	*<0.5*	**1.2**	*<0.5*	**1.2**	**7.1**
27	Oct-13	**350**	**200**	*<0.5*	*<0.5*	**0.92**	*<0.5*	**0.92**	*<2.0*
28	Dec-13	**290**	**210**	*<0.5*	*<0.5*	**0.68**	*<0.5*	**0.68**	**2.5**
29	Mar-14	*<50*	**62**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	**2.8**
30	Jun-14	**2,300**	**190**	*<0.5*	*<0.5*	**0.65**	*<0.5*	**0.65**	*<2.0*
31	Sep-14	**2,500**	**130**	*<0.5*	**6.8**	**26**	*<0.5*	**32.8**	*<2.0*
32	Mar-15	*<50*	*<49*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<2.0*
33	Sep-15	*<50*	**91**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<2.0*
34	Dec-15	*<50*	*<49*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*2.1*
35	Mar-16	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<2.0*
36	Sep-16	*<50*	**58**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<2.0*
55	Mar-17	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*2.2*

HISTORICAL SURFACE WATER ANALYTICAL RESULTS
REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA
(all concentrations in ug/L, equivalent to parts per billion [ppb])

Surface Water 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.

Surface Water 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*

SW-2 Continued

Surface Water Sampling Location SW-2 (Area of Historical Contaminated Groundwater Discharge)									
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**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*

SW-2 Continued

Surface Water Sampling Location SW-2 (Area of Historical Contaminated Groundwater Discharge)									
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*
59	Mar-13	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
60	Oct-13	*<50*	**930**	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	**4.8**
61	Mar-14	*<50*	<49	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
62	Sep-14	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
63	Mar-15	*<50*	<51	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
64	Sep-15	*NS*	NS	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
65	Mar-16	*<50*	<50	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
66	Sep-16	*NS*	NS	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
67	Mar-17	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*2.8 b*

Surface Water 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*

SW-3 Continued

Surface Water Sampling Location SW-3 (Downstream of Contaminated Groundwater Discharge Location SW-2)									
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*
59	Mar-13	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
60	Oct-13	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
61	Mar-14	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
62	Sep-14	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
63	Mar-15	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
64	Sep-15	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
65	Mar-16	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
66	Sep-16	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*
67	Mar-17	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	0	*<2.0 b*

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

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

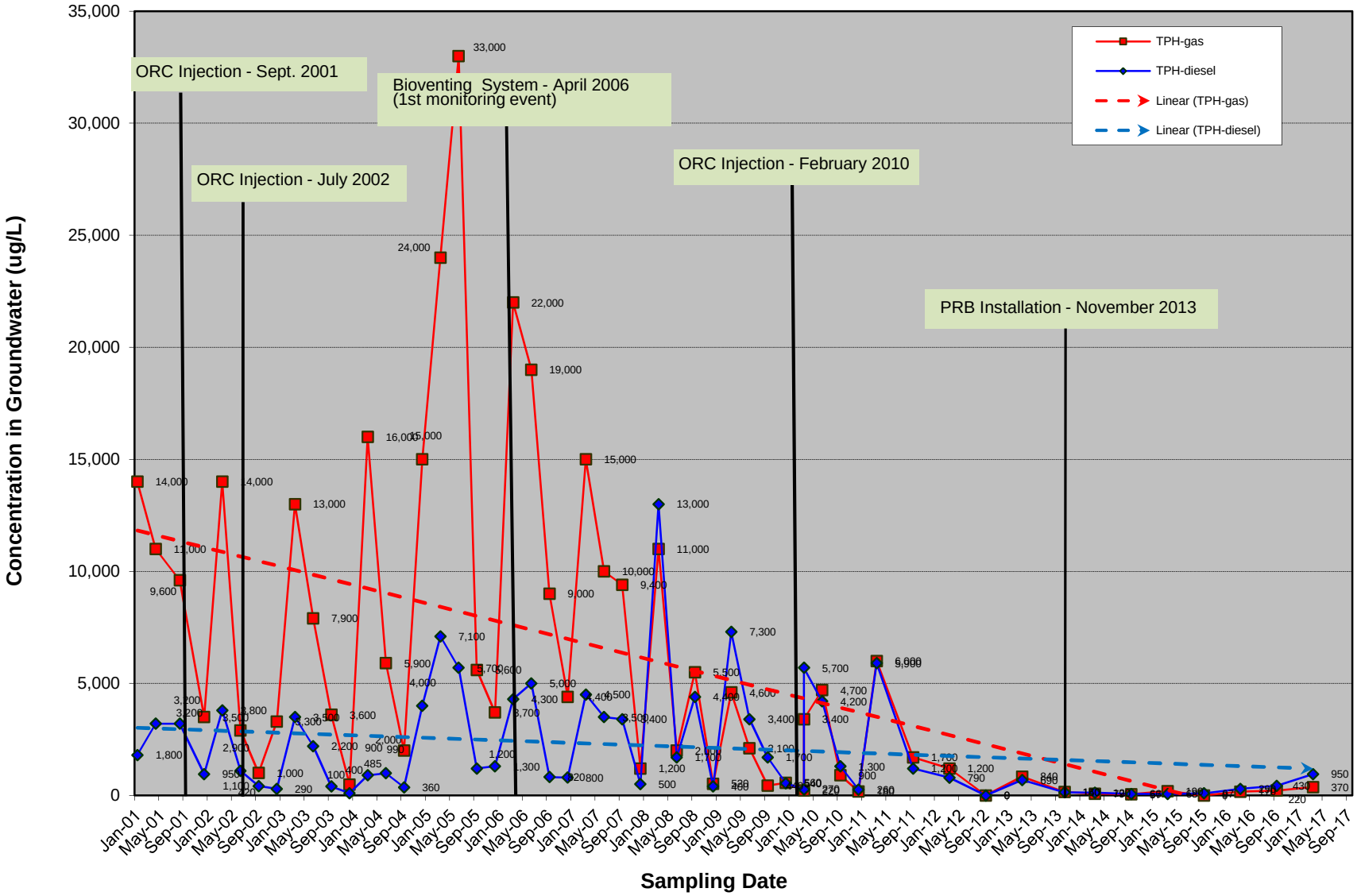

Figure 9: Gasoline and Diesel Hydrochemical Trends: Well MW-11
Redwood Regional Park Service Yard, Oakland, California

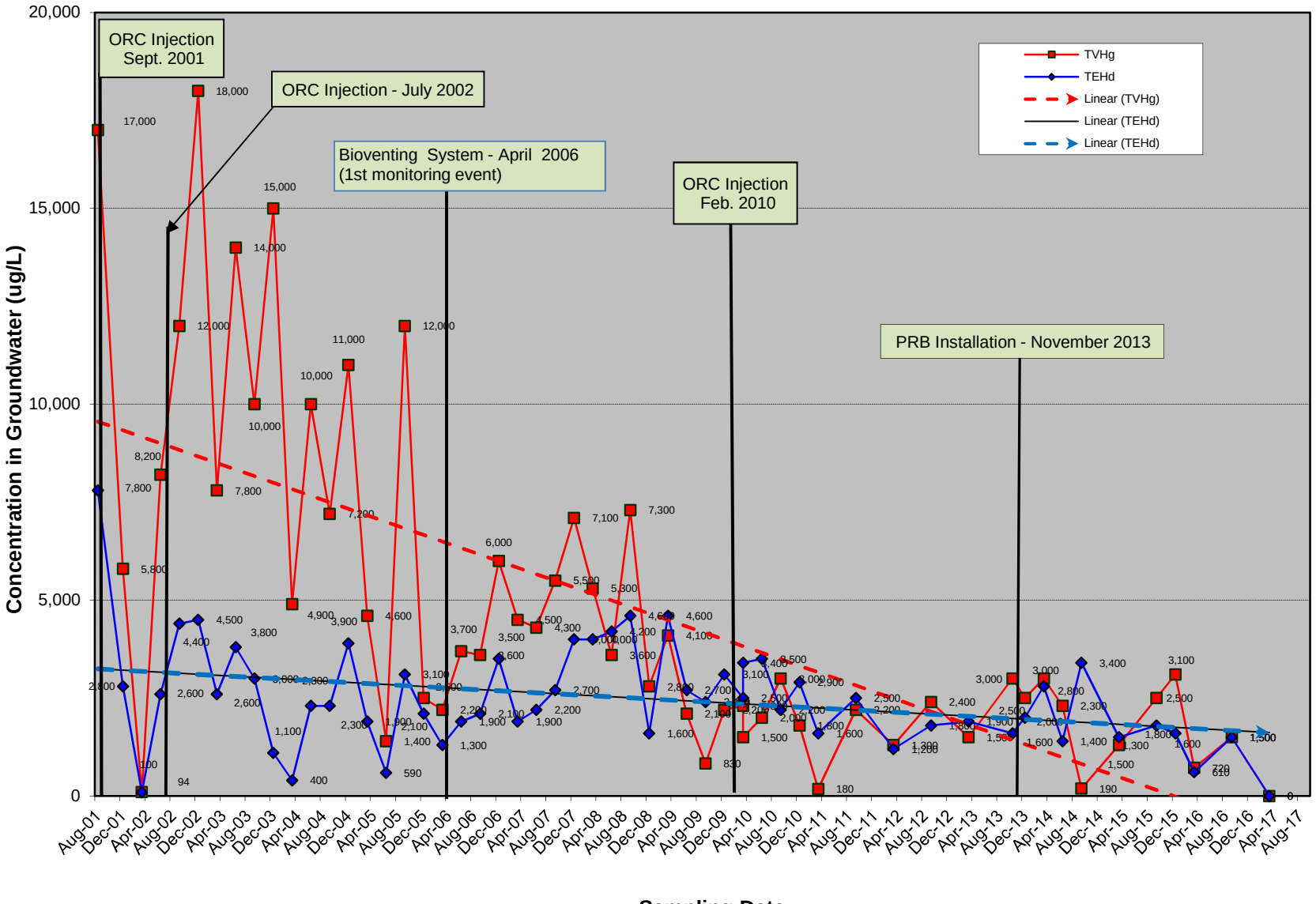

Figure 10: Gasoline and Diesel Hydrochemical Trends: 2001-2017
Well MW-7, Redwood Regional Park Service Yard, Oakland, California

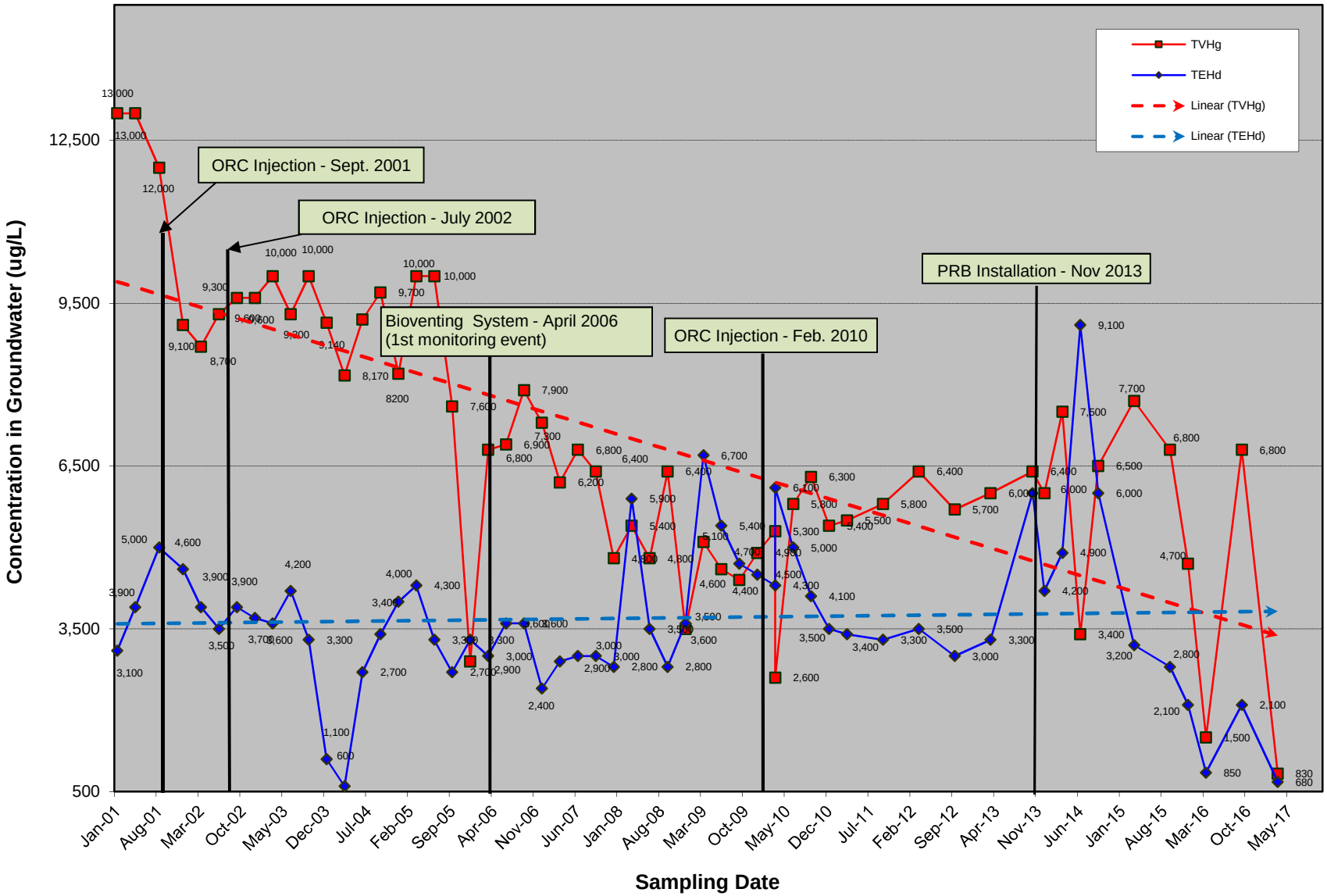

Figure 11: TPH-gasoline and TPH-diesel Hydrochemical Trends: 2001-2017
Well MW-9, Redwood Regional Park Service Yard, Oakland, California

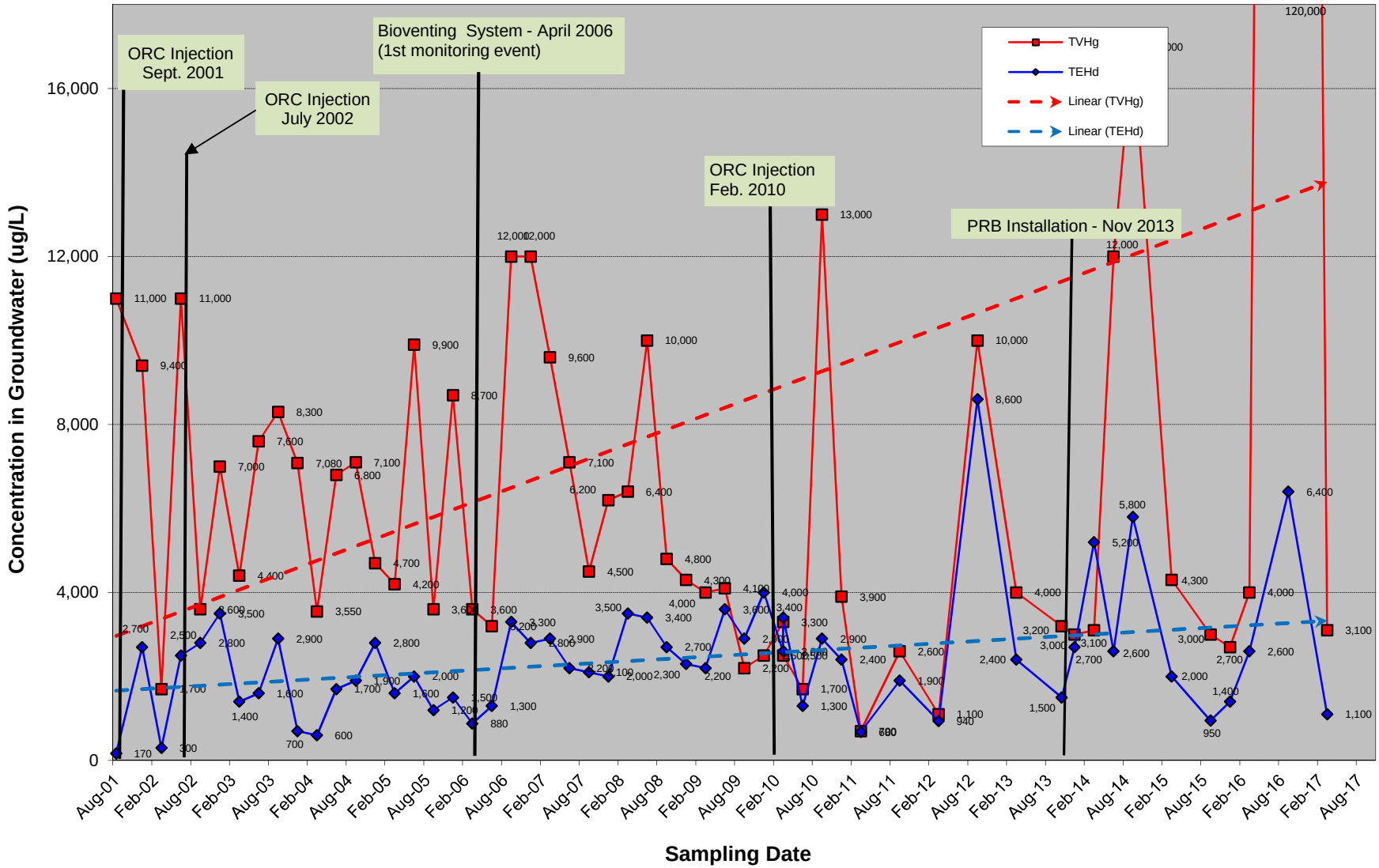

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Figure 12: Gasoline and Diesel Hydrochemical Trends: 2001-2017
Well MW-10, Redwood Regional Park Service Yard, Oakland California

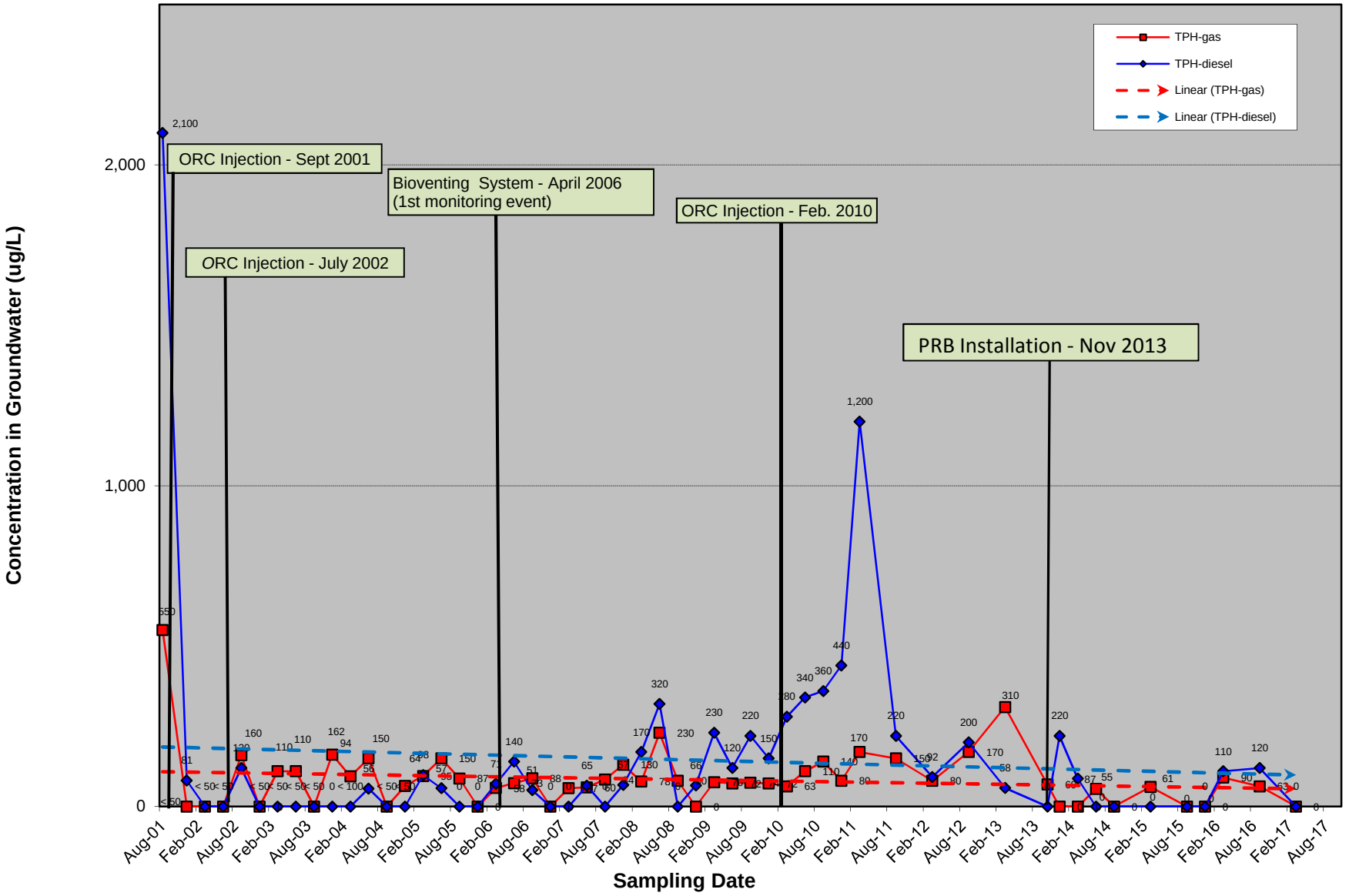

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Figure 13: Gasoline and Diesel Hydrochemical Trends: 2005-2017
Well MW-12, Redwood Regional Park Service Yard, Oakland, California

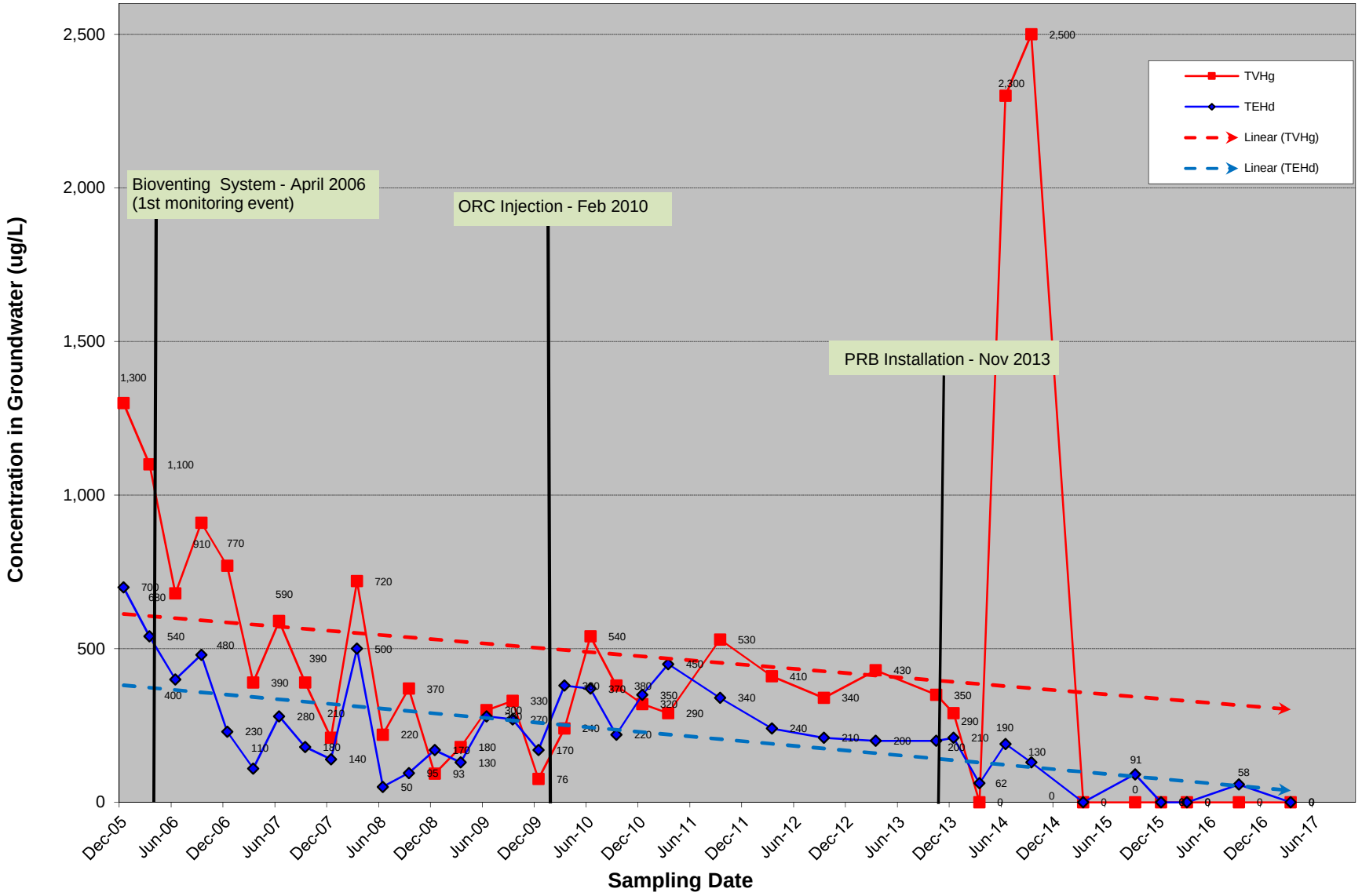

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Figure 7: Gasoline and Diesel Hydrochemical Trends: Well MW-2
Redwood Regional Park Service Yard, Oakland, California