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March 21, 2013

Mr. Mark Detterman
Alameda County Health Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: Conceptual Site Model and Request for Low-Threat Case Closure
1400 Powell Street, Emeryville, California
Fuel Leak Case No.: RO0000067

Dear Mr. Detterman,

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have any questions or need additional information, please contact me at (925) 790-6270.

Sincerely,

Roya Kambin
Union Oil of California – Project Manager

Attachment
Conceptual Site Model and Request for Low-Threat Case Closure Report

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Union Oil Company of California

Conceptual Site Model and Request for Low-Threat Case Closure

Former 76 Service Station No. 3737
1400 Powell Street
Emeryville, California

March 21, 2013

ARCADIS

Steve Rice
Environmental Scientist

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Certified Project Manager

Conceptual Site Model

Union Oil
Former 76 Service Station No. 3737
1400 Powell Street
Emeryville, California

Prepared for:
Union Oil Company of California

Prepared by:
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Our Ref.:
B0047937.0000.00005

Date:
March 21, 2013

ARCADIS

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1. Introduction and Purpose

On behalf of Chevron Environmental Management Company, for itself and as Attorney-in-Fact for Union Oil Company of California, ARCADIS U.S., Inc. (ARCADIS) is pleased to submit this Conceptual Site Model and Request for Low-Threat Case Closure (CSM) for the former 76 Service Station #3737, located at 1400 Powell Street in Emeryville, California (site; Figure 1). ARCADIS prepared this CSM to assist the Alameda County Local Oversight Program (LOP) with evaluating the site for low-threat closure under the State Water Resources Control Board's (SWRCB's) resolution 2012-0016 adopted on May 1, 2012, otherwise known as the Low-Threat Underground Storage Tank Case Closure Policy (Low-Threat Closure Policy; SWRCB 2012a).

This CSM includes a comprehensive site assessment and remediation history, regional and site-specific geology and hydrogeology, review of the soil and groundwater conditions onsite and offsite (including the distribution of constituents of potential concern [COPCs]), and evaluation of human health exposure from site-related COPCs. Based on the information provided in the following sections, the site meets general and media-specific criteria of the Low-Threat Closure Policy (SWRCB 2012a); therefore, ARCADIS requests that the site be considered for low-threat closure.

2. Site Description and Vicinity

The site was a former 76 brand service station and is currently an operating Chevron brand service station located on the northeast corner of the intersection of Powell Street and Peladeau Street, at 1400 Powell Street in Emeryville, California (Figure 1).

The site is bordered by Powell Street to the south, Peladeau Street to the west, commercial properties to the north, and Hollis Street to the east. Commercial properties also exist south, west, and east of the site, across Powell, Peladeau, and Hollis streets, respectively. According to the City of Emeryville Planning & Building Department's (CEPBD) Land Use Diagram (CEPBD 2012), the site is zoned as mixed use non-residential areas. Properties to the south and southeast of the site are zoned as mixed use residential areas (CEPBD 2012). The property to the southwest is zoned for industrial use. Properties to the east, north, and northeast of the site are zoned as office/technology areas (CEPBD 2012). A strip of land, approximately 20 feet wide, is zoned for park/open space, and crosses the intersection of Powell Street and Hollis Street in a southwest to northeast direction (CEPBD 2012).

The current station facility includes three 10,000 gallon underground storage tanks (USTs), four dispenser islands, and a station building. A propane fueling station is located in the northwest portion of the property. The site is currently surrounded by commercial development, including the Emeryville Industrial Court redevelopment located north of the station, which was excavated to approximately 12 to 15 feet below ground surface (bgs) in 2006 (Conestoga-Rovers & Associates [CRA] 2012). Figure 2 depicts the site and neighboring properties. A site plan is presented on Figure 3.

2.1 Historical Land Use and Nearby Properties

The site was historically owned (1917 to 1964) and operated by Union Oil Company of California as a petroleum products distribution facility. The distribution plant was bound by Powell Street to the south, 59th Street to the north, Peladeau Street to the west, and Hollis Street to the east. The adjacent Emeryville Industrial Court Property (5885 Hollis Street) to the north of the site was also part of the Union Oil distribution facility. This distribution plant contained numerous aboveground storage tanks (ASTs), USTs, a garage along Hollis Street, and an auto repair shop along Peladeau Street. Up to 40,000 gallons of lubrication oil were reportedly stored in aboveground tanks (CRA 2012). The service station was constructed on the southern portion of the former distribution plant, which contained eight ASTs with a combined storage capacity of 624,000 gallons of refined oil and gasoline products on the west portion of the site and an oil warehouse, oil pump, and asphalt staging area on the east portion of the site (Figure 3).

Between 1964 and 1974, the Intermountain Terminal Company owned the parcel (Alameda County Environmental Health [ACEH] 2012b). Several other environmental cases are located near the site and are described in detail below (Figure 2).

2.1.1 Emeryville Industrial Court (5885 Hollis Street)

In 1985, the Marks Management Company purchased the majority of the property that is now 5885 Hollis Street. The property, known as the Emeryville Industrial Court, subsequently appears to have been leased to multiple tenants. Hazardous materials reported to have been associated with these businesses included (among other incidental chemicals) paints, thinners, lacquers, inks, solvents (1,1,1-trichloroethane and methylene chloride), oil storage drums (new and used), drummed used oil filters, one 1,000-gallon used motor oil AST, and one 10,000-gallon gasoline UST. The UST is reported to have been located in the “front yard” of 5805 Hollis and to have been removed in 1990. No records are available for that event; however, the property

owners of the parcel reported that soil contamination was noted. The contaminated soil was disposed of at a regulated landfill. From March through June 2006, the entire property was excavated to a total depth of approximately 12 to 15 feet bgs to prepare the foundation of the building that currently occupies the site (Antea Group [Antea] 2011). Approximately 630,500 gallons of groundwater were extracted and treated to accommodate the excavation activities (Pacific States Environmental Contractors [PSEC] 2006).

2.1.2 Former Chevron Asphalt Plant and Bulk Terminal

A former Chevron bulk asphalt plant and bulk terminal is located near the site, to the west, at 1520 Powell Street. The plant operated from the early 1950s until June 1987. The 3-acre plant is bordered to the east and south by Horton (formerly Landregan) and Powell streets, respectively and to the west by Southern Pacific Railroad and gas pipeline right-of-ways. The northwestern portion of the plant property was used as a storage and transfer facility for petroleum products. Along the eastern margin of the plant property were storage, garage, and office buildings. In the southwest corner of the plant property was an office/laboratory building, in which various pavement products were researched and marketed. A portion of the plant property was leased by Chevron to a solvent handler during this same period, but information regarding this tenant's use and storage of onsite chemicals is not available. The northern portion of the plant property has been redeveloped as an Amtrak passenger terminal, and the southern portion of the plant property has been redeveloped with a parking/residential structure (Cambria 2006).

Remaining groundwater impacts near the former Chevron asphalt plant are limited to the Powell Street Release Area (Figure 2). Historical groundwater samples collected near the former Chevron Asphalt Plant property is discussed in Section 6.

2.1.3 Site B (1525 and 1535 Powell Street)

Site B is located further downgradient of the Powell Street Release Area to the southwest, at the intersection of Shellmound Street and Powell Street. The property comprised five separate properties purchased by the city of Emeryville in 2007 (EKI 2004). Environmental cleanup at the site is currently conducted by EKI under the direction of the city of Emeryville and the Department of Toxic Substances Control (DTSC).

COPCs in groundwater at Site B include arsenic, antimony, total petroleum hydrocarbons (TPH), and volatile organic compounds (VOCs). COPCs in soil include arsenic, antimony, lead, TPH, and sulfides (secondary standard – nuisance odor). Site soil has been remediated by excavations completed from 2007 to 2009.

In 2011, a pilot test was completed at Site B as well as in the Powell Street Release Area (Figure 2) to evaluate enhanced reductive dechlorination, via emulsified vegetable oil. Results indicate that this would be an effective remedial option. EKI has completed at least three subsequent injections and continues to monitor the progress of remediation under supervision by the DTSC.

2.1.4 Westinghouse Electric Parcel 1 (5815-5899 Peladeau Street)

The Westinghouse Electric Parcel encompasses approximately 69,000 square feet and is located at 59th Street and Horton Street (formerly Landregan Street) in Emeryville, California. CBS Corporation, formerly Westinghouse, is the current owner. Wareham Development currently leases the parcel for surface parking.

COPCs in soil at the Westinghouse Electric Parcel include polychlorinated biphenyls, VOCs, semivolatile organic compounds (SVOCs), arsenic, and lead. COPCs in groundwater include VOCs, SVOCs, arsenic, and lead.

In 1984, Westinghouse entered into the Consent Agreement and Final Order with the United States Environmental Protection Agency (USEPA). In 1985, as required by the Consent Agreement, Westinghouse constructed a subsurface slurry wall encompassing approximately 50,000 square feet of the parcel and a surface cap over the entire parcel. The slurry wall and surface cap remain in place.

2.2 Topography and Site Elevation

According to the U.S. Geological Survey (USGS) 7.5-minute topographic map for the Oakland West California quadrant dated 1993, the site is located at an approximate elevation of 15 feet above mean sea level (amsl) (USGS 1993).

2.3 Geography

The site is located in the City of Emeryville on the east shore of San Francisco Bay in Alameda County, bordered by the City of Berkeley to the north and the City of Oakland

to the east and south (City of Emeryville 2012). San Francisco Bay is located approximately 0.5 mile west of the site.

2.4 Surface-Water Drainage

The nearest surface-water body to the site is Temescal Creek, which is located approximately 1,500 feet southwest of the site. In addition, the San Francisco Bay is located approximately 0.5 mile west of the site. Based on the USGS 7.5-minute topographic map for the Oakland West California quadrant dated 1993 (USGS 1993), surface water at the site is generally expected to drain to the west of the site into adjacent storm drains.

2.5 Climate

According to the Western Regional Climate Center's (WRCCs) Berkeley, California (040693) weather station, the monthly average temperatures near the site vary from a minimum of 42.7 degrees Fahrenheit (°F) in January to a maximum of 71.8°F in October. Annual average precipitation in the region of the site is approximately 23.41 inches per year (WRCC 2012).

2.6 Vegetation

The site is located in an urban area of Emeryville, California. The site and surrounding areas are almost entirely paved with asphalt or concrete and intermittent landscaping.

3. Geology and Hydrogeology

3.1 Regional Geology

The site is located within the East Bay Alluvial Plain Subbasin (subbasin; California Department of Water Resources [DWR] 2004). The subbasin is bounded to the east by the Franciscan Basement Rock, which underlies the western flank of the Berkeley Hills, to the west by San Francisco Bay, to the north by San Pablo Bay, and to the south by the Niles Creek groundwater basin. The subbasin consists of Quaternary alluvial deposits of the Alameda Formation, including artificial fill, young bay mud, and the San Antonio Formation. The San Antonio Formation is characterized by interbedded silty gravels, silty sand, silty clay, with high-energy sandy gravel deposits (EKI 2007).

3.2 Regional Hydrogeology

The site is located within the subbasin, which is within the Santa Clara Valley Groundwater Basin, in the San Francisco Bay Hydrologic Region. The subbasin is a northwest-trending alluvial plain bounded on the north by San Pablo Bay, on the east by the contact with Franciscan Basement rock, and on the south by the Niles Cone Groundwater Basin. The East Bay Plain Basin extends beneath San Francisco Bay, to the west. Numerous creeks including San Pablo Creek, Wildcat Creek, San Leandro Creek, and San Lorenzo Creek flow from the western slope of the Coast Ranges westward across the plain and into the San Francisco and San Pablo bays. Average precipitation in the subbasin ranges from approximately 17 inches in the southeast to greater than 25 inches along the eastern boundary, most of which occurs between November and March (Delta Environmental Consultants [Delta] 2009).

The subbasin aquifer system consists of unconsolidated sediments of Quaternary age. Deposits include the early Pleistocene Santa Clara Formation, the later Pleistocene Alameda Formation, the early Holocene Temescal Formation, and Artificial Fill. The cumulative thickness of the unconsolidated sediments is approximately 1,000 feet. The average specific yield of the subbasin was calculated to be approximately 6 percent (Delta 2009).

Since the early 1950s, water levels in the deep (more than 500 feet) aquifer in the subbasin have varied between -10 to -140 feet mean sea level (msl). The low water level was reached in approximately 1962. Shallower aquifers have had a less pronounced water level decline. Since 1950, the low water level for aquifers at an approximate depth of 250 feet bgs has been approximately -30 feet msl. Water levels rose approximately 5 feet per year between 1965 and 1980. Water levels have been rising continuously since then, but at a less rapid rate. Since 2000, water levels have been near surface in all aquifers (Delta 2009).

3.3 Site Geology

Boring logs from onsite wells MW-1A through MW-3B indicate that the site is underlain primarily by clayey sand in the eastern portion of the site, clays and silts in the area of the MW-2 cluster, and a mixture of clayey sand and clay in the location of the MW-1 cluster. A perched groundwater zone exists across the site and is most prominent in the location of clusters MW-3 and MW-1, and is weaker in the MW-2 cluster location (Antea 2011). Offsite boring logs MWT-2 and MWT-4 display similar lithology to the MW-1 and MW-3 clusters, which show a perched groundwater zone due to clay lenses

at approximately 5 feet bgs. MWT-1 and MWT-3 boring logs did not show definitive clay or interbedded clay layers at the depths investigated. Well construction details are provided in Table 1. Geologic cross-sections are included in Appendix A. Copies of available boring logs are provided in Appendix B.

3.4 Site Hydrogeology

Groundwater elevations at the site have historically ranged from approximately 11.16 to 14.22 feet amsl (or 7.77 to 4.40 feet below top of casing [btoc]) in the shallow zone and 10.37 to 14.21 feet amsl (or 8.51 to 4.36 feet btoc) in the deep zone. Previous groundwater data indicated a groundwater flow direction predominately to the west-southwest in the shallow zone and to the south in the deep zone. During the July 29, 2012 groundwater monitoring event (which included temporary monitoring well points MWT-1 through MWT-4), the hydraulic gradient was to the west-southwest at 0.055 foot per foot (ft/ft) in the shallow zone and to the south-southeast at 0.04 ft/ft (ARCADIS 2012a) in the deep zone. The groundwater elevation contour map for the shallow zone for the third quarter 2012 sampling event conducted on July 29, 2012 is presented on Figure 4. Groundwater elevation contours for the first quarter 2013 are presented on Figures 7B and 7C, respectively. An analysis of groundwater elevations in well pairs screened in the shallow and deep zones shows that an apparent downward vertical gradient periodically exists between MW-1A and MW-1B. However, as discussed in Section 5.3, detections of groundwater constituents of concern (COCs) in the deep zone are limited to methyl tertiary butyl ether (MTBE) and 1,2-dichloroethane (EDC) at maximum concentrations of 3.4 micrograms per liter (µg/L; MW-2B) and 27 µg/L (MW-1B), indicating that COC concentrations in the deep zone are not being influenced by the apparent downward vertical gradient. Historical water levels are provided in Table 2.

4. Summary of Previous Work

This section summarizes previous work, including release history, site assessment, and site remediation activities. Historical soil data are included as Appendix C and historical groundwater analytical results are included as Appendix D. As mentioned in Section 3.3, available boring log and monitoring well construction diagrams are included as Appendix B.

4.1 Confirmed Release History

In 1990, an unknown first generation 10,000-gallon gasoline UST was reportedly located and removed from the property at 5885 Hollis Street by a tenant (S.B. Thomas). No records were found in regards to removal of the UST. However, according to Marks Management (the previous property owners), soil contamination was noted during the tank removal and the affected soil was disposed of at a regulated landfill (Treadwell & Rollo [Treadwell] 2007). The UST was located upgradient of the current plume location.

In May 1999, fiberglass product lines were removed from the site associated with the former product dispensers and were replaced with upgraded equipment. Additionally, a 550-gallon waste oil UST, located west of the station building, was removed. No holes, leaks, or cracks were visible on the product lines, but soil samples indicated concentrations of petroleum hydrocarbons (TRC Alton Geoscience [TRC] 1999). Two small holes were noted in the top of the waste oil tank, but the bottom was observed to be intact. Strong hydrocarbon odor and staining were noted by ACEH oversight personnel (ACEH 1999). On May 7, 1999, the site was placed in the LOP (Case #: RO0000067) (SWRCB2012c).

Potential historical releases from the former distribution facility operations have not been documented. However, excavation and redevelopment activities have likely mitigated many of the potential groundwater and soil impacts from former operations. Given the timeline of site operations, any remaining hydrocarbon compounds would be highly weathered and would not present a risk to human health or the environment (SWRCB 2012b).

4.2 Site Assessment Activities

4.2.1 Onsite Soil Investigations

Soil investigation activities commenced in 1993, when Geostrategies Inc. (Geostrategies) of Hayward, California oversaw the removal of an oil/water separator. One soil sample was collected from the oil/water separator excavation, located within the service station building footprint. The soil sample was collected approximately 1 foot (4 feet bgs) below the oil/water separator box, which had measured dimensions of 2 feet by 3 feet by 3 feet. Oil and grease and total lead were at concentrations of 67 and 8 parts per million (ppm), respectively. Total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), and benzene, toluene,

ethylbenzene, xylenes (BTEX) compounds were not detected above laboratory reporting limits (LRLs [GeoStrategies 1993]). Analytical results are presented in Appendix C, Table C-1. Locations of soil samples are depicted on Figure 4.

In September 1997, Pacific Environmental Group, Inc. (Pacific) performed a soil gas survey at the site to provide baseline data regarding the occurrence of petroleum hydrocarbon vapors in soil near potential source areas. Six soil gas probes were installed near the USTs, product islands, and product lines to a depth of 3 feet bgs. Two samples were collected near the USTs and four were collected at the pump islands, one adjacent to each of the four pumps. Results indicated that petroleum hydrocarbon vapors were present at each sample location and were highest at sample location T-2, just east of the UST pit (Pacific 1997). Results of the soil vapor investigation are provided in Table C-2 of Appendix C.

On May 7, 1999, Norman and Norman completed the removal of product piping associated with the former fuel dispenser islands. Immediately following the piping removal and under the direction of Robert Weston with Alameda County Health Care Services (ACHCS), soil samples D-1, D-2, PL-1, PL-2, PL-3, and PL-4 were collected at various points along the former product line trench and at the former dispenser islands. The samples ranged in depth from 1.5 to 4 feet bgs. Maximum concentrations of TPHg, TPHd, and BTEX detected in these samples were 1,200, 710, 2.4, 23, 6.8, and 46 ppm, respectively, and were reported in the soil sample collected from PL-2 at 2 feet bgs, near the northwest pump dispenser (TRC 1999).

On May 11, 1999, under the supervision of Robert Weston of ACHCS, Norman and Norman over excavated soil from below the former northwest dispenser and product piping. Approximately 6 cubic yards (cy) of soil were removed. The confirmation soil sample (also called PL-2) was collected from below the excavation, at a depth of 4 feet bgs. Concentrations of TPHg, TPHd, and BTEX detected in PL-2 were 40, 530, 0.48, 0.23, 0.27, and 0.33 milligrams per kilogram (mg/kg), respectively. One groundwater grab sample (TCW-1) was also collected north of the USTs. Concentrations of TPHg, TPHd, and BTEX collected from this sample were 4,400, 2,600, 520, 12, 72, and 24 µg/L, respectively. MTBE was detected at a concentration of 1,300 µg/L when analyzed using USEPA Method 8020 and was 540 µg/L when analyzed using USEPA Method 8260 (TRC 1999). Results of the pipeline and dispenser soil sampling and excavation are provided in Table C-3 of Appendix C.

On May 24, 1999, one single-walled 550-gallon steel waste oil UST, located west of the station building, was removed under the direction of Susan Hugo of ACHCS and

TRC. Soil samples WO-4 through WO-7 and WO-1 were collected from the bottom and sidewalls of the excavation at depths of 7.5 and 10 feet bgs. The maximum TPHg concentration (470 mg/kg) was reported in the sample retrieved from WO-5. The maximum TPHd concentration (1,100 mg/kg) was reported in samples WO-4 and WO-6. Benzene, ethylbenzene, and total xylenes were detected at a maximum concentration of 0.3, 1.3, and 6 mg/kg, respectively, in sample WO-7. Toluene was detected at a maximum concentration of 1.1 mg/kg in sample WO-4. Total petroleum hydrocarbons as motor oil (TPHmo) was detected at a maximum concentration of 1,100 mg/kg in sample WO-6 (TRC 1999). Soil samples were retrieved within the historical groundwater table and therefore represent potential smear zone impacts. Results are provided in Table C-4 of Appendix C.

In July 2009, Delta installed and abandoned cone penetrometer test (CPT) locations CPT-1 through CPT-7 (Delta 2009). Each of the seven locations consisted of three boreholes: one for the CPT, one for groundwater sampling, and one for soil sampling. All borings were advanced to a total depth of 60 feet bgs. The highest concentrations of TPHg, TPHd, and ethylbenzene in soil were recorded in sample CPT-1@7' at concentrations of 570, 5.6, and 1.1 mg/kg, respectively. No other COPCs were detected above their respective LRLs. Soil results are provided in Table C-5 of Appendix C. Delta conducted a sensitive receptor survey in 2009 and submitted a Sensitive Receptor Survey Report to the ACEH in January 2010 (Delta 2010). The survey included a DWR well completion report search, review of web-based available files (GeoTracker database), and site reconnaissance (Delta 2010). Sensitive receptors are further discussed in Section 7.1.

In January, 2011, Cascade Drilling LP, under supervision by Antea, installed six groundwater monitoring wells at the site (MW-1A through MW-3B [Antea 2011]) in response to the ACEH's November 18, 2009 request to install groundwater wells to monitor site conditions (ACEH 2009). The A-zone wells were screened in a shallow perched zone interval (5 to 10 feet bgs in MW-1A/MW-2A and 3.5 to 9.5 feet bgs in MW-3A). The B-zone wells were screened in the lower water bearing zone (17 to 22 feet bgs in MW-1B, 20 to 25 feet bgs in MW-2B, and 19 to 24 feet bgs in MW-3B). Four soil samples were submitted from borings for wells MW-1B and MW-3B, and five soil samples were submitted from MW-2B. Maximum concentrations of TPHg, TPHd, benzene, ethylbenzene, and xylenes in soil were reported in sample MW-2B at 5 feet bgs at concentrations of 460, 520, 0.40, 1.5, and 0.59 mg/kg respectively (Antea 2011). Well construction details are provided in Table 1. Soil results are provided in Table C-6 of Appendix C.

In July and August 2012, Gregg Drilling and Testing under supervision by ARCADIS, installed and abandoned four temporary groundwater monitoring wells at the site (MWT-1 through MWT-4 [CRA 2012]) in response to the ACEH's January 12, 2012 request to provide downgradient and lateral delineation of contamination in the upper water-bearing zone (ACEH 2012a). Additionally, a preferential pathway survey was requested by the ACEH to evaluate utilities and trenches near the site and in plume areas (ACEH 2012a). Maximum concentrations of TPHg, benzene, ethylbenzene, and xylenes in soil were reported in sample MWT-4 at concentrations of 1,000, 1.3, 13, and 4.5 mg/kg, respectively. The maximum TPHd concentration (210 mg/kg) was reported in sample MWT-3. The maximum tertiary butyl alcohol (TBA) concentration (1.2 mg/kg) was reported in sample MWT-2. No other COPCs were detected above their respective LRLs. Soil results from the 2012 investigation are provided in Table C-7 of Appendix C.

4.2.2 Onsite Groundwater Investigations

During the 2009 CPT investigation onsite, the highest concentrations of TPHg, BTEX, and EDC in water were recorded in sample CPT-1@6-9' at concentrations of 690, 42, 4, 59, 11, and 4.4 µg/L, respectively. TPHd was detected at a maximum concentration of 630 µg/L in sample CPT-5@28-31'. MTBE was detected at a maximum concentration of 0.99 µg/L in sample CPT-2@19-22' (Delta 2009). Groundwater results are provided in Table D-1 of Appendix D.

Following well installation activities in January 2011, COPCs were reported at five of the six site monitoring wells, but were higher in shallow screened monitoring wells. The maximum concentrations of TPHg (3 µg/L), benzene (100 µg/L), and ethylbenzene (96 µg/L) were reported in sample MW-3A. The maximum concentrations of TPHd (1,200 µg/L), toluene (2.2 µg/L), total xylenes (9 µg/L), MTBE (140 µg/L), and TBA (1,300 µg/L) were reported in sample MW-2A (Antea 2011). Historical groundwater monitoring results from the six onsite wells are provided in Tables 2 and 3.

During the July 2012 sampling event following installation of temporary monitoring wells along Peladeau Street, maximum concentrations in groundwater of TPHd (690 µg/L; analyzed with silica gel cleanup), benzene (530 µg/L), toluene (5.8 µg/L), ethylbenzene (100 µg/L), xylenes (61 µg/L), and TBA (560 µg/L) were reported in sample MWT-4. The maximum concentration of MTBE (31 µg/L) was reported in sample MWT-1. The maximum concentration of TPHg (3,000 µg/L) was reported in sample MWT-2 (ARCADIS 2012b).

Quarterly groundwater monitoring and sampling has been conducted at the site since the first quarter 2011. Due to minimal detections of COPCs in the lower water-bearing zone, the monitoring frequency for wells MW-1B, MW-2B, and MW-3B was reduced from quarterly to semiannually as of the third quarter 2012, with subsequent sampling occurring during the first and third quarters.

4.3 Site Assessment Activities at Adjacent Emeryville Industrial Court Property

During the remodeling of one building in 1985 and during the widening of 59th Street and replacement of an underground utility in 1999, petroleum hydrocarbons were discovered in the soil with TPHd detected at a maximum concentration of 13,000 mg/kg and TPHmo at 15,000 mg/kg. The excavated soil was reportedly transported and disposed of at a regulated landfill (Treadwell 2007). This was completed on the north end of the former distribution facility plant and likely would not directly affect concentrations at the Emeryville Industrial Court Property.

In 1990, an unknown 10,000-gallon gasoline UST was reportedly located and removed from the Emeryville Industrial Court Property by a tenant (S.B. Thomas). S.B. Thomas had been leasing the property since 1974, indicating that the release likely occurred prior to their use of the property. No records were found regarding the removal of the UST. However, according to Marks Management, the previous property owner, soil contamination was noted during the tank removal and the affected soil was disposed of at a regulated landfill (Treadwell 2007). The UST was located on the southeast portion of the Emeryville Industrial Court Property (i.e., directly north of the eastern portion of the site).

In 2000 and 2005, Treadwell conducted pre-construction environmental sampling of soil and groundwater at the site. This consisted of the installation of 18 soil borings (TR-1 to TR-18) in 2000 to a depth of 15 feet bgs and the installation of soil borings TR-19 to TR-31 in 2005 to average depths of 7 to 9 feet bgs, but with three borings extending to 13 feet bgs. Results of the sampling event were used to prepare a Site Management Plan (SMP; Treadwell 2005) for use during construction. In August 2005, soil borings TR-33 to TR-38 were installed to a depth of 15 feet bgs within the site boundaries to further evaluate contamination. Boring TR-32 was not installed due to surface obstructions and borings TR-33 to TR-38 were not logged due to installation near previous boring locations. Groundwater grab sampling results collected from this event are provided in Table D-2 of Appendix D.

The Emeryville Industrial Court Property was redeveloped into its current state in 2006. Soil excavation activities took place between March and June 2006, and lasted for approximately 10 weeks. As required in the SMP (Treadwell 2005), soil was only excavated to final construction depth (approximately 12 to 15 vertical feet below original grade). Soil excavation activities were subcontracted to PSEC. Excavated soil was directly loaded and transported to Keller Canyon Landfill located in Pittsburg, California. According to bills of lading signed by PSEC, 91,640 tons of soil were excavated and hauled from the site (Treadwell 2007). Limits of the excavation are presented on Figure 5.

Post-excavation confirmation sampling was performed in May 2006 according to the approved SMP (Treadwell 2005) and included the following activities:

- Collection of confirmation soil samples TR-39 through TR-56 around the perimeter and at the base of the excavation

- Collection of groundwater data at selected dewatering locations (wells DW-11, DW-14, and DW-24).

Concentrations up to 10 mg/kg TPHg, 7.9 mg/kg TPHd (both with non-standard chromatograms), and 33 mg/kg TPHmo were detected in soil at the bottom of the excavation. Concentrations of TBA (0.40 mg/kg) and benzene (0.0082 mg/kg) were detected in soil at the southern end of the excavation, within approximately 20 feet of the adjacent Chevron service station. Up to 0.22 mg/kg methylene chloride was detected in four soil samples along the eastern property boundary; however, the laboratory issued a letter stating that these may be a laboratory contaminant and indicated that the lab had sporadic detections of this compound in the refrigerated sample storage area during that time period. Up to 0.60 mg/kg benzopyrene was detected in four soil samples along the western property boundary (ACEH 2012b). Confirmation soil sampling results are provided in Table C-8 of Appendix C.

To mitigate groundwater from flowing in the excavation area, 25 dewatering wells were installed along the perimeter of the site. Self-activating pumps were installed near the bottom of each dewatering well, at approximately 30 feet bgs. When water levels rose above the pump sensor, the pump automatically activated and water was pumped through a manifold, treated through carbon vessels, and stored in two-10,000 gallon Baker tanks located along the southern edge of the site. Routine groundwater samples were collected from the dewatering wells located on the southeastern corner (DW-11), southwestern corner (DW-14), and northern part of

the site (DW-24). The environmental screening level applied to the site for TPHg was exceeded in numerous groundwater samples from dewatering well DW-14 (Treadwell 2007). Sampling results are provided in Table D-3 of Appendix D.

In July 2008, soil boring TR-GW was installed at the southwestern corner of the property to collect a groundwater grab sample to determine the source of groundwater contamination near dewatering well DW-14. Concentrations of TPHg (430 µg/L), TPHd (560 µg/L), benzene (3.8 µg/L), and EDC (13 µg/L) were detected. MTBE was not detected in these samples at standard detection limits.

Based on the results of the 2000 and 2005 investigations, additional post-construction investigations were completed to assess benzopyrene concentrations along the western property boundary, VOCs in groundwater from an identified historical storage area along the eastern property boundary, and residual TPH concentrations in the southwestern portion of the site. In March and April 2010, hand augured soil bores HA-1 to HA-4 (to investigate shallow soil at landscaping depths) and CPT bores TRCPT-1 to TRCPT-4 (to investigate deeper and offsite soil and groundwater) were installed to investigate the benzopyrene and VOC detections, and CPT bores TRCPT-5 to TRCPT-9 were installed to investigate the TPH detection. The investigation did not detect additional benzopyrene and VOC concentrations of concern. TPH compounds were detected in shallow soil and shallow groundwater samples in the southern portion of the site (in soil up to 690 mg/kg TPHg, 220 mg/kg TPHd, 80 mg/kg TPHmo, 4 mg/kg ethylbenzene, and 4.9 mg/kg naphthalene at 5 to 6 feet bgs). TPH compounds were not detected in deeper soil samples collected at the site (10 to 22 feet bgs) (ACEH 2012b). Soil data collected during this investigation are presented in Table C-9 of Appendix C.

The Emeryville Industrial Court Property was granted environmental site closure by the ACEH in a closure transmittal letter dated April 30, 2012. The letter outlined that known areas of contamination still exist, including benzopyrene at concentrations up to 0.600 mg/kg in soil along the western boundary of the property. Additionally, petroleum hydrocarbon concentrations of TPHg (up to 2,100 mg/kg), TPHd (259 mg/kg), TPHmo (280 mg/kg), and propylbenzene (4.8 mg/kg) remain on the southern border of the property. The ACEH believes that the contamination on the southern boundary may be related to former bulk oil storage activities at the site. Environmental case closure was granted under the following conditions:

- Excavation or construction activities in areas of residual contamination require planning and implementation of appropriate health and safety procedures by the responsible parties prior to excavation.

- The site must be entered into the City of Emeryville Permit Tracking System due to residual contamination.

- Case closure was granted for the current commercial land use only (ACEH 2012b).

4.4 Site Remediation Activities

Activities related to both onsite service station improvements and offsite redevelopment of the Emeryville Industrial Court Property has contributed to remediation in both soil and groundwater at the site.

As discussed in Section 4.2.1, soil excavation activities were completed during replacement of the piping and dispenser islands and removal of the waste oil UST in 1999. The limits of these excavations are presented on Figure 5. On May 11, 1999, following excavation and confirmation sampling during pipeline and dispenser modifications and under supervision by TRC/Alton Geoscience and Robert Weston of ACHCS, Norman and Norman over-excavated soil from below the former northwest dispenser and product piping. Approximately 6 cy of soil were removed (TRC 1999).

During the 2006 excavation event, 630,500 gallons of groundwater were extracted, treated, and discharged under a National Pollution Discharge Elimination System Permit (PSEC 2006) Historical groundwater detections from these three wells during the dewatering process are provided in Table D-2 of Appendix D. Influent water into the carbon treatment system was also periodically sampled during the dewatering process. Influent concentrations of TPHg, TPHd, benzene, and toluene were initially detected at 200,000, 64, 1,400, and 510 µg/L. However, at the end of dewatering activities, influent concentrations of all groundwater CPOCs were below detection limits. Influent and effluent concentrations and system operational data are provided in Tables E-1 through E-5 of Appendix E.

A comparison of groundwater concentrations collected prior to and after the excavation and dewatering activities indicates that groundwater extraction activities contributed to decreased concentrations of site COPCs both near the excavation boundary and further south in groundwater at the site. For example, groundwater

grab sample TR-25 (collected in January 2005), located directly north of the site had concentrations of TPHg (150,000 µg/L), benzene (2,500 µg/L), ethylbenzene (3,600 µg/L), and xylenes (1,720 µg/L). Following excavation activities, TR-GW was installed approximately 30 feet west of TR-25 to assess remaining groundwater impacts in the vicinity. One groundwater sample collected from TR-GW in July 2008 had concentrations of TPHg (430 µg/L), benzene (3.8 µg/L), ethylbenzene (3.5 µg/L), and xylenes (0.6 µg/L), indicating a concentration decrease of approximately three orders of magnitude.

A comparison of maximum concentrations detected in groundwater grab samples collected near the presumed release area onsite additionally validates the remedial effectiveness attributed from the 2006 groundwater extraction activities. The groundwater grab sample collected from TCW-1 in 1999 had concentrations of TPHg (4,400 µg/L), TPHd (2,600 µg/L), and BTEX compounds (520, 12, 72, and 24 µg/L). MTBE was detected at a concentration of 1,300 µg/L using USEPA Method 8020 and 540 µg/L using USEPA Method 8260 (TRC 1999). Maximum concentrations of TPHg (2,800 µg/L), TPHd (1,600 µg/L), BTEX compounds (860, 4.6, 28, and 12 µg/L), and MTBE (320 µg/L) near TCW-1 since the excavation event were detected in MW-2A. With the exception of benzene, maximum concentrations in the presumed release area declined by approximately 36 to 62 percent.

Groundwater grab sample results collected after the excavation event are depicted on Figure 6. Sampling results from the July 29, 2012 sampling event are provided on Figure 7A, and sampling results from the January 16, 2013 (first quarter 2013) sampling event are provided on Figures 7B and 7C. Remaining groundwater impacts are discussed in Section 5.3.

4.5 Preferential Flow Pathways

Due to shallow groundwater at the site, utility corridors in and along Peladeau Street may potentially act as a preferential pathway for offsite migration of contaminated groundwater. Utility surveys were conducted on June 18 and July 25, 2012 by a combination of Underground Service Alert and a private utility surveyor (Cruz Brothers Locating, Inc. of Scotts Valley, California). Results of the utility survey are described in detail below; identified utilities are presented on Figure 8.

4.5.1 Water Lines

The actual depth of the water line could not be determined. The water line runs east-west, parallel to the site along the northernmost lane of Powell Street. Because the utility is located offsite and does not intersect the site, it is unlikely to intersect groundwater and act as a conduit for hydrocarbon migration (ARCADIS 2012b).

4.5.2 Communication Utilities

The depth of the communication utilities could not be determined. The communication utilities are located on the west-northwest portion of the site, which is crossgradient and downgradient to historical groundwater flow in the shallow zone. Communication lines are typically installed in a relatively shallow interval (i.e., 12 to 18 inches bgs [Public Utilities Commission of the State of California 2006]) and would not create a preferential pathway for groundwater transport (ARCADIS 2012b).

4.5.3 Storm Sewer System

The depth of the storm sewer system ranges from 3 feet 8 inches, near the Peladeau Street pullout area, to 7 feet 5 inches at the intersection of Peladeau Street and Powell Street. The sewer line runs along the western boundary of the site and then crosses Peladeau Street near MWT-3. This utility is located downgradient and crossgradient of groundwater flow in the shallow zone at the site. Groundwater was encountered at 3.44 feet bgs in MWT-3, adjacent to a storm drain with a measured utility depth of 3 feet 8 inches (ARCADIS 2012b).

4.5.4 Electrical Utilities

The depth of the electrical utilities ranges from 22 to 36 inches bgs. The electrical conduits located on Peladeau Street originate from the lamp posts located in landscaped areas, as well as from the building located at 5855 Horton Street, to the west of Peladeau Street. This utility is located above the highest measured groundwater elevation onsite and would not create a preferential pathway for groundwater transport (ARCADIS 2012b).

4.5.5 Gas Utilities

The depths of the gas utilities range from 25 inches bgs to 4 feet 1 inch bgs. Gas utilities are at their deepest point at the intersection of Powell Street and Peladeau

Street. Downgradient and crossgradient of the site, the gas utility line crosses Peladeau Street and is encountered at varying shallower depths. This section of the gas line does not appear to have intersected groundwater because the depth of the utility is shallower than historical groundwater depths (ARCADIS 2012b).

4.5.6 Reclaimed Water/Irrigation Utilities

Depths of the reclaimed water/irrigation utilities range from 21 inches to 3 feet 6 inches bgs. The irrigation line runs through the landscaping and down the sidewalk/ pullout area on the west side of Peladeau Street, which is located downgradient and crossgradient of the groundwater flow direction in the shallow zone. Groundwater was encountered at 3.44 feet bgs in MWT-3, which is adjacent to a section of the irrigation line that had a measured utility depth of 3 feet 6 inches (ARCADIS 2012b).

4.5.6 Summary of Utility Survey

Based on the results of the utility survey, it is possible that some downgradient transport through preferential pathways (either within the formation or through utility corridors) is occurring. However, although these preferential pathways could create some crossgradient flow, bulk groundwater flow will still follow the natural gradient to the west.

5. Contaminant Distribution

5.1 Distribution of Constituents of Potential Concern in Soil

Seventy-three soil samples were collected at the site at depths ranging from 1.5 to 55 feet bgs (Appendix C). Detectable petroleum hydrocarbon impacts were identified between 1.5 and 52 feet bgs, with the highest COPC concentrations reported between 2 and 7.5 feet bgs. Note that soil samples collected below approximately 5 to 7 feet bgs represent saturated soil conditions.

Generally, the highest COPC concentrations were reported in vadose zone and capillary fringe soil, west and northwest of the former pipeline and fuel dispensers (based on soil samples MWT-1 through MWT-4, MW-1A through MW-3B, and CPT-1 through CPT-7). Maximum concentrations of TPHg (1,000 mg/kg), benzene (1.3 mg/kg), ethylbenzene (13 mg/kg), and total xylenes (4.5 mg/kg) in soil were observed at 6 feet bgs in samples from MWT-4; the maximum concentration of TPHd (210 mg/kg) was observed at 5 feet bgs in samples collected from MWT-3. Soil samples

collected from MW-2B displayed higher TPHd results than were detected in MWT-4, but chromatogram results suggested that the hydrocarbons present in MW-2B were not typical of diesel; therefore, MW-2B results are not being used for historical maximums.

Except for two detections of MTBE near the detection limit (0.059 and 0.0050 mg/kg in MW-2B at 7.5 and 12 feet bgs, respectively); MTBE and TBA were not detected above LRLs in soil samples collected onsite. This observation is consistent with expectations considering the low affinity for MTBE and TBA to sorb to soil particles. The two minimal detections of MTBE in soil samples were obtained from saturated zone soil near the presumed release area.

In addition, petroleum hydrocarbon impacts were also reported in vadose zone soil collected underneath the dispenser islands, with maximum concentrations of TPHg (1,200 mg/kg), TPHd (710 mg/kg), benzene (2.4 mg/kg), toluene (23 mg/kg), ethylbenzene (6.8 ppm), and total xylenes (46 mg/kg) at 2 feet bgs at PL-2. However, this soil was subsequently excavated to 4 feet bgs to remove impacts.

Petroleum hydrocarbon impacts were also reported in soil collected beneath the former waste oil tank, which was removed in 1999. Maximum concentrations of TPHg (470 mg/kg) were reported in soil sample WO-5 at of 7.5 feet bgs. Maximum concentrations of TPHd (1,100 mg/kg) were reported in both WO-4 and WO-6 at 7.5 feet bgs. Maximum concentrations of benzene (0.30 mg/kg), ethylbenzene (1.3 mg/kg), and total xylenes (6 mg/kg) were observed in WO-7 at 7.5 feet bgs.

Groundwater has often been detected up to 4 feet bgs, indicating that the majority of soil impact is located within the capillary fringe and saturated zones and represents residual groundwater impacts. Historical excavation areas and soil sample locations at the site and the adjacent property are depicted on Figure 5. Historical soil data is provided in Appendix C.

ARCADIS evaluated the historical soil analytical results from onsite locations by comparing data to the Concentrations of Petroleum Constituents in Soil That Will Have No Significant Risk of Adversely Affecting Human Health (Table 1; SWRCB 2012a). Maximum concentrations of benzene, ethylbenzene, and MTBE were below the levels presented in the Low-Threat Closure Policy (SWRCB 2012a). TPHg, toluene, and xylenes concentrations in soil were not used to evaluate risk against the low-threat closure criteria. A technical justification document is provided in the Leaking

Underground Fuel Tank Guidance Manual, updated in September 2012 (SWRCB 2012b).

5.2 Extent of Separate-Phase Hydrocarbon

Separate-phase hydrocarbon (SPH) has never been observed in measurable quantities in any of the site monitoring wells or temporary wells since their inception.

5.3 Distribution of Constituents of Potential Concern in Groundwater

COPCs in site groundwater have been monitored using either groundwater grab samples or monitoring wells since 1999. The monitoring well network consists of six wells (MW-1A through MW-3B), installed in January 2011. Three wells (MW-1A, MW-2A, and MW-3A) are sampled quarterly and the remaining three wells (MW-1B, MW-2B, and MW-3B) are sampled semiannually during the first and third quarters. The reduction in sampling of the deeper zone B wells was approved in a letter by the ACEH dated May 10, 2012 and began during third quarter 2012 (ACEH 2012c). Well construction details are provided in Table 1. Groundwater analytical data are presented in Tables 2 and 3. Historical groundwater grab sample analytical data from the site and adjacent property are provided in Appendix D.. Concentrations of TPHg, TPHd, BTEX, MTBE, and EDC in groundwater grab samples collected after the excavation and dewatering event are presented on Figure 6. Concentrations detected in site monitoring wells and offsite temporary monitoring wells during the July 29, 2012 sampling event are provided on Figure 7A and concentrations detected in site monitoring wells during the January 16, 2013 sampling event are provided on Figures 7B and 7C. Dissolved-phase concentrations in groundwater samples collected as of first quarter 2013 indicate the following:

- *TPHg*. TPHg concentrations at the site ranged from less than the LRL of 50 µg/L in monitoring wells MW-1B, MW-2B, and MW-3B to 1,700 µg/L in wells MW-2A and MW-3A. The historical maximum TPHg concentration was 3,100 µg/L at MW-3A on January 26, 2011. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 2,100 µg/L in MWT-3 to 3,000 µg/L in MWT-2.

- *TPHd*. TPHd concentrations at the site ranged from less than the LRL of 40 µg/L in monitoring wells MW-1B, MW-2B, and MW-3B to 710 µg/L in well MW-2A. The historical maximum TPHd concentration was 1,600 µg/L at MW-2A on August 28, 2011. The temporary monitoring wells sampled during third quarter 2012

displayed results ranging from below the LRL of 40 µg/L in MWT-2 to 690 µg/L in MWT-4.

- *Benzene.* Benzene concentrations at the site ranged from less than the LRL of 0.50 µg/L in monitoring wells MW-1B, MW-2B, and MW-3B to 310 µg/L in MW-2A .The historical maximum benzene concentration was 860 µg/L at MW-2A on May 1, 2011. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 1.3 µg/L in MWT-3 to 530 µg/L in MWT-4.

- *Toluene.* Toluene concentrations at the site ranged from less than the LRL of 0.50 µg/L in monitoring wells MW-1A, MW-1B, MW-2B, and MW-3B to 7 µg/L in MW-2A. The toluene result in MW-2A in this sampling event is also the historical maximum concentration. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 0.65 µg/L in MWT-3 to 100 µg/L in MWT-4.

- *Ethylbenzene.* Ethylbenzene concentrations at the site ranged from less than the LRL of 0.50 µg/L in monitoring wells MW-1B, MW-2B, and MW-3B to 14 µg/L in well MW-2A. The historical maximum ethylbenzene concentration was 98 µg/L at MW-3A on May 1, 2011. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 0.63 µg/L in MWT-3 to 100 µg/L in MWT-4.

- *Total xylenes.* Total xylenes concentrations at the site ranged from less than the LRL of 1 µg/L in monitoring wells MW-1B, MW-2B, MW-3A and MW-3B to 5.2 µg/L in well MW-2A. The historical maximum total xylenes concentration was 12 µg/L at MW-2A on May 1, 2011. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 2.4 µg/L in MWT-3 to 61 µg/L in MWT-4.

- *MTBE*. MTBE concentrations at the site ranged from less than the LRL of 0.50 µg/L in monitoring wells MW-1B, MW-3A, MW-2B, and MW-3B to 140 µg/L in well MW-2A. The historical maximum MTBE concentration was 320 µg/L at MW-2A on August 28, 2011. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 0.78 µg/L in MWT-4 to 31 µg/L in MWT-1.

- *TBA.* TBA concentrations at the site ranged from less than the LRL of 10 µg/L in monitoring wells MW-1B, MW-2B, MW-3A, and MW-3B to 3,400 µg/L in well

MW-2A. The most recent result at MW-2A is also the historical maximum concentration. The temporary monitoring wells sampled during third quarter 2012 displayed results ranging from 17 µg/L in MWT-3 to 560 µg/L in MWT-4.

In addition to the above-mentioned analytes, from January 2011 to the sampling event on May 20, 2012, groundwater at the site has been analyzed for full-scan VOCs using USEPA Method 8260B (Table 3 and Appendix D). Additional VOCs analyzed from January 2011 to May 2012, including 1,1,2-trichloroethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 4-isopropyltoluene, and t-butylbenzene have been detected above their respective LRLs. As of second quarter 2012, no additional full-scan VOCs have been detected above their respective LRLs. ARCADIS evaluated the most recent groundwater analytical results by comparing the data to the California Regional Water Quality Control Board, San Francisco Region (CRWQCB) environmental screening levels (ESLs; CRWQCB 2013), Table F-1a, Groundwater Screening Levels where groundwater is a current or potential drinking water source. .

The highest concentration of TPHg detected during recent sampling events was found offsite at monitoring well MWT-2. The highest concentrations of TPHd and benzene detected during recent sampling events were found offsite at monitoring well MWT-4. The highest concentrations of MTBE and TBA detected during recent sampling events were found onsite at monitoring well MW-2A.

As discussed in Section 4.4, excavation and dewatering activities that took place during the 2006 redevelopment of the Emeryville Industrial Court Property decreased groundwater concentrations both onsite and offsite.

Recent detections of TPHg and benzene in MWT-4 could be attributed to one or a combination of the following circumstances:

- Previous releases on the Emeryville Industrial Court Property that were not remediated through excavation and dewatering activities in 2006.

- Mass transport caused by the induced hydraulic gradient from excavation dewatering.

- Downgradient transport through preferential pathways (either within the formation or through utility corridors) from the presumed release area at the site.

The relative concentrations of MTBE and TBA in MWT-4 (0.78 µg/L/560 µg/L = 0.14 percent) compared to the same ratio in the presumed release area at the site in MW-2A (280 µg/L/ 2,300 µg/L = 12 percent) indicates that significant degradation of MTBE occurred along the flow path from the presumed release area. When degradation of MTBE is observed, benzene concentrations typically exhibit a similar, or greater, decrease along the same flow path. This degradation is due to a variety of attenuation processes including dilution, dispersion, sorption, and both aerobic and anaerobic biodegradation (Kamath et al. 2012). The lack of similarities exhibited in apparent benzene and MTBE degradation concludes that concentrations observed at MWT-4 likely originated from a combination of sources both onsite and offsite.

5.4 Offsite Sources

As mentioned in Sections 5.1 and 5.2, petroleum hydrocarbons and VOCs associated with fueling storage and operations have been or are currently detected in site groundwater monitoring wells, predominantly on the west side of the site.

Due to elevated concentrations of TPH in soil and groundwater samples collected from TR-12, TR-22 through TR-25, and TR-28 (Treadwell 2010) and the directional flow of groundwater near the site, ARCADIS believes that a second petroleum hydrocarbon source exists. The second source most likely originated from the former ASTs, oil pump, and oil pump house, which were located on the northern portion of the former terminal, or what is now the Emeryville Industrial Court Property. In addition, the 10,000-gallon gasoline UST removed from the former paints and adhesives warehouse in the southeastern portion of the Emeryville Industrial Court Property has likely contributed to remaining groundwater impacts.

5.5 Offsite Delineation of Groundwater Impacts

As discussed in Section 4.5, due to the presence of shallow groundwater at the site, utility corridors along Peladeau Street are likely providing conductive pathways for groundwater flow perpendicular to the natural hydraulic gradient. Although these preferential pathways could create some crossgradient flow, bulk groundwater flow will still follow the natural gradient to the west. Delineation of groundwater impacts to the northwest and southwest of the site are discussed below.

Samples from TR-CPT-5, the northernmost sampling location along Peladeau Street, were analyzed for TPHd and TPHg (Treadwell 2010). However, TR-CPT-1, TR-CPT-2, and TR-CPT-3, located to the north along Paladeau Street, were analyzed for VOCs

(full scan 8260B) in groundwater. Groundwater collection was not possible in TR-CPT-4 because water did not collect in the well after 6 hours. However, soil samples collected from 5, 10, and 18 feet bgs in TR-CPT-1 through TR-CPT4 were all less than the detection limit for VOCs and SVOCs, indicating that impacts are not present at significant concentrations in this location. Groundwater concentrations were less than the detection limit for all VOCs and SVOCs in TR-CPT-1 and TR-CPT-2. Groundwater from TR-CPT-3 had minimal detections of toluene (0.6 µg/L), ethylbenzene (0.7 µg/L), total xylenes (3.5 µg/L), and a few other VOCs and SVOCs. However, concentrations were less than the detection limit for benzene and MTBE, indicating that the commingled plume is delineated well to the north with TR-CPT-2 and the site plume in particular is delineated to the north with TR-CPT-3. Groundwater from TR-CPT-1 through TR-CPT4 was not analyzed for TPHg or TPHd.

ARCADIS is currently unable to further delineate the hydrocarbon plume to the west due to the presence of the partial belowground parking structure at 5858 Horton Street located between Peladeau and Horton streets. However, extensive investigation activities have occurred at the former Chevron bulk asphalt plant (Chevron Site ID 20-6265) located west of Horton Street (approximately 250 feet downgradient of the subject site) since 1985. A detailed assessment of remediation activities and historical monitoring associated with the former Chevron bulk asphalt plant is provided in the recently submitted Conceptual Site Model and Closure Request (ARCADIS 2012c).

Most recent detections of site COPCs in wells around the former Chevron bulk asphalt plant property are presented on Figure 9. Samples collected along Horton Street following remedial activities at the former Chevron bulk asphalt plant property (MW-2A and MW-15) indicate that concentrations of TPHg and BTEX compounds are less than their respective LRLs. In addition, recent samples collected upgradient of the Powell Street Release Area (MW-17) provide additional delineation for TPHg and BTEX impacts in the southwest direction. Concentrations of TPHg and BTEX in MW-17 were less than the respective LRLs during the most recent sampling event on December 1, 2011. Furthermore, MTBE has not been detected in monitoring wells from the former Chevron bulk asphalt plant or the Powell Street Release Area, indicating that MTBE impacts in groundwater are limited to the site and Peladeau Street. Groundwater flow is believed to be in the south to southwest direction near the Powell Street Release Area (ARCADIS 2012c), indicating that MW-17 is a good downgradient delineator of remaining impacts at the site.

These downgradient observations indicate that the maximum TPHg; BTEX; and MTBE plume extent would be approximately 500 feet. The actual extent of TPHg, BTEX, and

MTBE impacts is likely 200 feet or less, consistent with observations seen at numerous fuel release sites in the presence of oxygenates, such as MTBE and TBA (Kamath et al. 2012).

6. Linear Regression Analysis and Geochemistry Evaluation

6.1 Linear Regression Analysis of Hydrocarbon Constituent Concentration Trends

ARCADIS reviewed groundwater analytical data collected since January 2011 for onsite groundwater monitoring wells screened within the shallow aquifer (MW-1A, MW-2A, and MW-3A) and within the deeper aquifer (MW-1B, MW-2B, and MW-3B). The following constituents were detected above the applicable ESL for the majority of sampling events since January 2011:

- TPHg and TPHd
- Benzene
- MTBE
- TBA
- EDC

Other constituents were either detected above the laboratory reporting limit but below the applicable ESL, do not have an ESL, or have been consistently below laboratory reporting limits during the entire monitoring period.

To assess the significance of the observed trends in hydrocarbon constituents at the site, ARCADIS completed a statistical evaluation of the groundwater monitoring data using a linear regression trend analysis for constituents at monitoring wells that passed the data screening criteria. The historical groundwater data are provided in Table 2. The data screening criteria were selected to ensure that the data sets used in the linear regression analyses would produce statistically defensible results. These data screening criteria included the availability of at least six data points per data set. The data points for a given data set included concentrations above the applicable ESL. More than 50 percent of the data points for a given data set were quantified above the laboratory reporting limit. Where non-detect values were used in computations, the concentrations were set equal to the laboratory reporting limits. This approach provides a conservative estimate for evaluating the concentration trends through time.

ARCADIS conducted linear regression analyses using natural log-normalized concentration data to estimate trend direction, attenuation rates, and approximate time to achieve the applicable ESL (USEPA 2002). The results of the linear regression

analyses, including the constituents and monitoring well data sets that passed the data screening criteria, correlation coefficients, p-value of the correlation, and trend direction, are summarized in Table 4. Details of the analyses are included as Appendix F.

The correlation coefficient, R^2, is a measure of how well the linear regression fits the site data; values close to one are considered to be a good fit, while values close to zero are considered to be a poor fit. The p-value of the correlation provides a measure of the level of significance of the statistical test. Correlations were accepted as significant for p-values less than or equal to 0.10 (90 percent confidence level) and not significant for p-values greater than 0.10. The trend direction for significant correlations was defined as decreasing if concentrations decreased with time, and increasing if concentrations increased with time. Correlations deemed not significant at a 90 percent confidence interval were defined as stable.

As summarized in Table 4, the data collected across the site generally indicate decreasing or stable groundwater concentration trends for TPHg, TPHd, benzene, MTBE, and EDC. Statistically significant decreasing trends are observed for TPHg at monitoring wells MW-2A and MW-3A; TPHd at monitoring wells MW-1A, MW-2A, and MW-3A; and benzene at monitoring well MW-3A. Stable trends are observed for TPHg at monitoring well MW-1A; benzene at monitoring wells MW-2A and MW-3A; MTBE at monitoring well MW-1A and MW-2A; TBA at MW-1A and MW-2A; and EDC at MW-1B and MW-3A.

When appropriate, smaller data sets that still meet the data screening criteria described above can be used to better predict future attenuation capability. For TPHg at monitoring well MW-1A and TBA at monitoring well MW-2A, the oldest data points were eliminated from the evaluation to remove any potential sampling artifacts associated with newly installed monitoring wells. At groundwater monitoring well locations where the concentration trend is decreasing and statistically significant, an estimation of the projected year to reach the applicable ESL can be made. As detailed in Table 4, the projected years to reach ESLs ranged from 2013 to 2022. TPHg has the longest attenuation timeframe to reach the ESL of 100 µg/L (estimated to reach the ESL in MW-2A and MW-3A by 2022). The estimated attenuation year to reach the TPHd ESL of 100 µg/L at monitoring wells MW-2A and MW-3A is 2013; at monitoring well MW-1A, TPHd is estimated to reach the ESL by 2014. Attenuation rates are not calculated for concentration trends that were determined to be stable.

Overall, the concentration trends of residual petroleum-related constituents are decreasing at the site and the groundwater plume is stable or decreasing in size. Groundwater concentration trend graphs with historically measured groundwater elevations are presented in Appendix G. In many cases, the decreasing concentration trends were determined to be statistically significant, and residual groundwater concentrations at these locations are anticipated to reach ESLs by 2022.

6.2 Geochemistry Evaluation

In addition to the linear regression evaluation described above, ARCADIS reviewed the geochemical data associated with the same groundwater monitoring wells to determine the applicability of aerobic or anaerobic biodegradation in that area. Petroleum compounds are most readily biologically degraded under aerobic (i.e., oxidizing) conditions; however, biodegradation to innocuous end products can also occur under anoxic or anaerobic (i.e., reducing) conditions, albeit at a slower rate. An evaluation of current geochemical parameters can help identify whether the aquifer is aerobic or anaerobic.

The geochemical data reviewed included dissolved oxygen (DO), nitrate, nitrite, dissolved total iron, dissolved total manganese, and sulfate (Table 5). In addition to collecting samples from MW-1A, MW-2A, and MW-3A to evaluate geochemical parameters, one sample was also collected from unimpacted monitoring well MW-3B to provide an indication of background concentrations of each parameter. In all monitoring wells, DO concentrations were near, or just below, 1 milligram per liter (mg/L). These parameters indicate that aquifer conditions are transitioning from aerobic to anoxic or anaerobic.

In all monitoring wells, nitrate and nitrite concentrations were below laboratory reporting limits, indicating that these parameters are not likely significant electron acceptors for microbial metabolism. Dissolved total iron concentrations were elevated in monitoring wells MW-1A and MW-2A, but were below laboratory reporting limits in monitoring wells MW-3A and MW-3B. Dissolved total manganese was elevated in monitoring wells MW-1A, MW-2A, and MW-3A, but was two orders of magnitude lower in MW-3B. These data suggest that ferric iron and manganese (IV) oxides present in the soil matrix are serving as electron acceptors for microbial metabolism and are being reduced to ferrous iron and dissolved manganese (II), respectively.

Sulfate concentrations were less than 7 mg/L in all monitoring wells, but were lowest in monitoring well MW-1A (1.1 mg/L). Low sulfate concentrations in deeper monitoring

well MW-3B indicate that sulfate is not likely a significant electron acceptor for microbial metabolism. However, the additionally depressed sulfate concentration in monitoring well MW-1A suggests that aquifer conditions are more reducing there than near MW-2A and MW-3A.

Together, these geochemical data indicate that aquifer conditions are anaerobic. Iron-reducing conditions likely dominate near monitoring wells MW-2A and MW-3A, while iron- and sulfate-reducing conditions are likely present near monitoring well MW-1A. The more reducing conditions near monitoring well MW-1A could explain why the TPHg concentration trend at that location differs from the other monitoring well locations. Based on the geochemical parameters described above, TPHg concentrations will likely continue to decrease via microbially mediated degradation.

7. Assessment of Impacts of Residual Constituents on Public Health and the Environment

Historical releases, remedial actions, site soil and groundwater COPC concentrations, and current and potential future onsite and offsite land uses were reviewed to evaluate which potential receptors and exposure pathways could be potentially exposed to residual COPCs at the site. As described in Section 2, current land use at the site is mixed use non-residential and it can be reasonably anticipated that future land use will involve the continued operation of the service station and remain mixed non-residential land use. Properties in the immediate vicinity of the site are generally mixed use non-residential as well as office/technology properties and are expected to continue in these uses based on current zoning through the CEPBD. The closest residences are located just east of the site. The site is currently completely covered with pavement, landscaping, and buildings. In addition, groundwater is not a drinking water source.

7.1 Sensitive Receptors

7.1.1 Site Vicinity Receptors

The site is an active fueling and service station consisting of a station building, four fuel dispenser islands with associated USTs, and a propane fueling station. The site vicinity consists of office/technology properties to the north, northeast, and west and mixed-use residential properties to the south. Emerystation East, a four-story office building with one level of subsurface parking, borders the site immediately to the north. The site is bounded by Peladeau Street to the west, Powell Street to the south, and Hollis

Street to the east. There are currently no known plans to further develop the site or neighboring properties.

The January 18, 2010 Sensitive Receptor Survey Report (Delta 2010) identified two daycare centers and four schools within a 0.5-mile radius of the site. No hospitals were identified within the 0.5-mile sensitive receptor survey radius.

7.1.2 Surface-Water Receptor Information

The surface-water body nearest to the site is Temescal Creek and the San Francisco Bay, located approximately 1,500 feet and 0.5 mile southwest and west of the site, respectively. These surface-water bodies are not considered to be potential sensitive receptors due to their distance from the site.

7.1.3 Drinking Water Supply Sources

No drinking water supply receptors were identified within a 0.5-mile radius of the site. Drinking water at the site (and for all of Emeryville) is supplied by the Mokelumne River watershed in the Sierra Nevada (East Bay Municipal Utility District [EBMUD] 2012). Groundwater beneath the site is not expected to be used as drinking water in the future.

7.1.4 Water Well Survey

The 2010 sensitive receptor survey included a review of a well search report obtained from the DWR. Information provided by the DWR did not show any domestic, municipal, or agricultural wells within a 0.5-mile radius of the site. Other wells located near the site include monitoring, test, remediation, and wells that have been abandoned or destroyed (Delta 2010).

7.1.5 Utility Survey

As discussed in Section 4.5, subsurface utility surveys were completed on June 18 and July 25, 2012 to clear potential boring locations and assess potential preferential pathways (e.g., water, electric and gas utility trenches), specifically down and crossgradient of the site on Peladeau Street. The depths of utilities ranged from 12 to 18 inches bgs (approximated depth of communication lines [Public Utilities Commission of the State of California 2006]) to 7 feet 5 inches (storm sewer at the intersection of Powell and Peladeau streets [ARCADIS 2012b]).

Depth to groundwater at the site has historically ranged from 4.40 (5-20-12/MW-3A) to 7.77 (5-20-12/MW-2A) feet bgs in the shallow screened monitoring wells, from 4.36 (7-29-12/MW-3B) to 8.51 (5-1-11/MW-1B) feet bgs in the deep screened monitoring wells, and from 3.44 (7-29-12/MWT-3) to 6.03 (7-29-12/MWT-1) feet bgs in the temporary monitoring wells (now destroyed) associated with the site (ARCADIS 2012b). As discussed in Section 4.5, due to shallow groundwater, the utilities in the street are thought to potentially be acting as a preferential pathway for offsite migration of contaminated groundwater from the site.

7.2 Summary of Potential Exposure Pathways and Comparison to Low-Threat Underground Storage Tank Case Closure Policy Screening Criteria

This section discusses the potential transport and release mechanisms, possible pathways, and receptors associated with potential exposures to residual concentrations of fuel hydrocarbons and oxygenates detected in site media. Where applicable, the detected constituent concentrations were compared to screening criteria defined in the Low-Threat Closure Policy as having no significant risk of adversely affecting human health (SWRCB 2012a).

7.2.1 Volatilization

A potential release mechanism at the site is the volatilization of COPCs in subsurface soil to indoor air of current and future onsite commercial buildings, outdoor air, or air within a trench used by a future onsite utility worker. Another potential release mechanism at the site is volatilization of COPCs in groundwater to indoor air of current and future onsite commercial buildings, outdoor air, offsite commercial buildings or residences, or air within a trench used by a future onsite utility worker. Therefore, volatilization of the COPCs in the subsurface and migrating into buildings is a potentially complete exposure pathway. However, the maximum detected benzene concentration is below the low-threat closure threshold level, assuming a minimum of 4 percent oxygen in the subsurface. Based on the relatively low benzene concentration in groundwater, the volatilization pathway is likely insignificant.

7.2.2 Leaching to Groundwater

Petroleum hydrocarbons released from former bulk fuel operations and piping and dispensers from the current facility also can leach from soil to groundwater. This release mechanism is likely responsible for the majority of historical groundwater impacts.

7.2.3 Direct Contact with Groundwater

As described in Section 7.1.3, groundwater at the site is currently not used as a potable source and is not expected to be used as a drinking water source in the future. Drinking water is supplied to the site by the EBMUD. No drinking water supply receptors were identified within a 0.5-mile radius of the site. Therefore, potential direct contact exposures to COPCs in groundwater, such as tap water ingestion and inhalation of VOCs released from tap water, are not expected to occur for current and future onsite commercial workers, current and future offsite commercial workers, and current and future offsite residents. However, a utility worker could perform deeper subsurface work and potentially contact groundwater. Dewatering will be performed in cases where groundwater seeps into utility trenches, Based on the relatively low benzene concentration in groundwater and the low likelihood that utility workers would contact groundwater after dewatering activities, the direct contact pathway to utility workers is likely insignificant..

7.2.4 Direct Contact with Soil

Because the site is completely covered with a building, fuel dispensers, landscaping, and pavement, it is anticipated that current and future onsite and offsite commercial workers and offsite residents will not be exposed to constituents in soil via direct contact exposure pathways (i.e., ingestion, dermal contact, and inhalation of particulates).

7.2.5 Summary of Potential Receptors and Exposure Pathways

Potential human receptors at the site were identified based on current and future land use(s) at and near the site. As discussed previously, current and reasonably anticipated future land use at the site is commercial (i.e., continued operation of the service station). Land use offsite includes residential, commercial, and mixed commercial/residential buildings. Potential receptors include current and future onsite commercial workers, current and future offsite commercial workers, future onsite and offsite utility/construction workers, and current and future offsite residents. The sources, release mechanisms, exposure media, and exposure pathways for these receptors are shown on Figure 10. No complete and potentially significant exposure pathways were identified. Potentially complete, but likely insignificant exposure pathways include:

- Current and future onsite and offsite commercial workers: Inhalation (indoor and outdoor air) of air vapors

- Future onsite and offsite utility/construction trench workers:

  - Inhalation (outdoor air) of air vapors
  - Inhalation (outdoor air) of dust particles
  - Ingestion of surface and subsurface soil
  - Dermal contact with surface and subsurface soil

- Future offsite residents: Inhalation (indoor and outdoor air) of air vapors

7.3 Potential Ecological Receptors

Because no ecological habitat or surface-water bodies are present at the site, it is concluded that potential ecological receptors are absent from the site. Site conditions are not expected to change in the foreseeable future. Due to its distance from the site (approximately 0.5 mile west), the nearest surface-water body (San Francisco Bay) is not considered to be impacted by site releases. Therefore, aquatic and other ecological receptors at the San Francisco Bay will not be impacted (i.e., potential exposure pathways for ecological receptors are considered incomplete).

8. Summary and Evaluation of Criteria for Low-Threat Case Closure

8.1 General Criteria

A site must satisfy the General Criteria outlined in the Low-Threat Closure Policy (SWRCB 2012a) to be considered for low-threat case closure. ARCADIS considers this site eligible for low-threat closure on the following basis:

1. *The unauthorized release is located within the service area of a public water system.* The site is located within the service area of the EBMUD public water system and drinking water at the site is supplied from the Mokelumne River watershed in the Sierra Nevada (EBMUD 2012).

2. *The unauthorized release consists only of petroleum.* COPCs identified at the site include TPHg, TPHd, benzene, MTBE, and TBA, which are indicative of a gasoline release.

3. *The unauthorized ("primary") release from the UST system has been stopped.* The former oil/water separator was removed from the site in 1993. The former 550-gallon waste oil UST was removed from the site in 1999. The former product dispensers and fiberglass product lines were removed and upgraded in May 1999. In addition, one 10,000-gallon UST was removed from the neighboring property to the north in 1990. The unauthorized releases have been stopped with the removal of these infrastructures.

4. *Free product has been removed to the maximum extent practicable.* No SPH has been observed in monitoring wells onsite.

5. *A CSM that assesses the nature, extent, and mobility of the release has been developed.* This CSM includes a comprehensive site assessment and remediation history, regional and site-specific geology and hydrogeology, review of the soil and groundwater conditions at the site, and evaluation of human health exposure from site-related COPCs.

6. *Secondary source has been removed to the extent practicable.* Secondary source(s) at the site and the neighboring property to the north have been removed to the extent practicable. Secondary source removal activities onsite have included over-excavation of the piping and dispenser islands around soil sample PL-2 in 1999, removal of impacted soil during the 10,000-gallon UST excavation in 1990, and excavation of approximately 91,640 tons of soil from the Emeryville Industrial Court Property (5858 Hollis Street) site during the 2006 redevelopment. During the redevelopment, dewatering wells were installed around the perimeter of the excavation and 630,500 gallons of water were pumped through a manifold, treated through carbon vessels and stored in two-10,000 gallon Baker tanks located along the southern edge of the site (Treadwell 2007).

7. *Soil or groundwater has been tested for MTBE and results were reported in accordance with Health and Safety Code Section 25296.15.* Soil and groundwater samples collected at the site were analyzed for MTBE. Distribution of MTBE in soil and groundwater is discussed in Sections 5.1 and 5.3.

8. *Nuisance as defined by Water Code Section 13050 does not exist at the site.* No nuisance as defined by Water Code Section 13050 exists at this site, under the current use of the site.

8.2 Media-Specific Criteria

Media-Specific Criteria that must be satisfied for low-threat closure at the site are described below:

- *Groundwater.* Groundwater-Specific Criteria listed in the Low-Threat Closure Policy (SWRCB 2012a) can be met with support of the conclusions discussed in Section 5, including recent groundwater monitoring conducted at the downgradient former Chevron Asphalt Plant property. Trend graphs presented in Appendix F show that the plume is stable in the shallow zone, and the site meets the Groundwater-Specific Criteria of Category 4 of the Low-Threat Closure Policy (SWRCB 2012a) because:

  - The contaminant plume exceeding water quality objectives is less than 1,000 feet long. Non-detect concentrations observed upgradient of the former Chevron Asphalt Plant (see monitoring wells MW-15 and MW-17 [Figure 9]) which is downgradient of the site indicate that the plume length does not exceed 500 feet. No free product is present.

  - The nearest existing water supply well or surface-water body is more than 1,000 feet from the defined plume boundary.

  - The dissolved concentration of benzene is less than 1,000 µg/L and the dissolved concentration of MTBE is less than 1,000 µg/L.

- *Vapor intrusion to indoor air*. As described in the Low-Threat Closure Policy (SWRCB 2012b), satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities where there are no site-specific characteristics that would pose an unacceptable health risk. The site is an active commercial petroleum fueling facility with no unacceptable risk characteristics and there are no plans for redevelopment; therefore, the site is exempt from this media-specific criterion.

  In addition, potential vapor intrusion into a downgradient parking garage is unlikely to be a health concern. The garage is likely built in compliance with the California Building Code (CBC), which is designed to limit the build-up of carbon monoxide from operation of vehicles. Mitigation measures for possible soil vapor intrusion into the offsite garage can be considered an add-on to the CBC. The same measures used to mitigate carbon monoxide also mitigate VOCs. These measures

specify that at least 20 percent of the side walls and story frontage of the parking garage must be open to the outside, evenly distributed across the story. In addition, the aggregate length of the opening must constitute 40 percent of the perimeter of each side of the garage. The open areas of the garage consequently eliminate advection forces, minimizing vapor intrusion potential. If the sides are not open, an active gas mitigation system must be installed (CBC 2001).

- *Direct contact and outdoor air exposure.* As outlined in Section 6.2, the site meets the direct contact and outdoor air exposure criteria presented in Table 1 of the Low-Threat Closure Policy (SWRCB 2012a).

- *Direct contact to soil by utility worker*. The maximum detected benzene concentration in soil is 1.3 mg/kg. The screening criteria presented in SWRCB 2012a for the protection of the utility/construction trench workers is 14 mg/kg. The Site meets the Low Threat Closure Policy for benzene in soil. No health based screening criteria for TPH is currently available. However, the Department of Toxics Substance Control states that health risk assessments to TPH should be evaluated by TPH toxic components such as benzene (DTSC 2011).

9. Conclusions

ARCADIS respectfully requests that the ACEH LOP grant a low-threat site closure because site conditions meet all the General and Media-Specific Criteria established in the Low-Threat Closure Policy (SWRCB 2012a); therefore, the site poses a low threat to human health, safety, and the environment and satisfies the case closure requirements of Health and Safety Code Section 25296.10.

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ARCADIS

Tables

Table 1
Well Construction Details
76 Station 3737
1400 Powell Street, Emeryville, California

Well ID	Well Type	Wellhead Type	Date of Installation	Date of Survey	Top of Casing Elevation (feet amsl)	Total Depth (feet bgs)	First Groundwater Depth (feet bgs)	Casing Diameter (inches)	Screen			
									Slot Size (inches)	Length (feet)	Top (feet btoc)	Bottom (feet btoc)
MW-1A	Groundwater Monitoring Well	Flush Mounted	1/15/2011	1/21/2011	18.74	10	6	2	0.010	5.0	5.0	10.0
MW-1B	Groundwater Monitoring Well	Flush Mounted	1/15/2011	1/21/2011	18.88	23	9.5	2	0.010	5.0	17.0	22.0
MW-2A	Groundwater Monitoring Well	Flush Mounted	1/14/2011	1/21/2011	18.93	10	8	2	0.010	5.0	5.0	10.0
MW-2B	Groundwater Monitoring Well	Flush Mounted	1/15/2011	1/21/2011	19.10	26.0	21.5	2	0.010	5.0	20.0	25.0
MW-3A	Groundwater Monitoring Well	Flush Mounted	1/15/2011	1/21/2011	18.62	9.5	4.0	2	0.010	6.0	3.5	9.5
MW-3B	Groundwater Monitoring Well	Flush Mounted	1/15/2011	1/21/2011	18.57	25.0	4.0	2	0.010	5.0	19.0	24.0
MWT-1	Temporary Monitoring Well	Flush Mounted	7/25/2012	7/27/2012	19.11	10.0	7.5	2	0.020	5.0	5.0	10.0
MWT-2	Temporary Monitoring Well	Flush Mounted	7/26/2012	7/27/2012	17.47	10.0	7.0	2	0.020	5.0	5.0	10.0
MWT-3	Temporary Monitoring Well	Flush Mounted	7/26/2012	7/27/2012	17.15	10.0	6.0	2	0.020	5.0	5.0	10.0
MWT-4	Temporary Monitoring Well	Flush Mounted	7/25/2012	7/27/2012	17.53	10.0	6	2	0.020	5.0	5.0	10.0

Notes:
btoc = below top of casing
amsl = above mean sea level
bgs = below ground surface
Note: All wells were initially developed following installation activities. No redevelopment activities have taken place onsite.

Table 2
Groundwater Monitoring Data and Analytical Results for 2011 through First Quarter 2013
76 Station 3737
1400 Powell Street, Emeryville, California

Well ID	Date Sampled [a]	TOC (feet AMSL)	DTW (feet bgs)	LPH Thickness (feet)	GWE (feet AMSL)	Previous Quarter GWE (feet AMSL)	Change in Elevation (feet)	TPH-Motor Oil (8015B/FFP)	TPH-d (FFP) (8015B/FFP)	TPH-g (8015B)	TPH-g (Luft-GC/MS)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	EDB	EDC	DIPE	ETBE	TAME	Ethanol	Comments
ESL [b]								**100**	**100**	**100**	**100**	**1.0**	**40**	**30**	**20**	**5**	**12**	**0.05**	**0.5**	**--**	**--**	**--**	**--**	
MW-1A	01/26/2011	18.74	5.80	0.00	12.94	--	--	<200	450	--	960	8.4	<0.50	1.9	1.6	50	62	<0.50	<0.50	<0.50	<0.50	1.4	<250	A52
	05/01/2011	18.74	5.68	0.00	13.06	12.94	-0.12	<200	450	--	1,100	36	0.86	5.9	1.9	31	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/28/2011	18.74	5.72	0.00	13.02	13.06	0.04	170	540	--	840	21	0.68	3.8	1.8	55	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/20/2011	18.74	5.58	0.00	13.16	13.02	-0.14	<100	460	--	1,300	20	0.74	6.4	<1.0	40	79	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	02/19/2012	18.74	5.67	0.00	13.07	13.16	0.09	<100	610	--	1,300	20	0.91	6.8	2.5	59	80	<0.50	<0.50	<0.50	<0.50	2.0	<250	
	05/20/2012	18.74	5.50	0.00	13.24	13.07	-0.17	<100	380	--	1,600	18	0.81	5.1	2.7	26	39	<0.50	<0.50	<0.50	<0.50	0.76	<250	A52
	07/29/2012	18.74	5.57	0.00	13.17	13.24	0.07	<100	220	--	1,400	10	<0.50	0.8	1.9	35	80	<0.50	<0.50	<0.50	<0.50	1.2	<250	
	10/28/2012	18.74	5.32	0.00	13.42	13.17	-0.25	<100	180	--	1,500	13	0.72	2.8	1.7	52	120	<0.50	<0.50	<0.50	<0.50	1.9	<250	
	1/16/2013	18.74	5.29	0.00	13.45	13.42	-0.03	230	260	1,000	1,300	9.0	<0.50	2.1	1.7	24	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A01, A52, A57
MW-1B	01/26/2011	18.88	9.46	0.00	9.42	--	--	<200	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.66	<10	<0.50	24	<0.50	<0.50	<0.50	<250	
	05/01/2011	18.88	8.51	0.00	10.37	9.42	-0.95	<200	82	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	19	<0.50	<0.50	<0.50	<250	
	08/28/2011	18.88	8.27	0.00	10.61	10.37	-0.24	<100	59	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	18	<0.50	<0.50	<0.50	<250	
	11/20/2011	18.88	7.88	0.00	11.00	10.61	-0.39	<100	69	--	<50	<0.50	<0.50	<0.50	<1.0	0.55	<10	<0.50	16	<0.50	<0.50	<0.50	<250	
	02/19/2012	18.88	7.59	0.00	11.29	11.00	-0.29	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.87	<10	<0.50	26	<0.50	<0.50	<0.50	<250	
	05/20/2012	18.88	7.33	0.00	11.55	11.29	-0.26	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.75	<10	<0.50	24	<0.50	<0.50	<0.50	<250	
	07/29/2012	18.88	6.90	0.00	11.98	11.55	-0.43	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.72	<10	<0.50	27	<0.50	<0.50	<0.50	<250	
	10/28/2012	18.88	5.44	0.00	13.44	11.98	-1.46	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.63	<10	<0.50	23	<0.50	<0.50	<0.50	<250	
	1/16/2013	18.88	6.62	0.00	12.26	13.44	20.06	100	<40	<50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	15	<0.50	<0.50	<0.50	<250	A52, A57
MW-2A	01/26/2011	18.93	8.02	0.00	10.91	--	--	<1000	1200	--	2,500	100	2.2	28	9	140	1,300	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	05/01/2011	18.93	6.40	0.00	12.53	10.91	-1.62	<1000	1,500	--	2,800	860	4.6	<0.50	12	220	2,500	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A01
	08/28/2011	18.93	5.93	0.00	13.00	12.53	-0.47	<1000	1,600	--	2,300	690	<5.0	<5.0	<10	320	2,100	<5.0	<5.0	<5.0	<5.0	<5.0	<2,500	A01
	11/20/2011	18.93	5.73	0.00	13.20	13.00	-0.20	<500	1,200	--	1,800	440	<5.0	<5.0	<10	160	2,200	<5.0	<5.0	<5.0	<5.0	<5.0	<2,500	A01
	02/19/2012	18.93	7.25	0.00	11.68	13.20	1.52	<100	450	--	2,000	460	5.1	<0.50	5.8	280	3,200	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	05/20/2012	18.93	7.77	0.00	11.16	11.68	0.52	<100	470	--	2,100	250	3.2	<0.50	3.1	290	2,400	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A01, A52
	07/29/2012	18.93	7.33	0.00	11.60	11.16	-0.44	<100	310	--	1,900	120	1.9	12	1.4	280	2,300	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/28/2012	18.93	5.68	0.00	13.25	11.60	-1.65	<100	91	--	1,300	150	<2.5	14	5.4	270	2,100	<2.5	<2.5	<2.5	<2.5	<2.5	<1,200	A01
	1/16/2013	18.93	5.32	0.00	13.61	13.25	18.57	340	710	2,800	1,700	310	7.0	14	5.2	140	3,400	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A01, A52, A57
MW-2B	01/26/2011	19.10	5.51	0.00	13.59	--	--	<200	<50	--	<50	0.55	<0.50	<0.50	<1.0	3.4	<10	<0.50	<0.50	<.050	<0.50	<0.50	<250	
	05/01/2011	19.10	7.57	0.00	11.53	13.59	2.06	<200	<50	--	<50	1.2	<0.50	<0.50	<1.0	3.4	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/28/2011	19.10	5.82	0.00	13.28	11.53	-1.75	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	2.3	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/20/2011	19.10	5.73	0.00	13.37	13.28	-0.09	<100	56	--	<50	<0.50	<0.50	<0.50	<1.0	2.0	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	02/19/2012	19.10	5.46	0.00	13.64	13.37	-0.27	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	3.1	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	05/20/2012	19.10	5.18	0.00	13.92	13.64	-0.28	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	3.0	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/29/2012	19.10	5.28	0.00	13.82	13.92	0.10	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	2.1	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/28/2012	19.10	5.22	0.00	13.88	13.82	-0.06	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	1.7	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/16/2013	19.10	4.92	0.00	14.18	13.88	18.80	<100	<40	<50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A52, A57
MW-3A	01/26/2011	18.62	4.75	0.00	13.87	--	--	<200	830	--	3,100	160	<5.0	96	<10	<5.0	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<2500	
	05/01/2011	18.62	4.68	0.00	13.94	13.87	-0.07	<200	460	--	2,700	130	2.7	98	3.6	<0.50	<10	<0.50	1.2	<0.50	<0.50	<0.50	<250	A01
	08/28/2011	18.62	4.92	0.00	13.70	13.94	0.24	130	440	--	1,700	39	0.51	28	1.6	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/20/2011	18.62	4.97	0.00	13.65	13.70	0.05	<100	330	--	1,200	25	0.83	17	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	02/19/2012	18.62	4.72	0.00	13.90	13.65	-0.25	<1000	1400	--	1,900	60	2.1	41	2.1	0.71	30	<0.50	0.80	<0.50	<0.50	<0.50	<250	A01
	05/20/2012	18.62	4.40	0.00	14.22	13.90	-0.32	<100	340	--	2,200	45	2.2	30	2.5	0.54	25	<0.50	0.85	<0.50	<0.50	<0.50	<250	A52
	07/29/2012	18.62	4.50	0.00	14.12	14.22	0.10	<100	160	--	1,900	77	2.1	14	2.2	<0.50	<10	<0.50	0.94	<0.50	<0.50	<0.50	<250	
	10/28/2012	18.62	4.37	0.00	14.25	14.12	-0.13	<100	130	--	1,600	54	3.9	27	4.4	2.8	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<500	A01
	1/16/2013	18.62	4.21	0.00	14.41	14.25	-0.16	210	170	1,600	1,400	19	1	3.3	<1.0	<0.50	<10	<0.50	1	<0.50	<0.50	<0.50	<250	A01, A52, A57
MW-3B	01/26/2011	18.57	7.33	0.00	11.24	--	--	<200	57	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	05/01/2011	18.57	6.68	0.00	11.89	11.24	-0.65	<200	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/28/2011	18.57	7.29	0.00	11.28	11.89	0.61	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/20/2011	18.57	6.33	0.00	12.24	11.28	-0.96	<100	45	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	02/19/2012	18.57	4.62	0.00	13.95	12.24	-1.71	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	05/20/2012	18.57	4.52	0.00	14.05	13.95	-0.10	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/29/2012	18.57	4.36	0.00	14.21	14.05	-0.16	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/28/2012	18.57	4.10	0.00	14.47	14.21	-0.26	<100	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/16/2013	18.57	4.16	0.00	14.41	14.47	0.06	<100	<40	<50	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A52. A57, SO5

Table 2
Groundwater Monitoring Data and Analytical Results for 2011 through First Quarter 2013
76 Station 3737
1400 Powell Street, Emeryville, California

Well ID	Date Sampled [a]	TOC (feet AMSL)	DTW (feet bgs)	LPH Thickness (feet)	GWE (feet AMSL)	Previous Quarter GWE (feet AMSL)	Change in Elevation (feet)	TPH-Motor Oil (8015B/FFP)	TPH-d (FFP) (8015B/FFP)	TPH-g (8015B)	TPH-g (Luft-GC/MS)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	EDB	EDC	DIPE	ETBE	TAME	Ethanol	Comments
ESL [b]								**100**	**100**	**100**	**100**	**1.0**	**40**	**30**	**20**	**5**	**12**	**0.05**	**0.5**	**--**	**--**	**--**	**--**	
MWT-1	07/29/2012	19.11	6.03	0.00	13.08	--	--	--	450		2,500	7.7	2.3	3.5	6.3	31	71	--	--	--	--	--	--	
MWT-2	07/29/2012	17.47	4.95	0.00	12.52	--	--	--	<40	--	3,000	70	1.6	62	8.8	11	89	--	--	--	--	--	--	
MWT-3	07/29/2012	16.45	3.44	0.00	13.01	--	--	--	640	--	2,100	1.3	0.65	0.63	2.4	1.9	17	--	--	--	--	--	--	
MWT-4	07/29/2012	17.09	3.93	0.00	13.16	--	--	--	690	--	2,800	530	5.8	100	61	0.78	560	--	--	--	--	--	--	

Notes:
a. Analytical results given in micrograms per liter (µg/l)
b. ESL values are obtained from Table F-1a, Groundwater Screening Levels, Groundwater is a Current or Potential Source of Drinking Water (CRWQCB 2013).

Standard Abbreviations
-- = not analyzed, measured, or collected
< = not detected at or above laboratory detection limit
bgs = below ground surface
AMSL = above mean sealevel
DTW = depth to water
GW = groundwater
GWE = groundwater elevation
LPH = liquid-phase hydrocarbons
TOC = top of casing (surveyed reference elevation)

Analytes
MTBE = methyl tertiary butyl ether
TBA = tertiary butyl alcohol
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane (same as ethylene dichloride)
ETBE = ethyl tertiary butyl ether
TAME = tertiary amyl methyl ether
DIPE = di-isopropyl ether
TPH-g = total purgable petroleum hydrocarbons
TPH-d = total petroleum hydrcarbons as diesel
TPH-Motor Oil = total petroleum hydrocarbons as motor oil
8260B = EPA Method 8260B for TPH-g and Volatile Organic Compounds
8015B/FFP = EPA Method 8015B with silica gel clean-up for TPH-d and TPH-motor oil
A01 = PQL's and MDL's are raised due to sample dilution
A52 = Chromatogram not typical of diesel

Table 3
Additional Groundwater Analytical Results for 2011 and 2012
76 Station 3737
1400 Powell Street, Emeryville, California

Location	Sample Date [a]	1,1,1,2-TETRACHLOROETHANE (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1,2,2-Tetrachloroethane (µg/L)	1,1,2-Trichloroethane (µg/L)	1,1,2-Trichlorotrifluoroethane (Freon 113) (µg/L)	1,1-Dichloroethane (µg/L)
ESL [b]		**0.51**	**62**	**1.0**	**5.0**	**--**	**5.0**
MW-1A	05/01/2011	<0.50	<0.50	<0.50	1.4	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<0.50	--	<0.50
	07/29/2012	--	--	--	--	--	--
MW-1B	05/01/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<0.50	--	<0.50
	07/29/2012	--	--	--	--	--	--
MW-2A	05/01/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,
	11/20/2011	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,
	02/19/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<0.50	--	0.52
	07/29/2012	--	--	--	--	--	--
MW-2B	05/01/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<0.50	--	<0.50
	07/29/2012	--	--	--	--	--	--
MW-3A	05/01/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<0.50	--	<0.50
	07/29/2012	--	--	--	--	--	--
MW-3B	05/01/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<0.50	--	<0.50
	07/29/2012	--	--	--	--	--	--
MWT-1	07/29/2012	--	--	--	--	--	--
MWT-2	07/29/2012	--	--	--	--	--	--
MWT-3	07/29/2012	--	--	--	--	--	--
MWT-4	07/29/2012	--	--	--	--	--	--

Table 3
Additional Groundwater Analytical Results for 2011 and 2012
76 Station 3737
1400 Powell Street, Emeryville, California

Location	Sample Date [a]	1,1-Dichloroethene (Dichloroethylene) (µg/L)	1,1-Dichloropropene (µg/L)	1,2,3-Trichlorobenzene (µg/L)	1,2,3-TRICHLOROPROPANE (µg/L)	1,2,4-Trichlorobenzene (µg/L)	1,2,4-Trimethylbenzene (µg/L)
ESL [b]		**6.0**	**--**	**--**	**--**	**5.0**	**--**
MW-1A	05/01/2011	<0.50	<0.50	<0.50	<1.0	<0.50	1.1
	08/28/2011	<0.50	<0.50	<0.50	<1.0	<0.50	0.52
	11/20/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-1B	05/01/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-2A	05/01/2011	<0.50	<0.50	<0.50	<1.0	<0.50	1.6
	08/28/2011	<5.0 D,	<5.0 D,	<5.0 D,	<10 D,	<5.0 D,	<5.0 D,
	11/20/2011	<5.0 D,	<5.0 D,	<5.0 D,	<10 D,	<5.0 D,	<5.0 D,
	02/19/2012	<0.50	<0.50	<0.50	<1.0	<0.50	1.2
	05/20/2012	<0.50	<0.50	<0.50	<1.0	<0.50	1.2
	07/29/2012	--	--	--	--	--	--
MW-2B	05/01/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-3A	05/01/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-3B	05/01/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	08/28/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	11/20/2011	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	02/19/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	05/20/2012	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MWT-1	07/29/2012	--	--	--	--	--	--
MWT-2	07/29/2012	--	--	--	--	--	--
MWT-3	07/29/2012	--	--	--	--	--	--
MWT-4	07/29/2012	--	--	--	--	--	--

Table 3
Additional Groundwater Analytical Results for 2011 and 2012
76 Station 3737
1400 Powell Street, Emeryville, California

Location	Sample Date [a]	1,2-Dibromo-3-chloropropane (DBCP) (µg/L)	1,2-Dichlorobenzene (o-Dichlorobenzene) (µg/L)	1,2-Dichloroethene (µg/L)	1,2-Dichloropropane (µg/L)	1,3,5-Trimethylbenzene (µg/L)	1,3-Dichlorobenzene (µg/L)
ESL [b]		**--**	**10**	**--**	**5.0**	**--**	**65**
MW-1A	05/01/2011	5.1	<0.50	<1.0	<0.50	1.2	<0.50
	08/28/2011	<1.0	<0.50	<1.0	<0.50	0.59	<0.50
	11/20/2011	<1.0	<0.50	<1.0	<0.50	5.7	<0.50
	02/19/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	05/20/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-1B	05/01/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	08/28/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	11/20/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	02/19/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	05/20/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-2A	05/01/2011	<1.0	<0.50	<1.0	<0.50	2.3	<0.50
	08/28/2011	<10 D,	<5.0 D,	<10 D,	<5.0 D,	<5.0 D,	<5.0 D,
	11/20/2011	<10 D,	<5.0 D,	<10 D,	<5.0 D,	6.5 D	<5.0 D,
	02/19/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	05/20/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-2B	05/01/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	08/28/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	11/20/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	02/19/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	05/20/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MW-3A	05/01/2011	<1.0	<0.50	<1.0	<0.50	1.4	<0.50
	08/28/2011	<1.0	<0.50	<1.0	<0.50	0.68	<0.50
	11/20/2011	<1.0	<0.50	<1.0	<0.50	3.8	<0.50
	02/19/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	05/20/2012	<1.0	<0.50	<1.0	<0.50	0.76	<0.50
	07/29/2012	--	--	--	--	--	--
MW-3B	05/01/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	08/28/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	11/20/2011	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	02/19/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	05/20/2012	<1.0	<0.50	<1.0	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--
MWT-1	07/29/2012	--	--	--	--	--	--
MWT-2	07/29/2012	--	--	--	--	--	--
MWT-3	07/29/2012	--	--	--	--	--	--
MWT-4	07/29/2012	--	--	--	--	--	--

Table 3
Additional Groundwater Analytical Results for 2011 and 2012
76 Station 3737
1400 Powell Street, Emeryville, California

Location	Sample Date [a]	1,3-Dichloropropane (µg/L)	1,3-Dichloropropene (µg/L)	1,4-Dichlorobenzene (µg/L)	4-Isopropyltoluene (µg/L)	Chlorobenzene (µg/L)	Chloroethane (µg/L)	t-Butylbenzene (µg/L)	Tert-amyl methyl ether (µg/L)	Vinyl chloride (Chloroethene) (µg/L)
ESL [b]		--	0.5	5.0	--	25	16	--	--	0.5
MW-1A	05/01/2011	<0.50	<1.0	<0.50	0.90	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<1.0	<0.50	0.74	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<1.0	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<1.0	<0.50	1.9	<0.50	<0.50	0.59	2.0	<0.50
	05/20/2012	<0.50	<1.0	<0.50	2.1	<0.50	<0.50	0.59	0.76	<0.50
	07/29/2012	--	--	--	--	--	--	--	1.2	--
MW-1B	05/01/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--	--	<0.50	--
MW-2A	05/01/2011	<0.50	<1.0	<0.50	5.2	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<5.0 D,	<10 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,
	11/20/2011	<5.0 D,	<10 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,	<5.0 D,
	02/19/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--	--	<0.50	--
MW-2B	05/01/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--	--	<0.50	--
MW-3A	05/01/2011	<0.50	<1.0	<0.50	8.8	<0.50	<0.50	0.63	<0.50	<0.50
	08/28/2011	<0.50	<1.0	<0.50	1.2	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<1.0	<0.50	0.92	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<1.0	<0.50	2.0	<0.50	<0.50	0.63	<0.50	<0.50
	05/20/2012	<0.50	<1.0	<0.50	1.8	<0.50	<0.50	0.62	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--	--	<0.50	--
MW-3B	05/01/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	08/28/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/20/2011	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	02/19/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	05/20/2012	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/29/2012	--	--	--	--	--	--	--	<0.50	--
MWT-1	07/29/2012	--	--	--	--	--	--	--	--	--
MWT-2	07/29/2012	--	--	--	--	--	--	--	--	--
MWT-3	07/29/2012	--	--	--	--	--	--	--	--	--
MWT-4	07/29/2012	--	--	--	--	--	--	--	--	--

Table 3
Additional Groundwater Analytical Results for 2011 and 2012
76 Station 3737
1400 Powell Street, Emeryville, California

Notes:

a. Full suite volatile organic compounds (VOCs) analysis was discontinued after the May 2012 sampling event as approved by the Alameda Health Care Services Agency in their letter dated May 10, 2012.
b. ESL values are obtained from Table F-1a, Groundwater Screening Levels, Groundwater is a Current or Potential Source of Drinking Water (CRWQCB 2013).
< = not detected at or above the laboratory reporting limit
'-- = not analyzed, measured, or collected
µg/L = micrograms per liter

Table 4
Summary of Statistical Analysis of Groundwater Analytical Data
76 Station 3737
1400 Powell Street
Emeryville, California

Constituent	Well	Screening Level (µg/L)[1]	Data Range						Linear Regression Analysis					
			Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Concentration Measured Most Recently (µg/L)	% of Data Above Laboratory Reporting Limit	Start Date	End Date	Coefficient of Determination, R^2	p-value of Correlation (Significance of Slope)	Attenuation Half-life (days)	Trend Direction	Significance of Trend[2]	Projected Year to Screening Level
TPH-g	MW-1A	100	840	1,600	1,300	100	8/28/2011	1/16/2013	0.40	0.128	NA	Stable	NS	NA
TPH-g	MW-2A	100	1,300	2,800	1,700	100	1/26/2011	1/16/2013	0.68	0.006	912	Decreasing	Significant	2022
TPH-g	MW-3A	100	1,200	3,100	1,400	100	1/26/2011	1/16/2013	0.38	0.079	918	Decreasing	Significant	2022
TPH-d	MW-1A	100	180	610	260	100	1/26/2011	1/16/2013	0.52	0.028	557	Decreasing	Significant	2014
TPH-d	MW-2A	100	91	1,600	710	100	1/26/2011	1/16/2013	0.52	0.028	254	Decreasing	Significant	2013
TPH-d	MW-3A	100	130	1,400	170	100	1/26/2011	1/16/2013	0.48	0.039	314	Decreasing	Significant	2013
Benzene	MW-1A	1.0	8.4	36	9.0	100	1/26/2011	1/16/2013	0.15	0.302	912	Stable	NS	NA
Benzene	MW-2A	1.0	100	860	310	100	1/26/2011	1/16/2013	0.07	0.498	852	Stable	NS	NA
Benzene	MW-3A	1.0	19	160	19	100	1/26/2011	1/16/2013	0.39	0.072	390	Decreasing	Significant	2018
MTBE	MW-1A	5	24	59	24	100	1/26/2011	1/16/2013	0.13	0.349	1,434	Stable	NS	NA
MTBE	MW-2A	5	140	320	140	100	1/26/2011	1/16/2013	0.03	0.676	NA	Stable	NS	NA
TBA	MW-1A	12	10	120	10	67	1/26/2011	1/16/2013	0.03	0.670	NA	Stable	NS	NA
TBA	MW-2A	12	2,100	3,400	3,400	100	5/1/2011	1/16/2013	0.09	0.465	NA	Stable	NS	NA
EDC	MW-1B	0.5	15	27	15	100	1/26/2011	1/16/2013	0.00	0.964	44,846	Stable	NS	NA
EDC	MW-3A	0.5	0.5	5.0	1.0	56	1/26/2011	1/16/2013	0.15	0.298	643	Stable	NS	NA

Notes, Abbreviations and Assumptions:
µg/L = micrograms per liter
NS = not significant
NA = not applicable due to increasing trend or non-significant trend
[1] San Francisco Regional Water Quality Control Board Environmental Screening Levels (2013)
[2] Statistically significant trend defined as having p-value ≤0.10.

Table 5
Geochemistry Parameters Collected First Quarter 2013
76 Station 3737
1400 Powell Street, Emeryville, California

Well ID	Date Sampled	Dissolved Iron	Dissolved Manganese	Nitrate as NO3 (mg/L)	Nitrite as NO2 (mg/L)	Sulfate (mg/L)	Post-purge DO	Pre-purge DO
MW-1A	1/16/2013	69	5,300	<0.44	<0.17	1.1	1.0	1.2
MW-1B	1/16/2013	--	--	--	--	--	--	--
MW-2A	1/16/2013	1,400	13,000	<0.88	<0.17	5.6	1.0	1.0
MW-2B	1/16/2013	--	--	--	--	--	--	--
MW-3A	1/16/2013	<50	5,200	<0.44	<0.17	6.3	0.9	1.1
MW-3B	1/16/2013	<50	45	<0.44	<0.17	6.3	1.0	1.2

Notes
Analytical results given in micrograms per liter (µg/L), unless otherwise stated

mg/l	milligrams per liter (approx. equivalent to parts per million, ppm)
µg/l	micrograms per liter (approx. equivalent to parts per billion, ppb)
DO	dissolved oxygen

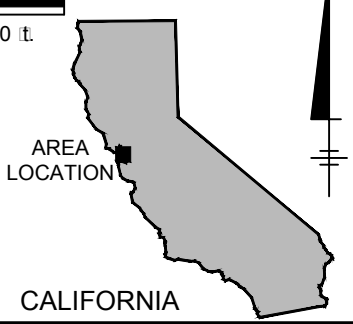
ARCADIS

Figures

REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. UAD., OAKLAND WEST, CALIFORNIA, 1993.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.



UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE 1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047937\0000\0004\DWG\47937N01.dwg LAYOUT: 1 SAVED: 8/22/2012 10:01 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 8/22/2012 10:01 AM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
47397X02.jpg

NOTES:

1. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH ON AUGUST 4, 2010.
2. BRIEF DESCRIPTIONS OF THE SITES SHOWN ARE INCLUDED IN SECTION 2.

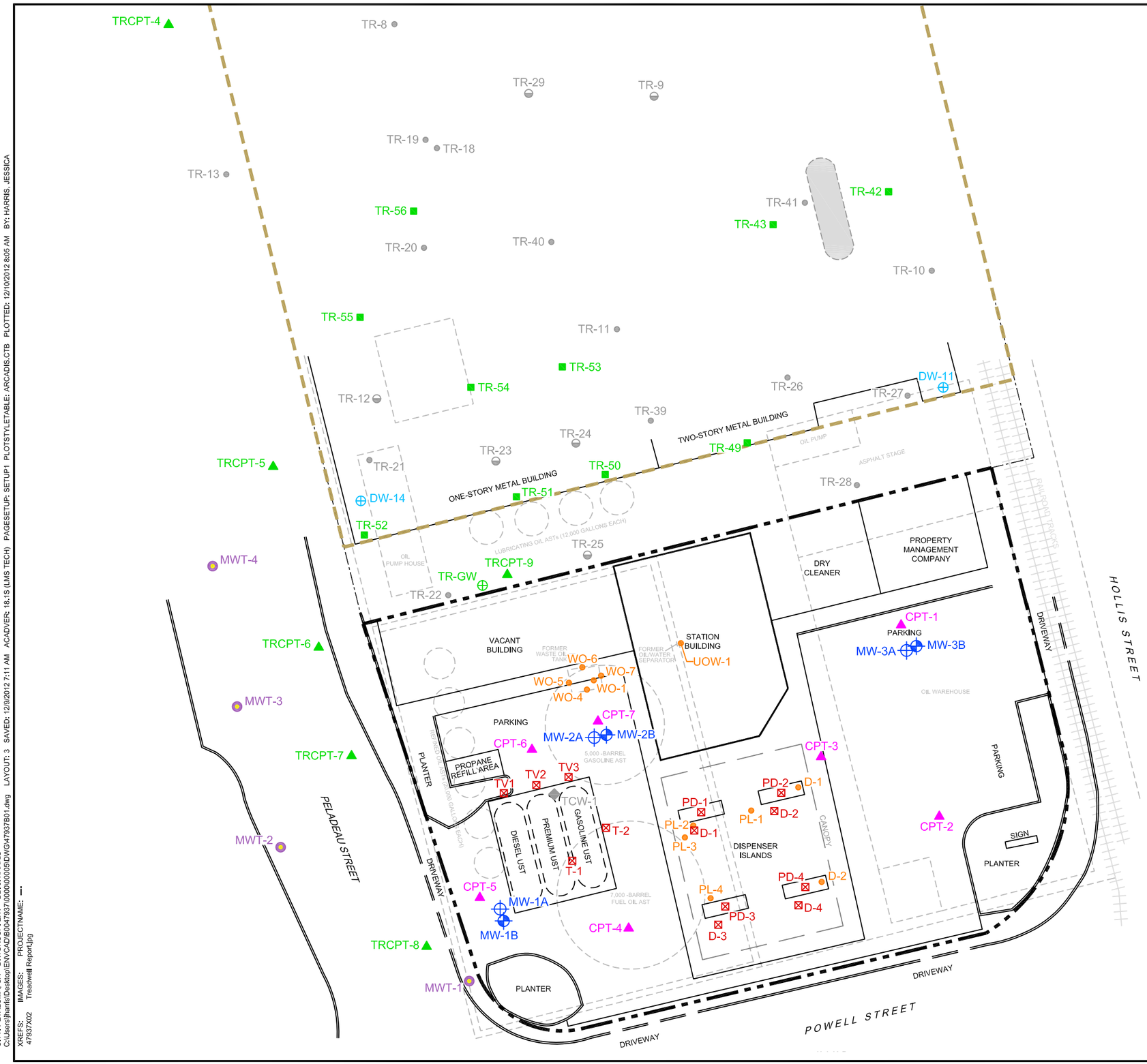
0 250' 500'
GRAPHIC SCALE

UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET, EMERYVILLE, CALIFORNIA
CONCEPTUAL SITE MODEL

SITE AND NEIGHBORING PROPERTIES

ARCADIS

FIGURE
2



LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- MW-1A — MONITORING WELL LOCATION (SHALLOW ZONE)
- MW-1B — MONITORING WELL LOCATION (DEEP ZONE)
- TCW-1 — TANK CAVITY WELL (GRAB SAMPLE) [2]
- DW-11 — DEWATERING WELL (OFFSITE) [2]
- TR-54 — APPROXIMATE CONFIRMATION SOIL SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2006 [POST 2006 EXCAVATION AND DEWATERING; RETRIEVED FROM FINAL EXCAVATION DEPTH] [3]
- TR-11 — APPROXIMATE HISTORICAL SOIL SAMPLE LOCATION (OFFSITE), 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-25 — APPROXIMATE SOIL AND GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE) 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-GW — GRAB GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO, 2008
- D-1 — HISTORICAL BORING LOCATION (ONSITE) [2]
- CPT-1 — CPT BORING LOCATION, 2009
- TRCPT-8 — APPROXIMATE CPT BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2010
- TV1 — SOIL VAPOR SAMPLING LOCATION (1997)
- MWT-1 — TEMPORARY MONITORING WELL LOCATION, 2012
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- APPROXIMATE LOCATION OF UST (REMOVED 1990)
- 2006 EXCAVATION EXTENT (12'-16' FEET BELOW GROUND SURFACE)

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.
2. SAMPLES RETRIEVED PRIOR TO 2006 EXCAVATION AND DEWATERING EVENT.
3. LOCATION APPROXIMATED FROM 5885 HOLLIS STREET CASE CLOSURE SUMMARY.
4. HISTORICAL DATA NOT AVAILABLE FOR TR-39 THROUGH TR-41. SAMPLE IDs WERE INADVERTENTLY DUPLICATED DURING POST-EXCAVATION SAMPLING.

0 30' 60'

GRAPHIC SCALE

UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

SITE PLAN

ARCADIS

FIGURE 3

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
LAYOUT: 3 SAVED: 12/9/2012 7:11 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/10/2012 8:05 AM BY: HARRIS, JESSICA
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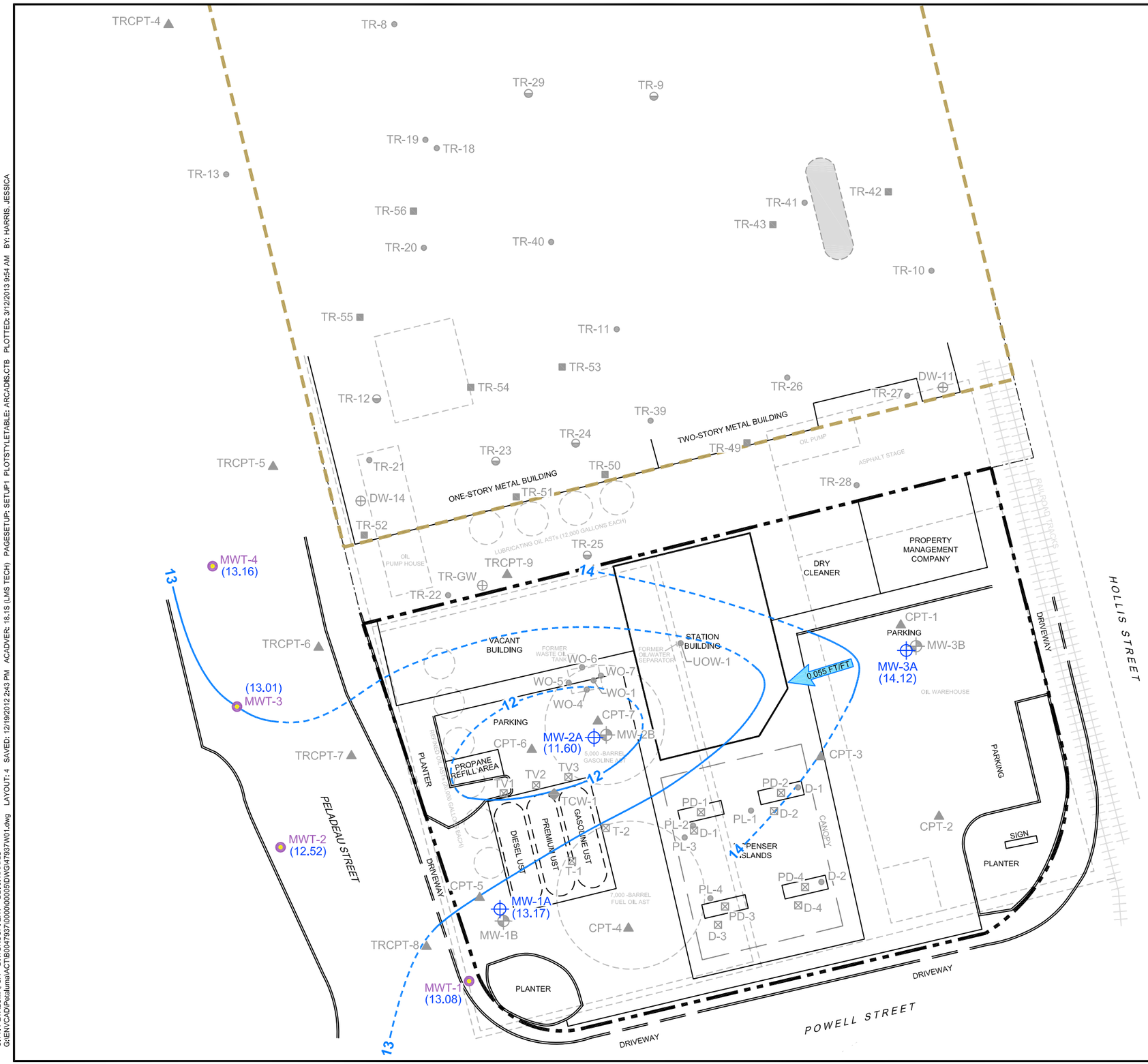
XREFS: 47937X02 IMAGES: Treadwell Report.jpg PROJECTNAME: ---



LEGEND

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- TV1 — SOIL VAPOR SAMPLING LOCATION (1997)
- MWT-1 — TEMPORARY MONITORING WELL LOCATION, 2012
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- APPROXIMATE LOCATION OF UST (REMOVED 1990)
- 2006 EXCAVATION EXTENT (12'-16' BELOW GROUND SURFACE)
- GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- (13.17) GROUNDWATER ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (MSL)
- 0.055 FT/FT — APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT MEASURED IN FOOT PER FOOT (FT/FT)

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.
2. SAMPLES RETRIEVED PRIOR TO 2006 EXCAVATION AND DEWATERING EVENT.
3. LOCATION APPROXIMATED FROM 5885 HOLLIS STREET CASE CLOSURE SUMMARY.
4. HISTORICAL DATA NOT AVAILABLE FOR TR-39 THROUGH TR-41. SAMPLE IDs WERE INADVERTENTLY DUPLICATED DURING POST-EXCAVATION SAMPLING.

0 30' 60'

GRAPHIC SCALE

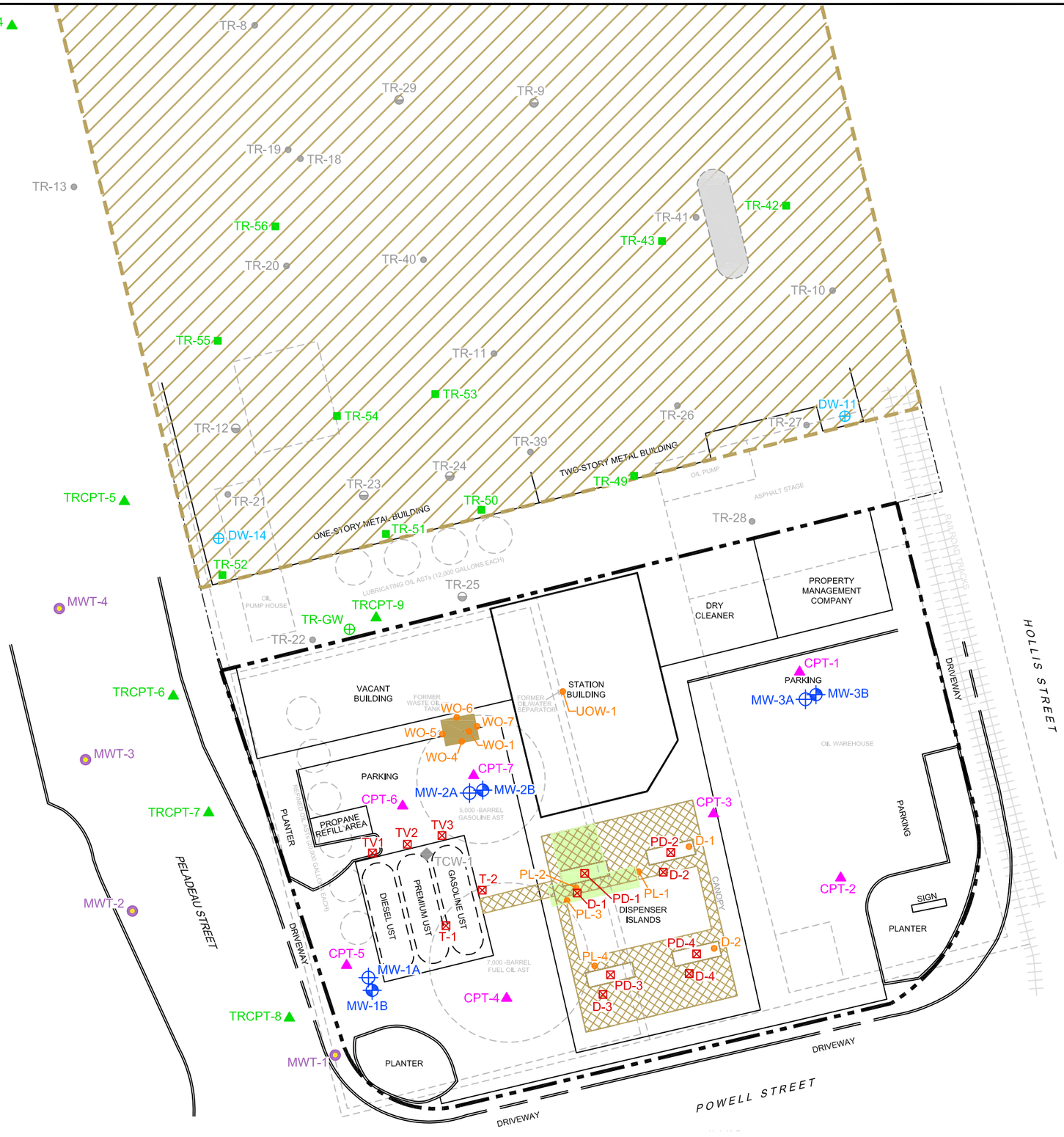
UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR MAP (SHALLOW ZONE)- JULY 29, 2012

ARCADIS

FIGURE 4

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENV\CAD\Petaluma\ACTIB\00479370\0000000\5\DWG\479370W01.dwg LAYOUT: 4 SAVED: 12/19/2012 2:43 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 3/12/2013 9:54 AM BY: HARRIS, JESSICA



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- TR-54 — APPROXIMATE CONFIRMATION SOIL SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2006 [POST 2006 EXCAVATION AND DEWATERING; RETRIEVED FROM FINAL EXCAVATION DEPTH] [3]
- TR-11 — APPROXIMATE HISTORICAL SOIL SAMPLE LOCATION (OFFSITE), 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-25 — APPROXIMATE SOIL AND GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE) 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-GW — GRAB GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO, 2008
- D-1 — HISTORICAL BORING LOCATION (ONSITE) [2]
- CPT-1 — CPT BORING LOCATION, 2009
- TRCPT-8 — APPROXIMATE CPT BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2010
- TV1 — SOIL VAPOR SAMPLING LOCATION (1997)
- MWT-1 — TEMPORARY MONITORING WELL LOCATION, 2012
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- APPROXIMATE LOCATION OF UST (REMOVED 1990)
- 2006 EXCAVATION EXTENT (12'-16' BELOW GROUND SURFACE (BGS))
- 1999 FORMER WASTE OIL TANK REMOVAL (7.5'-10' BGS)
- 1999 PRODUCT LINE EXCAVATION (1.5'-4' BGS)
- 1999 OVEREXCAVATION

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.
2. SAMPLES RETRIEVED PRIOR TO 2006 EXCAVATION AND DEWATERING EVENT.
3. LOCATION APPROXIMATED FROM 5885 HOLLIS STREET CASE CLOSURE SUMMARY.
4. HISTORICAL DATA NOT AVAILABLE FOR TR-39 THROUGH TR-41. SAMPLE IDs WERE INADVERTENTLY DUPLICATED DURING POST-EXCAVATION SAMPLING.

0 30' 60'

GRAPHIC SCALE

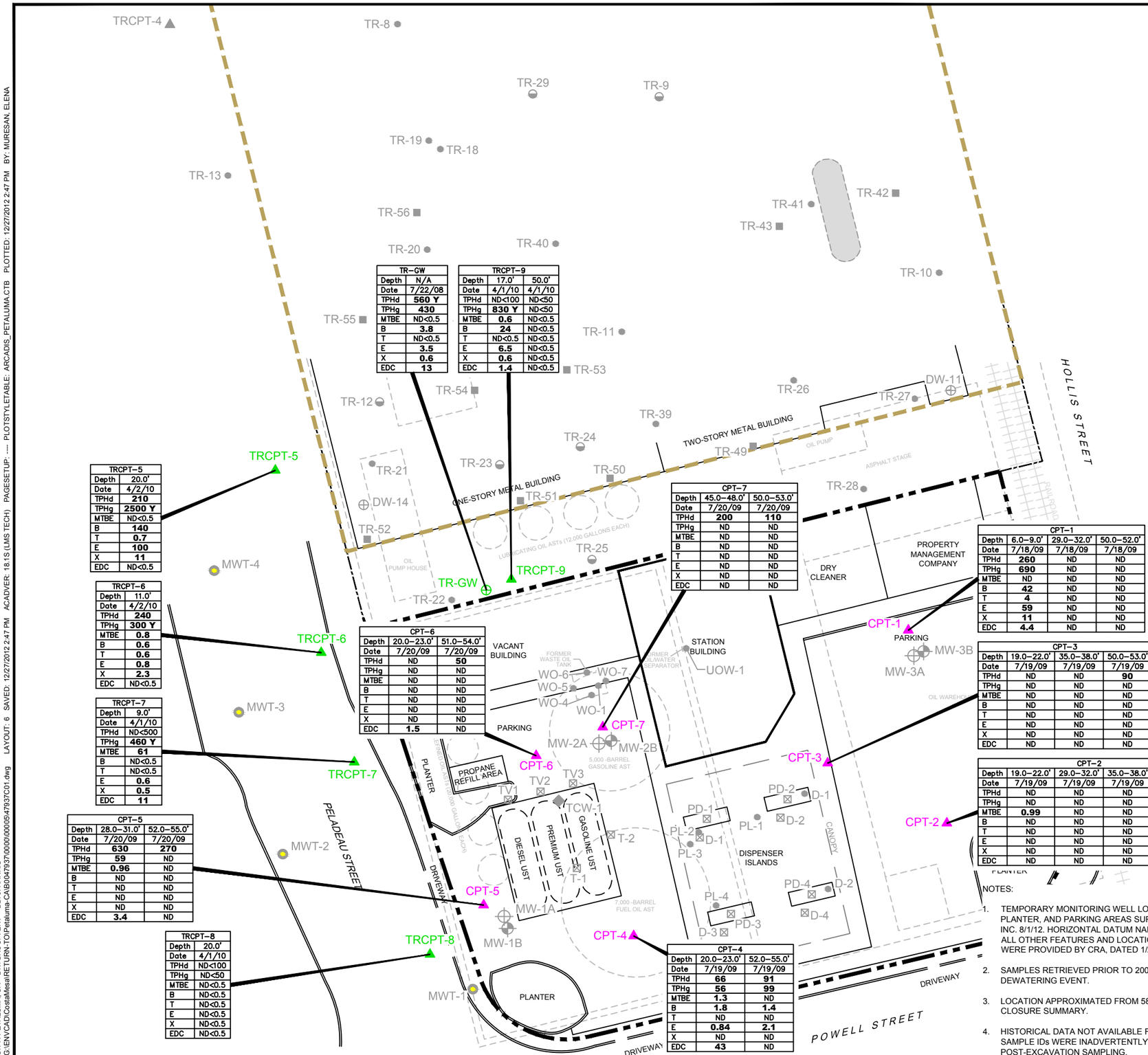
UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

HISTORICAL SOIL SAMPLING LOCATIONS AND EXCAVATION SUMMARY

ARCADIS

FIGURE 5

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047937\0000000005\DWG\47937B02.dwg LAYOUT: 5 SAVED: 12/10/2012 8:13 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/19/2012 1:53 PM BY: HARRIS, JESSICA



TR-GW	
Depth	N/A
Date	7/22/08
TPHd	**560 Y**
TPHg	**430**
MTBE	ND<0.5
B	**3.8**
T	ND<0.5
E	**3.5**
X	**0.6**
EDC	**13**

TRCPT-9		
Depth	17.0'	50.0'
Date	4/1/10	4/1/10
TPHd	ND<100	ND<50
TPHg	**830 Y**	ND<50
MTBE	**0.6**	ND<0.5
B	**24**	ND<0.5
T	ND<0.5	ND<0.5
E	**6.5**	ND<0.5
X	**0.6**	ND<0.5
EDC	**1.4**	ND<0.5

TRCPT-5	
Depth	20.0'
Date	4/2/10
TPHd	**210**
TPHg	**2500 Y**
MTBE	ND<0.5
B	**140**
T	**0.7**
E	**100**
X	**11**
EDC	ND<0.5

TRCPT-6	
Depth	11.0'
Date	4/2/10
TPHd	**240**
TPHg	**300 Y**
MTBE	**0.8**
B	**0.6**
T	**0.6**
E	**0.8**
X	**2.3**
EDC	ND<0.5

TRCPT-7	
Depth	9.0'
Date	4/1/10
TPHd	ND<500
TPHg	**460 Y**
MTBE	**61**
B	ND<0.5
T	ND<0.5
E	**0.6**
X	**0.5**
EDC	**11**

CPT-5		
Depth	28.0–31.0'	52.0–55.0'
Date	7/20/09	7/20/09
TPHd	**630**	**270**
TPHg	**59**	ND
MTBE	**0.96**	ND
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
EDC	**3.4**	ND

TRCPT-8	
Depth	20.0'
Date	4/1/10
TPHd	ND<100
TPHg	ND<50
MTBE	ND<0.5
B	ND<0.5
T	ND<0.5
E	ND<0.5
X	ND<0.5
EDC	ND<0.5

CPT-6		
Depth	20.0–23.0'	51.0–54.0'
Date	7/20/09	7/20/09
TPHd	ND	**50**
TPHg	ND	ND
MTBE	ND	ND
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
EDC	**1.5**	ND

CPT-7		
Depth	45.0–48.0'	50.0–53.0'
Date	7/20/09	7/20/09
TPHd	**200**	**110**
TPHg	ND	ND
MTBE	ND	ND
B	ND	ND
T	ND	ND
E	ND	ND
X	ND	ND
EDC	ND	ND

CPT-4		
Depth	20.0–23.0'	52.0–55.0'
Date	7/19/09	7/19/09
TPHd	**66**	**91**
TPHg	**56**	**99**
MTBE	**1.3**	ND
B	**1.8**	**1.4**
T	ND	ND
E	**0.84**	**2.1**
X	ND	ND
EDC	**43**	ND

CPT-1			
Depth	6.0–9.0'	29.0–32.0'	50.0–52.0'
Date	7/18/09	7/18/09	7/18/09
TPHd	**260**	ND	ND
TPHg	**690**	ND	ND
MTBE	ND	ND	ND
B	**42**	ND	ND
T	**4**	ND	ND
E	**59**	ND	ND
X	**11**	ND	ND
EDC	**4.4**	ND	ND

CPT-3			
Depth	19.0–22.0'	35.0–38.0'	50.0–53.0'
Date	7/19/09	7/19/09	7/19/09
TPHd	ND	ND	**90**
TPHg	ND	ND	ND
MTBE	ND	ND	ND
B	ND	ND	ND
T	ND	ND	ND
E	ND	ND	ND
X	ND	ND	ND
EDC	ND	ND	ND

CPT-2				
Depth	19.0–22.0'	29.0–32.0'	35.0–38.0'	50.0–53.0'
Date	7/19/09	7/19/09	7/19/09	7/19/09
TPHd	ND	ND	ND	ND
TPHg	ND	ND	ND	ND
MTBE	**0.99**	ND	ND	ND
B	ND	ND	ND	ND
T	ND	ND	ND	ND
E	ND	ND	ND	ND
X	ND	ND	ND	ND
EDC	ND	ND	ND	ND

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- MW-1A — MONITORING WELL LOCATION (SHALLOW ZONE)
- MW-1B — MONITORING WELL LOCATION (DEEP ZONE)
- TCW-1 — TANK CAVITY WELL (GRAB SAMPLE) [2]
- DW-11 — DEWATERING WELL (OFFSITE) [2]
- TR-54 — APPROXIMATE CONFIRMATION SOIL SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2006 [POST 2006 EXCAVATION AND DEWATERING; RETRIEVED FROM FINAL EXCAVATION DEPTH] [3]
- TR-11 — APPROXIMATE HISTORICAL SOIL SAMPLE LOCATION (OFFSITE), 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-25 — APPROXIMATE SOIL AND GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE) 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-GW — GRAB GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO, 2008
- D-1 — HISTORICAL BORING LOCATION (ONSITE) [2]
- CPT-1 — CPT BORING LOCATION, 2009
- TRCPT-8 — APPROXIMATE CPT BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2010
- TV1 — SOIL VAPOR SAMPLING LOCATION (1997)
- MWT-1 — TEMPORARY MONITORING WELL LOCATION, 2012
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- APPROXIMATE LOCATION OF UST (REMOVED 1990)
- 2006 EXCAVATION EXTENT (12'-16' FEET BELOW GROUND SURFACE)

TPHd	TOTAL PETROLEUM HYDROCARBONS AS DIESEL
TPHg	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MTBE	METHYL TERTIARY BUTYL ETHER
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
EDC	ETHYLENE DICHLORIDE
<	LESS THAN LABORATORY REPORTING LIMIT
ND	NON-DETECT
NA	NOT APPLICABLE
Y	CHROMATOGRAPHIC PATTERN DOES NOT RESEMBLE STANDARD

DETECTIONS ARE IN **BOLD**

ALL ANALYTICAL RESULTS ARE IN MICROGRAMS PER LITER (µg/L)

0 30' 60'

GRAPHIC SCALE

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.
2. SAMPLES RETRIEVED PRIOR TO 2006 EXCAVATION AND DEWATERING EVENT.
3. LOCATION APPROXIMATED FROM 5885 HOLLIS STREET CASE CLOSURE SUMMARY.
4. HISTORICAL DATA NOT AVAILABLE FOR TR-39 THROUGH TR-41. SAMPLE IDs WERE INADVERTENTLY DUPLICATED DURING POST-EXCAVATION SAMPLING.

UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET, EMERYVILLE, CALIFORNIA
CONCEPTUAL SITE MODEL

GRAB GROUNDWATER SAMPLING RESULTS [POST-EXCAVATION AND DEWATERING EVENT]

ARCADIS

FIGURE 6

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENV\CAD\CostaMesa\RETURN-TO\Petaluma-CA\B0047937\0000000\B0047937C01.dwg LAYOUT: 6 SAVED: 12/27/2012 2:47 PM ACADVER: 18.1S (LMS TECH)
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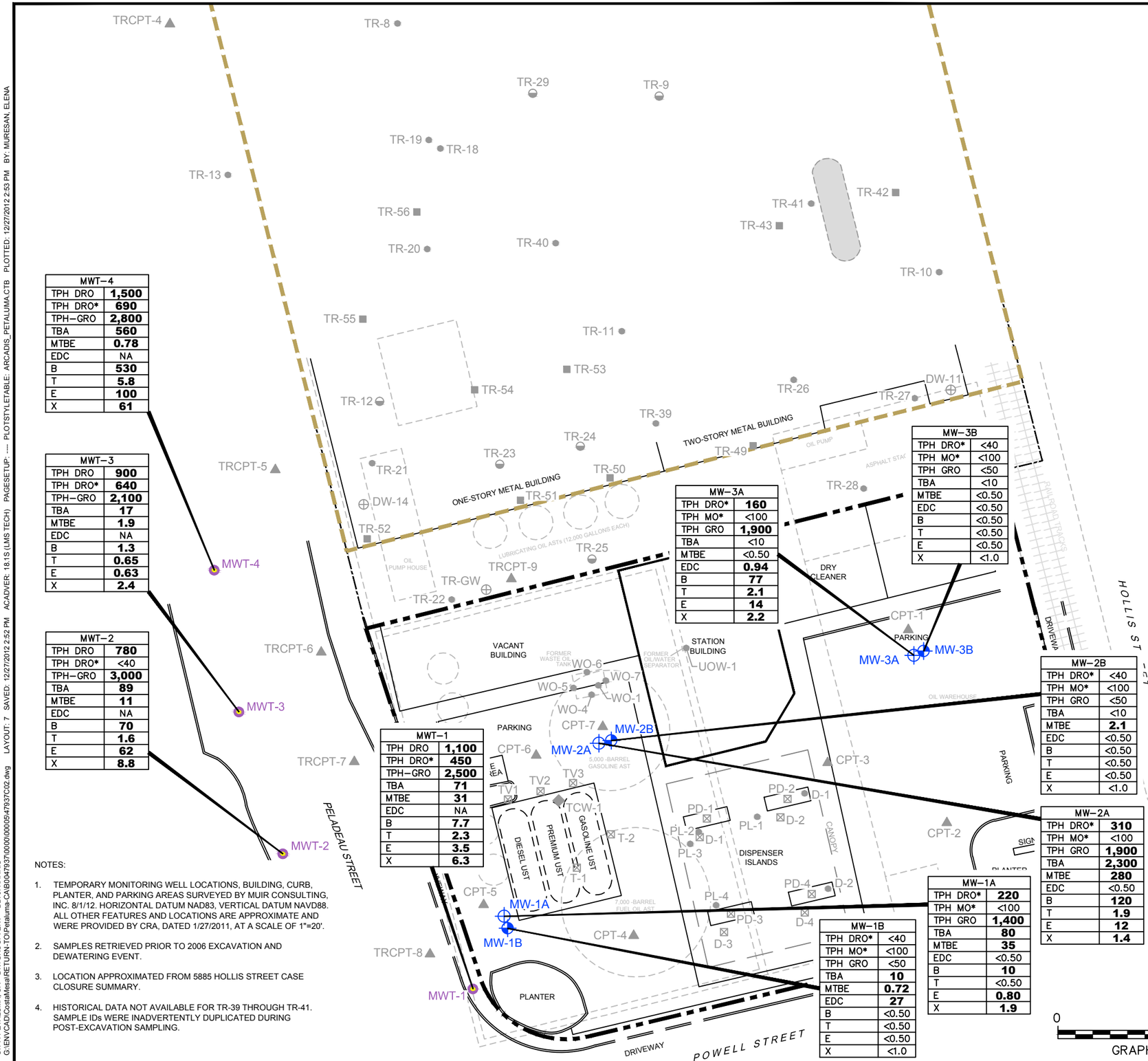


MWT–4	
TPH DRO	**1,500**
TPH DRO*	**690**
TPH–GRO	**2,800**
TBA	**560**
MTBE	**0.78**
EDC	NA
B	**530**
T	**5.8**
E	**100**
X	**61**

MWT–3	
TPH DRO	**900**
TPH DRO*	**640**
TPH–GRO	**2,100**
TBA	**17**
MTBE	**1.9**
EDC	NA
B	**1.3**
T	**0.65**
E	**0.63**
X	**2.4**

MWT–2	
TPH DRO	**780**
TPH DRO*	<40
TPH–GRO	**3,000**
TBA	**89**
MTBE	**11**
EDC	NA
B	**70**
T	**1.6**
E	**62**
X	**8.8**

MWT–1	
TPH DRO	**1,100**
TPH DRO*	**450**
TPH–GRO	**2,500**
TBA	**71**
MTBE	**31**
EDC	NA
B	**7.7**
T	**2.3**
E	**3.5**
X	**6.3**

MW–3A	
TPH DRO*	**160**
TPH MO*	<100
TPH GRO	**1,900**
TBA	<10
MTBE	<0.50
EDC	**0.94**
B	**77**
T	**2.1**
E	**14**
X	**2.2**

MW–3B	
TPH DRO*	<40
TPH MO*	<100
TPH GRO	<50
TBA	<10
MTBE	<0.50
EDC	<0.50
B	<0.50
T	<0.50
E	<0.50
X	<1.0

MW–2B	
TPH DRO*	<40
TPH MO*	<100
TPH GRO	<50
TBA	<10
MTBE	**2.1**
EDC	<0.50
B	<0.50
T	<0.50
E	<0.50
X	<1.0

MW–2A	
TPH DRO*	**310**
TPH MO*	<100
TPH GRO	**1,900**
TBA	**2,300**
MTBE	**280**
EDC	<0.50
B	**120**
T	**1.9**
E	**12**
X	**1.4**

MW–1A	
TPH DRO*	**220**
TPH MO*	<100
TPH GRO	**1,400**
TBA	**80**
MTBE	**35**
EDC	<0.50
B	**10**
T	<0.50
E	**0.80**
X	**1.9**

MW–1B	
TPH DRO*	<40
TPH MO*	<100
TPH GRO	<50
TBA	**10**
MTBE	**0.72**
EDC	**27**
B	<0.50
T	<0.50
E	<0.50
X	<1.0

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.
2. SAMPLES RETRIEVED PRIOR TO 2006 EXCAVATION AND DEWATERING EVENT.
3. LOCATION APPROXIMATED FROM 5885 HOLLIS STREET CASE CLOSURE SUMMARY.
4. HISTORICAL DATA NOT AVAILABLE FOR TR-39 THROUGH TR-41. SAMPLE IDs WERE INADVERTENTLY DUPLICATED DURING POST-EXCAVATION SAMPLING.

LEGEND

	PROPERTY BOUNDARY
	LOT LINE
MW-1A	MONITORING WELL LOCATION (SHALLOW ZONE)
MW-1B	MONITORING WELL LOCATION (DEEP ZONE)
TCW-1	TANK CAVITY WELL (GRAB SAMPLE) [2]
DW-11	DEWATERING WELL (OFFSITE) [2]
TR-54	APPROXIMATE CONFIRMATION SOIL SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2006 [POST 2006 EXCAVATION AND DEWATERING; RETRIEVED FROM FINAL EXCAVATION DEPTH] [3]
TR-11	APPROXIMATE HISTORICAL SOIL SAMPLE LOCATION (OFFSITE), 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
TR-25	APPROXIMATE SOIL AND GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE) 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
TR-GW	GRAB GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO, 2008
D-1	HISTORICAL BORING LOCATION (ONSITE) [2]
CPT-1	CPT BORING LOCATION, 2009
TRCPT-8	APPROXIMATE CPT BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2010
TV1	SOIL VAPOR SAMPLING LOCATION (1997)
MWT-1	TEMPORARY MONITORING WELL LOCATION, 2012
	APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
	APPROXIMATE LOCATION OF UST (REMOVED 1990)
	2006 EXCAVATION EXTENT (12'-16' FEET BELOW GROUND SURFACE)
TPH DRO	TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS
TPH MO	TOTAL PETROLEUM HYDROCARBONS - MOTOR OIL
TPH GRO	TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS
TBA	TERTIARY BUTYL ALCOHOL
MTBE	METHYL TERTIARY BUTYL ETHER
EDC	ETHYLENE DICHLORIDE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
*	SAMPLES RUN WITH SILICA GEL CLEANUP
<	LESS THAN LABORATORY REPORTING LIMIT
NA	NOT ANALYZED
	DETECTIONS ARE IN **BOLD**
	ALL ANALYTICAL RESULTS ARE IN MICROGRAMS PER LITER (µg/L)

0 30' 60'
GRAPHIC SCALE

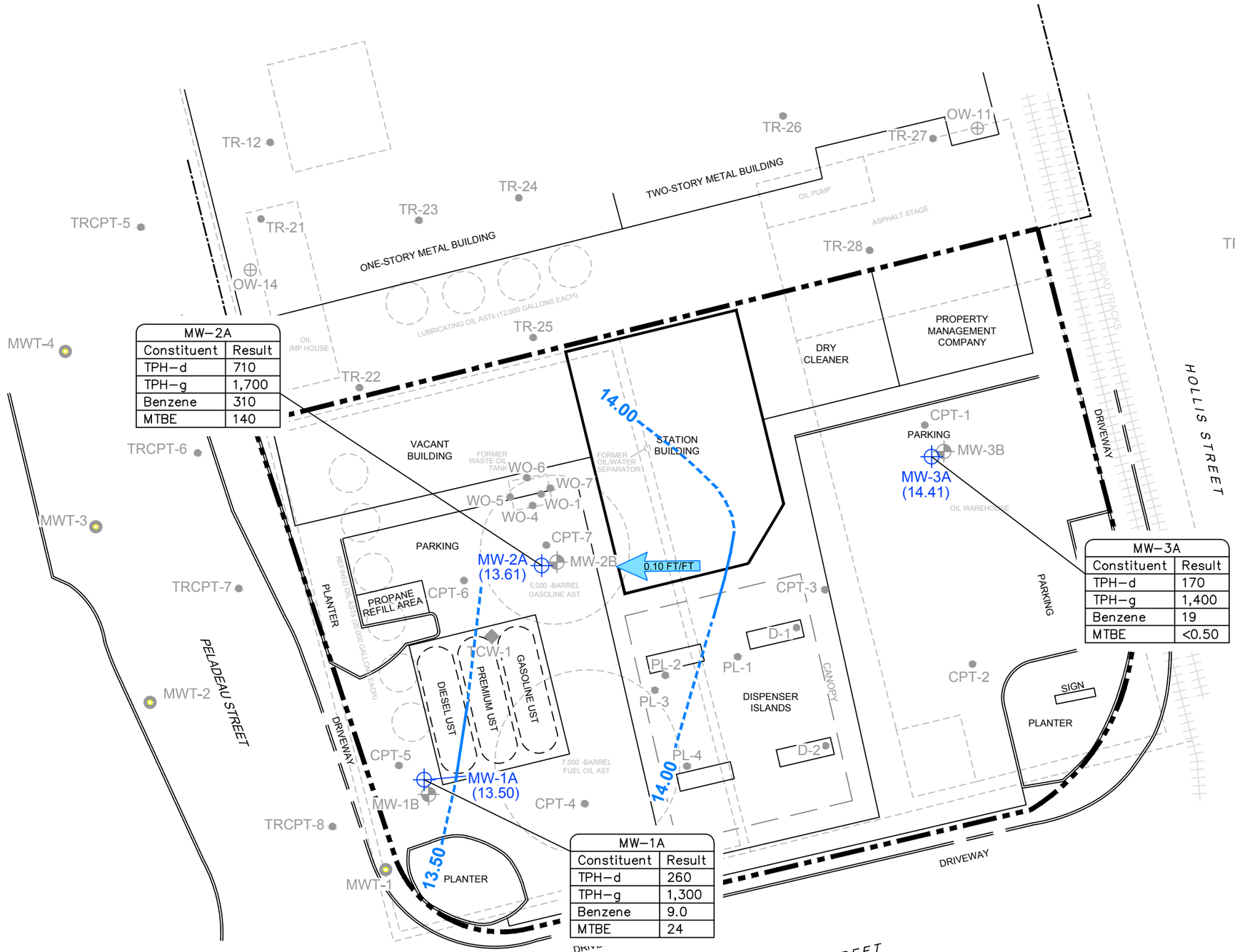
UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET, EMERYVILLE, CALIFORNIA
CONCEPTUAL SITE MODEL

GROUNDWATER ANALYTICAL RESULTS, JULY 29, 2012

ARCADIS

FIGURE
7A

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENVCAD\CostaMesa\RETURN-TO\Petaluma-CA\B0047937\0000000005479370\02.dwg LAYOUT: 7 SAVED: 12/27/2012 2:52 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS_PETALUMA.CTB PLOTTED: 12/27/2012 2:53 PM BY: MURESAN, ELENA



MW–2A	
Constituent	Result
TPH–d	710
TPH–g	1,700
Benzene	310
MTBE	140

MW–3A	
Constituent	Result
TPH–d	170
TPH–g	1,400
Benzene	19
MTBE	<0.50

MW–1A	
Constituent	Result
TPH–d	260
TPH–g	1,300
Benzene	9.0
MTBE	24

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- MW-1A — MONITORING WELL LOCATION (SHALLOW ZONE)
- MW-1B — MONITORING WELL LOCATION (DEEP ZONE)
- TCW-1 — TANK CAVITY WELL
- OW-11 — DEWATERING WELL (OFFSITE)
- TR-12/TRCPT-8 — APPROXIMATE BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2000-2010
- D-1 — HISTORICAL BORING LOCATION (ONSITE)
- CPT-1 — CPT BORING LOCATION, 2009
- MWT-1 — TEMPORARY MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- (14.41) — GROUNDWATER ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (MSL)
- 0.10 FT/FT — APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT MEASURED IN FOOT PER FOOT (FT/FT)

NOTE:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED PROVIDED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.

0 25' 50'
GRAPHIC SCALE

UNION OIL
FORMER 76 SERVICE STATION 35-1780
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR AND HYDROCARBON CONCENTRATION MAP (SHALLOW ZONE) JANUARY 16, 2013

ARCADIS

FIGURE 7B

CITY: PETALUMA_CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENV\CAD\CostaMesa\RETURN-TO\Petaluma-CA\R0047937\0000\0000021\D13479371W01.dwg LAYOUT: 7B SAVED: 3/11/2013 8:42 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS_PETALUMA.CTB PLOTTED: 3/11/2013 11:11 AM BY: MURESAN, ELENA
XREFS: IMAGES: PROJECTNAME: ---
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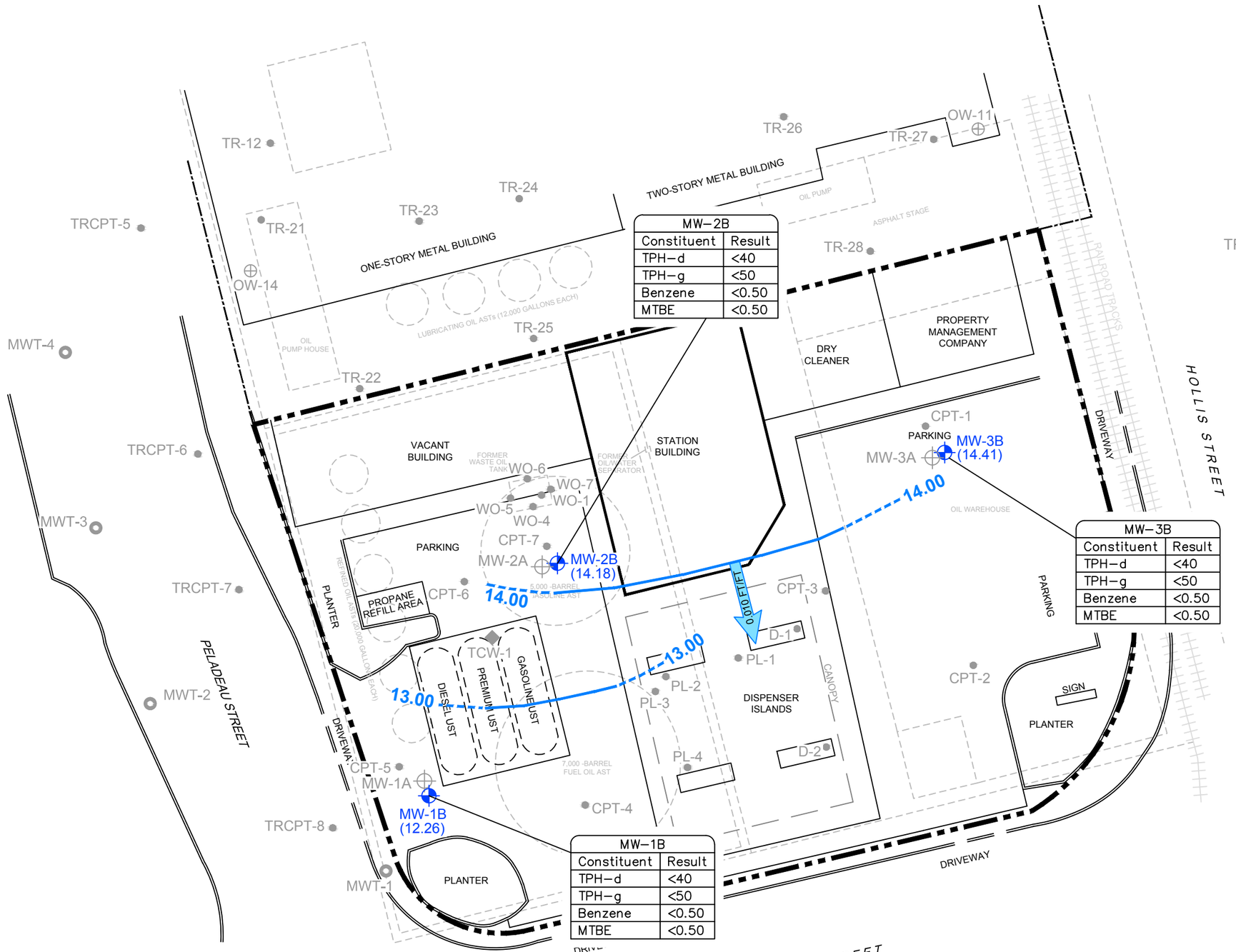

MW–2B	
Constituent	Result
TPH–d	<40
TPH–g	<50
Benzene	<0.50
MTBE	<0.50

MW–3B	
Constituent	Result
TPH–d	<40
TPH–g	<50
Benzene	<0.50
MTBE	<0.50

MW–1B	
Constituent	Result
TPH–d	<40
TPH–g	<50
Benzene	<0.50
MTBE	<0.50

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- MW-1A — MONITORING WELL LOCATION (SHALLOW ZONE)
- MW-1B — MONITORING WELL LOCATION (DEEP ZONE)
- TCW-1 — TANK CAVITY WELL
- OW-11 — DEWATERING WELL (OFFSITE)
- TR-12/TRCPT-8 — APPROXIMATE BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2000-2010
- D-1 — HISTORICAL BORING LOCATION (ONSITE)
- CPT-1 — CPT BORING LOCATION, 2009
- MWT-1 — TEMPORARY MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- (14.41) — GROUNDWATER ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (MSL)
- 0.010 FT/FT — APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT MEASURED IN FOOT PER FOOT (FT/FT)

NOTE:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED PROVIDED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.

0 25' 50'
GRAPHIC SCALE

UNION OIL
FORMER 76 SERVICE STATION 35-1780
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

GROUNDWATER ELEVATION CONTOUR AND HYDROCARBON CONCENTRATION MAP (DEEP ZONE) JANUARY 16, 2013

ARCADIS

FIGURE 7C

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
G:\ENV\CAD\CostaMesa\RETURN-TO\Petaluma-CA\B004793700000000021 13\47937W02.dwg LAYOUT: 4 SAVED: 2/5/2013 2:58 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 2/5/2013 2:59 PM BY: MURESAN, ELENA
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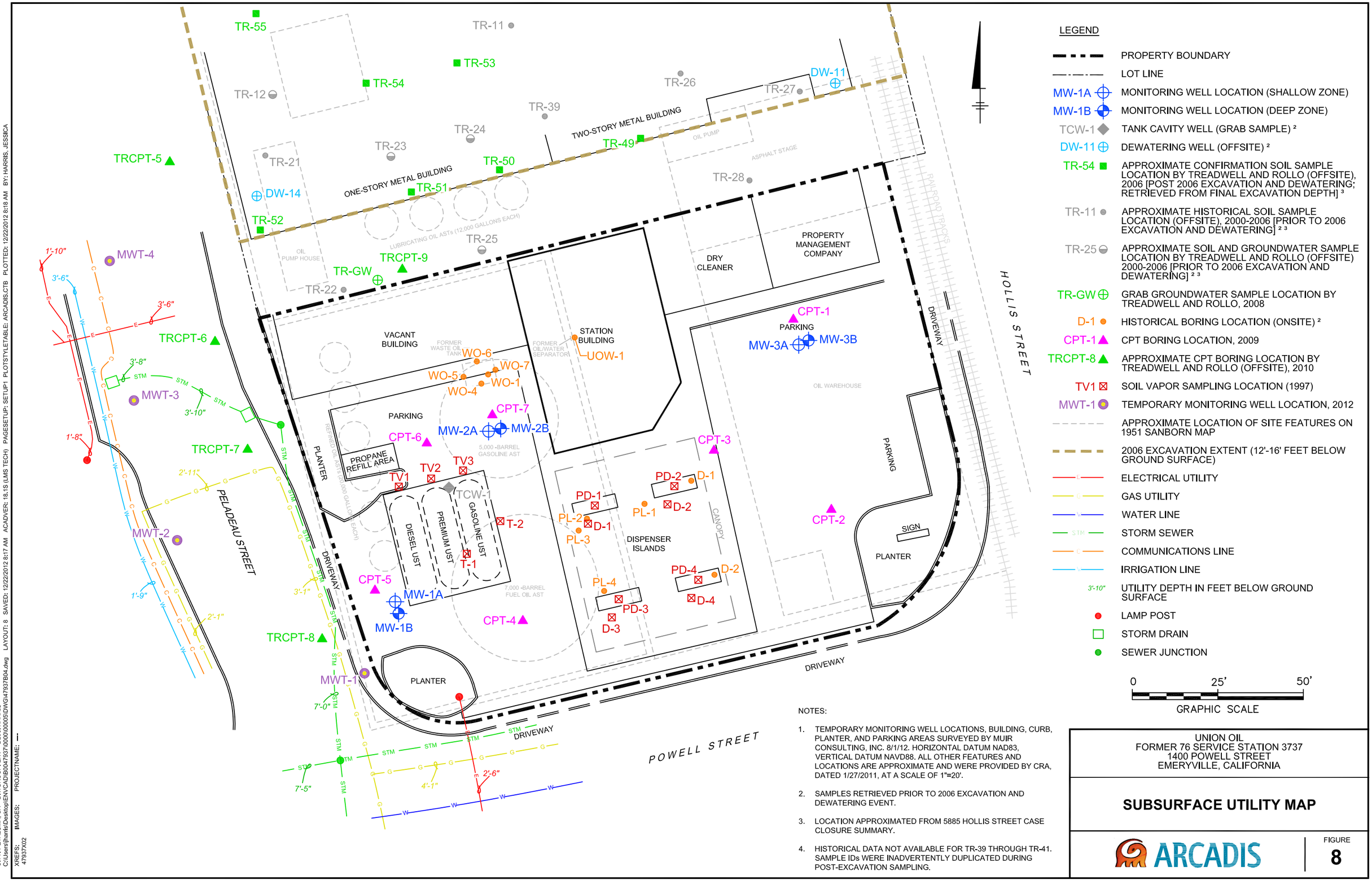
47937X02 m :1 13_Page_2_...g



LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- MW-1A — MONITORING WELL LOCATION (SHALLOW ZONE)
- MW-1B — MONITORING WELL LOCATION (DEEP ZONE)
- TCW-1 — TANK CAVITY WELL (GRAB SAMPLE) [2]
- DW-11 — DEWATERING WELL (OFFSITE) [2]
- TR-54 — APPROXIMATE CONFIRMATION SOIL SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2006 [POST 2006 EXCAVATION AND DEWATERING; RETRIEVED FROM FINAL EXCAVATION DEPTH] [3]
- TR-11 — APPROXIMATE HISTORICAL SOIL SAMPLE LOCATION (OFFSITE), 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-25 — APPROXIMATE SOIL AND GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO (OFFSITE) 2000-2006 [PRIOR TO 2006 EXCAVATION AND DEWATERING] [2 3]
- TR-GW — GRAB GROUNDWATER SAMPLE LOCATION BY TREADWELL AND ROLLO, 2008
- D-1 — HISTORICAL BORING LOCATION (ONSITE) [2]
- CPT-1 — CPT BORING LOCATION, 2009
- TRCPT-8 — APPROXIMATE CPT BORING LOCATION BY TREADWELL AND ROLLO (OFFSITE), 2010
- TV1 — SOIL VAPOR SAMPLING LOCATION (1997)
- MWT-1 — TEMPORARY MONITORING WELL LOCATION, 2012
- APPROXIMATE LOCATION OF SITE FEATURES ON 1951 SANBORN MAP
- 2006 EXCAVATION EXTENT (12'-16' FEET BELOW GROUND SURFACE)
- ELECTRICAL UTILITY
- GAS UTILITY
- WATER LINE
- STORM SEWER
- COMMUNICATIONS LINE
- IRRIGATION LINE
- 3'-10" — UTILITY DEPTH IN FEET BELOW GROUND SURFACE
- LAMP POST
- STORM DRAIN
- SEWER JUNCTION

0 25' 50'

GRAPHIC SCALE

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS, BUILDING, CURB, PLANTER, AND PARKING AREAS SURVEYED BY MUIR CONSULTING, INC. 8/1/12. HORIZONTAL DATUM NAD83, VERTICAL DATUM NAVD88. ALL OTHER FEATURES AND LOCATIONS ARE APPROXIMATE AND WERE PROVIDED BY CRA, DATED 1/27/2011, AT A SCALE OF 1"=20'.
2. SAMPLES RETRIEVED PRIOR TO 2006 EXCAVATION AND DEWATERING EVENT.
3. LOCATION APPROXIMATED FROM 5885 HOLLIS STREET CASE CLOSURE SUMMARY.
4. HISTORICAL DATA NOT AVAILABLE FOR TR-39 THROUGH TR-41. SAMPLE IDs WERE INADVERTENTLY DUPLICATED DURING POST-EXCAVATION SAMPLING.

UNION OIL
FORMER 76 SERVICE STATION 3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

SUBSURFACE UTILITY MAP

ARCADIS

FIGURE 8

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047937\0000\0000\DWG\47937B04.dwg LAYOUT: 8 SAVED: 12/22/2012 8:17 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/22/2012 8:18 AM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: ---
47937X02

MW–2A	
DATE	11/4/1999
COMPOUND	RESULT
TPHd	N/A
TPHg	ND<50
MTBE	ND<2.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MW–2	
DATE	10/28/1992
COMPOUND	RESULT
TPHd	N/A
TPHg	**55**
MTBE	N/A
Benzene	**1.3**
Toluene	**6.9**
Ethylbenzene	**1.1**
Xylenes	**5.1**

MW–12	
DATE	3/26/1992
COMPOUND	RESULT
TPHd	N/A
TPHg	ND<50
MTBE	N/A
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MW–15	
DATE	4/13/2000
COMPOUND	RESULT
TPHd	N/A
TPHg	ND<50
MTBE	ND<2.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MW–16	
DATE	5/4/1993
COMPOUND	RESULT
TPHd	N/A
TPHg	**51**
MTBE	ND<2.5
Benzene	ND<0.5
Toluene	**1.0**
Ethylbenzene	**0.6**
Xylenes	**0.7**

MW–17	
DATE	12/1/2011
COMPOUND	RESULT
TPHd	ND<50
TPHg	ND<51
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MW–3	
DATE	10/28/1992
COMPOUND	RESULT
TPHd	N/A
TPHg	**92**
MTBE	N/A
Benzene	**1.8**
Toluene	**12**
Ethylbenzene	**2.0**
Xylenes	**10**

MWX–3	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	ND<53
TPHg	**92**
MTBE	ND<0.5
Benzene	**0.6**
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MW–18	
DATE	12/1/2011
COMPOUND	RESULT
TPHd	ND<50
TPHg	ND<49
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MW–19A	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	ND<50
TPHg	**120**
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MWX–2	
DATE	12/2/2011
COMPOUND	RESULT
TPHd	ND<50
TPHg	**340**
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

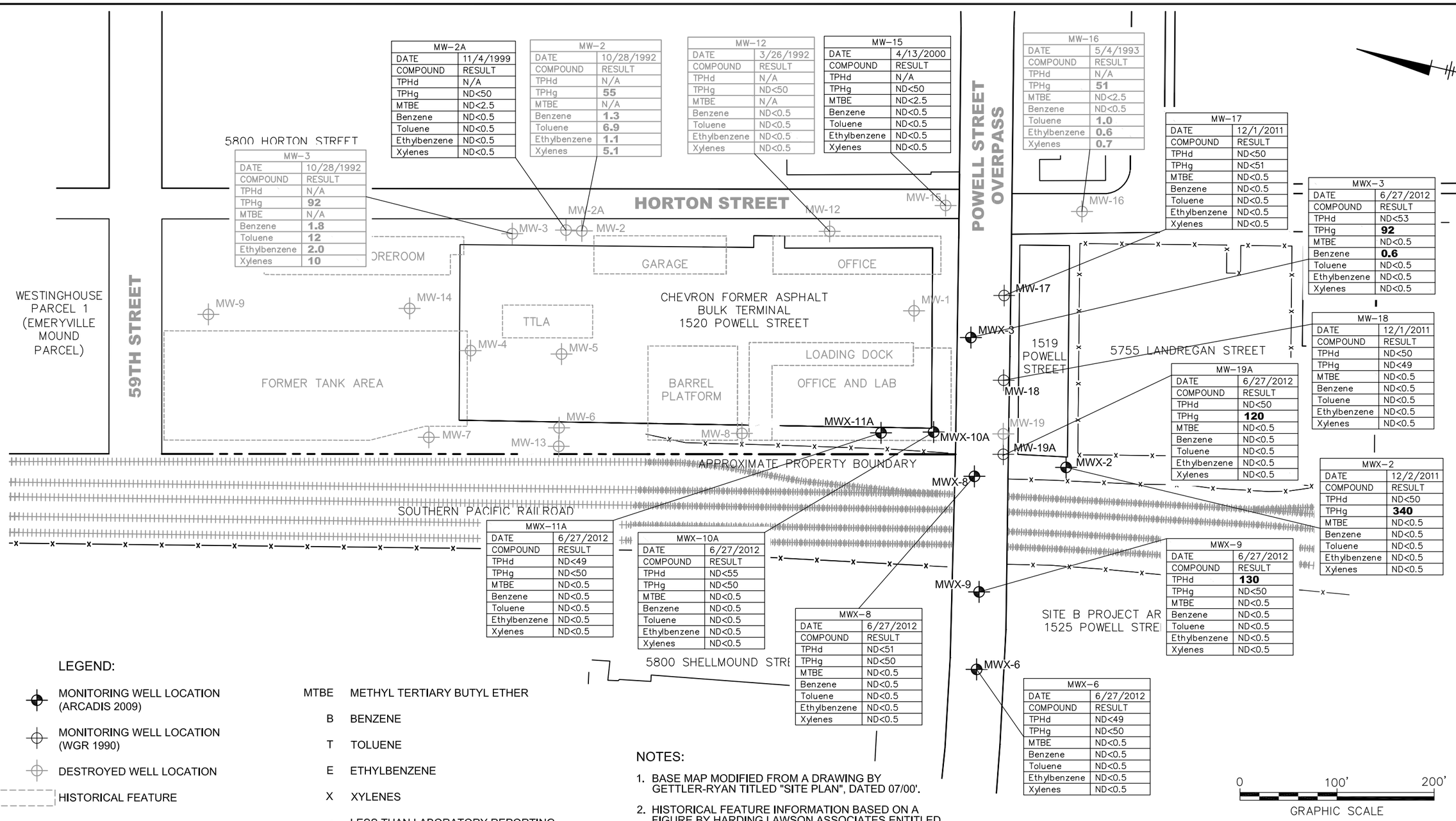
MW–9	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	**130**
TPHg	ND<50
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MWX–11A	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	ND<49
TPHg	ND<50
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MWX–10A	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	ND<55
TPHg	ND<50
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MWX–8	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	ND<51
TPHg	ND<50
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5

MWX–6	
DATE	6/27/2012
COMPOUND	RESULT
TPHd	ND<49
TPHg	ND<50
MTBE	ND<0.5
Benzene	ND<0.5
Toluene	ND<0.5
Ethylbenzene	ND<0.5
Xylenes	ND<0.5



0 100' 200'

GRAPHIC SCALE

LEGEND:

- MONITORING WELL LOCATION (ARCADIS 2009)
- MONITORING WELL LOCATION (WGR 1990)
- DESTROYED WELL LOCATION
- HISTORICAL FEATURE

TPHd TOTAL PETROLEUM HYDROCARBONS AS DIESEL RANGE ORGANICS

TPHg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE RANGE ORGANICS

MTBE METHYL TERTIARY BUTYL ETHER

B BENZENE

T TOLUENE

E ETHYLBENZENE

X XYLENES

< LESS THAN LABORATORY REPORTING LIMIT

ND NON-DETECT

N/A NOT APPLICABLE

DETECTIONS ARE IN **BOLD**

ALL ANALYTICAL RESULTS ARE IN MICROGRAMS PER LITER (µg/L)

NOTES:

1. BASE MAP MODIFIED FROM A DRAWING BY GETTLER-RYAN TITLED "SITE PLAN", DATED 07/00'.
2. HISTORICAL FEATURE INFORMATION BASED ON A FIGURE BY HARDING LAWSON ASSOCIATES ENTITLED "POTENTIOMETRIC SURFACE MAP, UPPERMOST AQUIFER 8/24/88", BASED ON MCKESSON ENVIRONMENTAL SERVICES GROUNDWATER INVESTIGATION.
3. DATA PRESENTED WERE SELECTED TO SHOW DELINEATED GROUNDWATER CONCENTRATIONS IN POWELL STREET RELATED TO THE FORMER CHEVRON ASPHALT PLANT PROPERTY AND TO PRESENT ABSENCE OF DETECTED CONSTITUENTS ALONG HORTON STREET. DATABOXES FOR MW-2, MW-3, MW-12, AND MW-16 ARE GRAY BECAUSE SAMPLES WERE COLLECTED PRIOR TO COMPLETION OF EXCAVATION REMEDIAL ACTIVITIES ONSITE.

UNION OIL
FORMER 76 STATION 3737
1400 POWELL STREET, EMERYVILLE, CA
CONCEPTUAL SITE MODEL

MOST RECENT GROUNDWATER ANALYTICAL RESULTS FOR FORMER CHEVRON ASPHALT PLANT

ARCADIS

FIGURE
9

PRIMARY SOURCE(S)	PRIMARY RELEASE MECHANISM(S)	EXPOSURE MEDIA	EXPOSURE ROUTE	Potential Human Receptors			
				Current and Future On-site Commercial Workers	Future On-site Utility and Construction Trench Workers	Current and Future Off-site Commercial Workers	Current and Future Off-site Residents
Historical Releases to Soil from USTs and Associated Piping, and/or Fuel Dispensers (1)	Volatilization From Subsurface	Air Vapors	Inhalation (Indoor Air)	○	--	○	○
			Inhalation (Outdoor Air)	○	○ (2)	--	○
	Leaching by Percolation	Groundwater	Ingestion	--	--	--	--
			Dermal Contact	--	○	--	--
			Inhalation (from potable water)	--	○	--	--
	Wind Erosion/Suspension	Dust Particles	Inhalation (Outdoor Air)	--	○	--	--
	Direct Contact	Surface and Subsurface Soil	Ingestion	--	○	--	--
			Dermal Contact	--	○	--	--

○ Exposure pathway is complete or potentially complete; however exposure is not considered significant at this time.

-- Incomplete exposure pathway.

NOTES:
(1) Piping and dispensers were replaced in 1999. Gas station was built in 1974 on former bulk oil and fuel storage facility.
(2) Ambient air within a utility trench

UNION OIL
FORMER 76 SERVICE STATION NO. 3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

EXPOSURE PATHWAY SUMMARY

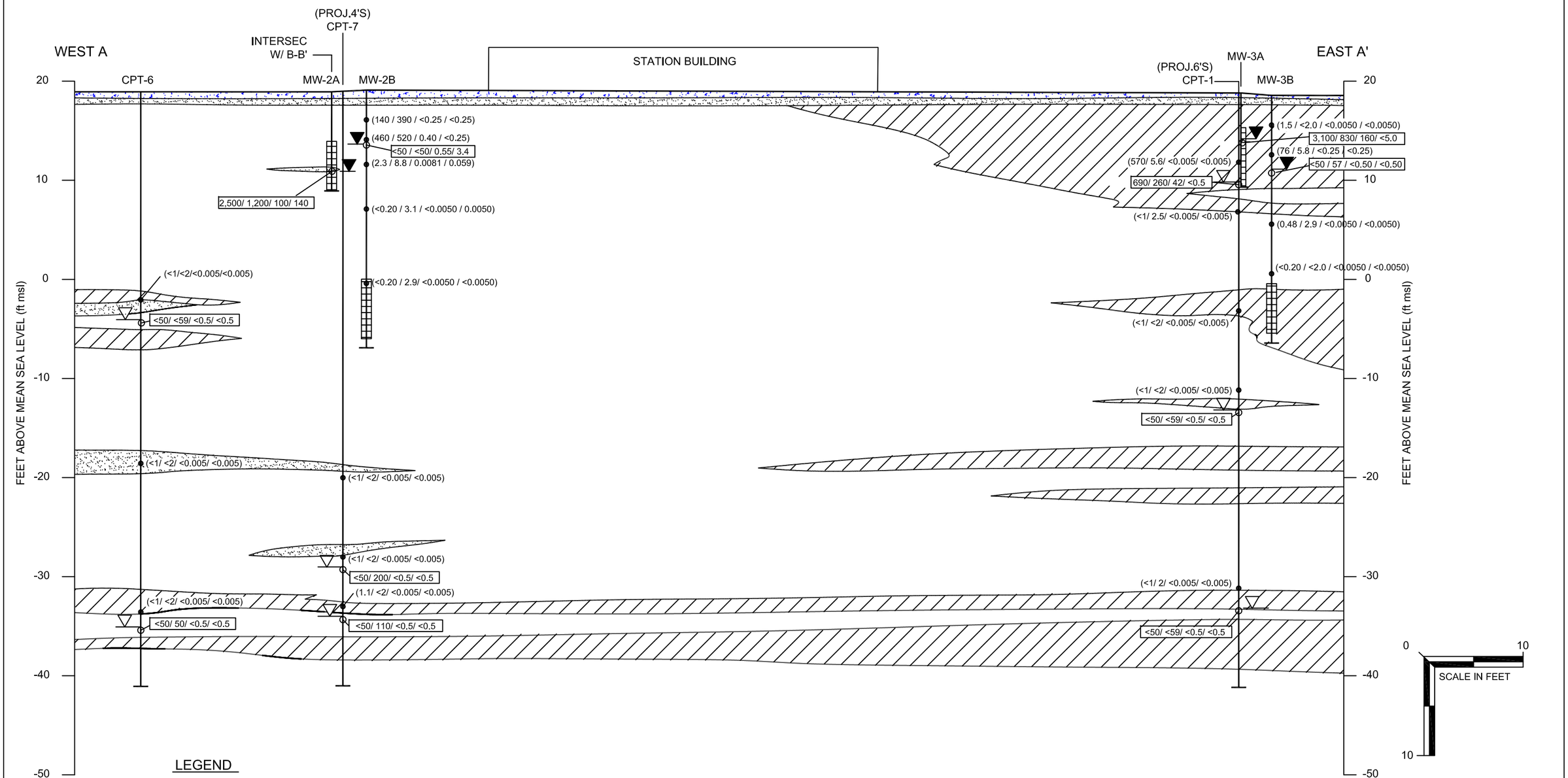
ARCADIS

FIGURE
10

ARCADIS

Appendix **A**

Geologic Cross Sections



LEGEND

MW-2B — MONITORING WELL / BORING NAME

WELL CASING / EXPLORATORY BORING

(140/390/<0.25/<0.25) — SOIL SAMPLE LOCATION WITH ANALYTICAL DATA: GRO, DRO, BENZENE, MTBE (mg/kg)

DEPTH TO FIRST ENCOUNTERED GROUNDWATER

DEPTH TO STATIC GROUNDWATER

<50/<50/<0.50/3.4 — GROUNDWATER SAMPLE LOCATION WITH ANALYTICAL DATA: TPH-G, BENZENE, MTBE (µg/L)

WELL SCREEN

APPROXIMATE STRATIGRAPHIC BOUNDARY

PAVEMENT

HIGH PERMEABILITY (SANDS AND GRAVELS)

MEDIUM PERMEABILITY (SAND, GRAVEL WITH CLAY, SILT)

LOW PERMEABILITY (CLAY, SILT)

NOTES:

1) <50=BELOW THE LABORATORY INDICATED REPORTING LIMIT
TPH-G=TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MTBE=METHYL TERTIARY BUTYL ETHER
mg/kg=MILLIGRAMS PER KILOGRAM
µg/L=MICROGRAMS PER LITER

2) STRATIGRAPHY BETWEEN BORINGS IS INTERPRETIVE.

3) GROUNDWATER SAMPLES FOR SOIL BORINGS TAKEN ON DRILLING DATE.

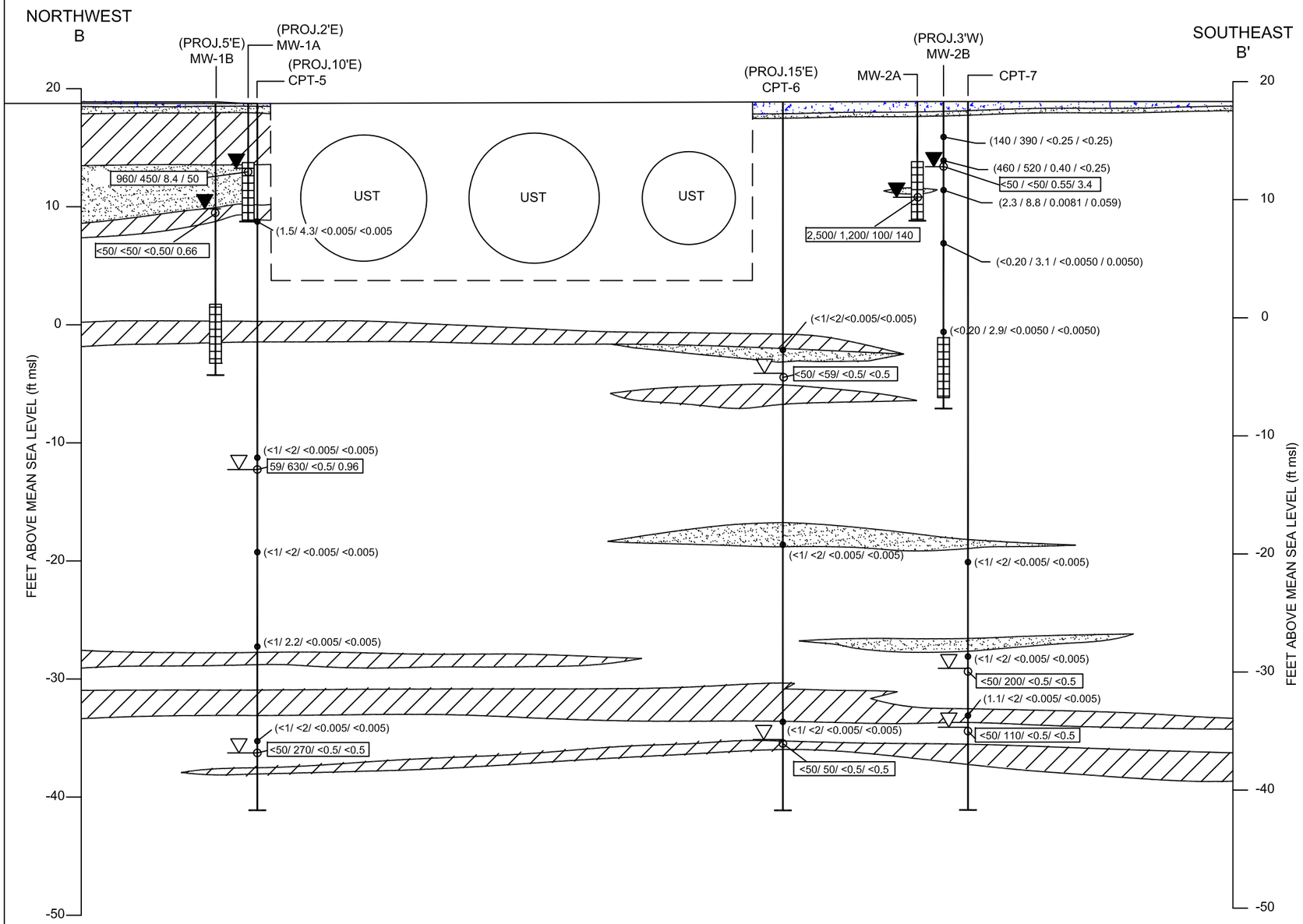
4) CPT LOGS BASED ON SOIL BEHAVIOR, NOT SOIL TYPE, SOIL TYPE IN CPT LOGS IS INTERPRETATED.

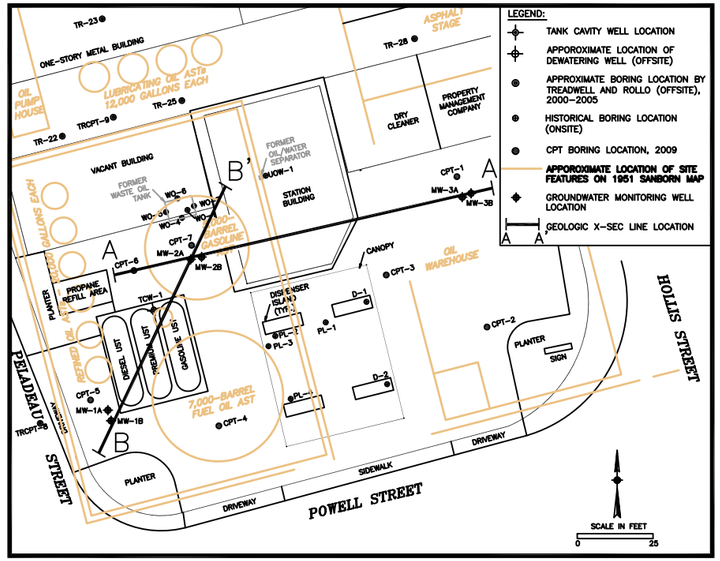
FIGURE 3a
GEOLOGIC CROSS SECTION A–A'

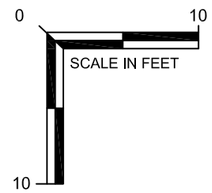
FORMER 76 STATION #3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
C103737	NaP	KYM
DATE	REVIEWED BY	FILE NAME
2/23/11	LH	COP3737-01

antea group







LEGEND

- MW-2B — MONITORING WELL / BORING NAME
- WELL CASING / EXPLORATORY BORING
- (140/390/<0.25/<0.25) — SOIL SAMPLE LOCATION WITH ANALYTICAL DATA: GRO, DRO, BENZENE, MTBE (mg/kg)
- DEPTH TO FIRST ENCOUNTERED GROUNDWATER
- DEPTH TO STATIC GROUNDWATER
- <50/<50/<0.50/3.4 — GROUNDWATER SAMPLE LOCATION WITH ANALYTICAL DATA: TPH-G, BENZENE, MTBE (µg/L)
- WELL SCREEN
- APPROXIMATE STRATIGRAPHIC BOUNDARY
- PAVEMENT
- HIGH PERMEABILITY (SANDS AND GRAVELS)
- MEDIUM PERMEABILITY (SAND, GRAVEL WITH CLAY, SILT)
- LOW PERMEABILITY (CLAY, SILT)

NOTES:

1) <50=BELOW THE LABORATORY INDICATED REPORTING LIMIT
TPH-G=TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
MTBE=METHYL TERTIARY BUTYL ETHER
mg/kg=MILLIGRAMS PER KILOGRAM
µg/L=MICROGRAMS PER LITER
2) STRATIGRAPHY BETWEEN BORINGS IS INTERPRETIVE.
3) GROUNDWATER SAMPLES FOR SOIL BORINGS TAKEN ON DRILLING DATE.
4) CPT LOGS BASED ON SOIL BEHAVIOR, NOT SOIL TYPE, SOIL TUPE IN CPT LOGS IS INTERPRETATED.

FIGURE 3b
GEOLOGIC CROSS SECTION B–B'

FORMER 76 STATION #3737
1400 POWELL STREET
EMERYVILLE, CALIFORNIA

PROJECT NO.	PREPARED BY	DRAWN BY
C103737	NqP	KYM
DATE	REVIEWED BY	FILE NAME
2/23/11	LH	COP3737–01

antea group

ARCADIS

Appendix **B**

Boring Logs/Well Construction Diagrams

Delta

Environmental Consultants, Inc.

Project No:	C103737051		Client:	COP	
Logged By:	Alan Buehler		Location:	Emeryville	
Driller:	Gregg		Date Drilled:	7/18/2009	
Drilling Method:	CPT		Hole Diameter:	2"	
Sampling Method:	CPT		Hole Depth:	60'	
Casing Type:	n/a		Well Diameter:	n/a	
Slot Size:	n/a		Well Depth:	n/a	
Gravel Pack:	n/a		First Water Depth:		
			Static Water Depth:		
Elevation:		Northing:		Easting:	

Boring / Well No: CPT-1

Page 1 of 3

LOCATION:
NE corner near property mngmnt company

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					1				
					2				Air Knife to 5'
					3				
					4				
					5				
					6				
					7				
			135					CL	Gray, gravely lean clay, 40% gravel, moist, mild odor
					8				
					9				
					10				
					11				
					12				
			22.7					CL	Brn, lean clay w/ gravel, 15% gravel, moist, slight odor
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22			CL	Brn, lean clay w/ sand, 15% sand, damp, mild, odor
			26.2						

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/18/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	First Water Depth:	
		Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-1

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29				
			3.6		30			CL	Grayish brn, lean clay, damp, no odor
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051		Client:	COP	**Boring / Well No:** CPT-1
Logged By:	Alan Buehler		Location:	Emeryville	Page 3 of 3
Driller:	Gregg		Date Drilled:	7/18/2009	
Drilling Method:	CPT		Hole Diameter:	2"	
Sampling Method:	CPT		Hole Depth:	60'	
Casing Type:	n/a		Well Diameter:	n/a	
Slot Size:	n/a		Well Depth:	n/a	
Gravel Pack:	n/a	▼	First Water Depth:		
		▽	Static Water Depth:		
Elevation:		Northing:		Easting:	

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45				
					46				
					47				
					48				
					49				
			6.6		50			CL	Brn, gravely lean clay, 30% gravel, moist, mild odor
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/18/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-2

Page 1 of 3

LOCATION:
SE corner near planter

Well Completion: Backfill	Well Completion: Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
						1				
						2				Air Knife to 5'
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						10				
						11				
						12				
						13				
						14				
						15				
						16				
						17				
						18				
						19				
						20			ML	Lt brn, sandy silt, 30% sand, moist, no odor
						21				
						22				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/18/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-2

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29		■	CL	Brn/gray mottled, lean clay w/ sand, 20% sand,
					30	■	■		moist, no odor
					31				
					32				
					33				
					34				
					35				
					36		■	CL	Brn/gray mottled, lean lean clay, damp, no odor
					37	■	■		
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051		Client:	COP	**Boring / Well No:** CPT-2
Logged By:	Alan Buehler		Location:	Emeryville	Page 3 of 3
Driller:	Gregg		Date Drilled:	7/18/2009	
Drilling Method:	CPT		Hole Diameter:	2"	
Sampling Method:	CPT		Hole Depth:	60'	
Casing Type:	n/a		Well Diameter:	n/a	
Slot Size:	n/a		Well Depth:	n/a	
Gravel Pack:	n/a	▼	First Water Depth:		
		▽	Static Water Depth:		
Elevation:		Northing:		Easting:	

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45				
					46				
					47				
					48				
					49				
					50				
					51				
					52				
					53				
					54			CL	Brn, sandy lean clay w/ gravel, damp, no odor
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Delta

Environmental Consultants, Inc.

Project No:	C103737051		Client:	COP	
Logged By:	Alan Buehler		Location:	Emeryville	
Driller:	Gregg		Date Drilled:	7/19/2009	
Drilling Method:	CPT		Hole Diameter:	2"	
Sampling Method:	CPT		Hole Depth:	60'	
Casing Type:	n/a		Well Diameter:	n/a	
Slot Size:	n/a		Well Depth:	n/a	
Gravel Pack:	n/a	▼	First Water Depth:		
		▽	Static Water Depth:		
Elevation:		Northing:		Easting:	

Boring / Well No: CPT-3

Page 1 of 3

LOCATION:
Immediately east of pump islands

Well Completion: Backfill	Well Completion: Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
						1				
						2				Air Knife to 5'
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						10				
						11				
						12				
						13				
						14				
						15				
						16				
						17				
						18				
						19			CL	Brn, lean clay w/ silt, damp, no odor
						20				
						21				
						22				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/19/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-3

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36			CL	Grayish brn, lean clay w/ gravel, 20% gravel,
					37				damp, no odor
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/19/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring / Well No: CPT-3

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45				
					46				
					47				
					48				
					49				
					50			CL	Brn, Sandy lean clay w/ gravel, moist, no odor
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Delta

Environmental Consultants, Inc.

Project No:	C103737051		Client:	COP	
Logged By:	Alan Buehler		Location:	Emeryville	
Driller:	Gregg		Date Drilled:	7/26/2009	
Drilling Method:	CPT		Hole Diameter:	2"	
Sampling Method:	CPT		Hole Depth:	60'	
Casing Type:	n/a		Well Diameter:	n/a	
Slot Size:	n/a		Well Depth:	n/a	
Gravel Pack:	n/a	▼	First Water Depth:		
		▽	Static Water Depth:		
Elevation:		Northing:		Easting:	

Boring / Well No: CPT-4

LOCATION:
Immediately west of pump islands

Well Completion: Backfill	Well Completion: Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
						1				
						2				Air Knife to 5'
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						10				
						11				
						12				
						13				
						14				
						15				
						16				
						17				
						18				
						19				
						20				
						21			CL	Grayish brn, lean clay w/ sand and gravel, 10%
						22				sand, 10% gravel, damp, no odor

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/26/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	First Water Depth:	
		Static Water Depth:	

Boring / Well No: CPT-4

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38			CL	Grayish Brn, lean clay w/ gravel, 5% gravel, moist,
					39				no odor
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/26/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring / Well No: CPT-4

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45				
					46				
					47				
					48				
					49				
					50				
					51				
					52			CL	Brn, lean clay with gravel and sand, 10% gravel,
					53				5% sand, moist, no odor
					54				
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/25/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-5

Page 1 of 3

LOCATION:
Middle of Pelandeau St driveway on west side

Well Completion: Backfill	Well Completion: Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
						1				
						2				Air Knife to 5'
						3				
						4				
						5				
						6				
						7				
						8				
						9			CL	Grayish brn, gravely lean clay, 30% gravel, moist,
						10				mild odor
						11				
						12				
						13				
						14				
						15				
						16				
						17				
						18				
						19				
						20				
						21				
						22				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/25/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	First Water Depth:	
		Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-5

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29			CL	Brn, sandy lean clay, 30% sand, moist, no odor
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37			CL	Brn, lean clay w/ gravel and sand, 10% gravel,
					38				20% sand, damp, no odor
					39				
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/25/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring / Well No: CPT-5

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45			CL	Brn, lean clay w/ sand, 20% sand, damp, very mild odor
					46				
					47				
					48				
					49				
					50				
					51				
					52				
					53			SC	Brn, clayey sand w/ gravel, 75% coarse sand, 10% gravel, wet, no odor
					54				
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/26/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-6

Page 1 of 3

LOCATION:
NW corner of site near propane dispenser

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					1				
					2				Air Knife to 5'
					3				
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20			SM	Brn/blk mottled, silty sand w/ gravel, >50% sand,
					21				10% gravel, wet, no odor
					22				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/26/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	First Water Depth:	
		Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-6

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37			SC	Brn, clayey sand w/ gravel, 20% gravel, moist,
					38				no odor
					39				
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/26/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	First Water Depth:	
		Static Water Depth:	

Boring / Well No: CPT-6

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45				
					46				
					47				
					48				
					49				
					50				
					51				
					52				Brn, clayey sand w/ gravel, 20% gravel, damp,
					53				no odor
					54				
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/25/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring / Well No: CPT-7

Page 1 of 3

LOCATION:
North edge of site along west wall of station building

Well Completion: Backfill	Well Completion: Casing	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
						1				
						2				Air Knife to 5'
						3				
						4				
						5				
						6				
						7				
						8				
						9				
						10				
						11				
						12				
						13				
						14				
						15				
						16				
						17				
						18				
						19				
						20				
						21				
						22				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/25/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	First Water Depth:	
		Static Water Depth:	

Boring / Well No: CPT-7

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
					24				
					25				
					26				
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38			CL	Brn, sandy lean clay w/ gravel, 20% sand, 10%
					39				gravel, damp, no odor
					40				
					41				
					42				
					43				
					44				

Delta

Environmental Consultants, Inc.

Project No:	C103737051	Client:	COP
Logged By:	Alan Buehler	Location:	Emeryville
Driller:	Gregg	Date Drilled:	7/25/2009
Drilling Method:	CPT	Hole Diameter:	2"
Sampling Method:	CPT	Hole Depth:	60'
Casing Type:	n/a	Well Diameter:	n/a
Slot Size:	n/a	Well Depth:	n/a
Gravel Pack:	n/a	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring / Well No: CPT-7

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					45				
					46			CL	Brn, lean clay w/ sand, 5% sand, damp, no odor
					47				
					48				
					49				
					50				
					51			CL	Brn, lean clay w/ sand, 5% sand, saturated,
					52				no odor
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				TD= 60 ft
					61				
					62				
					63				
					64				
					65				
					66				

Project No: C103737	Client: ConocoPhillips		Well/ Boring ID: MW-1A
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA		Page 1 of 1
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011	Location Map	
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches	See Attached Site Map	
Sampling Method: Split Spoon	Hole Depth: 10 feet		
Casing Type: Sch 40 PVC	Well Diameter:2-inches		
Slot Size: 0.010-inch	Well Depth: 10 feet		
Gravel Pack: 2/12 Sand	Casing Stickup: NA		
Elevation	Northing	Easting	

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
								Asphalt
				Air Knife to 5 Feet	1		GC-GP	**Sandy Gravel with Clay**, gray, 50% fine gravel, 35% well graded sand, 15% fines (base rock).
					2		SC	**Clayey Sand**, brown-black, 10% concrete debris (5" diameter), 50% medium sand, 40% fines, low plasticity.
		moist			3			
					4			
					5			As above
	▼	moist	1015	7 8 9	6		SP	**Poorly Graded Sand**, blue, <5% fines, fine sand, medium dense.
		moist	89	8 8 9	7			As above
					8			
		moist	4.6	7 8 8	9 10		SC	**Clayey Sand,** blue with red oxidation,10% fine gravel, 70% medium sand, 20% fines, roots with black liquid medium dense

Bottom of Boring at 10 feet Below Grade

Notes:

Groundwater not encountered during drilling.

Legend:

- Portland Cement
- Bentonite Seal
- 2/12 Sand Pack
- Blank Casing
- 0.01 inch Screen
- ▼ Static Groundwater

Project No: C103737	Client: ConocoPhillips		Well/ Boring ID: MW-1B	
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA		Page 1 of 2	
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011		Location Map	
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches		See Attached Site Map	
Sampling Method: Split Spoon	Hole Depth: 23 feet			
Casing Type: Sch 40 PVC	Well Diameter:2-inches			
Slot Size: 0.010-inch	Well Depth: 22 feet			
Gravel Pack: 2/12 Sand	Casing Stickup: NA			
Elevation	Northing	Easting		

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
									Asphalt
				Air Knife to 5 Feet	1			GC-GP	**Sandy Gravel with Clay**, gray, 50% fine gravel, 35% well graded sand, 15% fines (base rock).
					2			SC	**Clayey Sand**, brown-black, 10% concrete debris, 50% medium sand, 40% fines, low plasticity.
					3				
					4				
					5				As above
		moist	985	7 7 7	6			SP / CL	**Poorly Graded Sand**, blue, <5% fines, fine sand / **Lean Clay with Sand and Gravel**, brown with orange oxidation, 30% gravel, 15% well graded sand, 55% fines, stiff
		moist	111	7 8 9	7			SP	**Poorly Graded Sand,** blue, 10% fines, fine sand, nodules of clay ~1-inch diameter, trace fine gravel, medium dense
		moist	3.2	8 8 9	8			SC / CL	**Clayey Sand,** blue with red oxidation,10% fine gravel, 70% medium sand, 20% fines, roots with black liquid / **Sandy Lean Clay**, brown, 10% fine gravel, 30% well graded sand, 60% fines, medium plasticity, very stiff
	▼	moist	3.8	7 7 8	9				As above, some thin layers of lean clay, stiff
		moist	18.9	8 8 8	10			CL	**Lean Clay with Sand**, brown-orange mottled, 35% well graded sand,65% fines, root holes with black linings, medium plasticity, very stiff
		moist	0.8	8 9 9	11				As above, 5% fine gravel, sand is fine.
		moist	6.4	7 7 8	12			CL	**Sandy Lean Clay**, brown-orange mottled, 45% fine sand, 55% fines, trace gravel, fine root holes with black linings, stiff
		moist	1.4	7 7 9	13			CL	**Lean Clay**, tan, 15% fine sand, 85% fines, root holes, trace gravel, medium plasticity, very stiff
		moist	5.1	8 9 9	14				As above, color change to blue with orange mottling, medium plasticity, very stiff
	▽	wet	1	7 8 9	15			SW-SC	As above / **Well Graded Sand with Clay and Gravel,** blue, 60% sand, 25% fine gravel, 15% fines, sand mostly medium and fine, medium dense.
		wet	2.2	9 9 9	16				As above
		wet	1.1	9 9	17			CL	**Lean Clay with Sand,** tan-blue mottled, 20% fine sand, 80% fines, medium plasticity, roots with brown linings, very stiff
					18				As above
					19				
					20				
					21				
					22				

Project No: C103737	Client: ConocoPhillips		Well/ Boring ID: MW-1B
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA		Page 2 of 2
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011		Location Map
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches		See Attached Site Map
Sampling Method: Split Spoon	Hole Depth: 23 feet		
Casing Type: Sch 40 PVC	Well Diameter:2-inches		
Slot Size: 0.010-inch	Well Depth: 22 feet		
Gravel Pack: 2/12 Sand	Casing Stickup: NA		
Elevation	Northing	Easting	

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
		wet		9	23		CL	**Lean Clay with Sand Continued**

Bottom of Boring at 23 Feet Below Grade

Legend:

- Portland Cement
- Bentonite Seal
- 2/12 Sand Pack
- Blank Casing
- 0.01 inch Screen
- First Encountered Groundwater
- Static Groundwater

Project No: C103737	Client: ConocoPhillips	Well/ Boring ID: MW-2A
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA	Page 1 of 1
Driller: Cascade Drilling, LP	Date Drilled: 1/14/2011	Location Map
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches	See Attached Site Map
Sampling Method: Split Spoon	Hole Depth: 10 feet	
Casing Type: Sch 40 PVC	Well Diameter:2-inches	
Slot Size: 0.010-inch	Well Depth: 10 feet	
Gravel Pack: 2/12 Sand	Casing Stickup: NA	
Elevation	Northing	Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
									Asphalt
				Air Knife to 5 Feet	1			GC-GP	**Sandy Gravel with Clay**, gray, 50% fine gravel, 35% well graded sand, 15% fines (base rock).
					2			CL	**Lean Clay with Gravel**, gray-brown, 20% fine gravel, 10% medium sand, 70% fines, medium plasticity.
		moist			3			CL	**Lean Clay**, brown, trace sand, medium plasticity
					4				
					5				
			1318	5 6 7	6				As above, green-gray-brown mottled, stiff
		moist							
			886	5 7 7	7			ML	**Silt**, black, <5% sand, sooty, very moist, nodules of black oil, stiff
	▼	moist			8			GC	**Clayey Gravel**, brown-tan, 80% fine angular gravel, 10% fine sand, 10% fine, medium dense
			9.5	6 7 8	9			CL	**Lean Clay**, brown-green mottled, 20% very fine sand, 15% fine gravel, black roots with brown liquid, medium plasticity, stiff
		moist			10				

Bottom of Boring at 10 feet below grade

Notes:

Groundwater not encountered during drilling.

Legend:

	Portland Cement
	Bentonite Seal
	2/12 Sand Pack
	Blank Casing
	0.01 inch Screen
▼	Static Groundwater

Project No: C103737	Client: ConocoPhillips		Well/ Boring ID: MW-2B	
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA		Page 1 of 2	
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011		Location Map	
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches		See Attached Site Map	
Sampling Method: Split Spoon	Hole Depth: 26 feet			
Casing Type: Sch 40 PVC	Well Diameter:2-inches			
Slot Size: 0.010-inch	Well Depth: 25 feet			
Gravel Pack: 2/12 Sand	Casing Stickup: NA			
Elevation	Northing	Easting		

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
									Asphalt
				Air Knife to 5 Feet	1			GC-GP	**Sandy Gravel with Clay**, gray, 50% fine gravel, 35% well graded sand, 15% fines (base rock).
					2			CL	**Lean Clay with Gravel**, gray-brown, 20% fine gravel, 10% medium sand, 70% fines, medium plasticity.
					3			CL	**Lean Clay**, brown, trace sand, medium plasticity
					4				
					5				
	▼	moist	419	5 5 6	6				As above, green-gray-brown mottled, stiff
			1120	5 6 7	7			ML	As above, trace fine sand, medium to high plasticity **Silt**, olive green-gray, 10-15% fine sand, low to no plasticity, stiff
		moist	16.7	5 6 6	8			CL	color change to dark gray with orange mottling **Lean Clay**, orange-brown, 15% fine to medium sand, 85% fines, trace fine gravel, medium plasticity, abundant root holes with LNAPL,% sand increasing with depth, stiff
			34.1	7 7 8	9 10			CL	**Gravelly Lean Clay,** orange brown, 25% small gravel, 20% sand, 55% fines, gravel up to .5-inches, stiff
		moist	23.2	8 8 8	11 12			CL	**Lean Clay,** orange-brown, 15% fine to medium sand, 80% fines, trace fine gravel, orange oxidation, medium plasticity, abundant root holes with LNAPL
				7 7 9	13				very stiff As above, no gravel, <10% coarse sand.
		moist	3.4	8 8 9	14 15				As above, trace fine gravel, root holes less common. **Gravelly Lean Clay with Sand**, light brown, 25% small gravel, 15% medium to coarse sand, 60% fines,
			2.3	9 10 11	16			CL	abundant orange oxidation, nodules within matrix have sheen, nodules are <0.25 inches, gravel up to 0.75 inches, very stiff
		moist	10.6	9 10 11	17 18			CL	**Lean Clay,** light brown with orange mottling, trace corase sand, black mineral throughout, medium to high plasticity, abundant black root holes, very stiff
			2	10 10 10	19 20				As above, white precipitate with orange oxidation, light gray color
		moist		9 9 11	21				As above, root holes less common, groundwater in sample root holes are saturated
	▽	wet	2.7	9 9	22			CL	**Lean Clay with Gravel**, blue-gray, 15% fine gravel, 10% well graded sand, medium plasticity, very stiff

Project No: C103737	Client: ConocoPhillips	Well/ Boring ID: MW-2B
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA	Page 2 of 2
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011	Location Map
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches	See Attached Site Map
Sampling Method: Split Spoon	Hole Depth: 26 feet	
Casing Type: Sch 40 PVC	Well Diameter:2-inches	
Slot Size: 0.010-inch	Well Depth: 25 feet	
Gravel Pack: 2/12 Sand	Casing Stickup: NA	
Elevation	Northing	Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
				10	23			CL	**Lean Clay with Gravel Continued**
		wet	2	8 8 9	24				As above, blue with brown mottling, 20% well graded sand, trace small gravel, gravel is rounded, very stiff
		wet	2.5	7 7 9	25 26				As above, crumbly, some black root holes, slough is wet, very stiff

Bottom of Boring at 26 Feet Below Grade

Legend:

- Portland Cement
- Bentonite Seal
- 2/12 Sand Pack
- Blank Casing
- 0.01 inch Screen
- First Encountered Groundwater
- Static Groundwater

Project No: C103737		Client:	ConocoPhillips	Well/ Boring ID: MW-3A
Logged By: Nadine Periat		Location:	1400 Powell Street, Emeryville, CA	Page 1 of 2
Driller: Cascade Drilling, LP		Date Drilled:	1/15/2011	Location Map
Drilling Method:	Hollow Stem Auger	Hole Diameter:	8-inches	See Attached Site Map
Sampling Method:	Split Spoon	Hole Depth:	25 feet	
Casing Type:	Sch 40 PVC	Well Diameter:	2-inches	
Slot Size:	0.010-inch	Well Depth:	25 feet	
Gravel Pack:	2/12 Sand	Casing Stickup:	NA	
Elevation		Northing		Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
									Asphalt
									Base Rock
		moist		Air Knife to 5 Feet	1			SC	**Clayey Sand with Gravel,** green-gray, 60% small gravel,
					2				20% well graded sand, 20% fines, gravel is 1" in
									diameter, subrounded, resembles base rock
		moist			3				
	▽		44		4				**Groundwater in hole at 4 feet bgs**
	▼	wet							
					5				
				7					As above, sand is blue and tan, fine angular gravel, sand
		wet	1750	7	6				is 80% fine, medium dense
				7					
				7				SC	**Clayey Sand**, gray-green-brown, 70% very fine sand, 30%
		wet	40.5	8	7				fines, clusters of fine gravel, roots with brown liquid
				9					one 1-inch layer of poorly graded sand, brown, medium
				7	8				grains, medium dense
		wet	10.5	7	9				
				8					as above, 40% fines

Legend:

- Portland Cement
- Bentonite Seal
- 2/12 Sand Pack
- Blank Casing
- 0.01 inch Screen
- ▽ First Encountered Groundwater
- ▼ Static Groundwater

Project No: C103737	Client: ConocoPhillips	Well/ Boring ID: MW-3B
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA	Page 1 of 2
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011	Location Map
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches	See Attached Site Map
Sampling Method: Split Spoon	Hole Depth: 25 feet	
Casing Type: Sch 40 PVC	Well Diameter:2-inches	
Slot Size: 0.010-inch	Well Depth: 25 feet	
Gravel Pack: 2/12 Sand	Casing Stickup: NA	
Elevation	Northing	Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
									Asphalt
									Base Rock
		moist			1			SC	**Clayey Sand with Gravel,** green-gray, 60% small gravel, 20% well graded sand, 20% fines, gravel is 1" in diameter, subrounded.
		moist			3				**Groundwater in hole at 4 feet bgs**
	▽	wet			4				
		wet	1188	7 7 7	5 6				As above, sand is blue and tan, fine angular gravel, sand is 80% fine, medium dense
	▼	wet	36.1	6 8 8	7			SC	**Clayey Sand**, gray-green-brown, 70% very fine sand, 30% fines, clusters of fine gravel, roots with brown liquid medium dense
		wet	104	7 7 8	8 9				As above, 40% fines.
		moist	45.4	8 8 9	10			CL	**Lean Clay with Sand and Gravel,** brown with red oxidation, 15% fine rounded gravel, 20% fine sand, 65% fines, roots with black liquid, low plasticity, very stiff
			35.7	9 9 9	11 12			SC	**Clayey Sand with Gravel**, 20% small gravel, 60% well graded sand, 20% fines, medium dense.
		moist	84.9	8 9 10	13 14			CL	**Lean Clay with Sand and Gravel**, brown, 20% gravel, 15% medium sand, 65% fines, red oxidation, brown thick liquid covering gravel and in roots, medium plasticity. very stiff
		moist		8 8 8	15				No Recovery
		moist	85.5	8 9 11	16 17				As above, trace sand and gravel, some roots, medium plasticity, very stiff
			69.4	9 9 11	18			CL	**Lean Clay with Sand and Gravel**, brown with orange mottling, 15% gravel, 20% sand, 65% fines, root holes, less brown liquid, very stiff.
		moist		9 10 11	19 20				No Recovery
			20.9	10 10 10	21			SC	**Clayey Sand**, blue gray, 55% very fine sand, 45% fines, trace fine gravel, roots, pockets of poorly graded medium sand (tan), medium dense.
			26.4	10 10	22			SC	**Clayey Sand with Gravel**, brown with dark red mottling, 15% fine gravel, 40% well graded sand, 45% fines, medium dense

Project No: C103737	Client: ConocoPhillips	Well/ Boring ID: MW-3B
Logged By: Nadine Periat	Location: 1400 Powell Street, Emeryville, CA	Page 2 of 2
Driller: Cascade Drilling, LP	Date Drilled: 1/15/2011	Location Map
Drilling Method: Hollow Stem Auger	Hole Diameter: 8-inches	See Attached Site Map
Sampling Method: Split Spoon	Hole Depth: 25 feet	
Casing Type: Sch 40 PVC	Well Diameter:2-inches	
Slot Size: 0.010-inch	Well Depth: 25 feet	
Gravel Pack: 2/12 Sand	Casing Stickup: NA	
Elevation	Northing	Easting

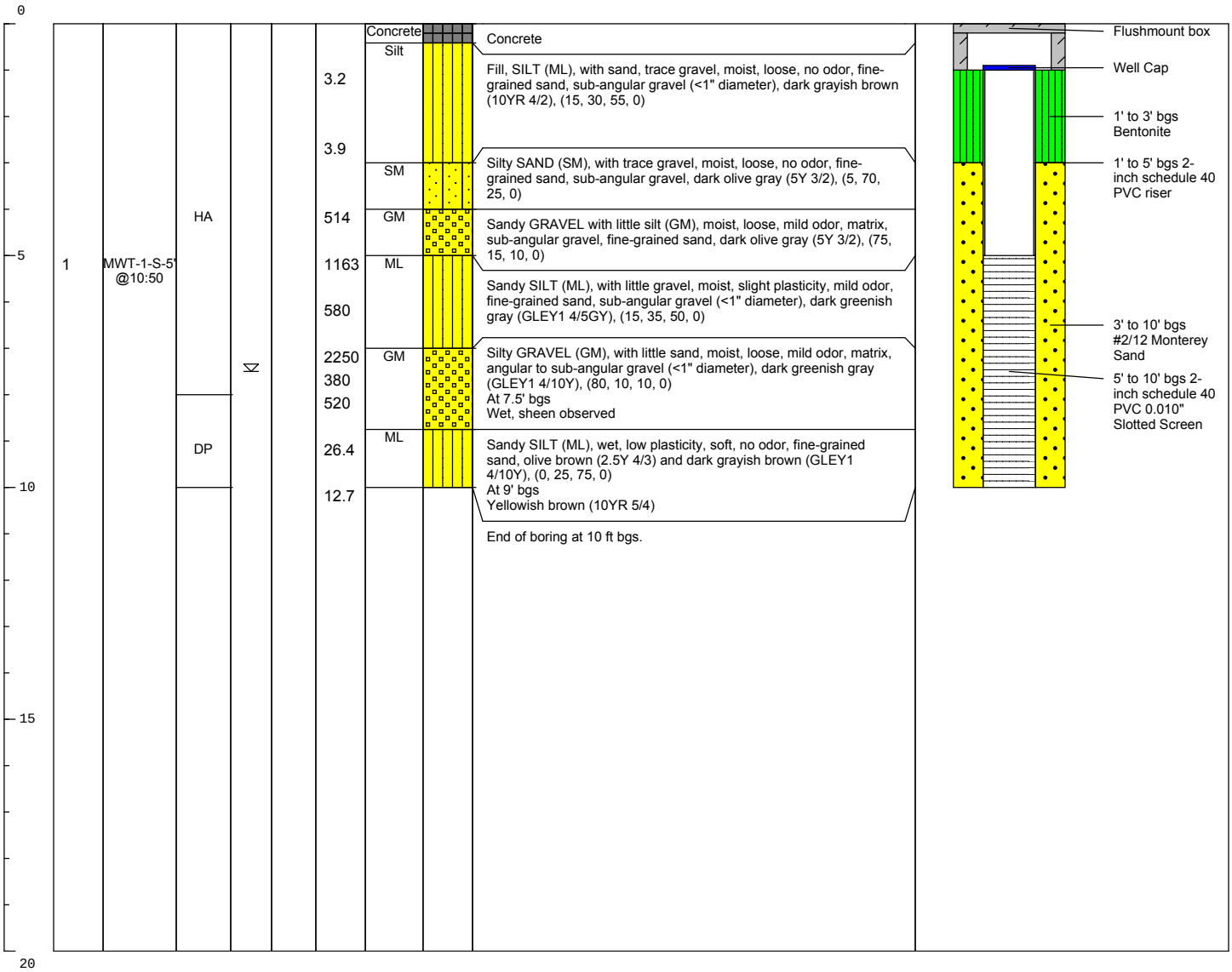
Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
				12	23			SC	**Clayey Sand with Gravel Continued**
		moist		11	24			SC	**Clayey Sand**, brown-blue with orange mottling, 55% fine
			25.8	11					sand, 45% fines, trace gravel, medium plasticity.
				13	25				medium dense.

Bottom of Boring at 25 Feet Below Grade

Legend:

- Portland Cement
- Bentonite Seal
- 2/12 Sand Pack
- Blank Casing
- 0.01 inch Screen
- First Encountered Groundwater
- Static Groundwater

Date Start/Finish:	07/25/2012	**Latitude:**	37.8395031	**Well ID:**	MWT-1
Drilling Company:	Greg Drilling & Testing, Inc.	**Longitude:**	-122.2899741	**Client:**	Chevron Environmental Management Company
Drilling Method:	Hand Auger, Direct Push	**Casing Elevation:**	19.11 ft amsl		
Sample Method:	Acetate Sleeve	**Total Depth:**	10 ft bgs	**Location:**	CVX 35-1780 1400 Powell Street, Emeryville, CA
Rig Type:	Hollow Stem Auger	**Boring Diameter:**	8-inch OD		
		Logged By:	Loretta Kwong		
		Reviewed By:	David Lay, P. G.	**Project Number:**	B0047937.0000



Remarks: amsl = above mean sea level; bgs = below ground surface; DP = Direct Push; ft = feet; HA = Hand Auger
NA = not applicable; OD= outer diameter; PID = photoionization detector; ppm = parts per million
PVC = Polyvinyl Chloride
Hand Auger to 8 ft 1 in bgs; Hollow Stem Auger to 10 ft bgs
Horizontal Datum = North American Datum of 1983 (NAD 83)
Vertical Datum = North American Vertical Datum of 1988 (NAVD 88)

Date Start/Finish:	07/26/2012	**Latitude:**	37.8396071	**Well ID:**	MWT-2
Drilling Company:	Greg Drilling & Testing, Inc.	**Longitude:**	-122.2901664	**Client:**	Chevron Environmental Management Company
Drilling Method:	Hand Auger, Direct Push	**Casing Elevation:**	17.47 ft amsl		
Sample Method:	Acetate Sleeve	**Total Depth:**	10 ft bgs	**Location:**	CVX 35-1780 1400 Powell Street, Emeryville, CA
Rig Type:	Hollow Stem Auger	**Boring Diameter:**	8-inch OD		
		Logged By:	Loretta Kwong		
		Reviewed By:	David Lay, P. G.	**Project Number:**	B0047937.0000

DEPTH (feet bgs)	Sample Run Number	Lab Sample	Recovery (feet)	Groundwater	Blow Counts	PID Headspace (ppm)	USCS Code	Geologic Column	Lithologic Description	Well Construction
0							Asphalt		Asphalt	Flushmount box
						5.9	ML		Fill, SILT (ML), with some sand, trace gravel, moist, loose, no odor, fine-grained sand, sub-angular gravel (<1.5" diameter), dark yellowish brown (10YR 3/4), (25, 35, 40, 0)	Well Cap
						18.5			At 2' bgs SILT (ML), little sand, trace gravel, dry, soft, mild odor, fine-grained sand, angular to sub-angular gravel (<1" diameter), black (5Y 2.5/1), (5, 15, 80, 0)	1' to 3' bgs Bentonite
						238	CL		CLAY (CL), some silt, trace sand, moist, medium plasticity, medium-stiff, mild odor, dark gray (5Y 4/1), (0, 5, 20, 75) At 4' bgs Stiff, light olive brown (2.5Y 5/3)	1' to 5' bgs 2-inch schedule 40 PVC riser
5	1	MWT-2-S-5' @09:05	HA	▽		680				
						1571	ML		SILT (ML), some clay, trace sand, moist, low plasticity, stiff, mild odor, fine-grained sand, mottling, olive gray (5Y 5/2) and greenish gray (GLEY1 5/5 GY), (0, 5, 65, 30) At 6' bgs Strong mottling	3' to 10' bgs #2/12 Monterey Sand
						1484			At 7' bgs Dark greenish gray (GLEY1 4/10Y), (0, 25, 75, 0)	
						1511			At 7.5' bgs Wet	5' to 10' bgs 2-inch schedule 40 PVC 0.010" Slotted Screen
						1252	GM		GRAVEL (GM), little silt, little sand, wet, medium-dense, matrix, gravel <2.5" diameter, fine-grained sand, dark greenish gray (GLEY 1 4/10Y), (70, 15, 15, 0)	
10			DP			12.2	ML		Sandy SILT (ML), wet, low plasticity, soft, mild odor, fine-grained sand, yellowish brown (10YR 5/4), (0, 20, 80, 0)	
						5.4			End of boring at 10 ft bgs.	
15										
20										

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Remarks: amsl = above mean sea level; bgs = below ground surface; DP = Direct Push; ft = feet; HA = Hand Auger
NA = not applicable; OD= outer diameter; PID = photoionization detector; ppm = parts per million
PVC = Polyvinyl Chloride
Hand Auger to 8 ft 1 in bgs; Hollow Stem Auger to 10 ft bgs
Horizontal Datum = North American Datum of 1983 (NAD 83)
Vertical Datum = North American Vertical Datum of 1988 (NAVD 88)

Date Start/Finish:	07/26/2012	**Latitude:**	37.8396071	**Well ID:**	MWT-3
Drilling Company:	Greg Drilling & Testing, Inc.	**Longitude:**	-122.2902129	**Client:**	Chevron Environmental Management Company
Drilling Method:	Hand Auger, Direct Push	**Casing Elevation:**	16.45 ft amsl		
Sample Method:	Acetate Sleeve	**Total Depth:**	10 ft bgs	**Location:**	CVX 35-1780 1400 Powell Street, Emeryville, CA
Rig Type:	Hollow Stem Auger	**Boring Diameter:**	8-inch OD		
		Logged By:	Loretta Kwong	**Project Number:**	B0047937.0000
		Reviewed By:	David Lay, P. G.		

DEPTH (feet bgs)	Sample Run Number	Lab Sample	Recovery (feet)	Groundwater	Blow Counts	PID Headspace (ppm)	USCS Code	Geologic Column	Lithologic Description	Well Construction
0							Asphalt		Asphalt	Flushmount box
						20.1	ML		Sandy SILT (ML), trace gravel, dry, nonplastic, soft, no odor, fine-grained sand, sub-angular gravel (<2.5" diameter), black (10YR 2/1), (5, 15, 80, 0)	Well Cap
						4.8			At 2' bgs Moist, slight plasticity, gravel<1" diameter, olive brown (2.5Y 4/3), (5, 30, 65, 0)	1' to 3' bgs Bentonite
						3.7				1' to 5' bgs 2-inch schedule 40 PVC riser
5	1	MWT-3-S-5' @11:00	HA	▽		130	GM		GRAVEL (GM), with little silt, moist, loose, mild odor, gravel<1" diameter, fine-grained sand, dark greenish gray (GLEY1 4/10Y), (60, 20, 20, 0)	
						2015				
						1336	ML		SILT (ML), some clay, trace sand, wet, low plasticity, mild odor, dark greenish gray (GLEY1 4/10Y), (0, 5, 65, 30)	3' to 10' bgs #2/12 Monterey Sand
						438	GM		GRAVEL (GM), with little silt and little sand, wet, mild odor, andular to sub-angular gravel (<2" diameter), fine-grained sand, dark greenish gray (GLEY1 4/10Y), (70, 15, 15, 0) At 8.5' bgs Gravel <2.5" diameter	5' to 10' bgs 2-inch schedule 40 PVC 0.010" Slotted Screen
						215				
10			DP			33.1	ML		SILT (ML), some clay, wet, low plasticity, soft, mild odor, dark greenish gray (GLEY1 4/5GY) At 9.5' bgs Dark yellowish brown (10YR 5/4)	
						21.4			End of boring at 10 ft bgs.	
15										
20										

Remarks: amsl = above mean sea level; bgs = below ground surface; DP = Direct Push; ft = feet; HA = Hand Auger
NA = not applicable; OD= outer diameter; PID = photoionization detector; ppm = parts per million
PVC = Polyvinyl Chloride
Hand Auger to 8 ft 1 in bgs; Hollow Stem Auger to 10 ft bgs
Horizontal Datum = North American Datum of 1983 (NAD 83)
Vertical Datum = North American Vertical Datum of 1988 (NAVD 88)

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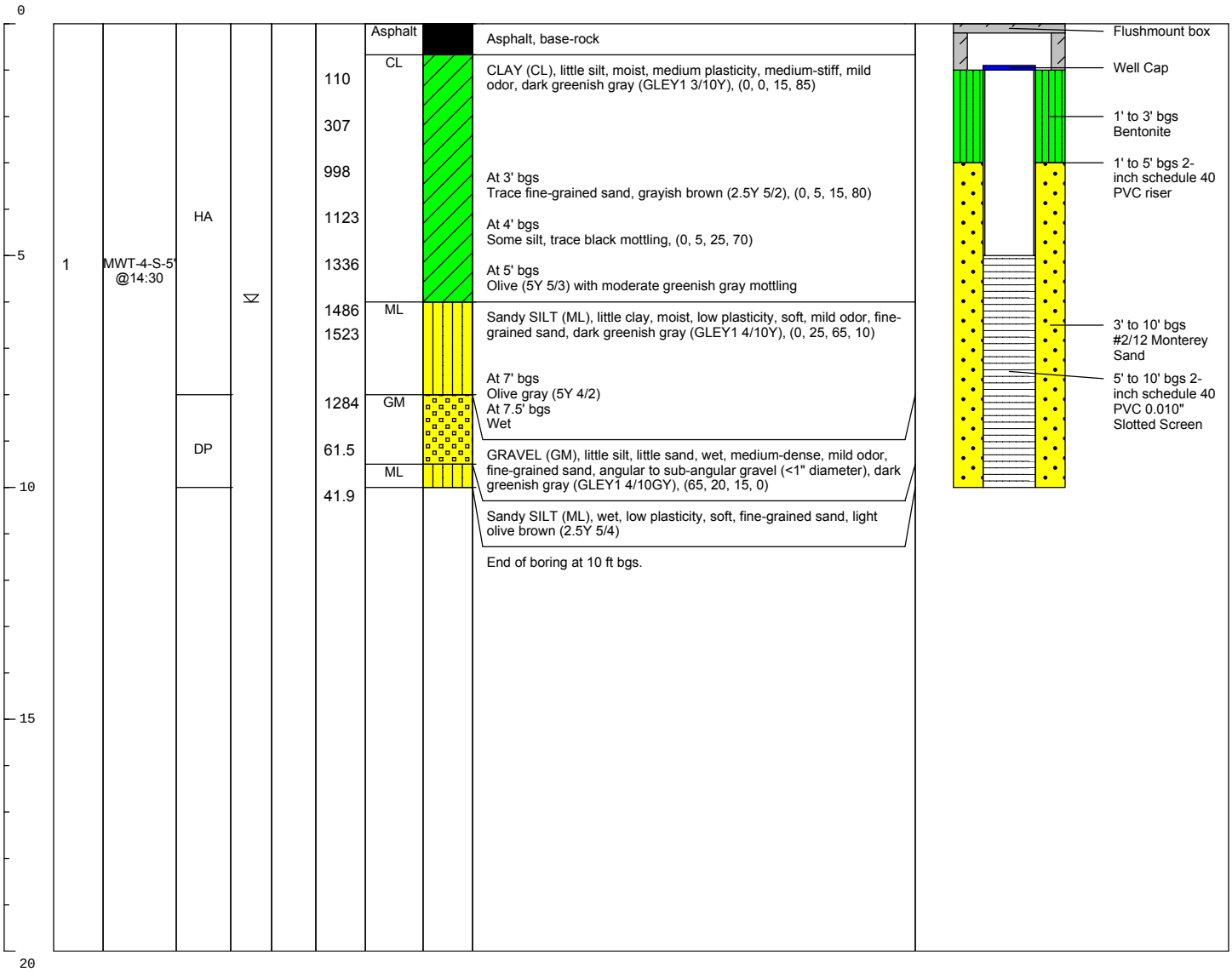
Date Start/Finish:	07/25/2012	**Latitude:**	37.8398300	**Well ID:**	MWT-4
Drilling Company:	Greg Drilling & Testing, Inc.	**Longitude:**	-122.2902403	**Client:**	Chevron Environmental Management Company
Drilling Method:	Hand Auger, Direct Push	**Casing Elevation:**	17.09 ft amsl		
Sample Method:	Acetate Sleeve	**Total Depth:**	10 ft bgs	**Location:**	CVX 35-1780 1400 Powell Street, Emeryville, CA
Rig Type:	Hollow Stem Auger	**Boring Diameter:**	8-inch OD		
		Logged By:	Loretta Kwong		
		Reviewed By:	David Lay, P. G.	**Project Number:**	B0047937.0000



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Remarks: amsl = above mean sea level; bgs = below ground surface; DP = Direct Push; ft = feet; HA = Hand Auger
NA = not applicable; OD= outer diameter; PID = photoionization detector; ppm = parts per million
PVC = Polyvinyl Chloride
Hand Auger to 8 ft 1 in bgs; Hollow Stem Auger to 10 ft bgs
Horizontal Datum = North American Datum of 1983 (NAD 83)
Vertical Datum = North American Vertical Datum of 1988 (NAVD 88)

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Appendix **C**

Historical Soil Analytical Data

Table C-1
Oil/Water Separator Soil Sample Results

Former 76 Service Station No. 3737
1400 Powell Street, Emeryville, California

Sample ID	Sample Depth	Sample Date	TPH-G	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-D	O&G	Total Lead
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
UOW-1	1	16-Jul-93	<0.5	<0.005	<0.005	<0.005	<0.005	<10	67	8

mg/kg	milligrams per kilogram
TPH-G	Total petroleum hydrocarbons calculated as Gasoline
TPH-D	Total Petroleum hydrocarbons calculated as Diesel
O&G	Oil and Grease
UOW	Oil/Water Separator Sample

Table C-2
Historical Soil Gas Sample Results

Former 76 Service Station No. 3737
1400 Powell Street, Emeryville, California

Sample ID	Sample Date	Sample Depth (ft bgs)	TPH-Gas µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	GC MTBE µg/L	GC/MS MTBE µg/L	PID Reading (ppm)	Comments
T-1	9/10/1997	3	16000	110	160	83	230	<2.5		---	Water at 3 ft bgs, strong odor on sampling probe
T-2	9/10/1997	3	40000	1100	410	83	130	<2.5		---	Water at 3 ft bgs, strong odor on sampling probe
D-1	9/10/1997	3	1800	8	16	11	32	49		---	
D-2	9/10/1997	3	3100	17	26	16	46	<2.5		---	
D-3	9/10/1997	3	5900	43	65	36	100	1000	<20	---	
D-4	9/10/1997	3	3400	19	32	21	63	<2.5		---	
TV-1	9/10/1997	---	---	---	---	---	---	---	---	410	Strong Odor
TV-2	9/10/1997	---	---	---	---	---	---	---	---	240	Monderate Odor
TV-3	9/10/1997	---	---	---	---	---	---	---	---	---	Pump not visible
PD-1	9/10/1997	---	---	---	---	---	---	---	---	0	gravel in box
PD-2	9/10/1997	---	---	---	---	---	---	---	---	8	gravel in box
PD-3	9/10/1997	---	---	---	---	---	---	---	---	4	gravel in box
PD-4	9/10/1997	---	---	---	---	---	---	---	---	2	gravel in box

TABLE C-3

Product Piping Removal Soil Sampling Analytical Results

Former Tosco 76 Service Station 3737

Sample ID	Date	Depth (feet)	TPHg (ppm)	TPHd (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	MtBE 8020 (ppm)	MtBE 8260 (ppm)
PL-2	05/11/99	4.0	40	530	0.48	0.23	0.27	0.33	0.91	—
D-1	05/07/99	1.5	ND<1.0	ND<1.0	ND<0.0050	0.0062	ND<0.0050	ND<0.0050	0.011	—
D-2	05/07/99	1.5	61	36	0.50	0.26	0.13	0.37	0.74	—
PL-1	05/07/99	2.0	460	260	0.37	0.41	0.27	1.40	ND<0.050	—
PL-2	05/07/99	2.0	1,200	710	2.4	23	6.8	46	ND<0.050	—
PL-3	05/07/99	4.0	310	120	ND<0.0050	1.6	1.1	4.1	ND<0.050	—
PL-4	05/07/99	2.0	39	ND<1.0	2.1	1.6	1.6	4.1	1.1	0.27

NOTES:

ppm = parts per million
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
MtBE = methyl tert butyl ether
ND = not detected at or above method detection limit
— = not analyzed

TABLE C-4

Waste Oil Tank Removal Soil Sampling Analytical Results

Former Tosco 76 Service Station 3737

Sample ID	Date	Depth (feet)	TPHg (ppm)	TPHd (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	MtBE 8020 (ppm)	TPH-MO (ppm)
WO-1	05/24/99	10.0	1.4	51	ND<0.0050	ND<0.0050	0.0072	0.039	ND<0.050	121
WO-4	05/24/99	7.5	220	1,100	ND<0.0050	1.1	0.61	0.82	ND<0.050	970
WO-5	05/24/99	7.5	470	1,000	ND<0.0050	0.91	0.81	1.8	ND<0.050	840
WO-6	05/24/99	7.5	370	1,100	ND<0.0050	0.51	0.36	1.9	ND<0.050	1100
WO-7	05/24/99	7.5	86	130	0.30	0.40	1.3	6.0	ND<0.050	220

NOTES:
ppm = parts per million
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
MtBE = methyl tert butyl ether
ND = not detected at or above method detection limit

TABLE C-5

Summary of Soil Analytical Results
ConocoPhillips Service Station No. 3737
1400 Powell Street
Emeryville, CA

Contaminant	Sample Depth									Reporting Limit	Units
	CPT-1@7'	CPT-1@12'	CPT-1@22'	CPT-1@30'	CPT-1@50'	CPT-2@20'	CPT-2@30'	CPT-2@37'	CPT-2@55'		
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Ethylbenzene	**1.1**	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Methyl t-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Total Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	mg/kg
t-Amyl Methyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
t-Butyl alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	mg/kg
Diisopropyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Ethanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	mg/kg
Ethyl t-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Gasoline Range Organics (C4 - C12)	**570**	ND	ND	ND	ND	ND	ND	ND	ND	1	mg/kg
Diesel Range Organics (C12 - C24)	**5.6**	**2.5**	ND	ND	**2**	ND	ND	ND	ND	2	mg/kg

ND = below laboratory reporting limits mg/kg = milligrams per kilogram
bold = above laboratory reporting limits

TABLE C-5

Summary of Soil Analytical Results
ConocoPhillips Service Station No. 3737
1400 Powell Street
Emeryville, CA

Contaminant	Sample Depth									Reporting Limit	Units
	CPT-3@20'	CPT-3@36'	CPT-3@50'	CPT-4@22'	CPT-4@39'	CPT-4@53'	CPT-5@10'	CPT-5@30'	CPT-5@38'		
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Methyl t-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Total Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	mg/kg
t-Amyl Methyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
t-Butyl alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.05	mg/kg
Diisopropyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Ethanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	mg/kg
Ethyl t-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Gasoline Range Organics (C4 - C12)	ND	ND	ND	ND	**4.7**	ND	**1.5**	ND	ND	1	mg/kg
Diesel Range Organics (C12 - C24)	**2.4**	ND	ND	ND	ND	ND	**4.3**	ND	ND	2	mg/kg

ND = below laboratory reporting limits mg/kg = milligrams per kilogram
bold = above laboratory reporting limits

TABLE C-5

Summary of Soil Analytical Results
ConocoPhillips Service Station No. 3737
1400 Powell Street
Emeryville, CA

Contaminant	Sample Depths								Reporting Limit	Units
	CPT-5@46'	CPT-5@54'	CPT-6@21'	CPT-6@38'	CPT-6@53'	CPT-7@39'	CPT-7@47'	CPT-7@52'		
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Methyl t-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Total Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	0.01	mg/kg
t-Amyl Methyl ether	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
t-Butyl alcohol	ND	ND	ND	ND	ND	ND	ND	ND	0.05	mg/kg
Diisopropyl ether	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Ethanol	ND	ND	ND	ND	ND	ND	ND	ND	1	mg/kg
Ethyl t-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	0.005	mg/kg
Gasoline Range Organics (C4 - C12)	ND	ND	ND	ND	ND	ND	ND	**1.1**	1	mg/kg
Diesel Range Organics (C12 - C24)	**2.2**	ND	ND	ND	ND	ND	ND	ND	2	mg/kg

ND = below laboratory reporting limits
mg/kg = milligrams per kilogram
bold = above laboratory reporting limits

TABLE C-6

Summary of Soil Analytical Data
Chevron Branded Service Station No. 3737
1400 Powell Street
Emeryville California

Sample ID	Date	Time	Depth	TPH-G (mg/kg)	TPH-D (mg/kg)	TPH-MO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	Ethanol (mg/kg)	ETBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	n-Butylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	Isopropylbenzene (mg/kg)	p-Isopropyltoluene (mg/kg)	Napthalene (mg/kg)	n-Propylbenzene (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	1,3,5 Trimethylbenzene (mg/kg)	Total Lead (mg/kg)
MW-1Bd3	1/7/2011	4:30	3	**29**	**4.3** A52	<10	<0.050	<0.050	<0.050	<0.10	<0.050	<0.050	<0.50	<0.050	<10	<0.050	<0.050	<0.050	**0.27**	**0.093**	**0.10**	<0.050	**0.065**	**0.28**	<0.050	<0.050	NA
MW-1Bd5.5	1/15/2011	12:08	5.5	**37**	**7.0**	**21**	<0.12	<0.12	<0.12	<0.25	<0.12	<0.12	<1.2	<0.12	<25	<0.12	<0.12	<0.12	**0.21**	<0.12	<0.12	<0.12	<0.12	**0.26**	<0.12	<0.12	NA
MW-1Bd12	1/15/2011	12:18	12	**0.36**	**4.1**	<10	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0055**	<0.0050	<0.0050	NA
MW-1Bd19	1/15/2011	12:34	19	<0.20	**2.7**	<10	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA
MW-2Bd3	1/8/2011	8:11	3	**140**	**390** A52	<1000 A57	<0.25	<0.25	<0.25	<0.50	<0.25	<0.25	<2.5	<0.25	<50	<0.25	<0.25	<0.25	**0.25**	<0.25	<0.25	<0.25	<0.25	<0.25	**0.52**	<0.25	**NA**
MW-2Bd5	1/8/2011	8:30	5	**460**	**520** A52	<1000 A57	**0.40**	<0.25	**1.5**	**0.59**	<0.25	<0.25	<2.5	<0.25	<50	<0.25	<0.25	<0.25	**0.44**	**0.34**	**0.46**	**0.41**	<0.25	**0.86**	**2.0**	**0.65**	**NA**
MW-2Bd7.5	1/14/2011	11:34	7.5	**2.3**	**8.8**	<10	**0.0081**	<0.0050	<0.0050	<0.010	**0.059**	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0054**	<0.0050	<0.0050	<0.0050	<0.0050	NA
MW-2Bd12	1/14/2011	11:45	12	<0.20	**3.1**	<10	<0.0050	<0.0050	<0.0050	<0.010	**0.0050**	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA
MW-2Bd19.5	1/14/2011	12:21	19.5	<0.20	**2.9**	<10	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA
MW-3Bd3	1/7/2011	1:25	3	**1.5**	<2.0	<10	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA
MW-3Bd6	1/15/2011	7:31	6	**76**	**5.8**	**14**	<0.25	<0.25	<0.25	<0.50	<0.25	<0.25	<2.5	<0.25	<50	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	NA
MW-3Bd13	1/15/2011	7:54	13	**0.48**	**2.9**	<10	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA
MW-3Bd18	1/15/2011	8:41	18	<0.20	<2.0	<10	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA
COMP ABCD	1/15/2011	2:30	NA	**0.75**	**10**	**14**	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.050	<0.0050	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**4.9**
Residential ESL (shallow soil)	--	--	<3m	83	83	370	0.044	2.9	2.3	2.3	0.023	0.075	NA	NA	NA	NA	0.00033	0.0045	NA	NA	NA	NA	1.3	NA	NA	NA	200

Notes:

mg/kg	milligrams per kilogram
TPH-D	Total Petroleum Hydrocarbons as Diesel
TPH-MO	Total Petroleum Hydrocarbons as Motor Oil
TPH-G	Total Petroleum Hydrocarbons as Gasoline
MTBE	methyl tertiary butyl ether
TBA	tertiary buty alcohol
ETBE	ethyl tertiary butyl ether
DIPE	di-isopropyl ether
TAME	tertiary amyl ethyl ether
EDB	ethylene dibromide
1,2-DCA	1,2-dichloroethane
ESL	Regional Water Quality Control Board - San Francisco Region Environmental Screening Level
A52	Data Qualifier: Chromatogram not typical of diesel.
A57	Data Qualifier: Chromatogram not typical of motor oil.

ESL based on residential land use, shallow soil, and groundwater as a potential drinking resource.
TPH-D and TPH-MO analysis by Environmental Protection Agency (EPA) Test Method 8015 with Silica Gel Cleanup
All other analyses by EPA Method 8260B.
Samples were analyzed for a full VOC Scan by EPA Method 8260B with oxygenates and lead scavengers. All Oxygenates and lead scavenger data are summarized, only VOCs with detections are presented in table.
Depth measured in feet below ground surface
Bold concentrations indicate detections over laboratory reporting limit
Data qualifiers regarding sample dilution, surrogate recovery, or quality control are not presented in table. Please refer to laboratory reports for full explanation of qualifiers.

Table C-7
July 2012 Soil Analytical Results

Former 76 Service Station No. 3737
1400 Powell Street, Emeryville, California

Sample Name	Sample Date	Sample Depth (feet bgs)	USEPA 8015B	LUFT-GC/MS	USEPA 8260								
			TPH-DRO (mg/kg)	TPH-GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)
MWT-1	07/25/12	5.0	51	32	<0.12	<0.12	<0.12	<0.25	<0.12	<1.2	<0.12	<0.12	<0.12
MWT-2	07/26/12	5.0	70	**340**	**1.2**	<0.12	3.1	**4.3**	<0.12	**1.2**	<0.12	<0.12	<0.12
MWT-3	07/26/12	5.0	**210**	**930**	<0.25	<0.25	<0.25	<0.50	<0.25	<2.5	<0.25	<0.25	<0.25
MWT-4	07/25/12	6.0	**160**	**1,000**	**1.3**	<0.12	**13**	**4.5**	<0.12	<1.2	<0.12	<0.12	<0.12
ESLs for Commercial/Industrial Soils			**83**	**83**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**0.075**	--	--	--

Notes:
bgs = below ground surface
Bold = detection exceeds ESL
DIPE = diisopropyl ether
ESL = Table A. Environmental Screening Levels, Shallow Soils (≤ 3 meters below ground surface), Commercial/Industrial Land Use Only, Groundwater is a Current or Potential Source of Drinking Water, CRWQCB-SFBR, Table A, November 2007
ETBE = ethyl t-butyl ether
LUFT-GC/MS = Leaking Underground Fuel Tank - Gas Chromatograph/Mass Spectrometer
mg/kg = milligrams per kilogram
MTBE = methyl tertiary butyl ether
TAME = t-amyl methyl ether
TBA = t-butyl alcohol
TPH-DRO = total petroleum hydrocarbons as diesel range organics
TPH-GRO = total petroleum hydrocarbons as gasoline range organics
USEPA = United States Environmental Protection Agency
<0.12 = not detected at concentration threshold as shown
-- = unavailable

Table C-8
Organics in Soil at 5850 Hollis Street Property

Former 76 Service Station No. 3737
1400 Powell Street, Emeryville, California

Sample ID	Sample Date	Sample Depth	TPHd mg/kg	TPHmo mg/kg	TPHg mg/kg	TRPH mg/kg	VOCs by 8010 mg/kg	Benzene mg/kg	Acetone mg/kg	2-Butanone mg/kg	Isopropyl benzene mg/kg	propyl benzene mg/kg	Ethyl benzene mg/kg	Total Xylenes mg/kg	1,3,5-Trimethylbenzene mg/kg	1,2,4-Trimethyl benzene mg/kg	sec-Butly benzene mg/kg	para-Isopropyl toluene mg/kg	n-Butyl benzene benzene	Naphthalene mg/kg	Methylene Chloride by 8260 mg/kg	Other Vocs by 8260 mg/kg	Benzo(a)pyrene by EPA 8270 mg/kg	Other SVOCs by 8270 mg/kg	Arochlor - 1260 mg/kg	Other PCBs mg/kg
TR-1	4/6/2000	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-2	4/6/2000	15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-5	4/5/2000	15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-6	4/5/2000	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.33	--	--	--	--	--	--	--
TR-7	4/5/2000	15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-8	4/5/2000	15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-9	4/5/2000	15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-10	4/6/2000	15	ND	180	ND	330	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-11	4/5/2000	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-12	4/5/2000	15	ND	ND	19	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-13	4/6/2000	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		5	ND	ND	ND	30	ND	--	--	--	--	--	--	--	--	--	--	--	--	<0.33	--	--	0.55	ND	--	--
		8	ND	39	ND	52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		10	ND	ND	ND	ND	--	<0.005	<0.01	<0.02	<0.05	<0.05	<0.05	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	--	--	--	--
		15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-14	4/6/2000	3	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		5	ND	ND	ND	ND	--	<0.005	<0.01	<0.02	<0.05	<0.05	<0.05	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	0.57	ND	--	--
		8	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		10	2.3	ND	1.2	ND	--	<0.005	<0.01	<0.02	<0.05	<0.05	<0.05	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	--	--	--	--
		15	4	ND	1.4	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.33	--	--	0.54	ND	--	--
TR-15	4/6/2000	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		5	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		10	1.3	ND	1	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.33	--	--	0.59	ND	--	--
		15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-16	4/6/2000	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		5	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		10	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.33	--	--	0.6	ND	--	--
TR-22	1/20/2005	2	5.5 H Y	32	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		6	8.5 H Y	10 H L	1.7 L Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-25	1/20/2005	2	11 H Y	62	<1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.011	ND
		6	44 H L Y	16	2100 Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-28	1/20/2005	2	4.3 H Y	54	<0.93	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.0096	ND
		6	140 H L Y	280	160 Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-33	8/11/2005	15	<1	<5	<0.92	--	--	<0.0046	--	--	--	--	<0.0046	ND	--	--	--	--	--	--	--	--	--	--	--	--
TR-34	8/11/2005	15	<0.99	<5	<1	--	--	<0.0053	--	--	--	--	<0.0053	ND	--	--	--	--	--	--	--	--	--	--	--	--
TR-35	8/11/2005	15	2.4 H Y	17	1.7 Z	--	--	<0.0051	--	--	--	--	0.076	0.65	--	--	--	--	--	--	--	--	--	--	--	--
TR-36	8/11/2005	15	<1	<5	<1.1	--	--	<0.0053	--	--	--	--	<0.0053	ND	--	--	--	--	--	--	--	--	--	--	--	--
TR-37	8/11/2005	15	9.1 H Y	46	<0.92	--	--	<0.0046	--	--	--	--	<0.0046	ND	--	--	--	--	--	--	--	--	--	--	--	--
TR-38	8/11/2005	15	<0.99	<5	<1	--	--	<0.005	--	--	--	--	<0.005	ND	--	--	--	--	--	--	--	--	--	--	--	--
TR-39	5/4/2006	15	--	--	<1.0	--	--	<0.0049	ND	ND	ND	ND	<0.0049	<0.0049	ND	ND	ND	ND	ND	ND	0.18 a	ND	--	--	--	--
TR-40	5/4/2006	15	--	--	<0.96	--	--	<0.0048	ND	ND	ND	ND	<0.0048	<0.0048	ND	ND	ND	ND	ND	ND	0.22 a	ND	--	--	--	--
TR-41	5/4/2006	15	--	--	<1.0	--	--	<0.0047	ND	ND	ND	ND	<0.0047	<0.0047	ND	ND	ND	ND	ND	ND	0.17 a	ND	--	--	--	--
TR-42	5/4/2006	15	--	--	<1.1	--	--	<0.0050	ND	ND	ND	ND	<0.0050	<0.005	--	--	--	--	--	--	--	--	--	--	--	--
TR-43	5/4/2006	15	--	--	<0.98	--	--	<0.0045	ND	ND	ND	ND	<0.0045	<0.0045	--	--	--	--	--	--	--	--	--	--	--	--
TR-44	5/10/2006	15	--	--	<0.99	--	--	<0.0047	ND	ND	ND	ND	<0.0047	ND	ND	ND	ND	ND	ND	ND	0.094 a	ND	--	--	--	--
TR-45	5/10/2006	15	<1.0	<5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-46	5/12/2006	15	<1.0	<5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-46A	5/10/2006	15	<1.0	<5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-47	5/12/2006	15	<0.99	<5.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-48	5/12/2006	15	7.9 H Y	33 L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-49	5/4/2006	15	<1.0	<5.0	<0.97	--	--	<0.0048	ND	ND	ND	ND	<0.0048	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-50	5/4/2006	15	2 H Y	6	<0.93	--	--	<0.0048	ND	ND	ND	ND	<0.0048	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-51	5/4/2006	15	<0.99	<5.0	<1.1	--	--	0.0082	ND	ND	ND	ND	<0.0050	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-52	5/4/2006	15	1.9 H Y	<5.0	10 H Y	--	--	<0.005	ND	ND	ND	ND	0.0076	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-53	5/4/2006	15	<1.0	<5.0	<0.99	--	--	<0.0045	ND	ND	ND	ND	<0.0045	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-54	5/4/2006	15	2 H Y	5.8	<1.1	--	--	<0.0046	ND	ND	ND	ND	<0.0046	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-55	5/4/2006	15	<1.0	<5.0	<1.1	--	--	<0.0049	ND	ND	ND	ND	<0.0049	--	--	--	--	--	--	--	--	--	--	--	--	--
TR-56	5/4/2006	15	1.4 H Y	<5.0	<0.94	--	--	<0.0046	ND	ND	ND	ND	<0.0046	--	--	--	--	--	--	--	--	--	--	--	--	--

mg/kg = milligrams per kilogram
--- = not analyzed
< 1 = indicates not detected at the indicated laboratory detection limit
ND = Not detected at or greater than laboratory detection limit which varies, see laboratory report
NE = Not established
C = Presence confirmed, but RPD (Relative Percent Difference) between columns exceeds 40%
Y = Laboratory flag iNDicating sample exhibits chromatographic pattern which does not resemble staNDa
H = Laboratory flag iNDicating heavier hydrocarbons contributed to quantitation
a = Detected concentration of methylene chloride due to laboratory contamination
L = Laboratory flag iNDicating lighter hydrocarbons contributed to quantitation

TPHd = Total Petroleum Hydrcarbons quantified as diesel fuel
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
TPHmo = Total Petroleum Hydrocarbons quantified as motor oi
PCBs = Polychlorinated Biphenyls
SFBRWQCB = San Francisco Bay Regional Water Quality Control Board
Table B-2: Shallow soils (less than 10 feet bgs) where grouNDwater is NOT a current or potential source of drinking water

Table C-9
Soil Analytical Results from April 2010 Investigation

Former 76 Service Station No. 3737
1400 Powell Street, Emeryville, California

Sample Location	Sample Date	Sample Depth feet bgs	TPHd mg/kg	TPHmo mg/kg	TPHg mg/kg	Benzene mg/kg	Ethylbenzene mg/kg	Total Xylenes mg/kg	Isopropyl Benzene mg/kg	Propyl-benzene mg/kg	1,3,5-Trimethylbenzene mg/kg	1,2,4-Trimethylbenzene mg/kg	sec-Butyl-benzene mg/kg	para-isopropyl toluene mg/kg	n-butylbenzene mg/kg	Naphthalene (8260) mg/kg	Acetone mg/kg	2-Butanone mg/kg	1,2-Dichloroethane mg/kg	Other VOCs mg/kg	Benzo (a) pyrene mg/kg	Napthalene mg/kg	Phenanthrene mg/kg	Other SVOCs
HA-1	4/5/2010	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.067	<0.067	<0.067	ND
HA-2	4/5/2010	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.066	<0.066	<0.066	ND
HA-3	4/5/2010	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.066	<0.066	<0.066	ND
HA-4	4/5/2010	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.066	<0.066	<0.066	ND
TRCPT-1	4/5/2010	5	--	--	--	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.019	<0.0096	<0.0048	ND	<0.0049	<0.0049	<0.0049	ND
		9.5	--	--	--	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.019	<0.0093	<0.0047	ND	<0.005	<0.005	<0.005	ND
		18	--	--	--	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.019	<0.0093	<0.0046	ND	<0.005	<0.005	<0.005	ND
TRCPT-2	4/5/2010	5	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.020	<0.010	<0.005	ND	<0.0049	<0.0049	<0.0049	ND
		9.5	--	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.019	<0.0097	<0.0049	ND	<0.005	<0.005	<0.005	ND
		18	--	--	--	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.019	<0.0097	<0.0048	ND	<0.0049	<0.0049	<0.0049	ND
TRCPT-3	4/2/2010	5	--	--	--	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.019	<0.0094	<0.0047	ND	<0.005	<0.005	<0.005	ND
		9.5	--	--	--	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.018	<0.0092	<0.0046	ND	<0.0049	<0.0049	<0.0049	ND
		18	--	--	--	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.019	<0.0094	<0.0047	ND	<0.0049	<0.0049	<0.0049	ND
TRCPT-4	4/2/2010	5	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.020	<0.010	<0.005	ND	<0.0049	<0.0049	<0.0049	ND
		10	--	--	--	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.020	<0.0099	<0.005	ND	<0.005	<0.005	<0.005	ND
		18	--	--	--	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.019	<0.0097	<0.0049	ND	<0.005	<0.005	<0.005	ND
TRCPT-5	4/2/2010	5	67	6.3	680Y	<0.5	4	<0.5	1.3	4.8	1.1	<0.5	1	<0.5	4.6	4.9	<2	<1	<0.5	ND	--	--	--	--
		16	<0.99	<5.0	<1.0	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.020	<0.0098	<0.0049	ND	--	--	--	--
TRCPT-6	4/2/2010	7	<1.0	<5.0	<0.99	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.020	<0.0098	<0.0049	ND	--	--	--	--
		19	<0.99	<5.0	<1.0	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.020	<0.0098	<0.0049	ND	--	--	--	--
TRCPT-7	4/1/2010	6	220	80	690Y	<0.25	<0.25	<0.25	0.39	0.89	0.34	<0.25	0.52	0.64	1.2	<0.25	<1	<0.5	<0.25	ND	--	--	--	--
		16	<0.99	<5.0	<0.96	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.019	<0.096	<0.0048	ND	--	--	--	--
TRCPT-8	4/1/2010	10	<1.0	<5.0	<0.95	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.019	<0.0094	<0.0047	ND	--	--	--	--
		19	<1.0	<5.0	<0.98	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.019	<0.0093	<0.0047	ND	--	--	--	--
TRCPT-9	3/31/2010	10	2.5	<5.0	5.5	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	0.28	0.062	<0.0048	ND	--	--	--	--
		22	<1.0	<5.0	<0.93	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.019	<0.0094	<0.0047	ND	--	--	--	--

Notes:
Results presented in units indicated at top of table.
mg/kg = milligrams per kilogram (parts per million)
TPHd = Total Petroleum Hydrcarbons quantified as diesel fuel
TPHmo = Total Petroleum Hydrocarbons quantified as motor oi
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
VOCs = Volatile Organic Compounds (see laboratory data sheets for complete list of VOCs analyzed)
SVOCs = Semivolatile Organic Compounds (see laboratory data sheets for complete list of SVOCs analyzed)
< 1 = indicates not detected at the indicated laboratory detection limit
ND = Not detected at or greater than the laboratory detection limit which varies, see laboratory report
Y = Laboratory flag iNDicating sample exhibits chromatographic pattern which does not resemble staNDard
-- = not analyzed
TPHg and VOCs analyzed by EPA Method 8260
TPHmo and TPHd analyzed by EPA Method 8015
SVOCs analyzed by EPA Method 8270

NE= Not established

ARCADIS

Appendix **D**

Historical Groundwater Analytical Data

TABLE D-1

Summary of Groundwater Analytical Results
ConocoPhillips Service Station No. 3737
1400 Powell Street
Emeryville, CA

Contaminant	Sample Depth						Reporting Limit	Units
	CPT-1@6-9'	CPT-1@29-32'	CPT-1@50-52'	CPT-2@19-22'	CPT-2@29-32'	CPT-2@35-38'		
Benzene	**42**	ND	ND	ND	ND	ND	0.5	ug/L
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	0.5	ug/L
1,2-Dichloroethane	**4.4**	ND	ND	ND	ND	ND	0.5	ug/L
Ethylbenzene	**59**	ND	ND	ND	ND	ND	0.5	ug/L
Methyl t-butyl ether	ND	ND	ND	**0.99**	ND	ND	0.5	ug/L
Toluene	**4**	ND	ND	ND	ND	ND	0.5	ug/L
Total Xylenes	**11**	ND	ND	ND	ND	ND	1	ug/L
t-Amyl Methyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
t-Butyl alcohol	ND	ND	ND	ND	ND	ND	10	ug/L
Diisopropyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
Ethanol	ND	ND	ND	ND	ND	ND	250	ug/L
Ethyl t-butyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
Gasoline Range Organics (C4 - C12)	**690**	ND	ND	ND	ND	ND	50	ug/L
Diesel Range Organics (C12 - C24)	**260**	ND	ND	ND	ND	ND	59	ug/L

ND = below laboratory reporting limits
ug/L = micrograms per liter
bold = above laboratory reporting limits

TABLE D-1

Summary of Groundwater Analytical Results
ConocoPhillips Service Station No. 3737
1400 Powell Street
Emeryville, CA

Contaminant	Sample Depth						Reporting Limit	Units
	CPT-2@50-53'	CPT-3@19-22'	CPT-3@35-38'	CPT-3@50-53'	CPT-4@20-23'	CPT-4@52-55'		
Benzene	ND	ND	ND	ND	**1.8**	**1.4**	0.5	ug/L
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	0.5	ug/L
1,2-Dichloroethane	ND	ND	ND	ND	**43**	ND	0.5	ug/L
Ethylbenzene	ND	ND	ND	ND	**0.84**	**2.1**	0.5	ug/L
Methyl t-butyl ether	ND	ND	ND	ND	**1.3**	ND	0.5	ug/L
Toluene	ND	ND	ND	ND	ND	ND	0.5	ug/L
Total Xylenes	ND	ND	ND	ND	ND	ND	1	ug/L
t-Amyl Methyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
t-Butyl alcohol	ND	ND	ND	ND	ND	ND	10	ug/L
Diisopropyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
Ethanol	ND	ND	ND	ND	ND	ND	250	ug/L
Ethyl t-butyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
Gasoline Range Organics (C4 - C12)	ND	ND	ND	ND	**56**	**99**	50	ug/L
Diesel Range Organics (C12 - C24)	ND	ND	ND	**90**	**66**	**91**	59	ug/L

ND = below laboratory reporting limits ug/L = micrograms per liter
bold = above laboratory reporting limits

TABLE D-1

Summary of Groundwater Analytical Results
ConocoPhillips Service Station No. 3737
1400 Powell Street
Emeryville, CA

Contaminant	Sample Depth						Reporting Limit	Units
	CPT-5@28-31'	CPT-5@52-55'	CPT-6@20-23'	CPT-6@51-54'	CPT-7@45-48'	CPT-7@50-53'		
Benzene	ND	ND	ND	ND	ND	ND	0.5	ug/L
1,2-Dibromoethane	ND	ND	ND	ND	ND	ND	0.5	ug/L
1,2-Dichloroethane	**3.4**	ND	**1.5**	ND	ND	ND	0.5	ug/L
Ethylbenzene	ND	ND	ND	ND	ND	ND	0.5	ug/L
Methyl t-butyl ether	**0.96**	ND	ND	ND	ND	ND	0.5	ug/L
Toluene	ND	ND	ND	ND	ND	ND	0.5	ug/L
Total Xylenes	ND	ND	ND	ND	ND	ND	1	ug/L
t-Amyl Methyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
t-Butyl alcohol	ND	ND	ND	ND	ND	ND	10	ug/L
Diisopropyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
Ethanol	ND	ND	ND	ND	ND	ND	250	ug/L
Ethyl t-butyl ether	ND	ND	ND	ND	ND	ND	0.5	ug/L
Gasoline Range Organics (C4 - C12)	**59**	**ND**	ND	ND	ND	ND	50	ug/L
Diesel Range Organics (C12 - C24)	**630**	**270**	ND	**50**	**200**	**110**	59	ug/L

ND = below laboratory reporting limits ug/L = micrograms per liter
bold = above laboratory reporting limits

Table D-2
Summary of Historic Groundwater Analytical Data - Organics

Sample ID	Sample Date	TPHd µg/L	TPHmo µg/L	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	Isopropyl benzene µg/L	Propyl benzene µg/L	1,3,5-Trimethyl-benzene µg/L	1,2,4-Trimethyl-benzene µg/L	sec-Butyl benzene µg/L	Napthalene µg/L	Acetone µg/L	Other VOCs µg/L
TR-1	4/6/2000	130	ND	98	--	--	--	--	--	--	--	--	--	--	--	ND (8010)
TR-6	4/5/2000	ND	1,400	ND	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<100	ND (8260)
TR-9	4/6/2000	ND	420	ND	--	--	--	--	--	--	--	--	--	--	--	--
TR-12	4/6/2000	700	ND	3,300	--	--	--	--	--	--	--	--	--	--	--	ND (8010)
TR-23 (GW)	6/20/2005	8400 L Y	--	28,000	4,300	<25	990	300	120	240	45	160	<25	380	<500	ND (8260)
TR-24 (GW)	6/15/2005	6800 L	--	91,000 Y	2,500	31	950	760	210	110	290	43	70	710	35	ND
TR-25 (GW)	1/20/2005	--	--	150,000 Y	2,500	<10	3,600	1,720	--	--	--	--	--	--	--	--
TR-29 (GW)	1/20/2005	280 H Y	340 L	<50	<0.5	0.61 C	< 0.5	0.6	--	--	--	--	--	--	--	--
TR-30 (GW)	1/20/2005	640 H Y	960	<50	<0.5	0.85 C	< 0.5	0.85	--	--	--	--	--	--	--	--
TR-31 (GW)	1/20/2005	270 H Y	1,500	<50	<0.5	0.56 C	< 0.5	0.57	--	--	--	--	--	--	--	ND

Notes:
Results presented in units indicated at top of table
ug/l = micrograms per liter (parts per billion)
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
TPHd = Total Petroleum Hydrcarbons quantified as diesel fue
TPHmo = Total Petroleum Hydrocarbons quantified as motor oi
VOCs = Volatile Organic Compounds (see laboratory data sheets for complete list of VOCs analyzed
< 5 = indicates not detected at the indicated laboratory detection limi
ND = Not detected at or greater than the laboratory detection limit which varies, see laboratory repor
C = Presence confirmed, but RPD (Relative Percent Difference) between columns exceeds 40%
Y = Laboratory flag indicating sample exhibits chromatographic pattern which does not resemble standar
H = Laboratory flag indicating heavier hydrocarbons contributed to quantitatio
L = Laboratory flag indicating lighter hydrocarbons contributed to quantitatio
Z = Sample exhibits unknown single peak or peaks
NA = not analyzed

TABLE D-3

GROUNDWATER ANALYTICAL RESULTS
Dewatering Wells
5885 Hollis Street
Emeryville, California

Sample ID	Sample Date	TPH			VOCs												
		Gasoline	Diesel Fuel	Motor Oil	TBA	MTBE	DIPE	ETBE	TAME	Ethanol	B	T	E	X	EDB	EDC	Other VOCs
DW-11	4/13/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	--	--	--
	4/18/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	**0.6**	<0.5	<0.5	<0.5	<0.5	All ND
	4/26/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	**9.8**	<0.5	<0.5	<5.0	<5.0	--
	5/3/2006	<50	**130 Y**	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	**2.3**	<0.5	<0.5	<5.0	<5.0	--
	5/10/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	**0.9**	<0.5	<0.5	<5.0	<5.0	--
	5/17/2006	<50	**100 Y**	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	**0.6**	<0.5	<0.5	<5.0	<5.0	--
	5/23/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	**0.5**	<0.5	<0.5	<5.0	<5.0	--
	6/1/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	6/8/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	6/16/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	6/22/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	6/30/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	7/5/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	7/12/2006	<50	**78 Y**	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	7/18/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	7/27/2006	<50	<50	<300	<10	<0.5	<0.5	<0.5	<0.5	<1,000	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0	--
	ESLs	500	640	640	18,000	1,800	NE	NE	NE	50,000	46	130	290	100	NE	200	Varies

TABLE D-3

GROUNDWATER ANALYTICAL RESULTS
Dewatering Wells
5885 Hollis Street
Emeryville, California

Sample ID	Sample Date	TPH			VOCs												
		Gasoline	Diesel Fuel	Motor Oil	TBA	MTBE	DIPE	ETBE	TAME	Ethanol	B	T	E	X	EDB	EDC	Other VOCs
DW-14	4/13/2006	77 L Y	<50	<300	72	<0.5	<0.5	<0.5	<0.5	<1,000	10	0.8	<0.5	0.6	--	--	--
	4/18/2006	250	110Y	<300	72	<0.5	<0.5	<0.5	<0.5	<1,000	22	1.3	6.4	5.7	<0.5	19	Isopropyl Benzene = 1.9 Propyl Benzene = 1.7 1,3,5 Trimethylbenzene = 1.9 1,2,4 Trimethylbenzene = 0.8 para-Isopropyl Toluene = 1.3 n-Butylbenzene = 0.6 All Others ND
	4/26/2006	630	440 L	<300	76	<0.5	<0.5	<0.5	<0.5	<1,000	42	4.9	14	6.8	<5.0	16	--
	5/3/2006	620	370 L Y	<300	64	<0.5	<0.5	<0.5	<0.5	<1,000	39	1.8	21	10	<5.0	18	--
	5/10/2006	450	250 L Y	<300	83	<0.5	<0.5	<0.5	<0.5	<1,000	11	2.4	8.6	4.9	<5.0	15	--
	5/17/2006	450	340 Y	<300	44	<0.5	<0.5	<0.5	<0.5	<1,000	37	0.6	9.1	6.2	<5.0	16	--
	5/23/2006	390	110 L Y	<300	30	<0.5	<0.5	<0.5	<0.5	<1,000	28	<0.5	4.9	3.3	<5.0	15	--
	6/1/2006	1,800	360 L Y	<300	58	<0.5	<0.5	<0.5	<0.5	<1,000	55	1.2	41	28	<5.0	16	--
	6/8/2006	520	130 L Y	<300	40	<0.5	<0.5	<0.5	<0.5	<1,000	37	<0.5	6.0	4.7	<5.0	16	--
	6/16/2006	580	150 L Y	<300	34	<0.5	<0.5	<0.5	<0.5	<1,000	35	<0.5	6.4	5.4	<5.0	15	--
	6/22/2006	1,200	320 L Y	<300	47	<0.5	<0.5	<0.5	<0.5	<1,000	34	0.5	7.6	9.7	<5.0	14	--
	6/30/2006	970	270 L Y	<300	35	<0.5	<0.5	<0.5	<0.5	<1,000	30	<0.5	6.7	5.6	<5.0	15	--
	7/5/2006	950	230 L Y	<300	37	<0.5	<0.5	<0.5	<0.5	<1,000	38	<0.5	6.1	5.2	<5.0	16	--
	7/12/2006	850 Y	<50	<300	24	<0.5	<0.5	<0.5	<0.5	<1,000	26	<0.5	6.9	4.6	<5.0	14	--
	7/18/2006	980	220 L Y	<300	57	<0.5	<0.5	<0.5	<0.5	<1,000	39	<0.5	6.5	4.8	<5.0	14	--
	7/27/2006	670	170 L Y	<300	51	<0.5	<0.5	<0.5	<0.5	<1,000	38	0.5	3.2	5.3	<5.0	15	--
	ESLs	500	640	640	18,000	1,800	NE	NE	NE	50,000	46	130	290	100	NE	200	Varies

TABLE D-3

GROUNDWATER ANALYTICAL RESULTS
Dewatering Wells
5885 Hollis Street
Emeryville, California

Sample ID	Sample Date	TPH			VOCs												
		Gasoline	Diesel Fuel	Motor Oil	TBA	MTBE	DIPE	ETBE	TAME	Ethanol	B	T	E	X	EDB	EDC	Other VOCs
DW-24	4/13/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/18/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/26/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/3/2006	--	**63 Y**	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/10/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/17/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/23/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/1/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/8/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/16/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/22/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/30/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/5/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/12/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/18/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/27/2006	--	<50	<300	--	--	--	--	--	--	--	--	--	--	--	--	--
	ESLs	500	640	640	18,000	1,800	NE	NE	NE	50,000	46	130	290	100	--	200	Varies

Notes

All water results reported in micrograms per liter (µg/L). Detected concentrations shown in **bold**.

L = Lighter hydrocarbons contributed to the quantitation

Y = Sample exhibits chromatographic pattern which does not resemble standard.

Total petroleum hydrocarbons analyzed by EPA Method 8015M. Volatile organic compounds (VOCs) analyzed by EPA Method 8260B.

Fuel oxygenates include tert-Butyl Alcohol (TBA), Methyl tert-Butyl ether (MTBE), Isopropyl Ether (DIPE), Ethyl tert-Butyl Ether (ETBE), and Methyl tert-Amyl Ether (TAME)

B = Benzene, T = Toluene, E = Ethylbenzene, X = Total Xylenes

Lead scavengers include 1,2 dibromoethane (EDB) and 1,2 dichloroethane (EDC)

Other VOCs = Other volatile organic compounds described in the laboratory analytical report

<0.5 = Compound not detected above laboratory reporting limit.

-- = Not Analyzed

NE = Not Established

ND = Not detected above laboratory detection limits. Detection limits vary for each constituent.

ESLs = Environmental Screening Levels, California Regional Water Quality Control Board, San Francisco Bay Region, February 2005. Based on criteria where water is not a current or potential source of drinking water (Table B)

Shaded cells exceeded ESL criteria for their respective constituent.

Table D-4
Groundwater Analytical Results from April 2010 Investigation

Sample ID	Sample Date	Sample Depth feet	TPHd µg/L	TPHmo µg/L	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Total Xylenes µg/L	m,p-Xylenes µg/L	o-Xylene µg/L	Isopropyl-benzene µg/L	Propyl-benzene µg/L	1,3,5-Trimethylbenzene µg/L	1,2,4-Trimethylbenzene µg/L	sec-Butyl-benzene µg/L	para-isopropyl toluene µg/L	n-butyl benzene µg/L	Naphthalene (8260) µg/L	Acetone µg/L	MtBE µg/L	2-Butanone µg/L	1,2-Dichloroethane µg/L	Other VOCs µg/L	Benzo (a)pyrene µg/L	Naphthalene (8270) µg/L	Phenanthrene µg/L	Other SVOCs µg/L
TRCPT-1-GW	4/6/2010	20	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<10	<0.5	<10	<0.5	ND	--	--	--	--
TRCPT-2-GW	4/5/2010	20	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<10	<0.5	<10	<0.5	ND	<0.1	<0.1	<0.1	ND
TRCPT-3-GW	4/2/2010	20	--	--	--	<0.5	0.6	0.7	3.5	2.3	1.2	<0.5	<0.5	1.3	3.4	<0.5	<0.5	0.7	<2.0	21	<0.5	<10	<0.5	ND	<0.1	0.3	0.1	ND
TRCPT-4-GW	Boring left open for 6 hours. No measurable water																											
TRCPT-5-GW	4/2/2010	20	210	<300	2,500y	140	0.7	100	11	10	1	23	56	4	6.6	6.8	3.8	23	46	42	<0.5	17	<0.5	ND				
TRCPT-6-GW	4/2/2010	11	240	1,700	300y	0.6	0.6	0.8	2.3	1.6	0.7	2.6	4.1	0.6	2	0.7	1	1.4	<2.0	34	0.8	11	<0.5	ND				
TRCPT-7-GW	4/1/2010	9	<500	<3,000	460y	<0.5	<0.5	0.6	0.5	0.5	<0.5	5.5	8.2	<0.5	<0.5	1.7	2.5	3.2	<2.0	<10	61	<10	11	ND				
TRCPT-8-GW	4/1/2010	20	<100	<600	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<10	<0.5	<10	<0.5	ND				
TRCPT-9-GW	4/1/2010	17	<100	<600	830y	24	<0.5	6.5	0.6	0.6	<0.5	5.3	5.9	1.7	0.6	1.4	2.1	2	<2.0	53	0.6	21	1.4	ND				
		50	<50	<300	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<10	<0.5	<10	<0.5	ND				

Notes:
Results presented in units indicated at top of table.
ug/l = micrograms per liter (parts per billion)
TPHd = Total Petroleum Hydrcarbons quantified as diesel fuel
TPHmo = Total Petroleum Hydrocarbons quantified as motor oil
TPHg = Total Petroleum Hydrocarbons quantified as gasoline
VOCs = Volatile Organic Compounds (see laboratory data sheets for complete list of VOCs analyzed)
<0.5 = indicates not detected at the indicated laboratory detection limit
ND = Not detected at or greater than the laboratory detection limit which varies, see laboratory report
Y = Laboratory flag indicating sample exhibits chromatographic pattern which does not resemble standard
-- = not analyzed
TPHg and VOC analyzed using EPA Method 8260
TPHd and TPHmo analyzed using EPA Method 8015
SVOCs analyzed using EPA Method 8270

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Appendix **E**

Emeryville Industrial Court
Excavation NPDES Monitoring Data
(2006)

TABLE E-1
FLOW SUMMARY FOR NPDES TREATMENT SYSTEM
Wareham Labs
Emeryville, CA

Date	Meter Reading (gallons)	Instantaneous Flow Rate (gpm)	System Average Flow Rate (gpm)	System Cumulative Volume (gallons)
March 30, 2006	13339400	150	0.0	0
April 3, 2006	13344900	150	1.0	5500
April 5, 2006	13346900	150	0.9	7500
April 10, 2006	13373700	150	2.2	34300
April 21, 2006	13602300	150	8.3	262900
April 24, 2006	13622600	150	7.9	283200
April 27, 2006	13625800	150	7.1	286400
May 8, 2006	13651600	150	5.6	312200
May 16, 2006	13677500	150	5.0	338100
June 20, 2006	13832700	150	4.2	493300
June 23, 2006	13840800	150	4.1	501400
June 27, 2006	13849000	150	4.0	509600
June 30, 2006	13857200	150	3.9	517800
July 7, 2006	13882100	150	3.8	542700
July 12, 2006	13898500	150	3.7	559100
July 18, 2006	13911700	150	3.6	572300
July 21, 2006	13925700	150	3.6	586300
July 24, 2006	13938800	150	3.6	599400
July 28, 2006	13969900	150	3.6	630500

Total Operating Period (days)	120
Total Volume Treated & Discharged (gallons)	630,500
Average Daily Flow for Period (gallons per day)	5,254

TABLE E-2
GENERAL CHEMICAL TREATMENT DATA
Wareham Labs
Emeryville, California

Sample Location	Date Sampled	Temperature (Field) (^oC)	pH (Field) (S.U.)	Electrical Conductivity (Laboratory) µmhos/cm	Turbidity (NTUs)
Influent	3/30/2006	21	7.6	837	440
	4/7/2006	21.5	7.5	1140	735
	5/16/2006	21.2	7.81	--	--
	6/20/2006	20.8	7.32	--	--
	7/21/2006	20.9	7.7	--	--
Effluent	3/30/2006	22.1	8	852	4.1
	4/7/2006	20.5	7.9	1050	29
	5/16/2006	21.6	7.5	1300	--
	6/20/2006	21.1	7.17	1200	1.5
	7/21/2006	21.2	7.45	1100	--
Effluent Limitations		--	6.5-8.5	--	--
Receiving Water Limitations		No change	Change <0.5	No change	No change

Notes:

^oC – degrees centigrade, measured in field
µmhos/cm – micromhos per centimeter
NTUs – nephelometric turbidity units
mg/l – milligrams per liter
-- not analyzed

TABLE E-3

INORGANIC CHEMICAL DATA – TOTAL METALS*

Wareham Labs

Emeryville, California

Sample Location	Date Sampled	Flowrate (gpd)	Antimony (µg/l)	Arsenic (µg/l)	Beryllium (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Silver (µg/l)	Thallium (µg/l)	Zinc (µg/l)	Cyanide (µg/l)	Hexachrome (µg/l)
Influent	3/30/2006	1,368	0.81	2.1	ND	ND	15	6.2	1.3	0.015	10	0.96	ND	ND	21	ND	7.7
	4/7/2006	1,756	0.7	2.9	ND	ND	2.6	7	ND	0.016	5.5	0.75	ND	ND	25	ND	1.5
	5/16/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/20/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Effluent	3/30/2006	1,368	1.3	10	ND	ND	0.72	52	9.4	0.0035	6.5	0.97	ND	ND	86	ND	ND
	4/7/2006	1,756	1.3	7.5	ND	ND	7.6	8	2.4	0.0028	10	1.1	ND	ND	21	ND	ND
	5/16/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/20/2006	6,048	ND	ND	ND	ND	ND	78	10	ND	ND	ND	ND	16	120	ND	ND
	7/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mass Discharged (g/d) 3/30/2006			6.74E-03	5.18E-02	N/A	N/A	3.73E-03	2.69E-01	4.87E-02	1.81E-05	3.37E-02	5.03E-03	N/A	N/A	4.46E-01	N/A	N/A
Mass Discharged (g/d) 4/7/2006			8.65E-03	4.99E-02	N/A	N/A	5.06E-02	5.32E-02	1.60E-02	1.86E-05	6.65E-02	7.32E-03	N/A	N/A	1.40E-01	N/A	N/A
Mass Discharged (g/d) 5/16/2006			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mass Discharged (g/d) 6/20/2006			N/A	N/A	N/A	N/A	N/A	1.79E+00	2.29E-01	N/A	N/A	N/A	N/A	3.67E-01	2.75E+00	N/A	N/A
Mass Discharged (g/d) 7/21/2006			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mass Based Trigger (g/d) Flow: less than 10 gpm			3	1	3	1	2	3	5	0.01	5	2	1	3	10	1	N/A
Mass Based Trigger (g/d) Flow: >100 gpm			10	10	10	4	20	10	10	0.5	40	45	10	10	200	1	N/A

Notes:

gpd – gallons per day
µg/l – micrograms per liter
g/d – grams per day
ND – Not detected
-- not analyzed

TABLE E-4

PETROLEUM HYDROCARBON AND

VOLATILE ORGANIC COMPOUND CONCENTRATIONS[1]

Wareham Labs

Emeryville, CA

Sample Location	Date Sampled	Petroleum Hydrocarbons						
		TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
		(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)
Influent	3/30/2006	200,000	64	1400	510	ND	ND	ND
	4/7/2006	70,000	ND	630	ND	ND	ND	ND
	5/16/2006	51	ND	ND	ND	ND	ND	ND
	6/20/2006	ND	ND	ND	ND	ND	ND	ND
	7/21/2006	ND	ND	ND	ND	ND	ND	ND
Effluent	3/30/2006	ND	ND	ND	ND	ND	ND	ND
	4/7/2006	ND	ND	ND	ND	ND	ND	ND
	5/16/2006	ND	ND	ND	ND	ND	ND	ND
	6/20/2006	ND	ND	ND	ND	ND	ND	ND
	7/21/2006	ND	ND	ND	ND	ND	ND	ND
Effluent Limitations		50	50	1	5	5	5	5

Notes:

µg/l – Micrograms per liter
TPH-g – Total petroleum hydrocarbons as gasoline
TPH-d – Total petroleum hydrocarbons as diesel

[1] – Influent and effluent samples taken on April 7, 2006 were analyzed for Volatile Organic Compound (VOC) by EPA Method 8260B; for Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270D for Alcohols by GC-FID and for Polynuclear Aromatic Hydrocarbons. All effluent compounds were non-detect.

TABLE E-5
FISH BIOASSAY RESULTS - EFFLUENT
Wareham Labs
Emeryville, CA

Date	Test Organisms	% Survival
4/7/2006	Fathead Minow	100
6/20/2006	Rainbow Trout	100

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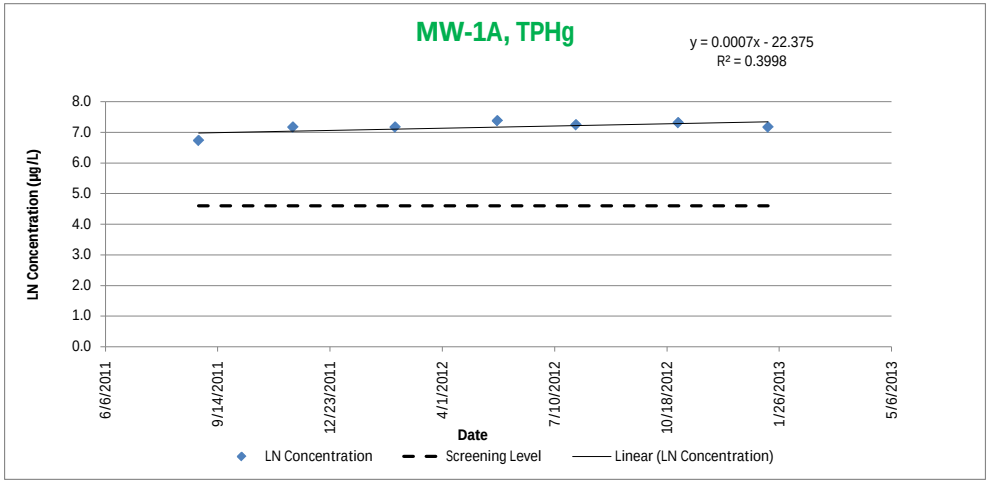
Appendix **F**

Linear Regression Analyses

Sample Information
Sample Location **MW-1A**
Constituent TPH-g

Data		
Sample Date	Concentration	LN Concentration
	(µg/L)	
8/28/2011	840	6.73
11/20/2011	1,300	7.17
2/19/2012	1,300	7.17
5/20/2012	1,600	7.38
7/29/2012	1400	7.24
10/28/2012	1,500	7.31
1/16/2013	1300	7.17



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	7
# of nondetects	0
% of data as detects	100

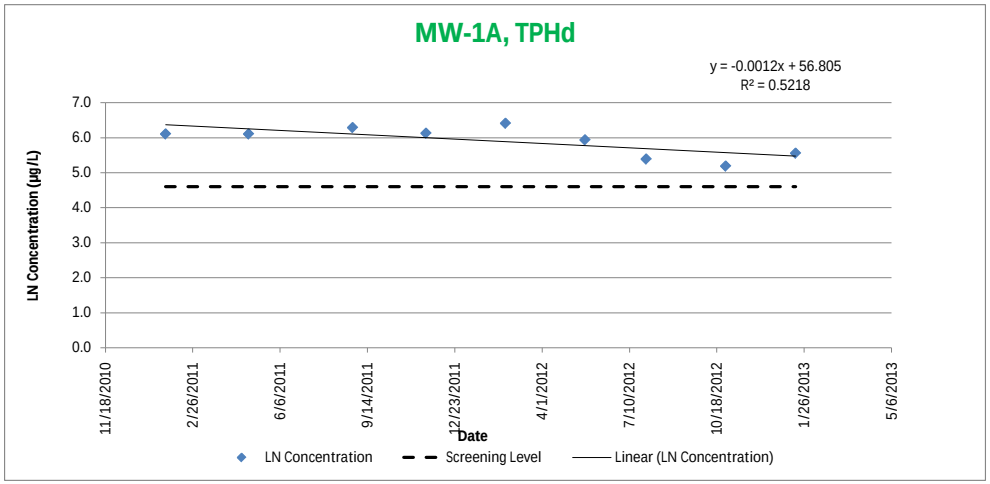
Results		
Coefficient of Determination (R^2) =	0.3998	
p-Value =	1.28E-01	
Attenuation Rate in Groundwater (K) =	-0.0007	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0015	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	NA	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	-22.375
Slope	0.0007
Date to Screening Level	NA

Abbreviations and Notes
µg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-1A**
Constituent TPH-d

Data		
Sample Date	Concentration	LN Concentration
	(mg/L)	
1/26/2011	450	6.11
5/1/2011	450	6.11
8/28/2011	540	6.29
11/20/2011	460	6.13
2/19/2012	610	6.41
5/20/2012	380	5.94
7/29/2012	220	5.39
10/28/2012	180	5.19
1/16/2013	260	5.56



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

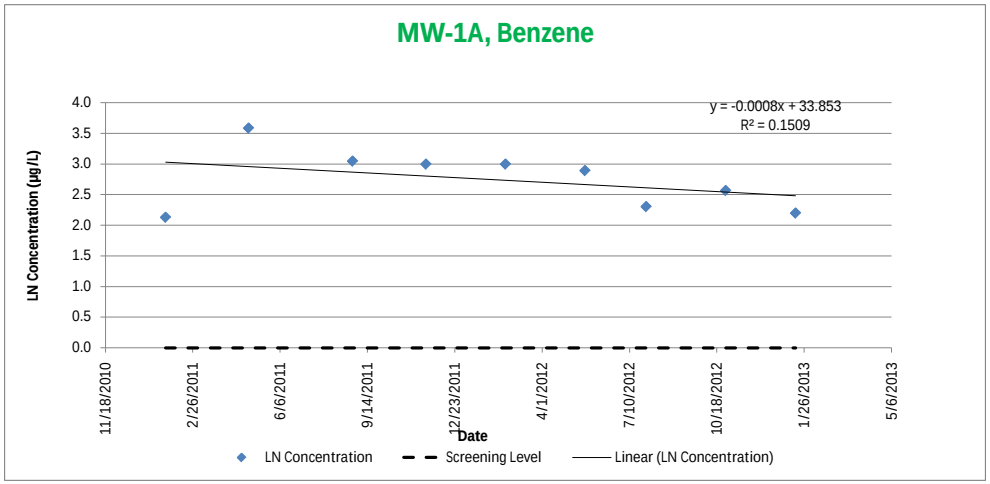
Results		
Coefficient of Determination (R^2) =	0.5218	
p-Value =	2.79E-02	
Attenuation Rate in Groundwater (K) =	0.0012	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0004	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	5.57E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	56.805
Slope	-0.0012
Date to Screening Level	12/17/2014

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-1A**
Constituent Benzene

Data		
Sample Date	Concentration	LN Concentration
	(µg/L)	
1/26/2011	8.4	2.13
5/1/2011	36	3.58
8/28/2011	21	3.04
11/20/2011	20	3.00
2/19/2012	20	3.00
5/20/2012	18	2.89
7/29/2012	10	2.30
10/28/2012	13	2.56
1/16/2013	9.0	2.20



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

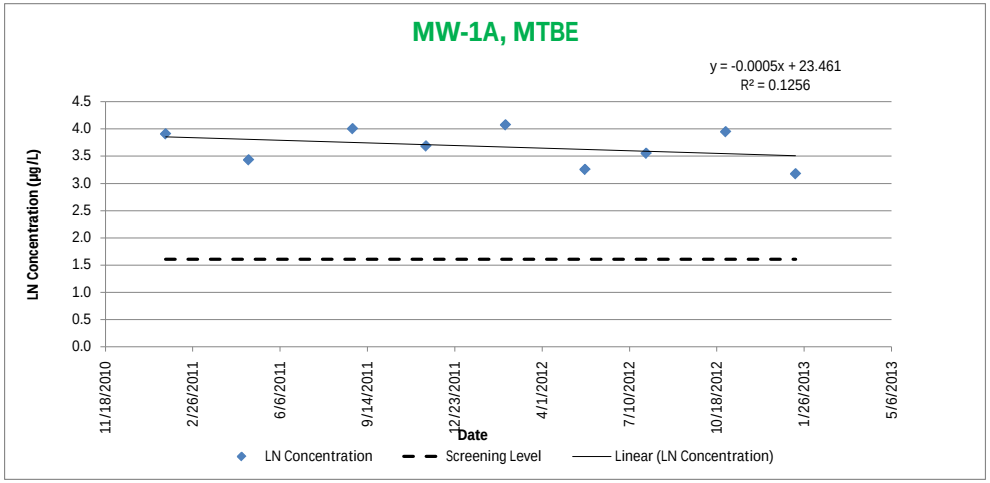
Results		
Coefficient of Determination (R^2) =	0.1509	
p-Value =	3.02E-01	
Attenuation Rate in Groundwater (K) =	0.0008	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0005	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	9.12E+02	days

Date Screening Level Reached	
Screening Level	1
LN Screening Level	0.0
Intercept	33.853
Slope	-0.0008
Date to Screening Level	NA

Abbreviations and Notes
µg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-1A**
Constituent MTBE

Data		
Sample Date	Concentration (mg/L)	LN Concentration
1/26/2011	50	3.91
5/1/2011	31	3.43
8/28/2011	55	4.01
11/20/2011	40	3.69
2/19/2012	59	4.08
5/20/2012	26	3.26
7/29/2012	35	3.56
10/28/2012	52	3.95
1/16/2013	24	3.18



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

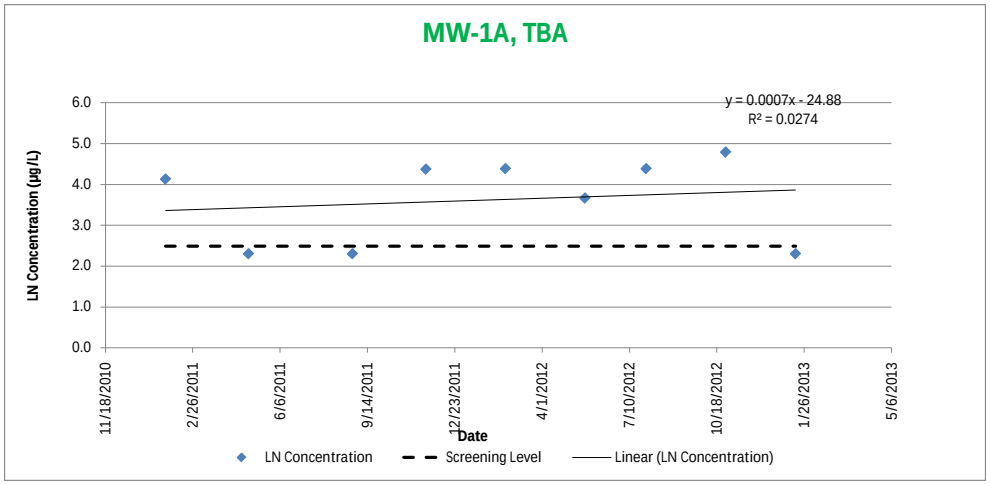
Results		
Coefficient of Determination (R^2) =	0.1256	
p-Value =	3.49E-01	
Attenuation Rate in Groundwater (K) =	0.0005	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0004	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	1.43E+03	days

Date Screening Level Reached	
Screening Level	5
LN Screening Level	1.6
Intercept	23.461
Slope	-0.0005
Date to Screening Level	NA

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-1A**
Constituent TBA

Data		
Sample Date	Concentration (mg/L)	LN Concentration
1/26/2011	62	4.13
5/1/2011	10	2.30
8/28/2011	10	2.30
11/20/2011	79	4.37
2/19/2012	80	4.38
5/20/2012	39	3.66
7/29/2012	80	4.38
10/28/2012	120	4.79
1/16/2013	10	2.30



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	3
% of data as detects	67

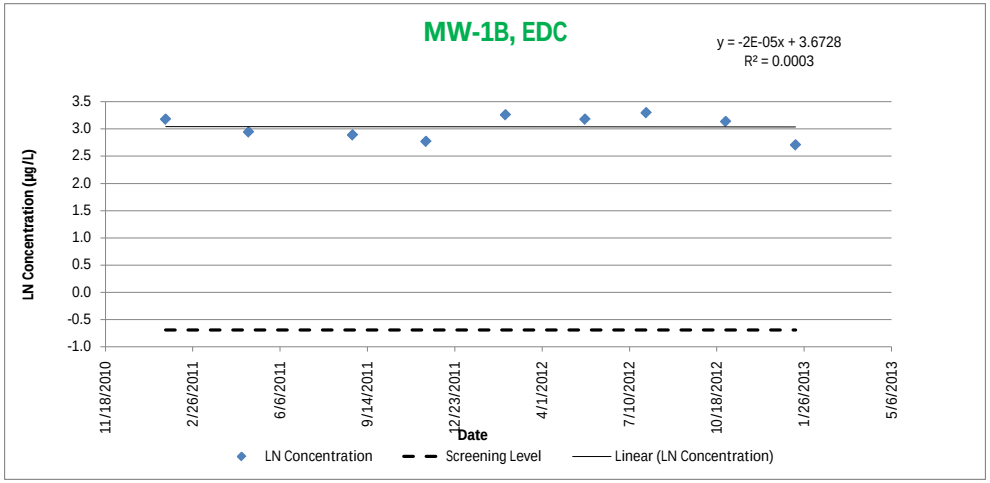
Results		
Coefficient of Determination (R^2) =	0.0274	
p-Value =	6.70E-01	
Attenuation Rate in Groundwater (K) =	-0.0007	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0037	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	NA	days

Date Screening Level Reached	
Screening Level	12
LN Screening Level	2.5
Intercept	-24.880
Slope	0.0007
Date to Screening Level	NA

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-1B**
Constituent EDC

Data		
Sample Date	Concentration (mg/L)	LN Concentration
1/26/2011	24	3.18
5/1/2011	19	2.94
8/28/2011	18	2.89
11/20/2011	16	2.77
2/19/2012	26	3.26
5/20/2012	24	3.18
7/29/2012	27	3.30
10/28/2012	23	3.14
1/16/2013	15	2.71



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

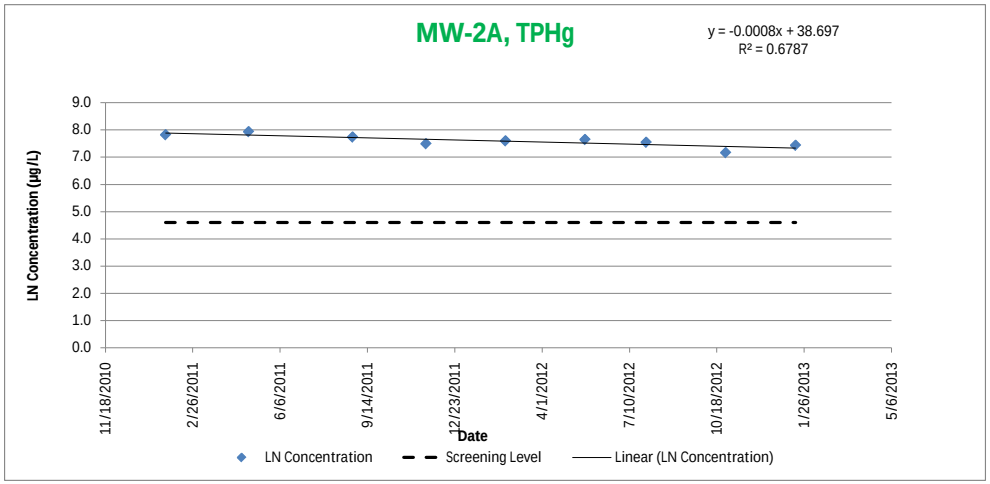
Results		
Coefficient of Determination (R^2) =	0.0003	
p-Value =	9.64E-01	
Attenuation Rate in Groundwater (K) =	0.0000	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0006	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	4.48E+04	days

Date Screening Level Reached	
Screening Level	0.5
LN Screening Level	-0.7
Intercept	3.673
Slope	0.0000
Date to Screening Level	NA

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-2A**
Constituent TPH-g

Data		
Sample Date	Concentration	LN Concentration
	(mg/L)	
1/26/2011	2500	7.82
5/1/2011	2,800	7.94
8/28/2011	2300	7.74
11/20/2011	1,800	7.50
2/19/2012	2,000	7.60
5/20/2012	2,100	7.65
7/29/2012	1900	7.55
10/28/2012	1,300	7.17
1/16/2013	1700	7.44



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

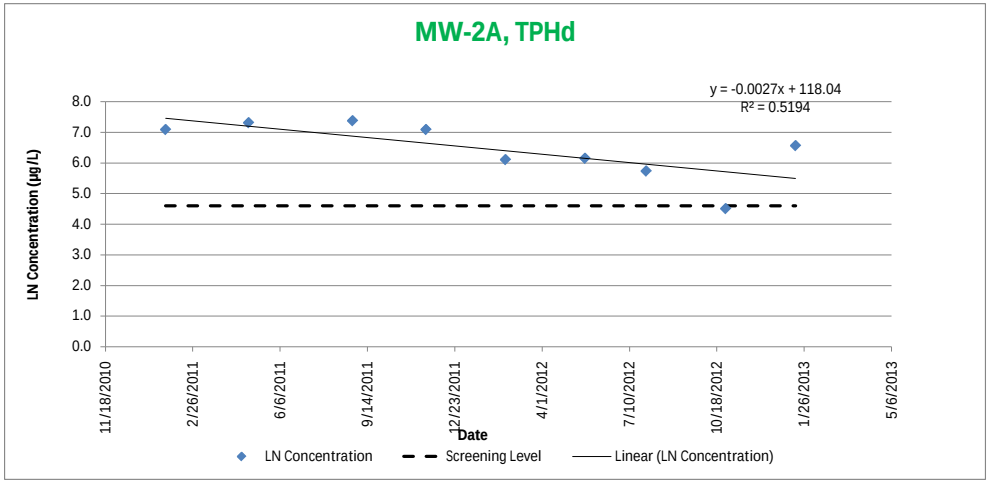
Results		
Coefficient of Determination (R^2) =	0.6787	
p-Value =	6.33E-03	
Attenuation Rate in Groundwater (K) =	0.0008	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0004	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	9.12E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	38.697
Slope	-0.0008
Date to Screening Level	11/24/2022

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-2A**
Constituent TPH-d

Data		
Sample Date	Concentration	LN Concentration
	(mg/L)	
1/26/2011	1200	7.09
5/1/2011	1,500	7.31
8/28/2011	1,600	7.38
11/20/2011	1,200	7.09
2/19/2012	450	6.11
5/20/2012	470	6.15
7/29/2012	310	5.74
10/28/2012	91	4.51
1/16/2013	710	6.57



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

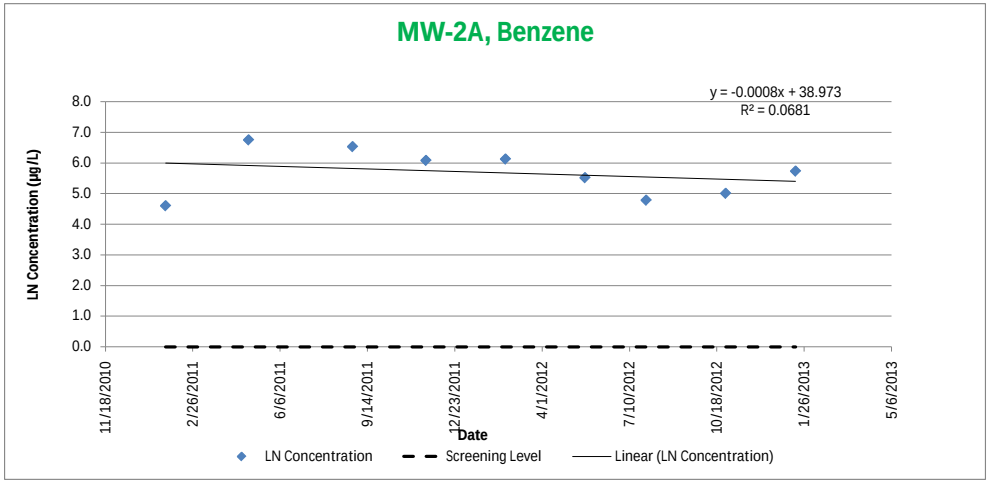
Results		
Coefficient of Determination (R^2) =	0.5194	
p-Value =	2.85E-02	
Attenuation Rate in Groundwater (K) =	0.0027	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0008	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	2.54E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	118.044
Slope	-0.0027
Date to Screening Level	12/10/2013

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-2A**
Constituent Benzene

Data		
Sample Date	Concentration	LN Concentration
	(mg/L)	
1/26/2011	100	4.61
5/1/2011	860	6.76
8/28/2011	690	6.54
11/20/2011	440	6.09
2/19/2012	460	6.13
5/20/2012	250	5.52
7/29/2012	120	4.79
10/28/2012	150	5.01
1/16/2013	310	5.74



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

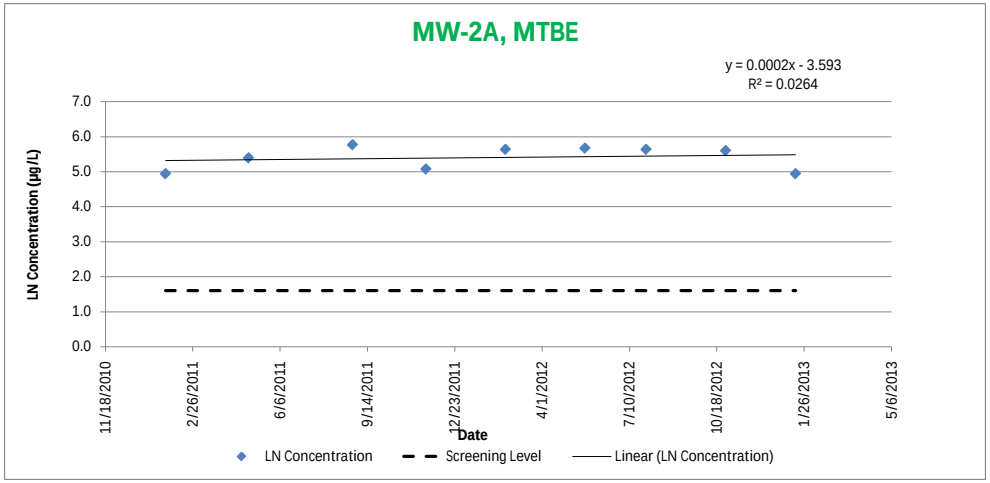
Results		
Coefficient of Determination (R^2) =	0.0681	
p-Value =	4.98E-01	
Attenuation Rate in Groundwater (K) =	0.0008	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0013	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	8.52E+02	days

Date Screening Level Reached	
Screening Level	1
LN Screening Level	0.0
Intercept	38.973
Slope	-0.0008
Date to Screening Level	NA

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-2A**
Constituent MTBE

Data		
Sample Date	Concentration	LN Concentration
	(µg/L)	
1/26/2011	140	4.94
5/1/2011	220	5.39
8/28/2011	320	5.77
11/20/2011	160	5.08
2/19/2012	280	5.63
5/20/2012	290	5.67
7/29/2012	280	5.63
10/28/2012	270	5.60
1/16/2013	140	4.94



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

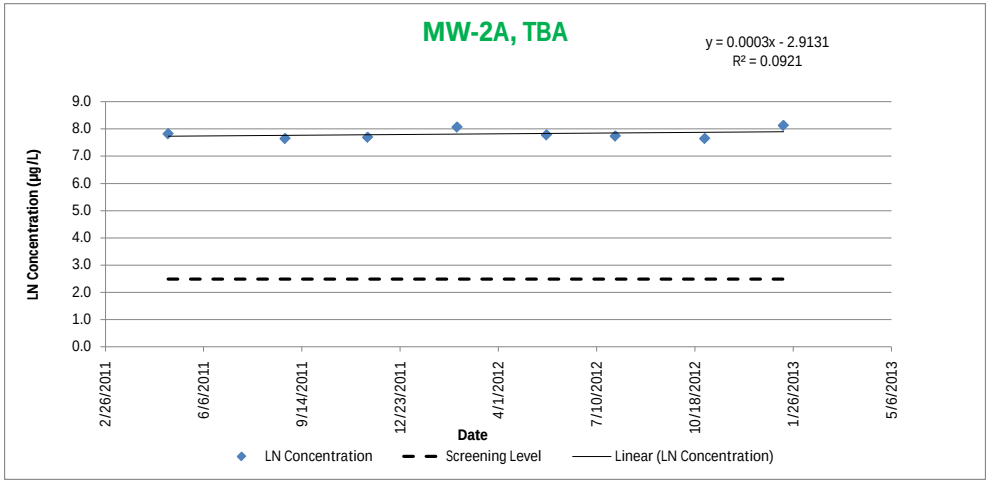
Results		
Coefficient of Determination (R^2) =	0.0264	
p-Value =	6.76E-01	
Attenuation Rate in Groundwater (K) =	-0.0002	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0012	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	NA	days

Date Screening Level Reached	
Screening Level	5
LN Screening Level	1.6
Intercept	-3.593
Slope	0.0002
Date to Screening Level	NA

Abbreviations and Notes
µg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-2A**
Constituent TBA

Data		
Sample Date	Concentration	LN Concentration
	(µg/L)	
5/1/2011	2,500	7.82
8/28/2011	2,100	7.65
11/20/2011	2,200	7.70
2/19/2012	3,200	8.07
5/20/2012	2,400	7.78
7/29/2012	2,300	7.74
10/28/2012	2,100	7.65
1/16/2013	3,400	8.13



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	8
# of nondetects	0
% of data as detects	100

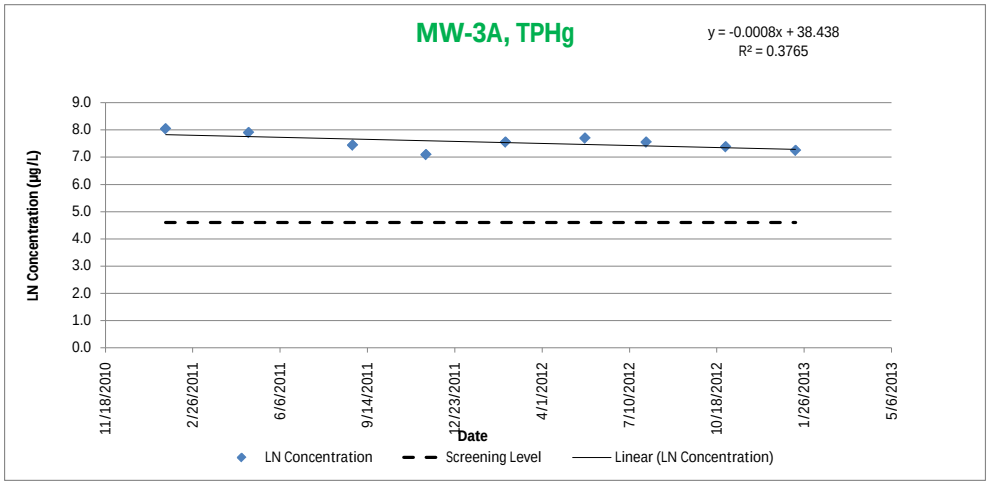
Results		
Coefficient of Determination (R^2) =	0.0921	
p-Value =	4.65E-01	
Attenuation Rate in Groundwater (K) =	-0.0003	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0009	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	NA	days

Date Screening Level Reached	
Screening Level	12
LN Screening Level	2.5
Intercept	-2.913
Slope	0.0003
Date to Screening Level	NA

Abbreviations and Notes
µg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-3A**
Constituent TPH-g

Data		
Sample Date	Concentration	LN Concentration
	(µg/L)	
1/26/2011	3100	8.04
5/1/2011	2,700	7.90
8/28/2011	1,700	7.44
11/20/2011	1,200	7.09
2/19/2012	1,900	7.55
5/20/2012	2,200	7.70
7/29/2012	1900	7.55
10/28/2012	1,600	7.38
1/16/2013	1400	7.24



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

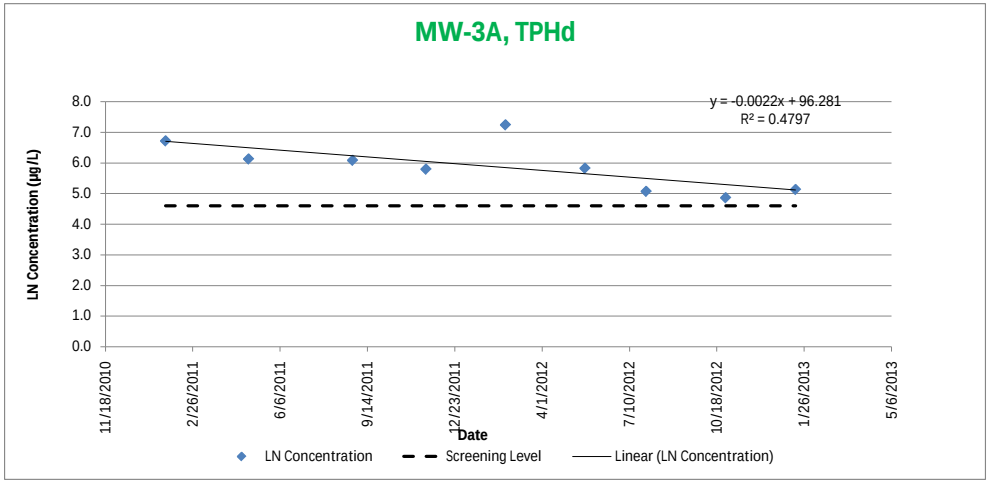
Results		
Coefficient of Determination (R^2) =	0.3765	
p-Value =	7.88E-02	
Attenuation Rate in Groundwater (K) =	0.0008	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0001	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	9.18E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	38.438
Slope	-0.0008
Date to Screening Level	10/4/2022

Abbreviations and Notes
µg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-3A**
Constituent TPH-d

Data		
Sample Date	Concentration (µg/L)	LN Concentration
1/26/2011	830	6.72
5/1/2011	460	6.13
8/28/2011	440	6.09
11/20/2011	330	5.80
2/19/2012	1,400	7.24
5/20/2012	340	5.83
7/29/2012	160	5.08
10/28/2012	130	4.87
1/16/2013	170	5.14



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

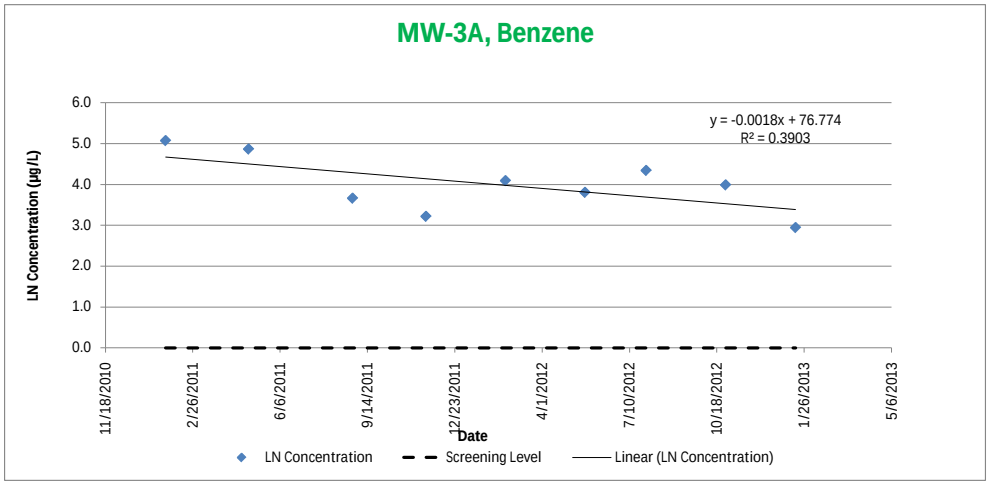
Results		
Coefficient of Determination (R^2) =	0.4797	
p-Value =	3.87E-02	
Attenuation Rate in Groundwater (K) =	0.0022	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0006	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	3.14E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	96.281
Slope	-0.0022
Date to Screening Level	9/4/2013

Abbreviations and Notes
µg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-3A**
Constituent Benzene

Data		
Sample Date	Concentration (mg/L)	LN Concentration
1/26/2011	160	5.08
5/1/2011	130	4.87
8/28/2011	39	3.66
11/20/2011	25	3.22
2/19/2012	60	4.09
5/20/2012	45	3.81
7/29/2012	77	4.34
10/28/2012	54	3.99
1/16/2013	19	2.94



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	0
% of data as detects	100

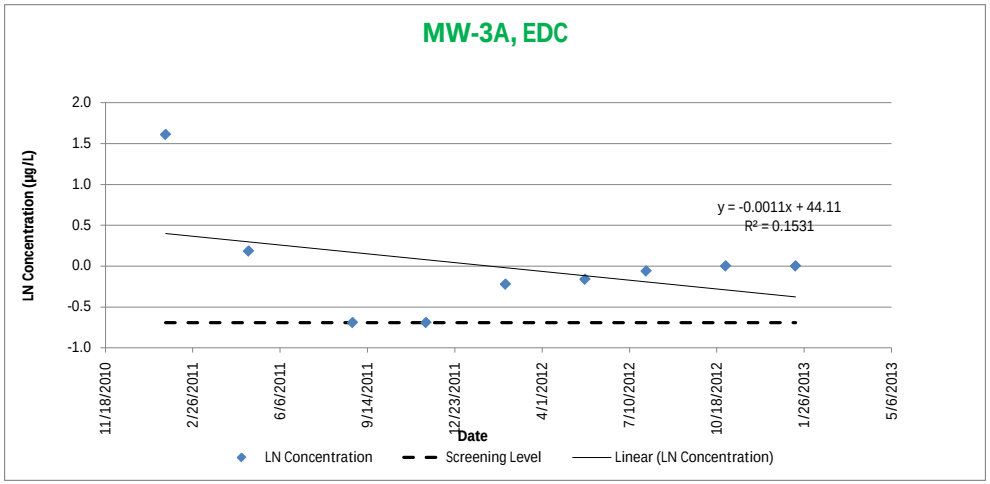
Results		
Coefficient of Determination (R^2) =	0.3903	
p-Value =	7.21E-02	
Attenuation Rate in Groundwater (K) =	0.0018	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0002	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	3.90E+02	days

Date Screening Level Reached	
Screening Level	1
LN Screening Level	0.0
Intercept	76.774
Slope	-0.0018
Date to Screening Level	4/6/2018

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Sample Location **MW-3A**
Constituent EDC

Data		
Sample Date	Concentration (mg/L)	LN Concentration
1/26/2011	5	1.61
5/1/2011	1.2	0.18
8/28/2011	0.5	-0.69
11/20/2011	0.5	-0.69
2/19/2012	0.80	-0.22
5/20/2012	0.85	-0.16
7/29/2012	0.94	-0.06
10/28/2012	1	0.00
1/16/2013	1	0.00



Notes:
ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	9
# of nondetects	4
% of data as detects	56

Results		
Coefficient of Determination (R^2) =	0.1531	
p-Value =	2.98E-01	
Attenuation Rate in Groundwater (K) =	0.0011	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	-0.0007	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	6.43E+02	days

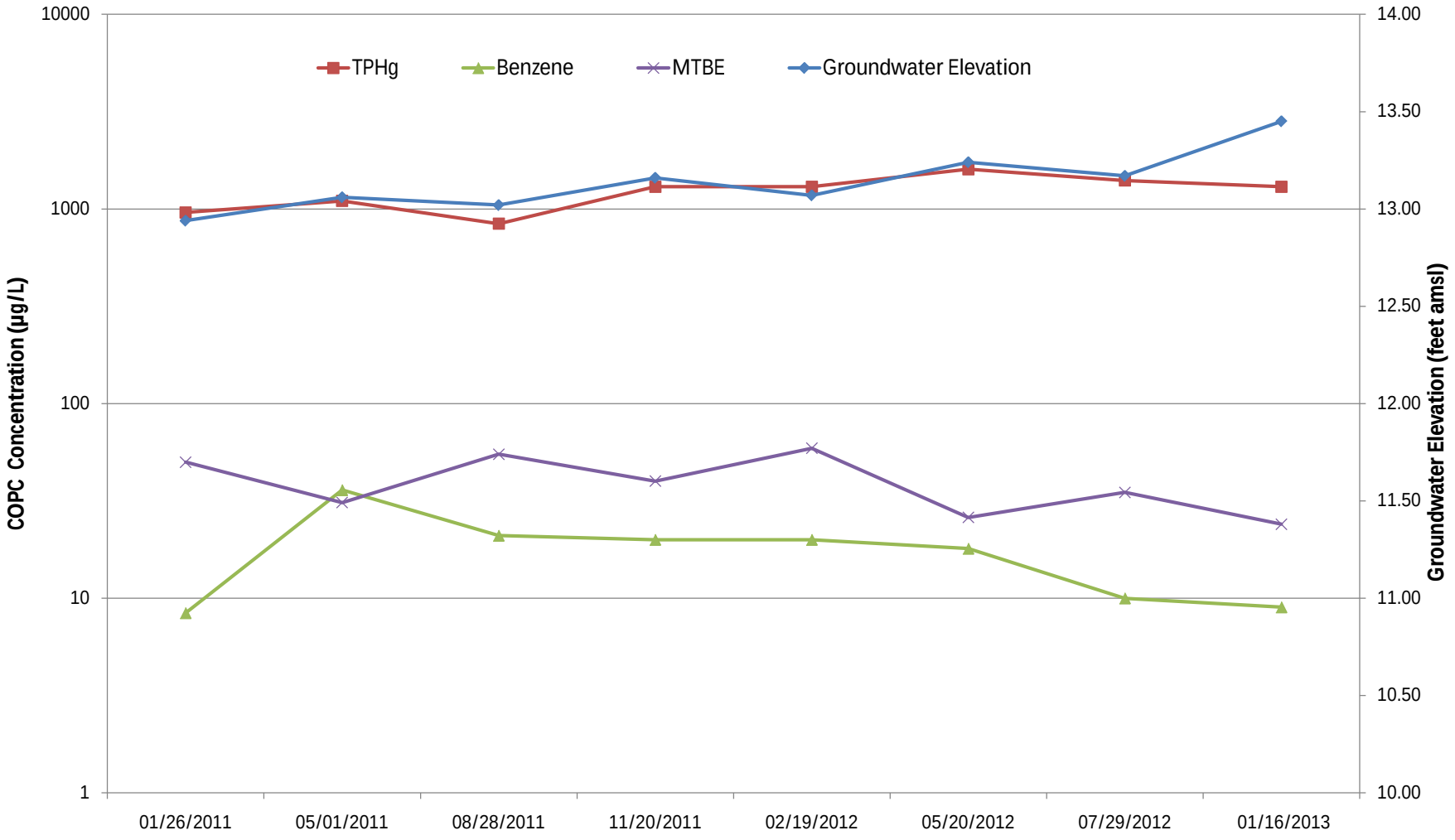
Date Screening Level Reached	
Screening Level	0.5
LN Screening Level	-0.7
Intercept	44.110
Slope	-0.0011
Date to Screening Level	NA

Abbreviations and Notes
mg/l = micrograms per liter
LN = Natural Logarithm

ARCADIS

Appendix **G**

Hydrographs



Notes:

Non-detects quantified at detection lmit
AMSL = above mean sea level
COPC = Constituents of potential concern
ft = feet
µg/L = micrograms per liter

MTBE = Methyl tert butyl ether
TPHg = Total petroleum hydrocarbons as gasoline

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MW-1A: TPH-g, Benzene and MTBE Concentrations Over Time

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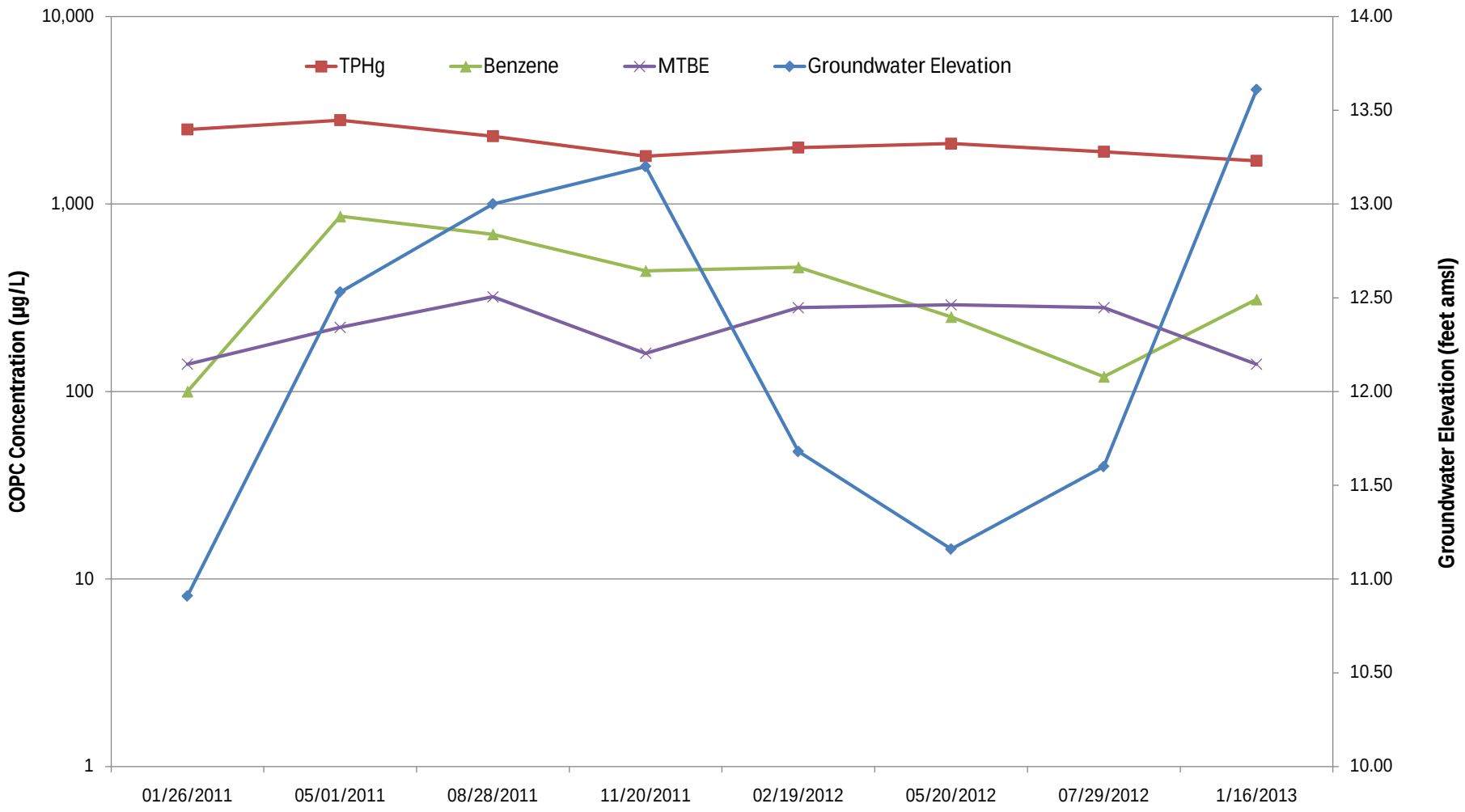
FIGURE
G-1



Notes:

Non-detects quantified at detection lmit
AMSL = above mean sea level
COPC = Constituents of potential concern
ft = feet
µg/L = micrograms per liter

MTBE = Methyl tert butyl ether
TPHg = Total petroleum hydrocarbons as gasoline

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MW-2A: TPH-g, Benzene and MTBE Concentrations Over Time

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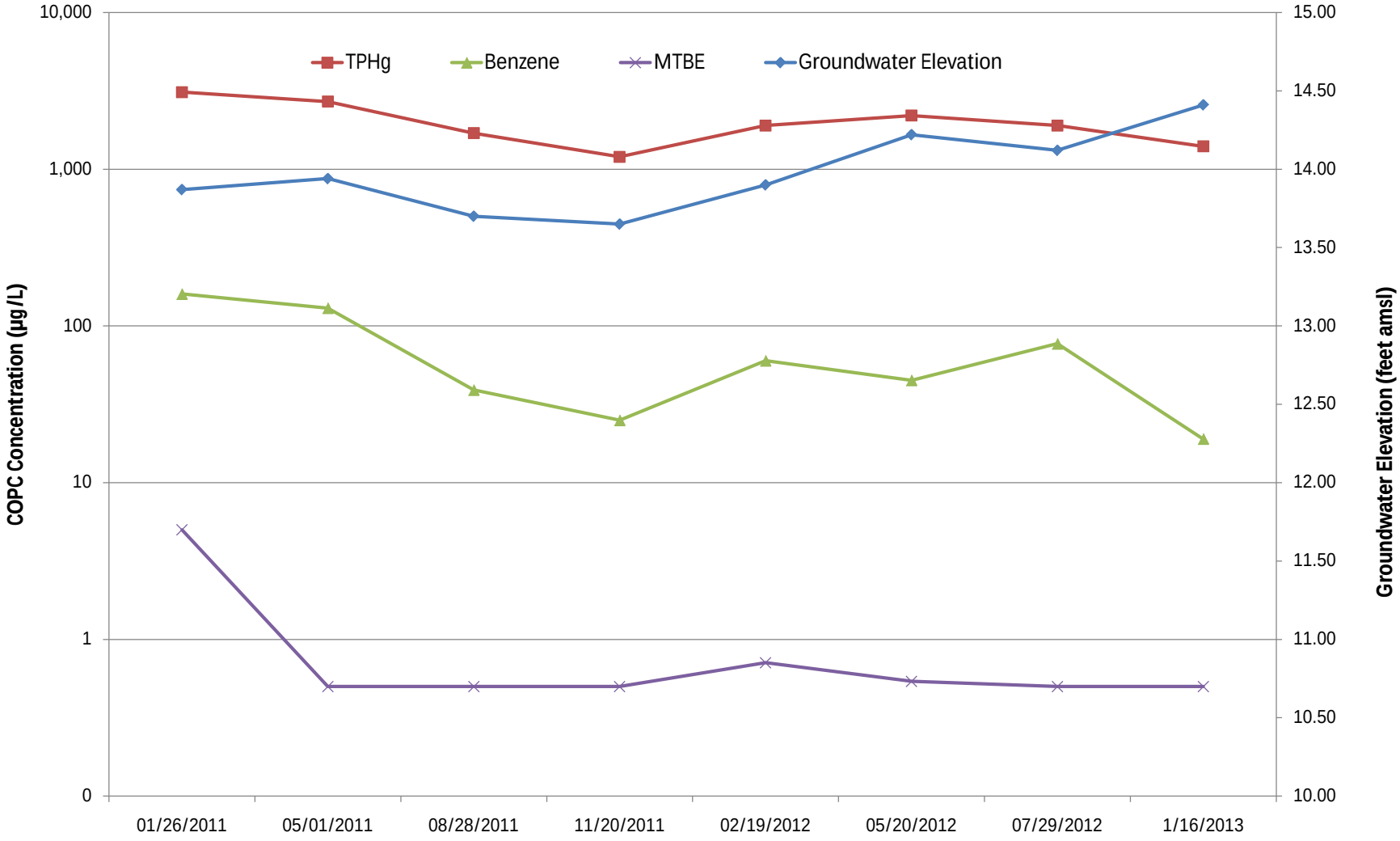
FIGURE
G-2



Notes:

Non-detects quantified at detection lmit
AMSL = above mean sea level
COPC = Constituents of potential concern
ft = feet

MTBE = Methyl tert butyl ether
TPHg = Total petroleum hydrocarbons as gasoline

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MW-3A: TPH-g, Benzene and MTBE Concentrations Over Time

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FIGURE
G-3