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Project Manager, Marketing Business Unit

Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RECEIVED
By Alameda County Environmental Health 3:56 pm, Oct 20, 2017

Re: Former Chevron Service Station No. 90121
3026 Lakeshore Avenue
Oakland, California
Fuel Leak Case RO0000284

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached *Technical Response and Work Plan* submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge

Sincerely,

Carryl MacLeod
Project Manager

Attachment: *Technical Response and Work Plan*

Chevron Environmental Management Company
6001 Bollinger Canyon Road, San Ramon, CA 94583
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October 20, 2017 Reference No. 311973

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

Re: Technical Response and Work Plan
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California
ACDEH Case No. RO0000284

Dear Mr. Detterman:

GHD is submitting this *Technical Response and Work Plan* for the site referenced above (Figures 1 and 2) on behalf of Chevron Environmental Management Company (CEMC) in response to Alameda County Department of Environmental Health's (ACDEH) letters dated June 7, 2017 and July 18, 2017 (Appendix A). The site background, a discussion of offsite sources, a response to ACDEH technical comments, and a work plan are presented below.

1. Site Background

1.1 Site Description

The site is currently a vacant lot on the southern corner of Lakeshore Avenue and MacArthur Boulevard in Oakland, California (Figure 1) utilized by the current owner as a parking lot. A retail gasoline service station operated onsite from 1928 to 2009. The service station was demolished in August 2010, removing all site facilities, including one building, one kiosk, three dispenser islands, four 10,000-gallon gasoline underground storage tanks (USTs), and product piping (Figures 2 and 3). The property was sold to FWS Highland LLC (FWS) in 2011. Surrounding land use is a mixture of commercial and residential, with Lake Merritt and a city park located across Lakeshore Avenue.

A review of Sanborn Maps and city records produced by Environmental Data Resources Inc. (EDR) and CEMC records indicates there were three station configurations; the first configuration from approximately 1928 through 1953 contained two dispensers along Lakeshore Avenue, a washroom and a service building (the UST locations are unknown); the second configuration from 1953 through 1984 contained two dispensers in the center of the site, four USTs and a service station building; the third configuration from 1984 through 2009 contained five dispensers, four USTs, and a kiosk. The USTs remained in the same location from 1953 through 2009. Approximate locations of former site facilities are illustrated on Figure 3. EDR also indicates that a service station and automobile repair shop were formerly located at 3000 Lakeshore Avenue, which is downgradient of the site at the corner of Lakeshore Avenue and

Beacon Street (Figure 2). The service station operated from approximately 1933 to 1957 when the service station was replaced by an office building.

1.2 Previous Environmental Work

The site has been an open environmental case since 1990 under ACEH jurisdiction (Fuel Leak Case Number RO0000284 and GeoTracker Global ID T0600100328). A total of 23 monitoring wells (13 of which have been destroyed), 3 sub-slab vapor probes, and 22 soil borings have been installed/advanced on and near the site (Figure 2). Remedial activities have consisted of light non-aqueous phase liquid (LNAPL) recovery and at least five fueling facility upgrades, some of which included remedial excavations. A summary of previous environmental investigation and remediation is included in Appendix B.

1.3 Site Geology

The site is approximately 12 feet above mean sea level (ft-amsl) with relatively flat topography and located in a valley adjacent to hilly terrain to the southeast. The site is located within the Oakland sub-area of the East Bay Plain groundwater basin.[1] This basin encompasses approximately 115 square miles and is bounded by San Pablo Bay to the north, northern boundary of the Alameda County Water District to the south, the Hayward Fault to the east, and the San Francisco Bay to the west. Sediments in the vicinity consist of Holocene-age estuarine deposits comprised of organic clay and silty clay (Bay Mud); overlying Holocene-age alluvial sand and silt, and Pleistocene-age interbedded clay, silt, sand, and gravel.[2] Locally, the site is underlain primarily by clays interbedded with silt, silty sand, fine sand, and gravel layers to the total depth explored of 35 feet below grade (fbg).

1.4 Site Hydrogeology

The site is located in the Santa Clara Valley Groundwater Basin, East Bay Plain Sub Basin, Oakland sub-area. Groundwater in this region has been designated potentially beneficial for agricultural, municipal, and industrial uses.[3] The average historical groundwater elevation has ranged from approximately 2 to 14 fbg and flows predominantly to the southwest. The nearest surface water body is Lake Merritt, approximately 900 feet to the southwest.

2. Offsite Sources

The ACDEH has previously raised concerns regarding the potential impact of petroleum hydrocarbons reported in the vicinity of MW-6 to the nearby surface water body, Lake Merritt. While it is possible that

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1 *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report*, Alameda and Contra Costa Counties, CA prepared by the California Regional Water Quality Control Board San Francisco Bay, August 4, 1999

2 *California's Groundwater Bulletin 118;* The State of California Department of Water Resources Agency, February 27, 2004

3 Table 2-2 *Existing and Potential Beneficial Uses in Groundwater in Identified Basins, Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basins*; California Regional Water Quality Control Board – San Francisco Bay Region, January 18, 2007.

this is occurring, GHD asserts that the petroleum hydrocarbons identified in MW-6 and nearby boring B-7 likely do not originate from the subject site, but from another offsite source. EDR's Sanborn Maps and city directories indicate that a service station and automobile repair shop were formerly located at 3000 Lakeshore Avenue, which is downgradient of the former Chevron site, at the corner of Lakeshore Avenue and Beacon Street (Figure 2). This service station operated from approximately 1933 to 1957 when the service station was replaced by an office building. In 2013, soil boring B-7 was advanced in Beacon Street adjacent to the downgradient side of the former service station. Elevated hydrocarbon concentrations of 130 mg/kg total petroleum hydrocarbons as diesel (TPHd) and 2,600 mg/kg TPHg were detected in shallow soil, and 2,800 μg/L TPHd and 2,500 μg/L TPHg were detected in groundwater from B-7. Furthermore, the highest naphthalene concentrations reported in soil during site assessment activities (up to 0.24 mg/kg), were detected in the offsite boring B-7. Based on the location of B-7 immediately downgradient of the former service station (3000 Lakeshore Avenue) and its distance from the site (150 feet), concentrations detected in B-7 are unlikely the result of hydrocarbons originating from the former Chevron station. Furthermore, it is also more likely that concentrations detected in MW-6 are a the result of the operation of the former service station at 3000 Lakeshore Avenue (25 feet away) than from the former Chevron station (150 feet away). It should also be noted that surface water runoff from Lakeshore Avenue is discharged directly to Lake Merritt via the storm drain, which is another potential source of petroleum hydrocarbon impact to Lake Merritt.

3. Response to Technical Comments

In response to ACDEH's correspondence associated with ACDEH's review of this site against the Low-Threat Closure Policy (LTCP), ACDEH's comments are presented in italics below followed by GHD's response

3.1 LTCP General Criteria b (Unauthorized Release Consists Only of Petroleum)

Comment: ACDEH states "Appendix B of the Data Gap Investigation Work Plan and Focused Site Conceptual Model, dated February 6, 2015, reports that two 500 – 1,000 gallon underground storage tanks (USTs) were abandoned in-place beneath the sidewalk during a station remodel in 1984. The location of the USTs have not been incorporated into site figures. Please locate the USTs on all future site figures.

Appendix B also indicates that this information was reported in the Pacific Environmental Group (PEG) report dated October 4, 1993, and entitled Remedial Feasibility Study. Review of the case file indicates that this report has not been previously submitted. Please submit the report electronically.

Due to their size the USTs would appear to be potentially first generation USTs. Due to the undocumented contents of these USTs it is appropriate to characterize residual contamination for all constituents, including those for waste oil. ACDEH has not located either soil or groundwater analytical results for chlorinated volatile organic solvents (CVOCs) as a waste oil UST can be expected at an older facility. If site-wide groundwater analytical monitoring for CVOCs has been conducted, please include the

analytical data as a table in all future groundwater monitoring reports. If CVOC analysis has not been conducted, please include analysis for CVOCs (full scan) in the next groundwater sampling event at the site. Please include the tabulated results in all future groundwater monitoring reports. The need for additional CVOC sampling can be assessed thereafter.

Response: The PEG October 4, 1993 *Remedial Feasibility Study* report has been uploaded to the ACDEH ftp site and to Geotracker. The report states that during the 1984 station remodel, two 500 to 1,000-gallon USTs were found abandoned in-place beneath the sidewalk. The tanks were abandoned in place with grout. A review of historical files found no location for these USTs. However, based on Sanborn Maps provided by EDR, two fuel dispensers were located along the Lakeshore Avenue sidewalk (Figure 3). Historically, first generation USTs of this era were often installed beneath sidewalks for ease of filling, were often small in size, and abandoned in place. Therefore, it is likely these two fuel tanks were associated with the two first generation fuel dispensers and were used for storing petroleum for retail sale, not used-oil. At this time, no CVOC or wear metal analysis appears warranted.

3.2 General Criteria f – Secondary Source has been Removed to the Extent Practicable

Comment: ACDEH states "*The presence of secondary source in the vicinity of the two USTs abandoned in place beneath the sidewalk is not known to have been assessed previously. Additionally, the identification of the location of all previous generations of USTs have not been depicted on site figures. Please include the location of all former UST generations on future site figures. Please determine the need to assess the removal of secondary source associated with each UST generation."*

Response: The location of the two USTs abandoned in place beneath the sidewalk has not been located in any historical files or during the 2011 geophysical survey conducted in the sidewalks of Lakeshore Avenue and MacArthur Boulevard. Figures 3, 6, 7, and 8 have been updated with known locations of former facilities and the dates those facilities were in place.

Previous secondary source removal has included the removal of an undocumented quantity of soil during the 1980 UST replacement, removal of 740 cubic yards of soil during the 1984 station reconstruction, and removal of 100 cubic yards of soil during the 1996 product line replacements. Hydrocarbon concentrations in shallow soil 2 to 3 fbg beneath the second generation product piping were over-excavated during the 1996 piping replacement. The concentrations that were overexcavated are indicated with a "strikethrough" on the cumulative soil analytical data Table 1. Soil samples EX-1 through EX-6 collected in 2010 from the fuel UST pit indicated the second and third generation USTs were not a source of hydrocarbons beneath the site (Table 1). No soil sampling data was located for any UST, product piping, or dispenser upgrades prior to 1996; however, no additional soil and groundwater assessment is warranted at this time based on the following.

- Dissolved hydrocarbon concentrations in all wells have decreased to near or below laboratory detection limits or ESLs
- Soil conditions beneath the known former facilities have been assessed by soil samples collected from 15 onsite soil borings (B-1, B-2, B-3, B-9 through B-13, and SB-1 through SB-7), 8 onsite well

borings (MW-1, MW-2, MW-2A, MW-3, MW-3A, MW-4, MW-4A, and MW-9), and 35 compliance soil samples.

Secondary source removal will be further evaluated after the soil vapor assessment proposed in Section 5 is completed.

3.3 LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air

Comment: ACDEH states "*Our review of the case files indicates that the site data collection and analysis fail to support the requisite characteristics of one of the four scenarios…"*

Response: An onsite soil vapor assessment is proposed in Section 5 below.

Comment: ACDEH states *"Specifically, review of existing indoor air and crawl space data (collected at the adjacent site due to the shallowness of groundwater) indicates potential vapor intrusion due to naphthalene vapors. Naphthalene vapor concentrations, detected by TO-17 methodology, in all indoor air vapor samples were above, up to nearly twice as high, as outdoor air concentrations. ACDEH notes that the detection limit for naphthalene vapor analysis by TO-15 were higher than indoor air Environmental Screening Levels (ESLs), promulgated by the San Francisco Bay Regional Water Quality Control Board (RWQCB), or was not conducted for crawl space vapor samples."*

Response: The hydrocarbon concentrations detected in indoor air in 2014 were similar, and within the same order of magnitude, to both crawl space and outdoor air concentrations, indicating the concentrations detected in indoor air are likely due to sources other than sub surface hydrocarbons, such as from vehicle emissions from the heavily traveled Lakeshore Avenue and Interstate 580. The highest naphthalene concentrations detected by TO-17 methodology in all indoor air vapor samples was 0.65 micrograms per cubic meter ($\mu g/m^3$), whereas 0.37 $\mu g/m^3$ were detected in the outdoor sample. These concentrations are within the same order of magnitude. However, the crawl space samples were not analyzed using the TO-17 method. To confirm concentrations detected in 2014, to analyze crawl space samples using the TO-17 method, and to have naphthalene analyzed by TO-15 method with a detection limit lower than the indoor air ESLs, GHD proposes to resample the sub slab vapor probes, crawl space, indoor, and outdoor air. Cumulative offsite soil vapor data are included in Table 3.

Comment: ACDEH states *"Review of existing site analytical soil data indicates substantial residual soil contamination is located in proximity to the downgradient property line with the adjacent site owned by the Diocese of Oakland. Onsite analytical concentrations up to 1,30 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg) and 920 mg/kg TPH as diesel (TPHd) were documented at soil bore B-3 in the 0 to 5 foot depth interval on site. At offsite soil bore B-4, concentrations up to 330 mg/kg TPHd were documented at 3 fbg, and 190 mg/kg at 6 fbg. At present no offsite soil bores have been installed offsite in proximity to the offsite buildings and basement."*

Response: In 2006, offsite soil borings SB-8 and SB-9 were advanced adjacent to the offsite properties located at 3008 and 3014 Lakeshore Avenue. Shallow soil samples were collected at 2 and 4 fbg from each boring. No TPHg, BTEX, or MTBE were detected in the soil samples. No TPHd or TPHmo was

detected in SB-8. Concentrations of 41 mg/kg TPHd and 100 mg/kg TPHmo were detected in SB-9 at 2 fbg (Table 1).

Total petroleum hydrocarbon concentrations in onsite soil and SB-9 between 0 and 5 fbg, exceed the LTCP criteria of 100 mg/kg; therefore, GHD proposes installing three nested soil vapor probes at 2 and 5 fbg, due to shallow groundwater depth that can be as shallow as 2 fbg. A work plan for soil vapor probe installation and sampling is presented in Section 5 below.

3.4 Feasibility Study / Corrective Action Plan (FS/CAP)

Following completion of the soil vapor assessment proposed in Section 5 below, GHD will address the requested FS/CAP.

3.5 Data Gap Investigation Work Plan and Focused Site Conceptual Model

Following completion of the soil vapor assessment proposed in Section 5 below, GHD will prepare a Focused Site Conceptual Model and relate the data collected to each LTCP criteria.

3.6 Data Support Request: Cross-Sections, Soil Contours, and Tables

As requested by ACDEH, geologic cross-sections including utility depths and historical high groundwater depths are included as Figures 4 and 5. Figures illustrating the lateral extent of TPHg (0 to 5 fbg) and benzene (0 to 5 and >5 to 10 fbg) in soil are included as Figures 6, 7, and 8. As illustrated, hydrocarbons in soil are centered on the former three generations of dispenser islands and product piping and extend downgradient to the west and southwest to B-3. A cumulative soil table documenting remaining hydrocarbons in soil and soil that has been removed is included as Table 1. A table documenting well construction details is included as Table 4.

3.7 Groundwater Monitoring Interval

Comment: ACDEH states *"Based on review of site data ACDEH requests quarterly groundwater monitoring of wells MW-6 and MW-10. ACDEH notes that contaminant concentrations in well MW-6 appear to have been recently increasing, and that some concentrations may not meet freshwater or saltwater Ecotoxicity values as defined by ESLs. This is of concern due to the presence of very shallow groundwater, the presence of a large storm drain corridor, installed at an unspecified depth and the closeness of Lake Merritt".*

Response: Dissolved TPHd concentrations (without SGC) recently detected in well MW-6 are similar to historical concentrations and are not increasing. Since sampling of well MW-6 began in 1992, TPHd concentrations have fluctuated and have been as high as 3,302 µg/L and 2,701 µg/L in 1998 and 2,500 in 2010. Dissolved TPHg, BTEX, and MTBE concentrations detected in both MW-6 and MW-10 are stable and typically below the laboratory reporting limit and have always been below the freshwater and saltwater ecotoxicity ESLs. Furthermore, if the dissolved hydrocarbon plume were to migrate 150 feet downgradient, the dissolved TPHg, BTEX and MTBE constituents would have migrated ahead of TPHd due to their higher solubility. BTEX and MTBE have generally not been detected in MW-6 for 20 years

and the highest TPHg detected was 140 µg/L. This further indicates TPHd detected in MW-6 is likely from the adjacent former service station. Therefore, quarterly sampling of well MW-6 (currently sampled semi-annually) is not warranted. After new well MW-10 is sampled four consecutive quarters and dissolved concentrations remain stable, sampling will be reduced to semi-annually during the first and third quarters in alignment with California State Water Resources Control Board Resolution No. 2009-0042.

3.8 Groundwater Monitoring Analytical

Comment: ACDEH states, *"Due to the presence of gasoline and diesel contamination at the site, and due to standard LTCP data evaluations, please include analysis for naphthalene in all future groundwater monitoring reports, until otherwise requested."*

Response: Of the 33 soil samples collected across the site between 3 and 15 fbg (from both vadose zone and saturated soil), trace naphthalene concentrations were detected in only three samples. An estimated value (greater than the method detection limit and less than the limit of quantitation) of 0.002 mg/kg was detected at 15 fbg in B-13, and at 7 and 9 fbg in B-3 at a maximum concentration of 0.006 mg/kg (Table 1). Additionally, no naphthalene has been detected in grab-groundwater samples collected beneath the site. With the lack of naphthalene detected in soil beneath the site to leach to groundwater and no naphthalene detected in grab-groundwater samples, analysis of naphthalene in groundwater from monitoring wells is not warranted.

Furthermore, the highest naphthalene concentrations, up to 0.24 mg/kg, in soil were detected offsite in boring B-7, located adjacent to the former service station and auto repair at the corner of Lakeshore Avenue and Beacon Street. This data further supports the assertion that this former service station is likely the source of hydrocarbons detected in well MW-6.

3.9 Groundwater Well TOC Evaluation Discrepancies

The ACDEH noticed changes in the top of casing elevations reported in GHDs *First Semi-Annual 2017 Groundwater Monitoring and Sampling Report*, dated March 15, 2017 and requested documentation of the reason for the change in casing elevations. Please note that, after well MW-10 was installed in 2016, all site groundwater monitoring wells were re-surveyed on November 4, 2016 for consistency. The new survey data does not affect groundwater gradient or direction. The new survey data was uploaded to Geotracker on December 9, 2016 with GHD's *Site Investigation Report*.

4. Data Gaps and Recommendations

Section 3 above provides GHD's technical responses to ACDEH correspondences dated June 7 and July 18, 2017. As presented above, GHD proposes to fill data gaps in order to prepare a comprehensive CSM document as well as thoroughly address each of the criteria of the LTCP. Based on the above assessment, soil conditions beneath the site meet the LTCP criteria for direct contact and outdoor air. However, soil vapor conditions beneath the site have not been evaluated and TPH in shallow soil beneath the site is greater than the LTCP criteria of 100 mg/kg for potential soil vapor to indoor air; therefore GHD

recommends an onsite soil vapor assessment including additional soil sampling during the probe installations. To assess current indoor air conditions on the adjacent downgradient building, GHD also recommends resampling the indoor, outdoor, and crawl space air and existing sub slab vapor probes. The data gap assessment activities are presented below.

5. Work Plan

To evaluate the potential for hydrocarbon vapor migration from the subsurface to indoor air of future structures on the site as well as the adjacent downgradient building. GHD proposes installing and sampling three nested soil vapor probes at 2 and 5 fbg. To evaluate current indoor air and basement conditions at the adjacent site, GHD proposes sampling the existing sub slab probes and collecting ambient indoor, crawl space, and outdoor air samples. Proposed probe and sampling locations are illustrated on Figures 2 and 3.

Site-Specific Health and Safety Plan

GHD will prepare a site-specific health and safety plan to protect site workers. The plan will be reviewed and signed by all site workers and visitors. The plan will be kept onsite during all field work.

Permits

An Alameda County Public Works Agency (ACPWA) permit will be obtained for the installation of the soil vapor probe. ACPWA does not require a permit for collecting crawl space, indoor or outdoor air samples. GHD and CEMC will work with the onsite and offsite property owners to secure an access agreement to conduct the proposed work.

Underground Utility Location and Utility Clearance

GHD will contact Underground Services Alert (USA) to notify utility companies to mark their utilities at the site no less than 48 hours prior to the start of field activities. GHD will hire a private line locator to conduct a survey of the proposed boring location area to confirm the locations of underground utilities.

Soil Boring and Vapor Probe Installation

Three soil borings will be advanced to approximately 5 fbg using a hand auger. GHD will collect soil samples at approximately 2 and 5 fbg by driving steel tubes into undisturbed sediments using a slide hammer bucket. Soils will be logged using the ASTM D2488-06 Unified Soil Classification System. Soil samples will be screened with a photo ionization detector (PID) and all PID measurements will be recorded on a boring log. All samples will be sealed, labeled, logged on a chain-of-custody, placed on ice, and transported to a Chevron and California State-approved laboratory for analysis.

The soil vapor probes will be constructed of a permeable stainless steel filter with a ¼-inch push-to-connect fitting to ¼-inch Teflon tubing. Each probe will be placed at approximately 2.5 and 5.5 fbg and surrounded by a 12-inch sand pack. Above the sand pack, 12-inches of dry granulated

bentonite will be topped with at least 12-inches of hydrated granular bentonite. Each probe will be separated from the others by a bentonite grout mixture. Exact vapor probe depth may be altered based on field observations and depth to groundwater. The soil vapor probe will be finished at the surface using a well vault. Standard Field Procedures for Soil Vapor Probe Installation and Sampling are presented as Appendix C.

Soil Vapor Sampling Protocol

Vapor samples will be collected from the three vapor probes at least 48 hours after the placement of the probes using 1-liter Summa™ canisters in a manifold system, connected to the sampling tubing at each vapor point. Using the same flow rate as is used during sampling, approximately three purge volumes will be purged from the sampling tubing before sampling begins. While sampling, the vacuum of the Summa™ canister will be used to draw the soil vapor through the flow controller until a negative pressure of approximately 5-inches of mercury is observed on the vacuum gauge. In accordance with the Department of Toxic Substances Control (DTSC) *Advisor-Active Soil Gas Investigations* guidance document, leak testing using helium and a shroud will be performed during sampling. After sampling, the Summa™ canisters will be packaged and sent to Eurofins Air Toxics laboratory under chain-of-custody for analysis.

Sub Slab Soil Gas Sampling

Sub slab soil gas samples will be collected in 100 percent laboratory certified clean one-liter Summa™ canisters connected directly to the each of the three existing sub slab probes. A closed circuit sampling train will be created by attaching the sample Summa™ canister in series with the purge Summa™ canister via a steam cleaned stainless steel manifold. A flow rate of 167 milliliters per minute will be used to collect the sample.

A “shut in” test will be performed prior to connecting the sampling equipment to the sub slab vapor probe tubing. This test will be performed by sealing all openings to ambient air, opening the purge Summa™ canister to establish a vacuum inside the sampling train and waiting to ensure the vacuum remained stable over time. The “shut in” test reduces the potential for ambient air to infiltrate into the sample.

After the “shut in” test is completed, tubing will be connected to the sub slab probe from the sampling train and approximately three probe tubing volumes of stagnant air will be purged for a representative soil gas sample. After purging, the sample Summa™ canister valve will be opened. The Summa™ canister’s vacuum will be used to draw soil vapor through the flow controller and into the sample canister until a negative pressure of approximately five inches of mercury is observed on the vacuum gauge.

Leak testing will be performed during sampling by using helium to determine if ambient air was entering the Summa™ canisters during sampling. A shroud will be used to surround the sub slab vapor sampling equipment and the connections between the sampling equipment and the sub slab vapor probe tubing. A helium detector will be placed inside the shroud to quantify helium concentrations inside the shroud. An atmosphere of approximately 10 percent helium will be created and maintained for the sampling duration. All samples will be labeled, logged on a chain of custody, stored at ambient temperature, and shipped to a State of California certified laboratory.

Ambient Air Survey

GHD will collect three indoor air samples, one adjacent to each sub slab probe location, and one outdoor ambient air sample at 3014 Lakeshore Avenue. In addition, one air sample from within the crawlspace beneath the building and one indoor and one outdoor air sample will be collected at 3008 Lakeshore Avenue. Approximately 48 hours prior to air sampling, a Building Survey and Building Chemical Screening form will be completed for each property as outlined in the DTSC guidance (2011). All samples will be collected from the breathing zone for approximately 8 hours. These follow up air samples will be collected in a 100 percent laboratory certified clean six liter Summa™ canister using flow meters set at flow rate that will allow the desired sample volume in approximately 8 hours. All samples will be labeled, logged on a chain of custody, stored at ambient temperature, and shipped to a State of California certified laboratory for analysis.

Chemical Analysis

Select soil samples will be analyzed for the following by Eurofins Calscience:

- Total petroleum hydrocarbons as motor oil (TPHmo), and TPHd by EPA Method 8015M using silica gel cleanup
- Total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015M
- Benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), and naphthalene by EPA Method 8260B

Soil vapor samples will be analyzed for the following by Eurofins Air Toxics:

- TPHg, BTEX, MTBE, and naphthalene by EPA Method TO-15 SIM (GC/MS)
- Naphthalene by EPA Method TO-17
- Oxygen, carbon dioxide, methane, and helium by ASTM D-1946 (GC/TCD)

Ambient air samples will be analyzed for the following by Eurofins Air Toxics:

- TPHg, BTEX, MTBE, and naphthalene by EPA Method TO-15 SIM (GC/MS)
- Naphthalene by EPA Method TO-17

Waste Disposal

All waste generated will be placed in Department of Transportation (DOT) approved drums, labeled appropriately, and temporarily stored onsite. The waste will be transported by licensed waste haulers to a Chevron and State of California-approved disposal facility following receipt of the analytical profile.

Data Interpretation

Indoor air samples may measure BTEX and other petroleum hydrocarbon compounds within the concentration ranges commonly seen as background values measured at sites where no subsurface petroleum hydrocarbon contamination is present. There are many sources of background contamination inside buildings. Materials and substances commonly found in commercial and residential settings, such as paints, paint thinners, gasoline powered machinery, building materials, cleaning products, dry cleaned clothing, and cigarette smoke, contain volatile organic compounds (VOCs) that may be detected by indoor air testing. Table 5.1 presents a summary of BTEX background concentrations based on the post-1990 studies evaluated in the U.S. Environmental Protection Agency (USEPA)'s Background Indoor Air Concentration of Volatile Organic Compounds in North American Residences (1990-2005): A Compilation of Statistics of Assessing Vapor Intrusion, June 2011.

Table 5.1 Ranges of Background Indoor Air Concentrations[4]

Chemical of Concern	Number of Studies	Number of Samples	Range % Detect	Total % Detects	RL Range (µg/m^3)	Range of 50th % (µg/m^3)	Range of 75th % (µg/m^3)	Range of 90th % (µg/m^3)
Benzene	14	2,615	31-100	91.1	0.05 – 1.6	<RL – 4.7	1.9 – 7.0	5.2 - 15
Toluene	12	2,065	86-100	96.4	0.03 – 1.9	4.8 – 24	12 – 41	25 – 77
Ethylbenzene	10	1,484	26-100	85.7	0.01 – 2.2	1 – 3.7	2 – 5.6	4.8 – 13
Xylene, m/p-	10	1,920	52-100	92.9	0.4 – 2.2	1.5 – 14	4.6 – 21	12 – 56
Xylene, o-	12	2,004	31-100	89.0	0.11 – 2.2	1.1 – 3.6	2.4 – 6.2	5.5 – 16

RL = Reporting limit
µg/m^3 =L = Micrograms per cubic meter

For example, the range of normal background concentrations for benzene spans the 1.9 to 15 µg/m3 range representing 10 5 to 10 4 incremental risk, based on a comparison to the California Human Health Screening Levels (CHHSLs) developed by California EPA of Environmental Health Hazard Assessment (OEHHA) as shown on Table 5.2 below.

Table 5.2 California Human Health Screening Levels For Indoor Air and Soil Gas[A]

	Indoor Air Human Health Screening Levels (µg/m^3)	
Chemical	Residential Land Use	Commercial/Industrial Land Use
Benzene	8.40 E-02	1.41 E-01

[4] USEPA, *Table ES-1 Ranges of Summary Statistics for Background Indoor Air Concentrations of Common VOCs Measured in North American Residences between 1990 and 2005, Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990-2005): A Compilation of Statistics Assessing Vapor Intrusion*, June 2011.

Table 5.2 California Human Health Screening Levels For Indoor Air and Soil Gas[A]

	Indoor Air Human Health Screening Levels (μg/m^3)	
Chemical	Residential Land Use	Commercial/Industrial Land Use
Carbon Tetrachloride	5.79 E-02	9.73 E-02
1,2-Dichloroethane	1.16 E-01	1.95 E-01
cis-1,2-Dichloroethylene	3.65 E+01	5.11 E+01
trans-1,2-Dichloroethylene	7.30 E+01	1.02 E+02
Ethylbenzene	0.97 E+00[B]	1.60 E+00[B]
Mercury, elemental	9.40 E-02	1.31 E-01
Methyl tertiary-Butyl Ether	9.35 E+00	1.57 E+01
Naphthalene	7.20 E-02	1.20 E-01
Tetrachloroethylene	4.12 E-01	6.93 E-01
Tetraethyl Lead	3.65 E-04	5.11 E-04
Toluene	3.13 E+02	4.38 E+02
1,1,1-Trichloroethane	2.29 E+03	3.21 E+03
Trichloroethylene	1.22 E+00	2.04 E+00
Vinyl Chloride	3.11 E-02	5.24 E-02
m-Xylene	7.30 E+02[C]	1.02 E+03[C]
o-Xylene	7.30 E+02[C]	1.02 E+03[C]
p-Xylene	7.30 E+02[C]	1.02 E+03[C]

Reference

Appendix 1, OEHHA Target Indoor Air Concentrations and Soil-Gas Screening Numbers for Existing Buildings under Residential and Industrial/Commercial land uses.

Table 5.2 California Human Health Screening Levels For Indoor Air and Soil Gas[A]

	Indoor Air Human Health Screening Levels (μg/m^3)	
Chemical	Residential Land Use	Commercial/Industrial Land Use

Notes

A. "Residential Land Use" screening levels generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.). Commercial/industrial properties should be evaluated using both residential and commercial/industrial CHHSLs. A deed restriction that prohibits use of the property for sensitive purposes may be required at sites that are evaluated and/or remediated under a commercial/industrial land use scenario only.

Calculation of cumulative risk may be required at sites where multiple contaminants with similar health effects are present.

Carcinogens: CHHSLS based on target cancer risk of 10-6. Cal/EPA cancer slope factors used when available. Noncarcinogens: CHHSLS based on target hazard quotient of 1.0.

Soil Gas: Screening levels based on soil gas data collected <1.5 meters (five feet) below a building foundation or the ground surface. Intended for evaluation of potential vapor intrusion into buildings and subsequent impacts to indoor-air. Soil gas data should be collected and evaluated at all sites with significant areas of VOC-impacted soil. Screening levels also apply to sites that overlie plumes of VOC-impacted groundwater.

B. Calculation of a screening number for the chemical outlined in OEHHA draft report, *California Human Health Screening Levels for Ethylbenzene* dated November 2009.

C. Representative Screening Numbers for mixed xylenes. The representative value for mixed xylenes is based on the calculated lowest one amongst the three isomers.

As a result, it is not possible to interpret whether vapor intrusion is occurring by simply comparing indoor air concentration against the most conservative screening values, since these values do not account for background concentrations. Instead, indoor concentrations must be compared to outdoor air, sub slab and crawl space vapor concentrations to determine whether external or indoor sources are contributing to indoor air concentrations. A clear indication of active vapor intrusion would be a combination of indoor and outdoor air samples where indoor air contained significantly greater concentrations of petroleum hydrocarbon VOC's (e.g., BTEX) than outdoor air, and also contained significantly lower concentrations of petroleum hydrocarbon VOC's than crawl space air or sub slab air.

At 3014 Lakeshore Avenue, indoor air, outdoor air, and sub slab concentrations will be evaluated per the above protocols. Criteria indicative of vapor intrusion should be:

1. Indoor air benzene, ethylbenzene, and naphthalene concentrations significantly higher than outdoor ambient air.
2. Indoor air benzene, ethylbenzene, and naphthalene concentrations significantly higher than the range of normal background (rather than the indoor air 10^{-6} standard values presented in OEHHA Table B above, which are within the lower range of normal background).
3. Sub slab benzene, ethylbenzene, and naphthalene concentrations are significantly higher than indoor air.

At 3008 Lakeshore Avenue indoor air, outdoor air, and crawlspace concentrations will be evaluated per the above protocols. Criteria indicative of vapor intrusion should be:

1. Indoor air benzene, ethylbenzene, and naphthalene concentrations significantly higher than outdoor air.
2. Indoor air benzene, ethylbenzene, and naphthalene concentrations significantly higher than the range of normal background (rather than the indoor air 10^{-6} standard values presented in OEHHA Table B above, which are within the lower range of normal background).
3. Crawl space benzene, ethylbenzene, and naphthalene concentrations significantly higher than indoor air.

Any other combination of concentrations, and concentration ratios, will likely indicate either an indoor or outdoor background source rather than vapor intrusion to the building.

Reporting

GHD will prepare a comprehensive report presenting the soil vapor assessment results. The report, at a minimum, will contain:

- Boring logs
- Sampling methodology
- Tabulated soil, and vapor data
- Summary of results
- Analytical data comparison
- Analytical reports and chain-of-custody forms
- Updated conceptual site model
- LTCP Evaluation
- TPHd Evaluation
- Conclusions and recommendations

6. Schedule

Following approval, GHD will obtain the required drilling permits and access from the onsite and offsite property owners to conduct the assessment and will work with the property owners to establish a date and time to collect the proposed crawl space ambient air samples. GHD will notify ACDEH of when the assessment will take place.

The TPHd ecotoxicity evaluation requested in the June 7, 2017 was unable to be finalized with CEMC subject matter experts by the established report due date. Therefore, the TPHd evaluation will be submitted with the results of the assessment proposed in Section 5.0 above.

Sincerely,

GHD

Kiersten Hoey

Ana Friel PG 6452

PROFESSIONAL GEOLOGIST ANA FRIEL No. 6452 STATE OF CALIFORNIA

KH/cw/34
Encl.

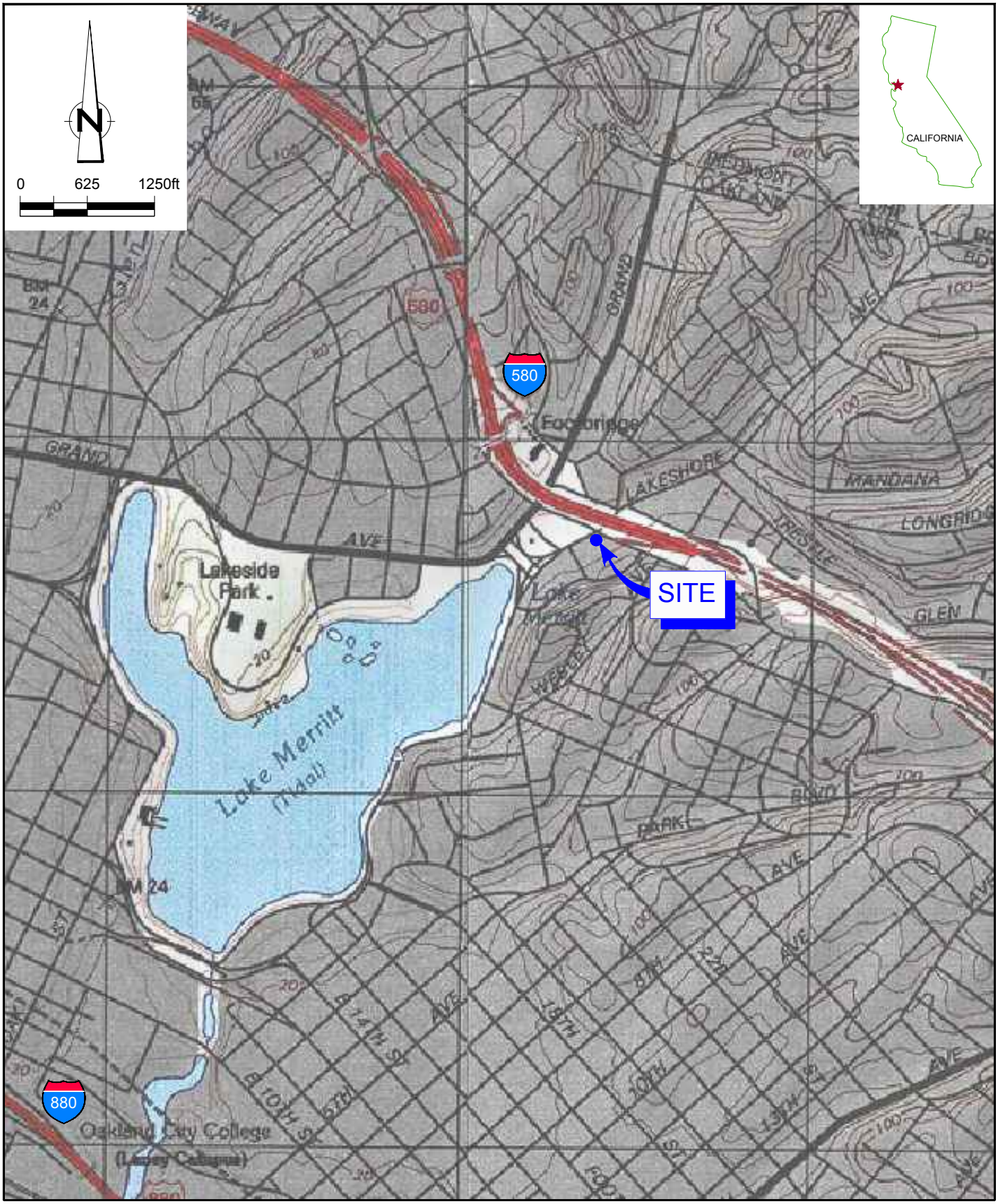
Figure 1	Vicinity Map
Figure 2	Site Plan
Figure 3	Site Plan
Figure 4	Geologic Cross Section A-A’
Figure 5	Geologic Cross Section B-B’
Figure 6	Maximum TPHg Concentrations in Soil (0 to 5 fbg)
Figure 7	Maximum Benzene Concentrations in Soil (0 to 5 fbg)
Figure 8	Maximum Benzene Concentrations in Soil (>5 to 10 fbg)

Table 1	Cumulative Soil Analytical Data
Table 2	Cumulative Grab-Groundwater Analytical Data
Table 3	Cumulative Soil Vapor Analytical Data
Table 4	Well Construction Data

Appendix A	Regulatory Letters
Appendix B	Summary of Environmental Investigations and Remediation
Appendix C	GHD’s Standard Operating Procedure for Soil Vapor Probe Installation and Sampling

cc: Ms. Carryl MacLeod, Chevron (*electronic copy*)

Figures



SOURCE: TOPO□MAPS

FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE
OAKLAND, CALIFORNIA

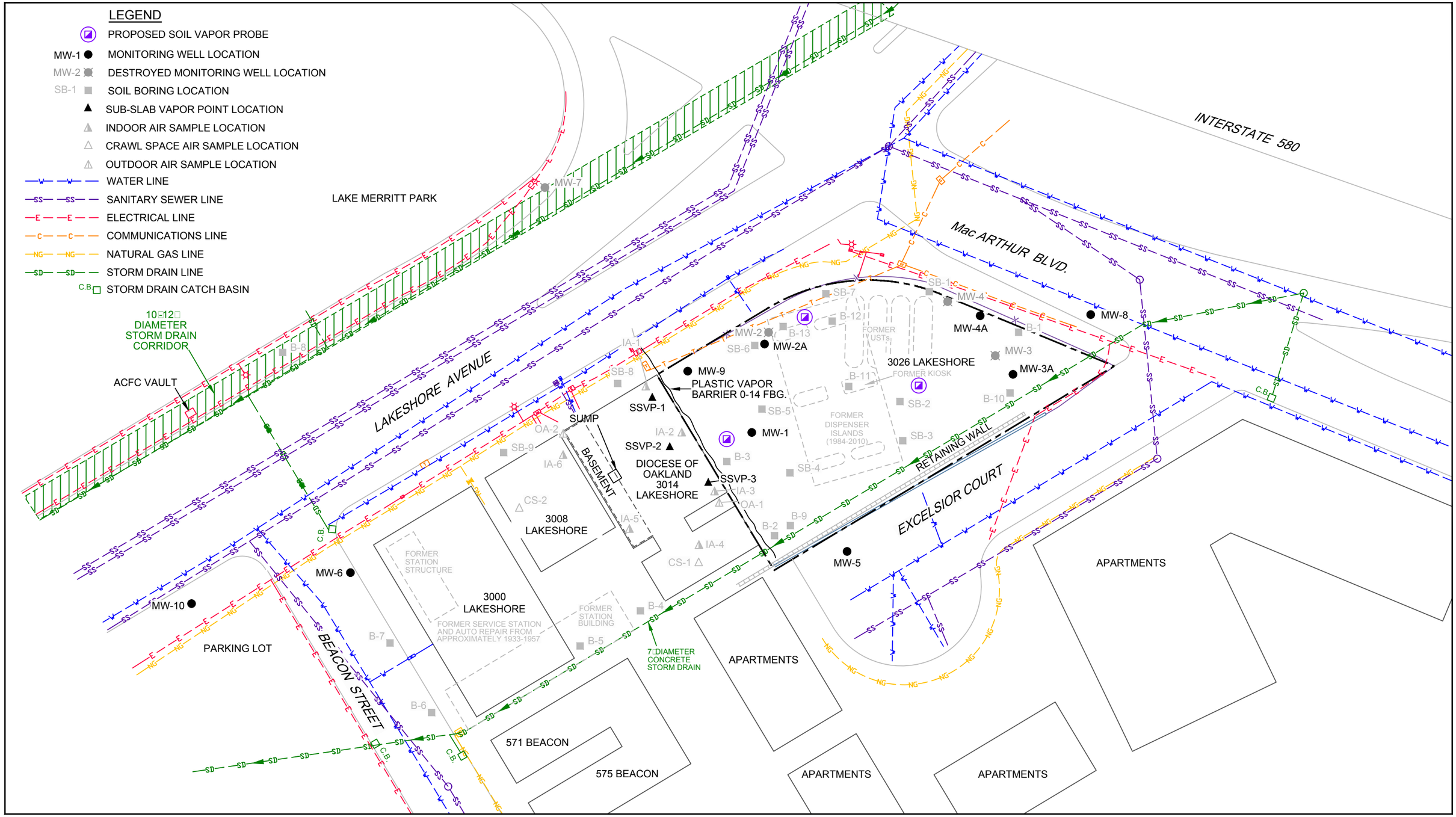
311973-2017.1

A□g 1, 2017

VICINITY MAP

FIGURE 1

CAD File: 311973-2017.1(034)GN-SO002.DWG



SOURCE: MORROW SURVEY LAND SURVEYORS, NOV 4, 2016.

0 20 40ft

Coordinate System: California State Plane Zone 3

GHD

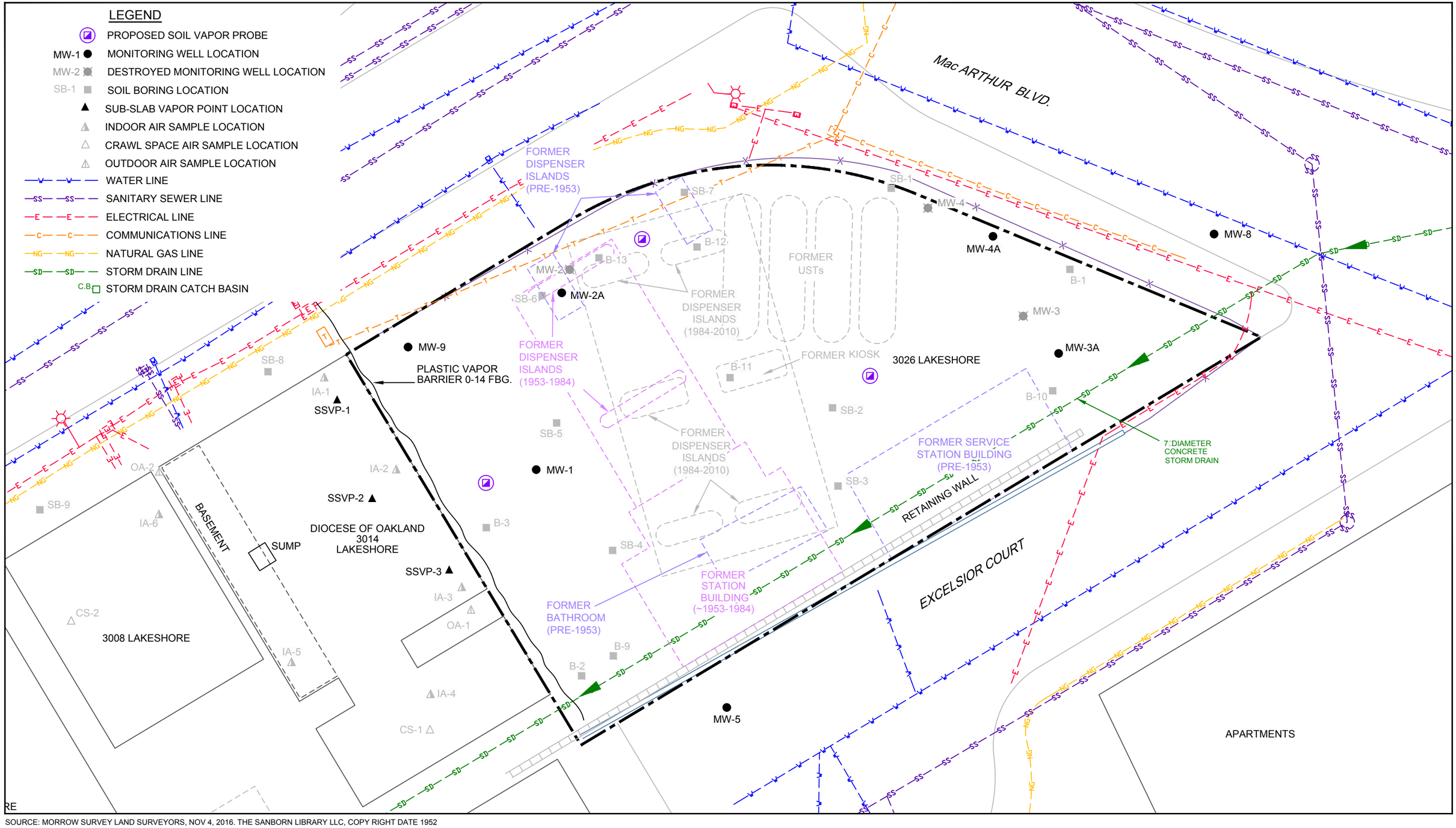
FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

311973-2017.1
Aug 2, 2017

EXPANDED SITE PLAN

FIGURE 2

CAD File: 311973-2017.1(034)GN-SO003.DWG



SOURCE: MORROW SURVEY LAND SURVEYORS, NOV 4, 2016. THE SANBORN LIBRARY LLC, COPY RIGHT DATE 1952

0 10 20ft

Coordinate System: California State Plane Zone 3

GHD

FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

311973-2017.1

Sep 5, 2017

SITE PLAN

FIGURE 3

CAD File: 311973-2017.1(034)GN-SO004.DWG

A

SOUTHWEST

A'

NORTHEAST

BEACON ST.

BUILDING

BUILDING

PROPERTY BOUNDARY

PLASTIC VAPOR BARRIER 0-14 FBG.

INTERSECTION WITH B-B'

FORMER DISPENSERS

FORMER USTs

PROPERTY BOUNDARY

MW-10 MW-6 SB-9 SB-8 MW-9 SB-6 MW-2A P-13 B-13 P-12 B-12 EX-1 MW-4A MW-8

ELEVATION (feet AMSL)

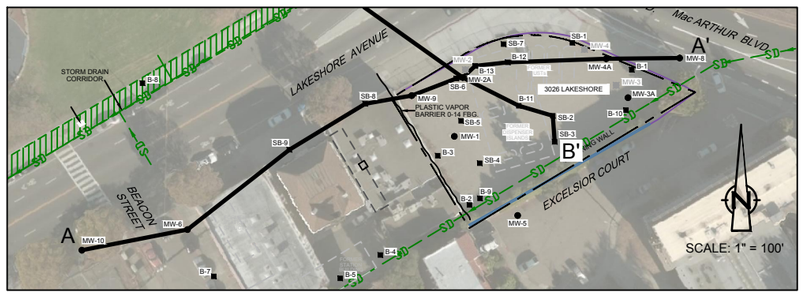
APPROXIMATE DEPTH (feet below ground)

15 10 5 0 -5 -10 -15 -20

0 5 10 15 20 25 30

0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420

DISTANCE (feet)



VERTICAL SCALE EXAGGERATION: 5X

Scale (ft) 5 0 30

LEGEND

MW-10 — WELL DESIGNATION

GROUND SURFACE

— OBSERVATION WELL INSTALLATION

— STRATIGRAPHIC BOUNDARY

CL — TYPICAL SOIL CLASSIFICATION

— SCREENED INTERVAL

— BOTTOM OF BORING

- - - HISTORICAL HIGH AND LOW DEPTH TO GROUNDWATER

▽ FIRST ENCOUNTERED GROUNDWATER DEPTH (DATE)

◄ APPROXIMATE GROUNDWATER SAMPLE LOCATION/DEPTH (1/13/17)

TPH-G
TPH-D w/Silica
BENZENE
DATE
HYDROCARBON CONCENTRATIONS IN GROUNDWATER (µg/L)

◄ APPROXIMATE SOIL SAMPLE LOCATION

TPH-G
TPH-D
BENZENE
DATE
HYDROCARBON CONCENTRATIONS IN SOIL (mg/kg)

< NOT DETECTED AT OR ABOVE STATED REPORTING LIMITS

J ESTIMATED VALUE BETWEEN METHOD DETECTION LIMIT AND LABORATORY REPORTING LIMIT

AS - ASPHALT

CONC - CONCRETE

FILL

ML - INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY

CL - INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS

GP - POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES

NR - NO RECOVERY

SM - SILTY SANDS, SAND-SILT MIXTURES

SW - WELL-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES

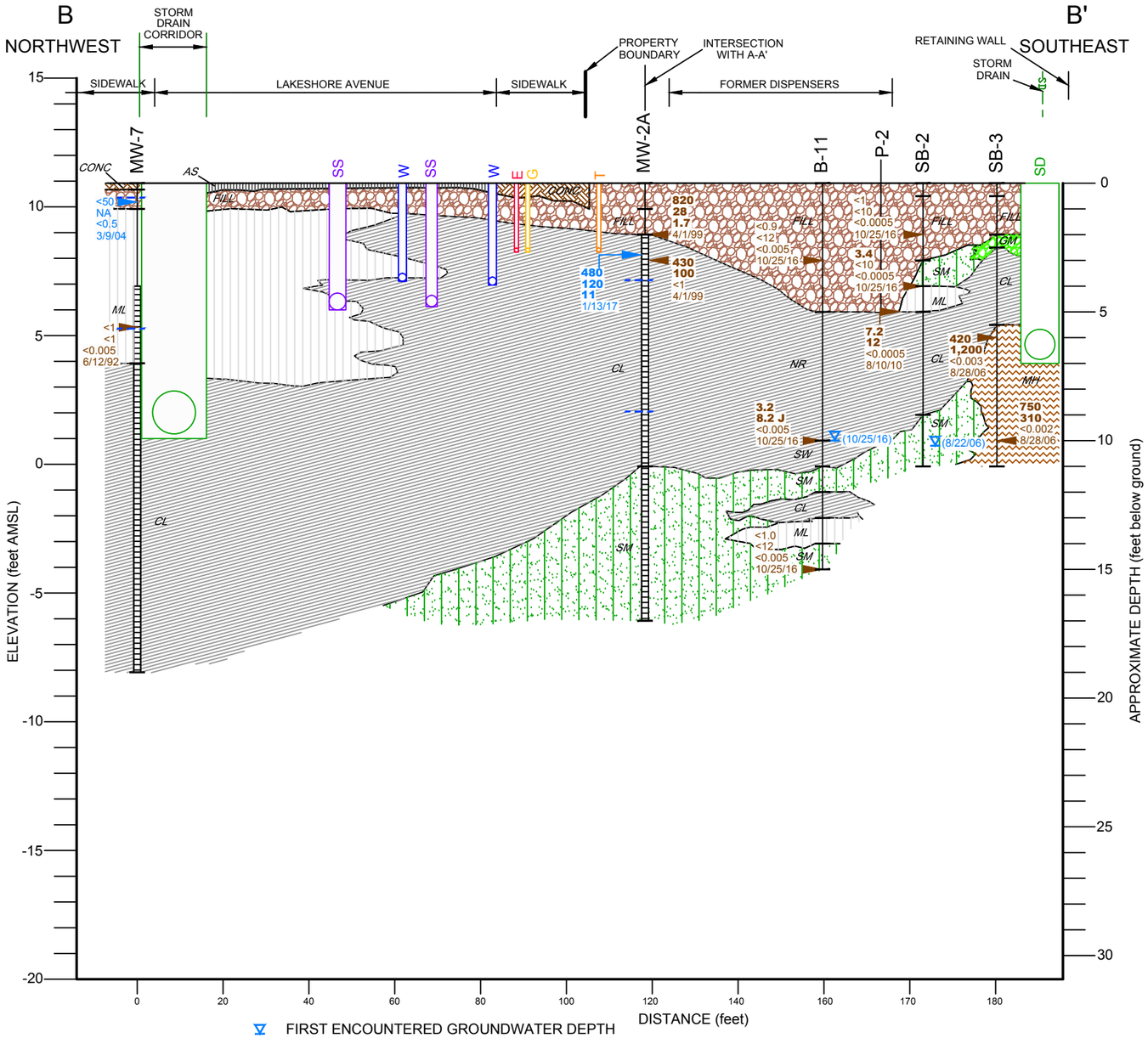
SW-SM - WELL-GRADED SANDS WITH SILT

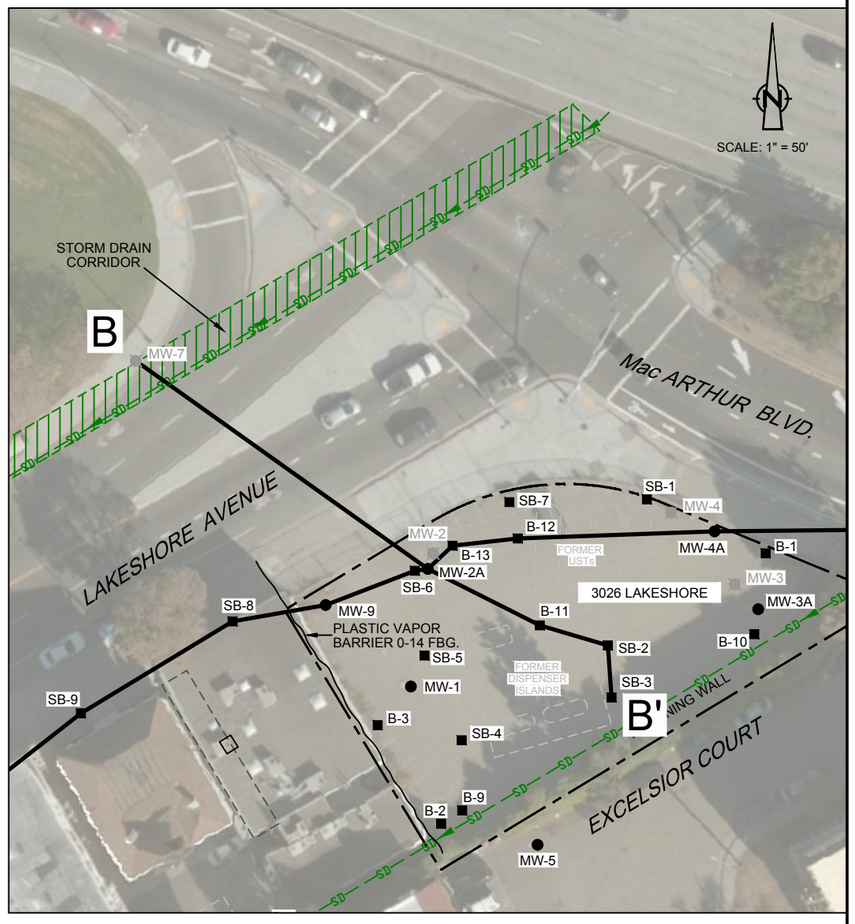
E - ELECTRICAL LINE TRENCH
G - GAS LINE TRENCH
SS - SANITARY SEWER LINE TRENCH
W - WATER LINE TRENCH
T - COMMUNICATION LINE TRENCH
SD - STORM DRAIN LINE TRENCH

FIGURE 4

GEOLOGIC CROSS SECTION A-A'
FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

GHD





VERTICAL SCALE EXAGGERATION: 5X

Scale (ft)

0 — 30 — 5

FIGURE 5

LEGEND

- MW-10 — WELL DESIGNATION
- GROUND SURFACE
- OBSERVATION WELL INSTALLATION
- STRATIGRAPHIC BOUNDARY
- CL — TYPICAL SOIL CLASSIFICATION
- SCREENED INTERVAL
- BOTTOM OF BORING
- HISTORICAL HIGH AND LOW DEPTH TO GROUNDWATER (DATE)
- FIRST ENCOUNTERED GROUNDWATER DEPTH (DATE)
- APPROXIMATE GROUNDWATER SAMPLE LOCATION/DEPTH (1/13/17)
- TPH-G / TPH-D w/Silica / BENZENE / DATE — HYDROCARBON CONCENTRATIONS IN GROUNDWATER (µg/L)
- APPROXIMATE SOIL SAMPLE LOCATION
- TPH-G / TPH-D / BENZENE / DATE — HYDROCARBON CONCENTRATIONS IN SOIL (mg/kg)
- < — NOT DETECTED AT OR ABOVE STATED REPORTING LIMITS
- J — ESTIMATED VALUE BETWEEN METHOD DETECTION LIMIT AND LABORATORY REPORTING LIMIT

- *AS* - ASPHALT
- *CONC* - CONCRETE
- *FILL*
- *CL* - INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
- *ML* - INORGANIC SILTS, VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
- *MH* - INORGANIC SILTS, FINE SANDY OR SILTY SOILS WITH HIGH PLASTICITY
- *GM* - SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
- *SM* - SILTY SANDS, SAND-SILT MIXTURES
- *NR* - NO RECOVERY

- E - ELECTRICAL LINE TRENCH
- G - GAS LINE TRENCH
- SS - SANITARY SEWER LINE TRENCH
- W - WATER LINE TRENCH
- T - COMMUNICATION LINE TRENCH
- SD - STORM DRAIN LINE TRENCH

GEOLOGIC CROSS SECTION B-B'
FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

LEGEND

MW-1 ● MONITORING WELL LOCATION
MW-2 ✹ DESTROYED MONITORING WELL LOCATION
SB-1 ■ SOIL BORING LOCATION
▲ SUB-SLAB VAPOR POINT LOCATION
◮ INDOOR AIR SAMPLE LOCATION
△ CRAWL SPACE AIR SAMPLE LOCATION
◬ OUTDOOR AIR SAMPLE LOCATION
◪ PRODUCT PIPING SAMPLE LOCATION (2010)
⊠ PRODUCT PIPING SAMPLE LOCATION (1996)
1,000 TPHG CONCENTRATION IN SOIL, IN MILLIGRAMS PER KILOGRAM (mg/kg)
100 TPHG CONCENTRATION CONTOUR LINE DASHED WHERE INFERRED

NOTE: LOCATIONS WITHOUT DATA - NO SAMPLE WAS COLLECTED 0-5 FBG.

LAKESHORE AVENUE
Mac ARTHUR BLVD.
EXCELSIOR COURT
FORMER DISPENSER ISLANDS (PRE-1953)
FORMER DISPENSER ISLANDS (1953-1984)
FORMER DISPENSER ISLANDS (1984-2010)
FORMER USTs
FORMER KIOSK
FORMER SERVICE STATION BUILDING (PRE-1953)
FORMER STATION BUILDING (~1953-1984)
FORMER BATHROOM (PRE-1953)
RETAINING WALL
PLASTIC VAPOR BARRIER 0-14 FBG.
BASEMENT
SUMP
DIOCESE OF OAKLAND 3014 LAKESHORE
3026 LAKESHORE
3008 LAKESHORE
APARTMENTS

SB-1 120'
SB-2 3.4
SB-3
SB-4
SB-5 1,900
SB-6
SB-7 760
SB-8 <1.0
SB-9 <1.0
MW-1
MW-2 660
MW-2A 820
MW-3 <1.0
MW-3A
MW-4 560
MW-4A 540
MW-5
MW-8
MW-9 22
B-1 <1.0
B-2 <1.0
B-3 1,300
B-9 <0.9
B-10 <1
B-11 <0.9
B-12 <1.0
B-13
P-1
P-2 7.2
P-3 9.4
P-4 980
P-5 1.1
P-6 2.2
P-7 8.4
P-8 410
P-9 0.89
P-10 1.3
P-11 390
P-12 770
P-13 780
P-14 620
EX-1
EX-2
EX-3
EX-4
EX-5
EX-6
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
IA-1
IA-2
IA-3
IA-4
IA-5
IA-6
OA-1
OA-2
SSVP-1
SSVP-2
SSVP-3
CS-1
CS-2
100
1,000

SOURCE: MORROW SURVEY LAND SURVEYORS, NOV 4, 2016.

0 10 20ft

Coordinate System: California State Plane Zone 3

FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

311973-2017.1
Sep 26, 2017

MAXIMUM TPHg CONCENTRATIONS IN SOIL (0 TO 5 FBG)

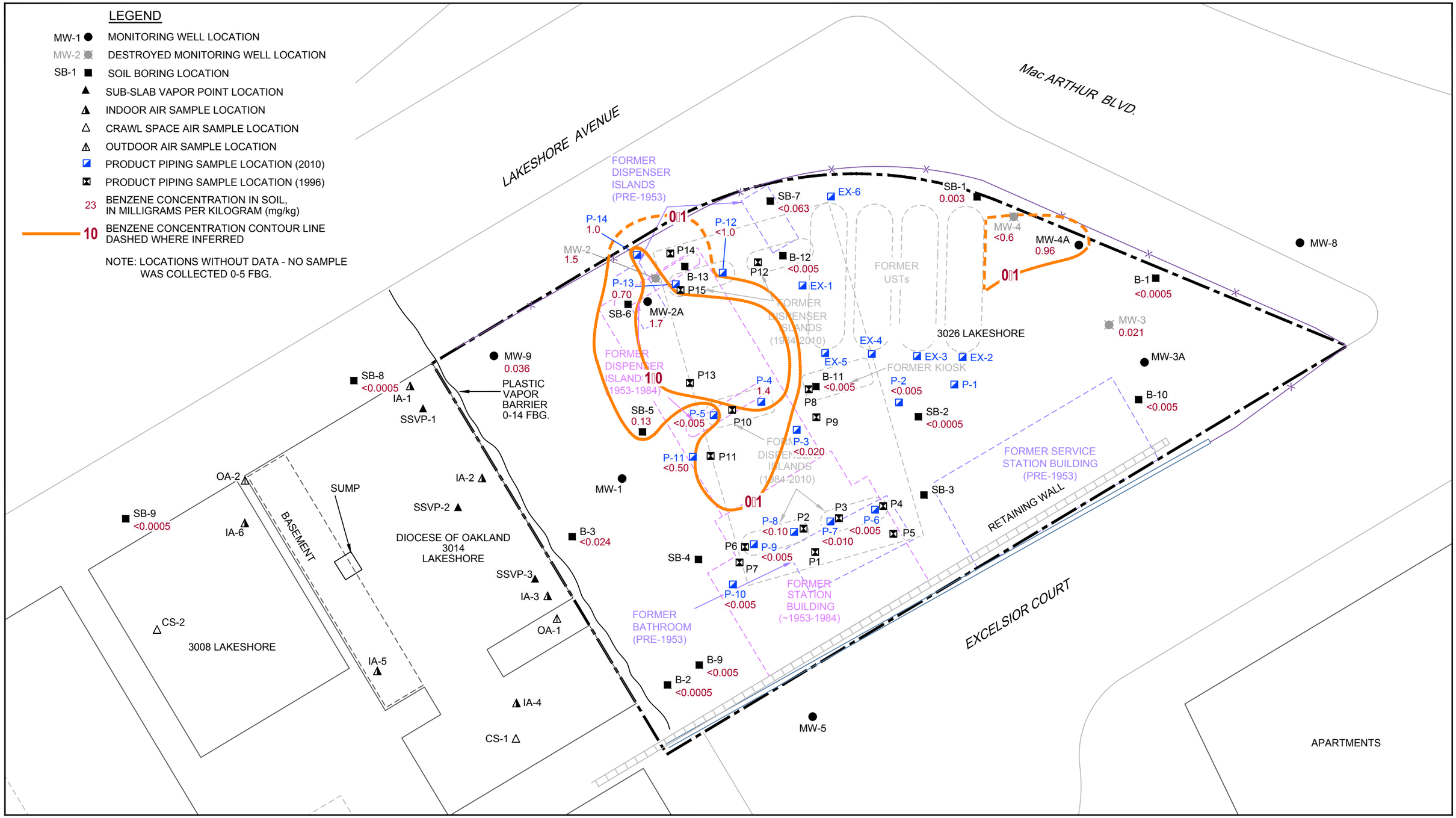
FIGURE 6

CAD File: 311973-2017.1(034)GN-SO005.DWG

LEGEND

- MW-1 ● MONITORING WELL LOCATION
- MW-2 ✹ DESTROYED MONITORING WELL LOCATION
- SB-1 ■ SOIL BORING LOCATION
- ▲ SUB-SLAB VAPOR POINT LOCATION
- ◮ INDOOR AIR SAMPLE LOCATION
- △ CRAWL SPACE AIR SAMPLE LOCATION
- ◬ OUTDOOR AIR SAMPLE LOCATION
- ◪ PRODUCT PIPING SAMPLE LOCATION (2010)
- ⊠ PRODUCT PIPING SAMPLE LOCATION (1996)
- 23 BENZENE CONCENTRATION IN SOIL, IN MILLIGRAMS PER KILOGRAM (mg/kg)
- 10 BENZENE CONCENTRATION CONTOUR LINE DASHED WHERE INFERRED

NOTE: LOCATIONS WITHOUT DATA - NO SAMPLE WAS COLLECTED 0-5 FBG.



SOURCE: MORROW SURVEY LAND SURVEYORS, NOV 4, 2016.

0 10 20ft

Coordinate System: California State Plane Zone 3

GHD

FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

311973-2017.1
Sep 6, 2017

MAXIMUM BENZENE CONCENTRATIONS IN SOIL (0 TO 5 FBG) FIGURE 7

CAD File: 311973-2017.1(034)GN-SO006.DWG

LEGEND

- MW-1 ● MONITORING WELL LOCATION
- MW-2 ✹ DESTROYED MONITORING WELL LOCATION
- SB-1 ■ SOIL BORING LOCATION
- ▲ SUB-SLAB VAPOR POINT LOCATION
- ◮ INDOOR AIR SAMPLE LOCATION
- △ CRAWL SPACE AIR SAMPLE LOCATION
- ◬ OUTDOOR AIR SAMPLE LOCATION
- ◪ PRODUCT PIPING SAMPLE LOCATION (2010)
- ⧓ PRODUCT PIPING SAMPLE LOCATION (1996)
- 5.6 BENZENE CONCENTRATION IN SOIL, IN MILLIGRAMS PER KILOGRAM (mg/kg)
- 1□0 BENZENE CONCENTRATION CONTOUR LINE DASHED WHERE INFERRED
- □ ESTIMATED VALUE BETWEEN METHOD DETECTION LIMIT AND LABORATORY REPORTING LIMIT

NOTE: LOCATIONS WITHOUT DATA - NO SAMPLE WAS COLLECTED <5-10 FBG.

LAKESHORE AVENUE

Mac ARTHUR BLVD.

FORMER DISPENSER ISLANDS (PRE-1953)

FORMER DISPENSER ISLANDS (1953-1984)

FORMER DISPENSER ISLANDS (1984-2010)

FORMER USTs

3026 LAKESHORE

FORMER SERVICE STATION BUILDING (PRE-1953)

FORMER STATION BUILDING (~1953-1984)

FORMER BATHROOM (PRE-1953)

RETAINING WALL

EXCELSIOR COURT

APARTMENTS

DIOCESE OF OAKLAND 3014 LAKESHORE

3008 LAKESHORE

BASEMENT

SUMP

PLASTIC VAPOR BARRIER 0-14 FBG.

MW-1

MW-2 2.8

MW-2A <1.0

MW-3 3

MW-4 0.17

MW-4A 5.6

MW-8 <0.005

MW-9 0.011

MW-3A <0.1

MW-5

SB-1 0.010

SB-2

SB-3 <0.003

SB-4 0.031

SB-5 0.039

SB-6 0.032

SB-7

SB-8

SB-9

B-1 <0.025

B-2 <0.0005

B-3 0.002

B-9 <0.005

B-10 <0.005

B-11 <0.005

B-12

B-13 0.0006 □

CS-1 △

CS-2 △

OA-1 ◬

OA-2 ◬

IA-1 ▲

IA-2 ◮

IA-3 ◮

IA-4 ◮

IA-5 ◮

IA-6 ◮

SSVP-1 ▲

SSVP-2 ▲

SSVP-3 ▲

EX-1 <0.005

EX-2 <0.005

EX-3 <0.020

EX-4 <0.010

EX-5 <0.005

EX-6 <0.005

P-1 0.041

P-2

P-3

P-4

P-5

P-6

P-7

P-8

P-9

P-10

P-11

P-12

P-13

P-14

P1

P2

P3

P4

P5

P6

P7

P8

P9

P10

P11

P12

P13

P14

P15

1□0

0□1

SOURCE: MORROW SURVEY LAND SURVEYORS, NOV 4, 2016.

0 10 20ft

Coordinate System: California State Plane Zone 3

GHD

FORMER CHEVRON SERVICE STATION 90121
3026 LAKESHORE AVENUE, OAKLAND, CALIFORNIA

311973-2017.1
Sep 6, 2017

MAXIMUM BENZENE CONCENTRATIONS IN SOIL (□5 TO 10 FBG) FIGURE 8

CAD File: 311973-2017.1(034)GN-SO007.DWG

Tables

Table 1

Cumulative Soil Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			Concentrations reported in milligrams per kilogram (mg/kg)																		
LTP-Direct Contact (0-5 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***1.9***	***NE***	***21***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.063***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***8.2***	***NE***	***89***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Outdoor Air (5-10 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***2.8***	***NE***	***32***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.68***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***12***	***NE***	***134***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Direct Contact (0-10 fbg)		***Utility Worker*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***14***	***NE***	***314***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***219***	***NE***	***NE***	***NE***	***4.5***
LTP-Indoor Air (0-5 fbg) [a]			***NE***	***NE***	***NE***	***NE***	***100***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***
2016 GHD Investigation																					
MW-10	10/24/16	3	<30	<30	<12	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		5	<30	<30	<12	---	<1	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		10	<30	<30	55	---	<1.1	<0.005	0.001J	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		15	<30	<30	11J	---	<1.1	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		20	<30	<30	10J	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
B-8	10/24/16	3	100	100	63	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
B-9	10/25/16	3	58	58	18	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		5	<30	<30	<12	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		8	69	69	22	---	<1.0	<0.005	<0.005	<0.005	<0.005	0.0008J	---	---	---	---	<0.005	---	---	---	---
		10	31	31	15	---	<1.0	<0.005	<0.005	<0.005	<0.005	0.002J	---	---	---	---	<0.005	---	---	---	---
		12	<30	<30	<12	---	<1.0	<0.005	<0.005	<0.005	<0.005	0.001J	---	---	---	---	<0.005	---	---	---	---
B-10	10/25/16	3	<30	<30	<12	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		5	<30	<30	<12	---	<1	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		8	23J	23J	7.7J	---	<1	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		10	19J	19J	18	---	<1.1	<0.005	<0.005	<0.005	<0.005	<0.006	---	---	---	---	<0.005	---	---	---	---
		12	<30	<30	<12	---	<1	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
B-11	10/25/16	3	<30	<30	<12	---	<0.9	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		10	<30	<30	8.2J	---	3.2	<0.005	<0.005	<0.005	0.002J	0.012	---	---	---	---	<0.005	---	---	---	---
		15	<30	<30	<12	---	<1.0	<0.005	<0.005	<0.005	<0.005	0.13	---	---	---	---	<0.005	---	---	---	---
B-12	10/25/16	3	27J	27J	9.8J	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	---	---	---	---	<0.005	---	---	---	---
		15	<30	<30	<12	---	78	<0.005	<0.005	<0.005	<0.005	0.001J	---	---	---	---	<0.005	---	---	---	---
B-13	10/25/16	6	<30	<30	13	---	7.6	0.0006J	<0.005	<0.005	0.003J	0.01	---	---	---	---	<0.005	---	---	---	---
		10	<30	<30	<12	---	2.2	<0.005	0.001J	<0.005	0.003J	0.004J	---	---	---	---	<0.005	---	---	---	---
		15	<30	<30	<12	---	4.4	0.022	0.001J	<0.005	0.004J	0.029	---	---	---	---	0.002J	---	---	---	---

Table 1

Cumulative Soil Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			← Concentrations reported in milligrams per kilogram (mg/kg) →																		
LTP-Direct Contact (0-5 fbg)		*Residential*[a]	*NE*	*NE*	*NE*	*NE*	*NE*	*1.9*	*NE*	*21*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*9.7*	*NE*	*NE*	*NE*	*0.063*
		Commercial[a]	*NE*	*NE*	*NE*	*NE*	*NE*	*8.2*	*NE*	*89*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*45*	*NE*	*NE*	*NE*	*NE*
LTP-Outdoor Air (5-10 fbg)		*Residential*[a]	*NE*	*NE*	*NE*	*NE*	*NE*	*2.8*	*NE*	*32*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*9.7*	*NE*	*NE*	*NE*	*0.68*
		Commercial[a]	*NE*	*NE*	*NE*	*NE*	*NE*	*12*	*NE*	*134*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*45*	*NE*	*NE*	*NE*	*NE*
LTP-Direct Contact (0-10 fbg)		*Utility Worker*[a]	*NE*	*NE*	*NE*	*NE*	*NE*	*14*	*NE*	*314*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*219*	*NE*	*NE*	*NE*	*4.5*
LTP-Indoor Air (0-5 fbg)[a]			*NE*	*NE*	*NE*	*NE*	*100*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*	*NE*
2013 CRA Site Investigation																					
B-1	11/11/13	3	38[b, c]	38[b, c]	---	14[b]	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.021	<0.001	<0.001	---	---	---	---
B-1	11/11/13	6	<9.9[b, c]	<9.9[b, c]	---	<3.9[b]	<1.0	<0.0005	<0.001	<0.001	0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-1	11/11/13	9	40[b, c]	40[b, c]	---	11[b]	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-1	11/11/13	9.5	<9.9[b, c]	<9.9[b, c]	---	27[d]	220	<0.025[e]	<0.051[e]	<0.051[e]	<0.051[e]	<0.025[e]	<0.051[e]	<0.051[e]	<1.0[e]	<0.051[e]	<0.051[e]	---	---	---	---
B-1	11/11/13	12.5	<9.9[b, c, f]	<9.9[b, c, f]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.021	<0.001	<0.001	---	---	---	---
B-1	11/11/13	14.5	<10[b, c, f]	<10[b, c, f]	---	<4.0[b, f]	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.019	<0.001	<0.001	---	---	---	---
B-2	11/11/13	3	<10[b, c]	<10[b, c]	---	<4.0[b]	<1.0	<0.0005	<0.0009	<0.0009	<0.0009	<0.0005	<0.0009	<0.0009	<0.019	<0.0009	<0.0009	---	---	---	---
B-2	11/11/13	6	<9.9[b, c]	<9.9[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-2	11/11/13	9	<10[b, c]	<10[b, c]	---	<4.0[b]	<1.0	<0.0005	<0.0009	<0.0009	<0.0009	0.0006	<0.0009	<0.0009	<0.018	<0.0009	<0.0009	---	---	---	---
B-2	11/11/13	13	<9.9[b, c]	<9.9[b, c]	---	<3.9[b]	<1	<0.0005	<0.001	<0.001	<0.001	0.28	<0.001	<0.001	0.17	0.004	<0.001	---	---	---	---
B-3	11/11/13	3	<10[b, c]	<10[b, c]	---	<4.0[b]	2.1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-3	11/11/13	5	110[c, d, g]	110[c, d, g]	---	920[b]	1,300	<0.024[e]	<0.048[e]	<0.048[e]	<0.048[e]	<0.024[e]	<0.048[e]	<0.048[e]	<0.95[e]	<0.048[e]	<0.048[e]	---	---	---	---
B-3	11/11/13	7.5	<9.9[b, c, f]	<9.9[b, c, f]	---	14[d, f]	58	0.0008	0.002	0.002	0.011	0.017	<0.001	<0.001	0.061	<0.001	0.002	---	---	---	---
B-3	11/11/13	9	<10[b, c]	<10[b, c]	---	7.9[b]	5.6	0.002	0.001	0.002	0.005	0.088	<0.001	<0.001	0.29	0.001	0.006	---	---	---	---
B-3	11/11/13	11	<9.9[b, c]	<9.9[b, c]	---	<4.0[b]	2.9	0.001[h]	<0.001[h]	<0.001[h]	<0.001[h]	0.071[h]	<0.001[h]	<0.001[h]	0.49[h]	0.001[h]	<0.001[h]	---	---	---	---
B-4	11/12/13	3	870[c, j]	870[c, j]	---	330[d, g]	<41[i]	0.0007[h]	<0.001[h]	<0.001[h]	<0.001[h]	<0.0005[h]	<0.001[h]	<0.001[h]	<0.021[h]	<0.001[h]	0.005[h]	---	---	---	---
B-4	11/13/13	6	700[b, c]	700[b, c]	---	190[b]	<9.8[i]	<0.0005[h]	<0.001[h]	<0.001[h]	<0.001[h]	<0.0005[h]	<0.001[h]	<0.001[h]	<0.021[h]	<0.001[h]	<0.001[h]	---	---	---	---
B-4	11/13/13	9	<10[b, c]	<10[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-4	11/13/13	15	<10[b, c]	<10[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.019	<0.001	<0.001	---	---	---	---
B-4	11/13/13	20	<10[b, c]	<10[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-4	11/13/13	25	<10[b, c]	<10[b, c]	---	<4.0[b]	<1.1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.021	<0.001	<0.001	---	---	---	---
B-4	11/13/13	27.5	<10[b, c]	<10[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-5	11/12/13	3	27[b, c]	27[b, c]	---	5.2[b]	<1	<0.0005	<0.0009	<0.0009	<0.0009	<0.0005	<0.0009	<0.0009	<0.019	<0.0009	<0.0009	---	---	---	---
B-5	11/12/13	6	140[b, c]	140[b, c]	---	33[b]	<1	<0.0005[h]	<0.001[h]	<0.001[h]	<0.001[h]	<0.0005[h]	<0.001[h]	<0.001[h]	<0.019[h]	<0.001[h]	<0.001[h]	---	---	---	---
B-5	11/12/13	9	17[b, c]	17[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-5	11/13/13	24	<10[b, c]	<10[b, c]	---	<4.0[b]	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---

Table 1

Cumulative Soil Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			← Concentrations reported in milligrams per kilogram (mg/kg) →																		
LTP-Direct Contact (0-5 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***1.9***	***NE***	***21***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.063***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***8.2***	***NE***	***89***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Outdoor Air (5-10 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***2.8***	***NE***	***32***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.68***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***12***	***NE***	***134***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Direct Contact (0-10 fbg)		***Utility Worker*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***14***	***NE***	***314***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***219***	***NE***	***NE***	***NE***	***4.5***
LTP-Indoor Air (0-5 fbg) [a]			***NE***	***NE***	***NE***	***NE***	***100***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***
B-6	11/13/13	3	46[b, c]	46[b, c]	---	11[b, f]	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-6	11/12/13	6	<10[b, c]	<10[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-6	11/12/13	9	<10[b, c]	<10[b, c]	---	<4.0[b]	<1	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	<0.001	---	---	---	---
B-6	11/12/13	15	<10[b, c]	<10[b, c]	---	<4.0[b]	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.021	<0.001	<0.001	---	---	---	---
B-7	11/12/13	3	19[b, c]	19[b, c]	---	21[b]	86	<0.025[e]	<0.049[e]	<0.049[e]	<0.049	<0.025[e]	<0.049[e]	<0.049[e]	<0.98[e]	<0.049[e]	0.14[e]	---	---	---	---
B-7	11/12/13	6	<10[b, c]	<10[b, c]	---	79[d]	2,600	0.058[e]	<0.10[e]	<0.10[e]	0.13[e]	<0.050[e]	<0.10[e]	<0.10[e]	<2.0[e]	<0.10[e]	0.24[e]	---	---	---	---
B-7	11/12/13	6.75	16[c, d]	16[c, d]	---	130[d]	130	<0.024[e]	<0.048[e]	<0.048[e]	<0.048[e]	<0.024[e]	<0.048[e]	<0.048[e]	<0.96[e]	<0.048[e]	0.053[e]	---	---	---	---
B-7	11/12/13	7.5	<10[b, c]	<10[b, c]	---	5.9[d]	22	0.0009	<0.001	<0.001	0.002	<0.0005	<0.001	<0.001	<0.020	<0.001	0.008	---	---	---	---
B-7	11/12/13	10	<10[b, c]	<10[b, c]	---	20[b]	8.0	0.004	<0.001	0.004	0.022	<0.0005	<0.001	<0.001	<0.020	<0.001	0.002	---	---	---	---
2010 CRA Compliance Soil Sampling																					
EX-1	08/10/10	9.5	---	---	2.3	---	2.5	<0.005	<0.005	<0.005	<0.005	0.18	<0.005	<0.005	0.16	<0.005	---	<0.004	<0.004	<0.5	---
EX-2	08/10/10	9.5	---	---	7.0	---	7.9	<0.005	<0.005	<0.005	<0.005	0.041	<0.005	<0.005	<0.05	<0.005	---	<0.004	<0.004	<0.5	---
EX-3	08/10/10	9.5	---	---	<1.0	---	1.1	<0.020	<0.020	<0.020	<0.020	0.77	<0.020	<0.020	0.35	<0.020	---	<0.016	<0.016	<2.0	---
EX-4	08/10/10	9.5	---	---	27	---	20	<0.010	<0.010	<0.010	<0.010	0.22	<0.010	<0.010	0.23	<0.010	---	<0.0080	<0.0080	<1.0	---
EX-5	08/10/10	9.5	---	---	<1.0	---	0.78	<0.005	<0.005	<0.005	<0.005	0.087	<0.005	<0.005	0.12	<0.005	---	<0.004	<0.004	<0.5	---
EX-6	08/10/10	9.5	---	---	18	---	1.6	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	---	<0.004	<0.004	<0.5	---
P-1	08/10/10	6.5	---	---	6.0	---	5.7	0.041	0.22	0.040	0.20	0.074	<0.010	<0.010	<0.10	<0.010	---	<0.0080	<0.0080	<1.0	---
P-2	08/10/10	5	---	---	12	---	7.2	<0.005	<0.005	0.039	0.16	0.17	<0.005	<0.005	0.17	<0.005	---	<0.004	<0.004	<0.5	---
P-3	08/10/10	5	---	---	11	---	9.4	<0.020	<0.020	<0.020	0.035	0.46	<0.020	<0.020	0.24	<0.020	---	<0.016	<0.016	<2.0	---
P-4	08/10/10	5	---	---	730	---	980	1.4	<1.0	16	2.6	<1.0	<1.0	<1.0	<10	<1.0	---	<0.80	<0.80	<100	---
P-5	08/10/10	5	---	---	30	---	1.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	---	<0.004	<0.004	<0.5	---
P-6	08/10/10	4	---	---	9.4	---	2.2	<0.005	<0.005	0.0054	<0.005	0.0081	<0.005	<0.005	<0.05	<0.005	---	<0.004	<0.004	<0.5	---
P-7	08/10/10	4	---	---	900	---	8.4	<0.010	<0.010	<0.010	<0.010	0.037	<0.010	<0.010	<0.10	<0.010	---	<0.0080	<0.0080	<1.0	---
P-8	08/10/10	4	---	---	150	---	410	<0.10	<0.10	3.0	0.12	<0.10	<0.10	<0.10	<1.0	<0.10	---	<0.080	<0.080	<10	---
P-9	08/10/10	4	---	---	<1.0	---	0.89	<0.005	<0.005	<0.005	<0.005	0.0051	<0.005	<0.005	<0.05	<0.005	---	<0.004	<0.004	<0.5	---
P-10	08/10/10	4	---	---	1.5	---	1.3	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	---	<0.004	<0.004	<0.5	---
P-11	08/10/10	4	---	---	290	---	390	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	---	<0.40	<0.40	<50	---
P-12	08/10/10	4	---	---	1,100	---	770	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	---	<0.80	<0.80	<100	---
P-13	08/10/10	4	---	---	610	---	780	0.70	<0.50	5.9	0.66	<0.50	<0.50	<0.50	<5.0	<0.50	---	<0.40	<0.40	<50	---
P-14	08/10/10	4	---	---	420	---	620	1.0	<0.50	9.4	0.84	<0.50	<0.50	<0.50	<5.0	<0.50	---	<0.40	<0.40	<50	---

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3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			← Concentrations reported in milligrams per kilogram (mg/kg) →																		
LTP-Direct Contact (0-5 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***1.9***	***NE***	***21***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.063***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***8.2***	***NE***	***89***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Outdoor Air (5-10 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***2.8***	***NE***	***32***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.68***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***12***	***NE***	***134***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Direct Contact (0-10 fbg)		***Utility Worker*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***14***	***NE***	***314***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***219***	***NE***	***NE***	***NE***	***4.5***
LTP-Indoor Air (0-5 fbg) [a]			***NE***	***NE***	***NE***	***NE***	***100***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***
2006 Cambria Soil investigation																					
SB-3-S-6	08/28/06	6	---	---	1,200	---	420	<0.003	<0.005	0.006	0.046	<0.003	<0.005	<0.005	<0.10	<0.005	---	---	---	<0.50	---
SB-3-S-10	08/28/06	10	---	---	310	---	750	<0.002	<0.005	<0.005	0.011	0.47	<0.005	0.01	<0.099	<0.005	---	---	---	<0.50	---
SB-5-S-4	08/23/06	4	---	---	<200	---	1,900	0.13	<0.013	7.6	5.2	<0.063	<0.13	<0.13	<2.5	<0.13	---	---	---	<13	---
SB-5-S-8	08/23/06	8	---	---	14	---	21	0.039	0.009	0.12	0.063	0.01	<0.005	<0.005	<0.099	<0.005	---	---	---	<0.50	---
SB-2-S-2	08/22/06	2	---	---	<10	---	<1	<0.0005	<0.001	<0.001	<0.001	0.012	<0.001	<0.001	<0.020	<0.001	---	---	---	<0.099	---
SB-2-S-4	08/22/06	4	---	---	<10	---	3.4	<0.0005	<0.001	<0.001	<0.001	0.064	<0.001	<0.001	0.078	<0.001	---	---	---	<0.10	---
SB-4-S-6	08/22/06	6	---	---	56	---	620	<0.063	<0.013	0.32	<0.13	<0.063	<0.13	<0.13	<2.5	<0.13	---	---	---	<13	---
SB-4-S-10	08/22/06	10	---	---	16	---	1.5	0.031	0.004	0.19	0.018	0.054	<0.001	<0.001	0.036	<0.001	---	---	---	<0.10	---
SB-1-S-4	08/03/06	4	---	---	41	---	120	0.003	<0.005	0.021	0.013	0.011	<0.005	<0.005	<0.099	<0.005	---	---	---	<0.50	---
SB-1-S-6	08/03/06	6	---	---	<10	---	7.3	0.010	<0.001	0.002	0.002	0.15	<0.001	0.00	0.15	<0.001	---	---	---	<0.099	---
SB-6-S-6	08/23/06	6	---	---	25	---	26	0.025	0.014	0.73	0.15	<0.003	<0.005	<0.005	<0.10	<0.005	---	---	---	<0.50	---
SB-6-S-10	08/23/06	10	---	---	19	---	<40	0.032	0.007	0.27	0.061	0.003	<0.005	<0.005	<0.10	<0.005	---	---	---	<0.50	---
SB-7-S-2	08/23/06	2	---	---	240	---	150	<0.062	<0.12	<0.12	<0.12	<0.062	<0.12	<0.12	<2.5	<0.12	---	---	---	<12	---
SB-7-S-4	08/23/06	4	---	---	900	---	760	<0.063	<0.013	<0.013	<0.013	<0.063	<0.13	<0.13	<2.5	<0.13	---	---	---	<13	---
2006 Cambria Soil Boring Invesgtigation																					
SB-8	08/03/06	2	<10	<10[k]	<10	---	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	---	<0.001	<0.001	<0.10	---
SB-8	08/03/06	4	<10	<10[k]	<10	---	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	---	<0.001	<0.001	<0.099	---
SB-9	08/03/06	2	100	100[k]	41	---	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	---	<0.001	<0.001	<0.10	---
SB-9	08/03/06	4	<10	<10[k]	<10	---	<1.0	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.020	<0.001	---	<0.001	<0.001	<0.10	---

Table 1

Cumulative Soil Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			← Concentrations reported in milligrams per kilogram (mg/kg) →																		
LTP-Direct Contact (0-5 fbg)		***Residential[a]***	***NE***	***NE***	***NE***	***NE***	***NE***	***1.9***	***NE***	***21***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.063***
		Commercial[a]	***NE***	***NE***	***NE***	***NE***	***NE***	***8.2***	***NE***	***89***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Outdoor Air (5-10 fbg)		***Residential[a]***	***NE***	***NE***	***NE***	***NE***	***NE***	***2.8***	***NE***	***32***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.68***
		Commercial[a]	***NE***	***NE***	***NE***	***NE***	***NE***	***12***	***NE***	***134***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Direct Contact (0-10 fbg)		***Utility Worker[a]***	***NE***	***NE***	***NE***	***NE***	***NE***	***14***	***NE***	***314***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***219***	***NE***	***NE***	***NE***	***4.5***
LTP-Indoor Air (0-5 fbg)[a]			***NE***	***NE***	***NE***	***NE***	***100***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***
1999 Cambria Soil investigation																					
MW2A-3	04/01/99	3	---	---	28	---	820	1.7	2.8	13	29	<0.5	---	---	---	---	---	---	---	---	---
MW2A-6	04/01/99	6	---	---	100	---	430	<1	1.7	5.0	2.6	<10	---	---	---	---	---	---	---	---	---
MW2A-17	04/01/99	17	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW3A-5.5	04/01/99	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW3A-6	04/01/99	6	---	---	3.8	---	41	<0.1	<0.1	<0.1	0.28	<1	---	---	---	---	---	---	---	---	---
MW3A-11	04/01/99	11	---	---	9.2	---	180	0.57	0.52	<0.5	1.8	<5	---	---	---	---	---	---	---	---	---
MW3A-15	04/01/99	15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW4A-3	04/01/99	3	---	---	94	---	540	0.96	1.6	4.6	1.3	<2.5	---	---	---	---	---	---	---	---	---
MW4A-6	04/01/99	6	---	---	72	---	1,100	5.6	13	2.4	18	<10	---	---	---	---	---	---	---	---	---
MW9-3	04/01/99	3	---	---	1.2	---	22	0.036	0.048	0.028	0.091	0.089	---	---	---	---	---	---	---	---	---
MW9-6	04/01/99	6	---	---	<1	---	8.3	0.011	0.033	0.010	0.078	0.18	---	---	---	---	---	---	---	---	---
1996 Piping Trench and Dispenser Sampling																					
~~P1~~	~~10/03/96~~	~~3~~	~~---~~	~~---~~	~~---~~	~~---~~	~~<1.0~~	~~<0.0050~~	~~<0.0050~~	~~<0.0050~~	~~<0.0050~~	~~<0.025~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~18~~
~~P2~~	~~10/03/96~~	~~2~~	~~---~~	~~---~~	~~---~~	~~---~~	~~<1.0~~	~~<0.0050~~	~~<0.0050~~	~~<0.0050~~	~~<0.0050~~	~~<0.025~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~12~~
~~P3~~	~~10/03/96~~	~~2.5~~	~~—~~	~~—~~	~~—~~	~~—~~	~~<1.0~~	~~0.0056~~	~~<0.0050~~	~~<0.0050~~	~~0.005~~	~~0.63~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~25~~
~~P4~~	~~10/03/96~~	~~2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~710~~	~~<0.25~~	~~19~~	~~7.8~~	~~78~~	~~15~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~28~~
~~P5~~	~~10/03/96~~	~~3~~	~~---~~	~~---~~	~~---~~	~~---~~	~~110~~	~~<0.25~~	~~<0.25~~	~~<0.25~~	~~0.46~~	~~<1.2~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~14~~
~~P6~~	~~10/03/96~~	~~3~~	~~—~~	~~—~~	~~—~~	~~—~~	~~1.3~~	~~0.021~~	~~0.15~~	~~0.033~~	~~0.18~~	~~2.5~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~6.6~~
~~P7~~	~~10/03/96~~	~~3~~	~~---~~	~~---~~	~~---~~	~~---~~	~~<1.0~~	~~<0.0050~~	~~0.0071~~	~~0.0063~~	~~0.024~~	~~0.49~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~8.0~~
~~P8~~	~~10/03/96~~	~~2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~4,100~~	~~33~~	~~19~~	~~51~~	~~30~~	~~31~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~20~~
~~P9~~	~~10/03/96~~	~~2~~	~~—~~	~~—~~	~~—~~	~~—~~	~~1,400~~	~~<0.50~~	~~22~~	~~5.4~~	~~5~~	~~9.7~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~—~~	~~13~~
~~P10~~	~~10/03/96~~	~~2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~410~~	~~8.3~~	~~<0.12~~	~~4.8~~	~~2.4~~	~~<0.62~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~52~~
~~P11~~	~~10/03/96~~	~~3~~	~~---~~	~~---~~	~~---~~	~~---~~	~~1,600~~	~~25~~	~~<0.50~~	~~25~~	~~26~~	~~<2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~15~~
~~P12~~	~~10/03/96~~	~~2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~2.2~~	~~28~~	~~<1.0~~	~~23~~	~~12~~	~~<5.0~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~20~~
~~P13~~	~~10/03/96~~	~~3~~	~~---~~	~~---~~	~~---~~	~~---~~	~~290~~	~~6.1~~	~~4~~	~~2.1~~	~~1.3~~	~~<0.62~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~36~~
~~P14~~	~~10/03/96~~	~~2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~2,500~~	~~40~~	~~20~~	~~27~~	~~76~~	~~<5.0~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~19~~
~~P15~~	~~10/03/96~~	~~2.5~~	~~---~~	~~---~~	~~---~~	~~---~~	~~1,000~~	~~23~~	~~<0.25~~	~~13~~	~~3~~	~~<1.2~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	~~---~~	44

Table 1

Cumulative Soil Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			← Concentrations reported in milligrams per kilogram (mg/kg) →																		
LTP-Direct Contact (0-5 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***1.9***	***NE***	***21***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.063***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***8.2***	***NE***	***89***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Outdoor Air (5-10 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***2.8***	***NE***	***32***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.68***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***12***	***NE***	***134***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Direct Contact (0-10 fbg)		***Utility Worker*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***14***	***NE***	***314***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***219***	***NE***	***NE***	***NE***	***4.5***
LTP-Indoor Air (0-5 fbg) [a]			***NE***	***NE***	***NE***	***NE***	***100***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***
1992 GTI Well Installation																					
MW1A	06/19/92	20.5	---	---	---	<1	<1	0.006	0.019	<0.005	0.015	---	---	---	---	---	---	---	---	---	---
MW5D	06/12/92	20.5	---	---	---	<1	<1	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---
MW6A	06/12/92	5.5	---	---	---	<1	<1	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---
MW7A	06/12/92	5.5	---	---	---	<1	<1	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---
MW8A	06/12/92	5.5	---	---	---	<1	<1	<0.005	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---
MW8B	06/12/92	10.5	---	---	---	2[l]	13	<0.005	0.006	0.012	0.078	---	---	---	---	---	---	---	---	---	---
1991 GTI Well Installation																					
MW-2A	08/07/91	2	---	---	---	4	660	1.5	1.2	2.3	4.6	---	---	---	---	---	---	---	---	---	---
MW-2B	08/07/91	7	---	---	---	17	540	2.8	1.3	11	4.3	---	---	---	---	---	---	---	---	---	---
MW-3A	08/13/91	2	---	---	---	2	<1.0	0.021	<0.005	<0.005	<0.005	---	---	---	---	---	---	---	---	---	---
MW-3B	08/13/91	9	---	---	---	34	660	3	3.7	5.0	8.0	---	---	---	---	---	---	---	---	---	---
MW-4A	08/13/91	3	---	---	---	13	560	<0.6	4.5	3.6	7.4	---	---	---	---	---	---	---	---	---	---
MW-4B	08/13/91	8	---	---	---	2	31	0.17	0.29	0.11	0.220	---	---	---	---	---	---	---	---	---	---

Table 1

Cumulative Soil Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	Total TPH	TPHmo w/ Silica Gel	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	TAME	TBA	ETBE	Naph-thalene	1,2-DCA	EDB	Ethanol	Total Lead
			Concentrations reported in milligrams per kilogram (mg/kg)																		
LTP-Direct Contact (0-5 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***1.9***	***NE***	***21***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.063***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***8.2***	***NE***	***89***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Outdoor Air (5-10 fbg)		***Residential*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***2.8***	***NE***	***32***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***9.7***	***NE***	***NE***	***NE***	***0.68***
		Commercial [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***12***	***NE***	***134***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***45***	***NE***	***NE***	***NE***	***NE***
LTP-Direct Contact (0-10 fbg)		***Utility Worker*** [a]	***NE***	***NE***	***NE***	***NE***	***NE***	***14***	***NE***	***314***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***219***	***NE***	***NE***	***NE***	***4.5***
LTP-Indoor Air (0-5 fbg) [a]			***NE***	***NE***	***NE***	***NE***	***100***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***	***NE***

Notes/Abbreviations:

Total petroleum hydrocarbons by modified EPA Method 8015B unless otherwise noted.

Total petroleum hydrocarbons as motor oil (TPHmo) and total oil and grease (TOG) by modified EPA Method 8015B unless otherwise noted.

Total petroleum hydrocarbons as diesel (TPHd) and gasoline (TPHg) by modified EPA Method 8015B unless otherwise noted.

Benzene, toluene, ethybenzene, total xylenes, methyl tertiary butyl ether (MTBE), di-isopropyl ether (DIPE), t-amyl methyl ether (TAME), t-butyl alcohol (TBA), ethyl t-butyl ether (ETBE), naphthalene, 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB) and ethanol by EPA Method 8026B unless otherwise noted.

Lead (Pb) by EPA Method 6010 unless otherwise noted.

Poly-aromatic hydrocarbons (PAHs) analyxed by EPA Method 8270C

fbg = Feet below grade

NE = Not established

ND = Not detected above various laboratory method detection limits.

--- = Not analyzed

<x.x = Not detected above laboratory limit of quantitation

~~x.xx~~ - Excavated - trenches deepened to 4 fbg during product piping replacement

J = Estimated value > the Method Detection Limit and < the Limit of Quantitation

a = Low-Threat Underground Storage Tank Case Closure Policy Criteria - California State Water Resources Control Board (SWRCB), August 2012, Low-Threat Underground Storage Tank Policy.

b = The reverse surrogate, capric acid, is present at <1%

c = TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetraoctane) normal hydrocarbons.

d = Due to the presence of fuel in the sample extract, capric acid recovery can not be determined

e = Reporting limits were raised due to interference from the sample matrix

f = The recovery for the sample surrogate(s) is outside the QC acceptance limits as noted on the QC summary. The following corrective action was taken: The sample was re-extracted outside the method required holding time and the QC is compliant. All results are reported from the first trial. Similar results were obtained in both trials.

g = The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram

h = The recovery for the sample internal standard is outside the QC acceptance limits. The following corrective action was taken: The sample was re-analyzed and the QC is again outside of the acceptance limits, indicating a matrix effect. The data is reported from the initial trial.

i = Reporting limits were raised due to sample foaming

j = Due to the dilution of the sampl extract, capric acid recovery can not be determined

k = TPHmo or TOG not analyzed with silica gel cleanup

l = According to laboratory analytical reports the chromatogram pattern observed was not typical of diesel.

Table 2

Grab-Groundwater Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Total TPH	TPHmo	TPHd	TPHd w/ Silica Gel	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naphthalene	PAHs
		← Concentrations reported in micrograms per liter (µg/L) →											
Water Quality Objective [i]		***100***	***100***	***100***	***100***	***100***	***1***	***40***	***13***	***20***	***5***	***0.17***	***Varies***
SB-8	08/03/06	--	**1,200**	**310**	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
SB-9	08/03/06	--	**3,700**	**1,100**	--	<50	<0.5	<0.5	<0.5	<0.5	2	--	--
B-1	11/11/13	<40[a, b, c]	<40[a, b, c]	--	**95**[b, c]	**120**	<0.5	<0.5	<0.5	<0.5	<0.5	<1	--
B-2	11/11/13	**260**[a, b, c]	**260**[a, b, c]	--	**200**[b, c, d]	**140**[e]	<0.5[f]	<0.5[f]	<0.5[f]	<0.5[f]	**2,000**[f]	<1[f]	--
B-3	11/11/13	**380**[a, b, c]	**380**[a, b, c]	--	--	**920**[f, g]	<5[f,g]	<5[f,g]	<5[f,g]	<5[f,g]	**96**[f,g]	<10[f,g]	--
B-4	11/13/13	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<1	--
B-5	11/13/13	<41[a, b, c]	<41[a, b, c]	--	<160[b, c, d]	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<1	--
B-6	11/12/13	<41[a, b, c]	<41[a, b, c]	--	**--**	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<1	--
B-7[c]	11/12/13	<400[a, b, c, d]	<400[a, b, c, d]	--	**2,800**[b, c]	**2,500**[h]	**3**[f, g]	<3[f, g]	<3[f, g]	<3[f, g]	<3[f, g]	<5[f, g]	--
B-9	10/25/16	75J	75J	<100		<100	<1	<1	<1	<1	3	<0.5	<0.5
B-10	10/25/16	**820**	**820**	**560**	--	79J	<1	<1	<1	<1	2	<0.5	<0.5

Notes/Abbreviations:

Total petroleum hydrocarbons by modified EPA Method 8015B unless otherwise noted.

Total petroleum hydrocarbons as motor oil (TPHmo) by modified EPA Method 8015B unless otherwise noted.

Total petroleum hydrocarbons as diesel (TPHd) and gasoline (TPHg) by modified EPA Method 8015B unless otherwise noted.
(TBA), ethyl t-butyl ether (ETBE), naphthalene, 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB) and ethanol by EPA Method 8026B unless otherwise noted.

Poly-aromatic hydrocarbons (PAHs) analyxed by EPA Method 8270C

fbg = Feet below grade

NE = Not established

ND = Not detected above various laboratory limit of quantitation.

<x.x = Not detected above laboratory limit of quantitation

--- = Not analyzed

J = Estimated value > the Method Detection Limit and < the Limit of Quantitation

Grab-Groundwater Analytical Data
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

a = TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons

b = The reverse surogate, capric acid, is present at <1%

c = The holding time was not met. This sample was submitted to the laboratory outside the holding time.

d = Reporting limits were raised due to interference from the sample matrix

e = A preserved vial was subitted for analysis. However, the pH at the time of analysis was 8

f = A preserved vial was subitted for analysis. However, the pH at the time of analysis was 7

g = Reporting limits were raised due to sample foaming

h = A preserved vial was submitted for analysis. However, the pH at the time of analysis was 4

i = WQOs are the Environmental Screening Levels from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board – San Francisco Bay Region, Interim Final February 2016

Table 3

Cumulative Air and Soil Vapor Analytical Data
Former Chevron Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth (fbg)	TPHg ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	m,p-Xylene ($\mu g/m^3$)	o-Xylene ($\mu g/m^3$)	MTBE ($\mu g/m^3$)	Napthalene by TO-15 ($\mu g/m^3$)	Naphthalene by TO-17 ($\mu g/m^3$)	Oxygen (% Vol)	N_2 (% Vol)	CO_2 (% Vol)	Methane (% Vol)	He (% Vol)
ESL Table E-3 Ambient and Indoor Air Screening Levels, Lowest Commercial/Industrial [a]			*2,500*	*0.42*	*1,300*	*4.9*	*440*	*440*	*47*	*0.36*	*0.36*	*NE*	*NE*	*NE*	*NE*	*NE*
LTCP Soil Gas Criteria - Commercial [b]			*NE*	*280*	*NE*	*3,600*	*NE*	*NE*	*NE*	*310*	*310*	*NE*	*NE*	*NE*	*NE*	*NE*
2014 Indoor/Outdoor/Crawl Space Air and Soil Vapor Sampling																
CS-1	10/06/14	--	<61	**0.56**	1.9	0.36	1.3	0.47	<0.54	<3.9	--	21	79	0.050	0.00026	<0.074
CS-2	10/06/14	--	<66	**0.64**	1.9	0.38	1.3	0.47	<0.58	<4.2	--	21	79	0.042	0.00047	<0.081
IA-1	10/06/14	--	<66	**0.54**	1.9	0.46	1.6	0.62	<0.58	<4.2	0.60	21	79	0.049	0.00024	<0.080
IA-2	10/06/14	--	<61	**0.50**	2.0	0.49	1.7	0.66	<0.54	<3.9	0.47	21	79	0.048	0.00022	<0.075
IA-3	10/06/14	--	<67	**0.55**	1.8	0.48	1.6	0.61	<0.59	<4.3	0.65	21	79	0.050	0.00023	<0.082
IA-4	10/06/14	--	<66	**0.55**	1.9	0.39	1.4	0.48	<0.58	<4.2	--	21	79	0.046	0.00021	<0.080
IA-5[c]	10/06/14	--	<66	**0.60**	2.2	0.39	1.5	0.51	<0.58	<4.2	0.55	21	79	0.045	0.00022	<0.080
IA-6	10/06/14	--	<100	**0.66**	2.3	0.44	1.4	0.52	<0.91	<6.6	--	21	79	0.048	0.00039	<0.13
OA-1	10/06/14	--	<66	**0.89**	2.7	0.50	1.9	0.64	<0.58	<4.2	0.37	21	79	0.044	0.00017	<0.080
OA-1 DUP	10/06/14	--	<74	**0.99**	2.7	0.51	1.9	0.65	<0.65	<4.7	--	21	79	0.044	<0.00018	<0.090
OA-2	10/06/14	--	<67	**0.56**	1.7	0.36	1.3	0.46	<0.59	<4.3	--	21	79	0.045	0.00021	<0.082
SSVP-1	10/07/14	0.7	<240	<3.8	<4.4	<5.1	<5.1	<5.1	<4.2	<25	<5.0	20	79	0.74	<0.00024	<0.12
SSVP-2	10/07/14	0.7	320	<3.7	<4.4	5.1	11	<5.0	5.0	<24	<5.0	17	79	3.9	<0.00023	<0.12
SSVP-2 DUP	10/07/14	0.7	<240	<3.7	<4.4	<5.0	<5.0	<5.0	<4.2	<24	--	17	79	3.9	<0.00023	<0.12
SSVP-3	10/07/14	0.7	<250	5.5	<4.6	<5.3	<5.3	<5.3	<4.4	<25	<5.0	19	79	1.9	<0.00024	<0.12
2013 Indoor/Outdoor/Crawl Space Air and Soil Vapor Sampling																
CS-1	11/14/13	--	120	**0.79**	2.0	0.39	1.4	0.49	<0.61	<4.4	--	21	79	0.048	0.00092	<0.084
CS-2	11/14/14	--	94	**0.93**	2.7	0.57	2.1	0.71	<0.62	<4.5	--	21	79	0.045	0.00057	<0.086
IA-1	11/14/13	--	150	**0.80**	2.8	0.78	2.9	1.2	<0.61	<4.4	0.24	21	79	0.061	0.0013	<0.084
IA-2	11/14/13	--	230	**0.86**	5.0	0.77	3.0	1.1	<0.55	<4.0	0.098	21	79	0.063	0.0013	<0.076
IA-3	11/14/13	--	160	**0.79**	2.8	0.68	2.6	1.0	<0.60	<4.4	0.12	21	79	0.060	0.0013	<0.084
IA-4[c]	11/14/13	--	150	**0.87**	2.1	0.36	1.1	0.34	<0.58	<4.2	0.055	21	79	0.047	0.0027	<0.081
IA-5	11/14/13	--	130	**0.80**	3.2	0.56	2.0	0.78	<0.51	<3.7	--	21	79	0.051	0.0010	<0.070
IA-6	11/14/13	--	410	**0.82**	2.4	0.53	2.0	0.70	<0.64	<4.7	--	21	79	0.046	0.00035	<0.089
OA-1	11/14/13	--	65	**1.0**	2.7	0.51	1.8	0.62	<0.54	<3.9	0.057	21	79	0.045	0.00024	<0.075

Table 3

Cumulative Air and Soil Vapor Analytical Data
Former Chevron Station 90121
3026 Lakeshore Avenue
Oakland, California

Sample ID	Date	Sample Depth *(fbg)*	TPHg *(µg/m³)*	Benzene *(µg/m³)*	Toluene *(µg/m³)*	Ethyl-benzene *(µg/m³)*	m,p-Xylene *(µg/m³)*	o-Xylene *(µg/m³)*	MTBE *(µg/m³)*	Napthalene by TO-15 *(µg/m³)*	Naphthalene by TO-17 *(µg/m³)*	Oxygen *(% Vol)*	N_2 *(% Vol)*	CO_2 *(% Vol)*	Methane *(% Vol)*	He *(% Vol)*
ESL Table E-3 Ambient and Indoor Air Screening Levels, Lowest Commercial/Industrial [a]			***2,500***	***0.42***	***1,300***	***4.9***	***440***	***440***	***47***	***0.36***	***0.36***	***NE***	***NE***	***NE***	***NE***	***NE***
LTCP Soil Gas Criteria - Commercial [b]			***NE***	***280***	***NE***	***3,600***	***NE***	***NE***	***NE***	***310***	***310***	***NE***	***NE***	***NE***	***NE***	***NE***
OA-1 DUP[d]	11/14/13	--	110	<1.4	3.7	<0.78	2.5	0.84	<3.2	<24	--	21	79	<0.090	<0.00090	<0.45
OA-2	11/14/13	--	90	**0.88**	2.9	0.64	2.4	0.85	<0.59	<4.3	--	21	79	0.042	0.00022	<0.082
SSVP-1	11/15/13	0.7	1,700	26	140	27	91	37	<4.2	<24	<2.5	20	80	0.39	<0.00023	<0.12
SSVP-2	11/15/13	0.7	300	7.3	<4.5	<5.1	<5.1	<5.1	5.2	<25	<2.5	18	80	1.9	<0.00024	<0.12
SSVP-3	11/15/13	0.7	2,300	22	10	17	32	<5.2	<4.3	<25	12	19	80	0.34	<0.00024	0.22

Abbreviations/Notes:

Total petroleum hydrocarbons as gasoline (TPHg) by EPA Method TO-15 or EPA Method TO-15 SIM

Benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tertiary butyl ether (MTBE) by EPA Method TO-15 or EPA Method TO-15 SIM

Naphthalene by EPA Method TO-15 or EPA Method TO-15 SIM or EPA Method TO-17 (VI Tubes)

Oxygen, nitrogen (N_2), carbon dioxide (CO_2), methane, and helium (He) by ASTM D-1946.

fbg = Feet below grade.

Micrograms per cubic meter (µg/m^3).

Percent Volume (%).

<X = Not detected above stated laboratory method detection limit x.

-- = not analyzed or not applicable.

a = Environmental Screening Levels (ESLs) for shallow soil gas from Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board, San Francisco Bay Region Interim Final November 2007, revised May 2008, revised May 2013, Table E-3.

b = Low-Threat Underground Storage Tank Case Closure Policy - Soil Gas Criteria No Bioattenuation Zone - prepared by the California State Water Resources Control Board, August 17, 2012.

c = Indoor air sample from the basement

d = Sample OA-1 DUP was received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Bold = Concentration exceeds applicable ESL.

Table 4

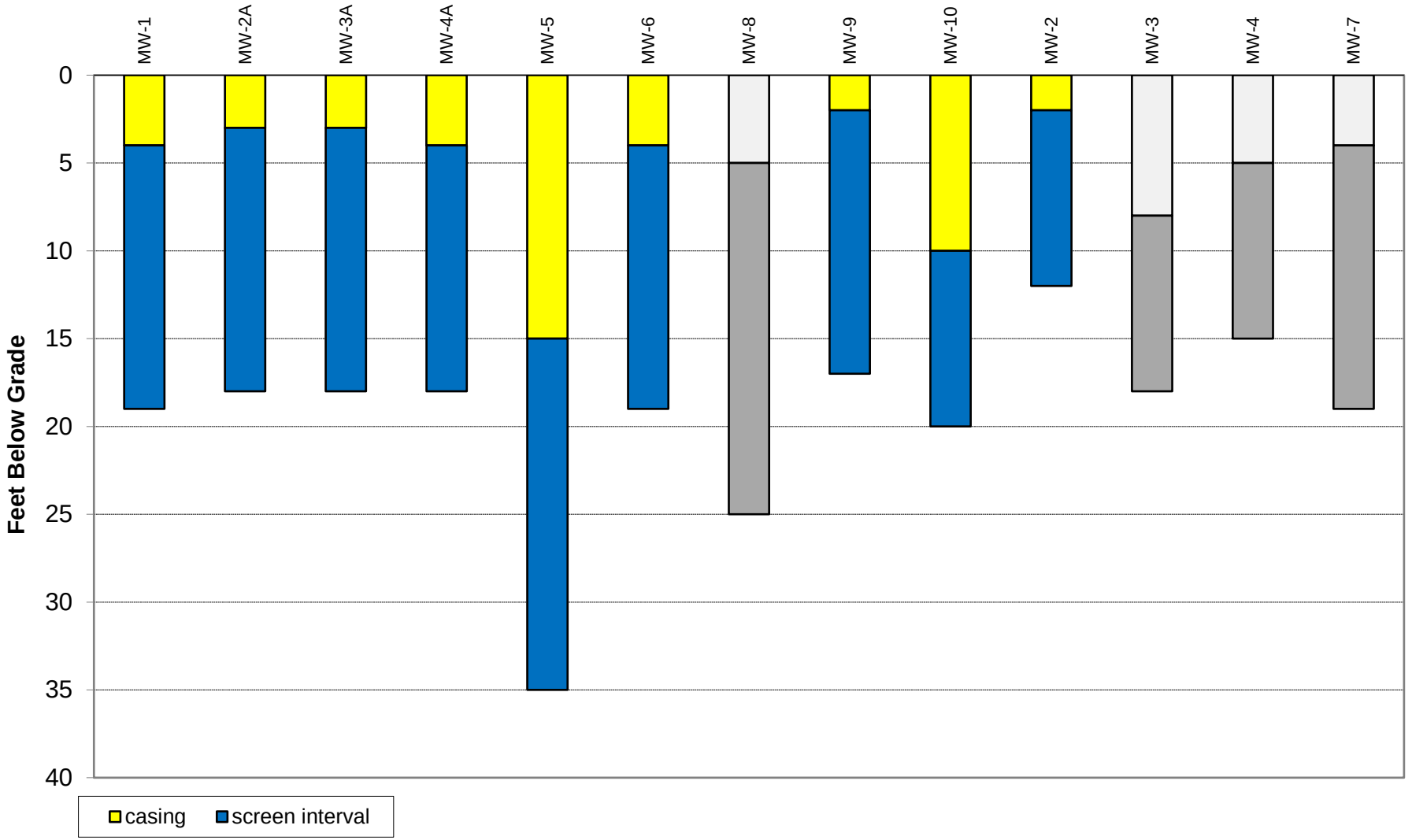
Well Construction Details
Former Chevron Service Station 90121
3026 Lakeshore Avenue
Oakland, California

Well ID	Date installed	Status	Top of Casing (ft-msl)	Casing Diameter *(inches)*	Total Depth *(fbg)*	Top of Screen Interval *(fbg)*	Bottom of Screen Interval *(fbg)*	Length of Screen *(feet)*
MW-1	06/19/92	Active	12.42	4	22	4	19	15.0
MW-2A	04/01/99	Active	11.92	2	18	3	18	15.0
MW-3A	04/01/99	Active	14.04	2	18	3	18	15.0
MW-4A	04/01/99	Active	13.11	2	18	4	18	14.0
MW-5	06/12/92	Active	19.73	2	35	15	35	20.0
MW-6	06/12/92	Active	9.99	2	20	4	19	15.0
MW-8	06/12/92	Active	14.46	2	30	5	25	20.0
MW-9	04/01/99	Active	10.73	2	18	2	17	15.0
MW-10	10/24/16	Active	10.37	2	20	10	20	10.0
MW-2	08/07/91	Destroyed	6.27	0.75	12	2	12	10.0
MW-3	08/13/91	Destroyed	8.71	0.75	18	8	18	10.0
MW-4	08/13/91	Destroyed	7.37	0.75	15	5	15	10.0
MW-7	06/12/92	Destroyed	5.26	2	19	4	19	15.0

Note:
ft-msl = feet above mean sea level
fbg= feet below grade

Table 4a

Well Construction Details
Former Chevron Service Station 90121
30296 Lakeshore Avenue
Oakland, California



Attachment A
Regulatory Letters

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBECCA GEBHART, Interim Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
LOCAL OVERSIGHT PROGRAM (LOP)
For Hazardous Materials Releases
1131 HARBOR BAY PARKWAY, SUITE 250
ALAMEDA, CA 94502
(510) 567-6700
FAX (510) 337-9335

June 7, 2017

Ms. Carryl MacLeod
Chevron Environmental Management Company
6001 Bollinger Canyon Road
San Ramon, CA 94583
(Sent via electronic mail to: CMacleod@chevron.com)

Subject: Eco-Toxicity and Groundwater Monitoring Request; Fuel Leak Case No. RO0000284 and Geotracker Global ID T0600100328, Chevron #9-0121; 3026 Lakeshore Avenue, Oakland, CA 94610

Dear Ms. MacLeod:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file including the *Second Semi-Annual 2016 Groundwater Monitoring and Sampling Report*, dated November 17, 2016, the *Site Investigation Report*, dated December 7, 2016, and the *First Semi-Annual 2017 Groundwater Monitoring and Sampling Report*, dated March 15, 2017. The reports were submitted on your behalf by GHD. Thank you for their submittal.

Based on ACDEH staff review of the case file, we request that you address the following technical comments and send us the reports described below.

TECHNICAL COMMENTS

1. **Eco-Toxicity** – Dependent on the results of additional groundwater monitoring events, it appears the groundwater contaminant plume at, and downgradient, of the subject site may be defined to Low Threat Closure Policy (LTCP) groundwater Water Quality Objectives (WQOs). This observation includes Total Petroleum Hydrocarbons as diesel (TPHd) which has been analyzed utilizing Silica Gel Cleanup with Capric Acid. Due to the presence of multiple storm drains which are likely to intercept groundwater, and which are understood to discharge to Lake Merritt, ACDEH is not certain that the concentrations of the resulting TPHd degradation products are below appropriate Fresh Water or Salt Water Ecotoxicity WQOs for the Lake. Therefore, ACDEH requests the identification of TPHd degradation products present in groundwater in the site vicinity, their respective Ecotoxicity WQOs, and an analysis of the site groundwater contaminant plume with respect to the WQOs.
2. **Groundwater Monitoring** – Upon review of the referenced site investigation report, ACDEH is in agreement that quarterly groundwater monitoring of well MW-10 is appropriate. ACDEH notes that contaminant concentrations in well MW-6 appear to have been recently increasing, and that some concentrations may not meet fresh or salt water Ecotoxicity values as defined by Environmental Screening Levels (ESLs) promulgated by the San Francisco Bay Regional Water Quality Control Board. This is of potential concern due to the presence of a storm drain, installed at an unspecified depth, up gradient of the well. Please submit quarterly groundwater monitoring and sampling reports by the dates identified below.
3. **Future Cross - Sections and Tables** – In order to help illuminate site and vicinity conditions, such as the depth of utilities relative to first water in the site vicinity, ACDEH requests, at an appropriate time, the generation of a minimum of two cross-sections across the site, both parallel and approximately perpendicular to the predominate groundwater flow direction that illustrate residual contamination and source areas. Also at an appropriate time, please additionally submit tables documenting remaining

residual soil contamination and contamination which is documented to have been removed (strikeout but legible, grayed out, or other).

SUBMITTAL ACKNOWLEDGEMENT STATEMENT

Please note that ACDEH has updated Attachment 1 with regard to report submittals to ACDEH. ACDEH will now be requiring a Submittal Acknowledgement Statement, replacing the Perjury Statement, as a cover letter signed by the Responsible Party (RP). The language for the Submittal Acknowledgement Statement is as follows:

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

Please make this change to your submittals to ACDEH.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **June 30, 2017 –** First Quarter 2017 Groundwater Monitoring Report
  File to be named: RO284_GWM_R_yyyy-mm-dd

- **August 25, 2017 –** TPHd Ecotoxicity Report
  File to be named: RO284_SWI_R_yyyy-mm-dd

- **September 29, 2017 –** Second Quarter 2017 Groundwater Monitoring Report
  File to be named: RO284_GWM_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Mark E. Detterman, P.G., C.E.G.
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: Kiersten Hoey, GHD, 5900 Hollis Street, Suite A, Emeryville, CA 94608; (Sent via electronic mail to: Kiersten.hoey@ghd.com)

Dilan Roe, ACDEH, (Sent via electronic mail to: dilan.roe@acgov.org)
Paresh Khatri, ACDEH; (Sent via electronic mail to: paresh.khatri@acgov.org)
Mark Detterman, ACDEH, (Sent via electronic mail to: mark.detterman@acgov.org)
Electronic File; GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Alameda County Department of Environmental Health's (ACDEH) Environmental Cleanup Oversight Programs, Local Oversight Program (LOP) and Site Cleanup Program (SCP) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program File Transfer Protocol (FTP) site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to SCP sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/) for more information on these requirements.

ACKNOWLEDGEMENT STATEMENT

All work plans, technical reports, or technical documents submitted to ACDEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6731, 6735, and 7835) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately licensed or certified professional. For your submittal to be considered a valid technical report, you are to present site-specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this case meet this requirement. Additional information is available on the Board of Professional Engineers, Land Surveyors, and Geologists website at: http://www.bpelsg.ca.gov/laws/index.shtml.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	**REVISION DATE:** December 1, 2016
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SCP) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
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- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org.
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Open File Explorer using the Windows  key + E keyboard shortcut.
      i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) On the address bar, type in ftp://alcoftp1.acgov.org.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive)
   d) Click Log On.
   e) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   f) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBECCA GEBHART, Interim Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
LOCAL OVERSIGHT PROGRAM (LOP)
For Hazardous Materials Releases
1131 HARBOR BAY PARKWAY, SUITE 250
ALAMEDA, CA 94502
(510) 567-6700
FAX (510) 337-9335

July 18, 2017

Ms. Carryl MacLeod
Chevron Environmental Management Company
6001 Bollinger Canyon Road
San Ramon, CA 94583
(Sent via electronic mail to: CMacleod@chevron.com)

Subject: Feasibility Study / Corrective Action Plan; Fuel Leak Case No. RO0000284 and Geotracker Global ID T0600100328, Chevron #9-0121; 3026 Lakeshore Avenue, Oakland, CA 94610

Dear Ms. MacLeod:

Subsequent to our recent directive letter (June 7, 2017), Alameda County Department of Environmental Health (ACDEH) staff have reviewed the status of the site within the context of the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy Low Threat Closure Policy (LTCP), specifically applied to the condition of the former Chevron property as it currently exists; as a parking lot without the presence of a building with an indoor air space, and to the downgradient properties.

ACDEH has evaluated the data and recommendations presented in case files to determine if the site is eligible for closure as a low risk site under the LTCP. In the site investigation report GHD, Inc, recommended quarterly groundwater monitoring for one year. Based on ACDEH staff review, we have determined that the site fails to meet the LTCP General Criteria b (Consists of Petroleum Only), f (Secondary Source Removal), the Media-Specific Criteria for Groundwater (discussed in the previous directive letter), and the Media-Specific Criteria for Vapor Intrusion to Indoor Air. (See Geotracker).

Based on ACDEH staff review of the case file, in addition to the eco-toxicity report, we request that you address the following technical comments and send us the reports described below.

TECHNICAL COMMENTS

1. **LTCP General Criteria b (Unauthorized Release Consists Only of Petroleum)** – For purposes of this policy, petroleum is defined as crude oil, or any fraction thereof, which is liquid at standard conditions and temperature and pressure, which means 60 degrees Fahrenheit and 14.7 pounds per square inch absolute including the following substances: motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents and used oils, including any additives and blending agents such as oxygenates contained in the formulation of the substances.

   Appendix B of the *Data Gap Investigation Work Plan and Focused Site Conceptual Model*, dated February 6, 2015, reports that two 500 – 1,000 gallon underground storage tanks (USTs) were abandoned in-place beneath the sidewalk during a station remodel in 1984. The location of the USTs have not been incorporated into site figures. Please locate the USTs on all future site figures.

   Appendix B also indicates that this information was reported in the Pacific Environmental Group (PEG) report dated October 4, 1993, and entitled *Remedial Feasibility Study*. Review of the case file indicates that this report has not been previously submitted. Please submit the report electronically by the date identified below to the ACDEH ftp site and to Geotracker.

   Due to their size the USTs would appear to be potentially first generation USTs. Due to the undocumented contents of these USTs it is appropriate to characterize residual contamination for all

constituents, including those for waste oil. ACDEH has not located either soil or groundwater analytical results for chlorinated volatile organic solvents (CVOCs) as a waste oil UST can be expected at an older facility. If site-wide groundwater analytical monitoring for CVOCs has been conducted, please include the analytical data as a table in all future groundwater monitoring reports. If CVOC analysis has not been conducted, please include analysis for CVOCs (full scan) in the next groundwater sampling event at the site. Please include the tabulated results in all future groundwater monitoring reports. The need for additional CVOC sampling can be assessed thereafter.

Please present a strategy in the Data Gap Work Plan (described in Technical Comment 5 below) to address the data gaps identified above. Please identify any additional data gaps, such as the need for analysis of wear metals that are typically associated with waste oil contamination. Alternatively, please provide justification of why the site satisfies this general criterion in the focused SCM described in Technical Comment 5 below.

2. **General Criteria f – Secondary Source Has Been Removed to the Extent Practicable** – "Secondary source" is defined as petroleum-impacted soil or groundwater located at or immediately beneath the point of release from the primary source. Unless site attributes prevent secondary source removal (e.g. physical or infrastructural constraints exist whose removal or relocation would be technically or economically infeasible), petroleum-release sites are required to undergo secondary source removal to the extent practicable as described in the policy. "To the extent practicable" means implementing a cost-effective corrective action which removes or destroys-in-place the most readily recoverable fraction of source-area mass. It is expected that most secondary mass removal efforts will be completed in one year or less. Following removal or destruction of the secondary source, additional removal or active remedial actions shall not be required by regulatory agencies unless (1) necessary to abate a demonstrated threat to human health or (2) the groundwater plume does not meet the definition of low threat as described in this policy.

   The presence of secondary source in the vicinity of the two USTs abandoned in-place beneath the sidewalk is not known to have been assessed previously. Additionally, the identification of the location of all previous generations of USTs have not been depicted on site figures. Please include the location of all former UST generations on future site figures. Please determine the need to assess the removal of secondary source associated with each UST generation.

   Please present a strategy in the Data Gap Work Plan (described in Technical Comment 5 below) to address the items discussed above. Alternatively, please provide justification of why the site satisfies this general criterion in the focused SCM described in Technical Comment 5 below.

3. **LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air** – The LTCP describes conditions, including bioattenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to human occupants of existing or future site buildings, and adjacent parcels. Appendices 1 through 4 of the LTCP criteria illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario.

   Our review of the case files indicates that the site data collection and analysis fail to support the requisite characteristics of one of the four scenarios. Specifically, review of existing indoor air and crawl space data (collected at the adjacent site due to the shallowness of groundwater) indicates potential vapor intrusion due to naphthalene vapors. Naphthalene vapor concentrations, detected by TO-17 methodology, in all indoor air vapor samples were above, up to nearly twice as high, as outdoor air concentrations. ACDEH notes that the detection limit for naphthalene vapor analysis by TO-15 were higher than indoor air Environmental Screening Levels (ESLs), promulgated by the San Francisco Bay Regional Water Quality Control Board (RWQCB), or was not conducted for crawl space vapor samples.

   Review of existing site analytical soil data indicates substantial residual soil contamination is located in proximity to the downgradient property line with the adjacent site owned by the Diocese of Oakland. Onsite analytical concentrations up to 1,300 milligrams per kilogram (mg/kg) Total Petroleum

Hydrocarbons as gasoline (TPHg) and 920 mg/kg TPH as diesel (TPHd; using Silica Gel Cleanup or SGC analysis) were documented at soil bore B-3 in the 0 to 5 foot depth interval on site. At offsite soil bore B-4, concentrations up to 330 mg/kg TPHd (with SGC analysis) were documented at 3 feet below grade surface (bgs), and 190 mg/kg at 6 feet bgs. At present no offsite soil bores have been installed offsite in proximity to the offsite buildings and basement.

Please present a strategy in the Data Gap Investigation Work Plan described in Technical Comment 5 below to collect additional offsite soil analytical data to determine if an offsite bioattenuation zone is present beneath the adjacent site to fit Scenarios 1 to 3 of the LTCP, or to collect additional soil gas (indoor air and crawl space) data as a proxy for Scenario 4. Consistent with Department of Toxic Substances Control's (DTSC) guidance to assess seasonality of vapor concentrations, please present a strategy in the Data Gap Investigation Work Plan requested in Technical Comment 5 below, to assess seasonal vapor variations.

Alternatively, please provide justification of why the site satisfies the Media-Specific Criteria for Vapor Intrusion to Indoor Air in a SCM that assures that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to occupants of adjacent buildings.

4. **Feasibility Study / Corrective Action Plan (FS/CAP) –** As noted above based on the apparent naphthalene vapor intrusion documented at the adjacent site(s), sufficient residual TPH concentrations are documented in soil in the 0 to 5 foot depth interval, and potentially the 5 to 10 foot depth interval, beneath the subject and the adjacent site, to warrant Corrective Actions. The residual soil and groundwater contamination appears to be additionally contaminating groundwater infiltrating into the basement sump at the adjacent building. The relatively consistent presence of concentrations of TPHg and benzene, toluene, ethylbenzene, and total xylenes, and methyl tert butyl either (MTBE) in sump grab groundwater over a period of years remains a concern.

   It is also the understanding of ACDEH that sump infiltrated groundwater is discharged to the curb on Lakeshore, and is thus is in potential violation of non-point source discharges.

   Therefore at this time, an FS/CAP prepared in accordance with Title 23, California Code of Regulations, Section 2725, appears warranted to mitigate contaminated sump groundwater infiltration and the indoor air vapor intrusion. The FS/CAP must include a concise background of soil and groundwater investigations and remedial actions performed in connection with this case and an assessment of the residual impacts of the chemicals of concern (COCs) for the site and the surrounding area where the unauthorized release has migrated or may migrate. The FS/CAP should also include, but is not limited to, a detailed description of site lithology, including soil permeability, and most importantly, contamination cleanup levels and cleanup goals, in accordance with LTCP goals, appropriate ESL guidance, or the RWQCB Basin Plan, for all COCs and for the appropriate groundwater designation. Please specify appropriate cleanup levels and cleanup goals in accordance with the LTCP, ESLs, or 23 CCR Section 2725, 2726, and 2727 in the FS/CAP.

   As a part of the FS/CAP, please include a Data Gap Investigation Work Plan (see following Technical Comment), for the collection of all necessary additional data which may be required for the FS/CAP. The FS/CAP must evaluate at least three viable alternatives for remedying or mitigating the actual or potential adverse effects of the unauthorized release(s) besides the 'no action' and 'monitored natural attenuation' remedial alternatives. Each alternative shall be evaluated not only for cost-effectiveness but also its timeframe to reach cleanup levels and cleanup goals, and ultimately the Responsible Party must propose the most cost-effective corrective action.

5. **Data Gap Investigation Work Plan and Focused Site Conceptual Model –** As a part of the FS/CAP, please prepare a Data Gap Investigation Work Plan to address the technical comments listed above. Please support the scope of work in the Data Gap Investigation Work Plan with a focused SCM and Data Quality Objectives (DQOs) that relate the data collection to each LTCP criteria. For example

please clarify which scenario within each Media-Specific Criteria a sampling strategy is intended to apply to.

In order to expedite review, ACDEH requests the focused SCM be presented in a tabular format that highlights the major SCM elements and associated data gaps, which need to be addressed to progress the site to case closure under the LTCP. Please see Attachment A "Site Conceptual Model Requisite Elements". Please sequence activities in the proposed revised data gap investigation scope of work to enable efficient data collection in the fewest mobilizations possible.

6. **Data Support Request: Cross-Sections, Soil Contours, and Tables** - As partly requested previously, in order to help illuminate site and vicinity conditions, such as the depth of utilities relative to first water in the site vicinity, ACDEH requests inclusion of a minimum of two cross-sections across the site, both parallel and approximately perpendicular to the predominate groundwater flow direction that illustrate residual contamination and source areas. In order to expedite review of the site, please additionally submit tables documenting remaining residual soil contamination and contamination which is documented to have been removed (strikeout but legible, grayed out, or other). In order to document the known extent of soil contamination at the site and vicinity, please include figures illustrating the extent of soil contamination. In order to document the construction and installation elevation of the groundwater monitoring wells, please include a table in future groundwater monitoring reports of the construction details for each well.
7. **Groundwater Monitoring Interval** – Based on a review of site data ACDEH requests quarterly groundwater monitoring of wells MW-6 and MW-10. ACDEH notes that contaminant concentrations in well MW-6 appear to have been recently increasing, and that some concentrations may not meet fresh or salt water Ecotoxicity values as defined by ESLs. This is of concern due to the presence of very shallow groundwater, the presence of a large storm drain corridor, installed at an unspecified depth, and the closeness of Lake Merritt. Please submit quarterly groundwater monitoring and sampling reports by the dates identified below.
8. **Groundwater Monitoring Analytical** – Due to the presence of gasoline and diesel contamination at the site, and due to standard LCTP data evaluations, please include analysis for naphthalene in all future groundwater monitoring reports, until otherwise requested.
9. **Groundwater Well TOC Elevation Discrepancies** – Review of the *First Semi-Annual 2017 Groundwater Monitoring and Sampling Report*, dated March 15, 2017, documents either an error in data input at all existing wells, or an undocumented resurvey of the well casings. In Table 1, the Top of Casing in all wells is stated to have increased approximately five to six feet. Please review the report and correct the TOC elevation and resubmit the report, or please document the reason for the change in casing elevations.

SUBMITTAL ACKNOWLEDGEMENT STATEMENT

Please note that ACDEH has updated Attachment 1 with regard to report submittals to ACDEH. ACDEH will now be requiring a Submittal Acknowledgement Statement, replacing the Perjury Statement, as a cover letter signed by the Responsible Party (RP). The language for the Submittal Acknowledgement Statement is as follows:

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

Please make this change to your submittals to ACDEH.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **August 18, 2017** – Submittal of 1993 Report
  File to be named: RO284_SWI_R_yyyy-mm-dd

- **August 25, 2017 –** TPHd Ecotoxicity Report
  File to be named: RO284_SWI_R_yyyy-mm-dd

- **September 8, 2017** – Second Quarter 2017 Groundwater Monitoring Report
  File to be named: RO284_GWM_R_yyyy-mm-dd

- **September 22, 2017 –** Feasibility Study / Corrective Action Plan / Data Gap Work Plan
  File to be named: RO284_FEASSTUD_WP_R_yyyy-mm-dd

- **December 1, 2017** – Third Quarter 2017 Groundwater Monitoring Report
  File to be named: RO284_GWM_R_yyyy-mm-dd

- **March 2, 2018 –** Fourth Quarter 2017 Groundwater Monitoring Report
  File to be named: RO284_GWM_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Mark E. Detterman, P.G., C.E.G.
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: Kiersten Hoey, GHD, 5900 Hollis Street, Suite A, Emeryville, CA 94608; (Sent via electronic mail to: Kiersten.hoey@ghd.com)

Dilan Roe, ACDEH, (Sent via electronic mail to: dilan.roe@acgov.org)
Paresh Khatri, ACDEH; (Sent via electronic mail to: paresh.khatri@acgov.org)
Mark Detterman, ACDEH, (Sent via electronic mail to: mark.detterman@acgov.org)
Electronic File; GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Alameda County Department of Environmental Health's (ACDEH) Environmental Cleanup Oversight Programs, Local Oversight Program (LOP) and Site Cleanup Program (SCP) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program File Transfer Protocol (FTP) site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to SCP sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/) for more information on these requirements.

ACKNOWLEDGEMENT STATEMENT

All work plans, technical reports, or technical documents submitted to ACDEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6731, 6735, and 7835) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately licensed or certified professional. For your submittal to be considered a valid technical report, you are to present site-specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this case meet this requirement. Additional information is available on the Board of Professional Engineers, Land Surveyors, and Geologists website at: http://www.bpelsg.ca.gov/laws/index.shtml.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	**REVISION DATE:** December 1, 2016
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SCP) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

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Submission Instructions

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   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
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   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
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   f) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

Attachment B
Summary of Environmental Investigations and Remediation

Attachment B Summary of Environmental Investigation and Remediation
Former Chevron Service Station 90121

1967 Source Leak

In July 1967, a 2,000-gallon inventory loss was discovered. The steel underground storage tanks (USTs) were removed and replaced with new USTs double wrapped in asphalt. A 32-inch long gash was observed in one of the removed tanks. This information was reported in Pacific Environmental Group, Inc.'s (PEG) October 4, 1993 *Remedial Feasibility Study*.

Prior to 1981 Monitoring Well Installation

Six monitoring wells were installed between the late 1970s and 1981 and used as recovery wells to recover light non-aqueous phase liquids (LNAPL). Installation dates and well construction logs were unavailable. This information was reported in PEG's October 4, 1993 *Remedial Feasibility Study*.

1980 Tank Replacement

A tank tightness test indicated that one of the USTs may have had a leak and was subsequently replaced with a fiberglass UST. An undocumented quantity of soil was removed from the site during UST replacement. A plastic impermeable barrier extending to approximately 14 to 16 feet below grade (fbg) was installed along the southwestern property line. This information was reported in PEG's October 4, 1993 *Remedial Feasibility Study*.

1981 Monitoring Well Installation

Four additional 8-inch diameter monitoring wells were installed in July 1981. In August 1981, a pump test was performed to determine groundwater draw down and production rates. Additional information is available in Groundwater Technology, Inc.'s (GTI) *Considerations on Retrieval of Product from Groundwater.* The report is not dated.

1984 Station Rebuild and UST Abandonment

In 1984, the station was torn down and completely rebuilt. During renovation two USTs, approximately 500 to 1,000 gallons, were discovered beneath the sidewalk. The USTs were abandoned in place by filling them with grout. Approximately 740 cubic yards of soil related to the site redevelopment were over-excavated and disposed of offsite. This information was reported in PEG's October 4, 1993 *Remedial Feasibility Study*.

1984 Basement Inspections

The building tenants at 3014 Lakeshore Avenue complained of petroleum odors in the building. No odor or sheen was noted in the basement. A letter was sent to the property owner by Chevron stating that Chevron had been monitoring the basement during the two previous years (1982 and 1983) and did not find any evidence of hydrocarbons. This information was reported in PEG's October 4, 1993 *Remedial Feasibility Study*.

1990 UST Repair

A hole created by repetitive tank volume gauging with a stick was discovered in the unleaded gasoline UST. The hole was repaired and the UST was put back in service. This information was reported in PEG's October 4, 1993 *Remedial Feasibility Study*.

1991 Monitoring Well Destruction

In March and April 1991, eight wells were destroyed. Additional information is available in GTI's April 25, 1991 *Destruction of Five Groundwater Monitoring Wells and Three Groundwater Extraction Wells*.

1991 Monitoring Well Installation

On August 7 and 13, 1991, monitoring wells MW-1 through MW-4 were installed. Additional information is available in GTI's October 18, 1991 *Well Installation Report*.

1992 Monitoring Well Installation and Destruction

In June 1992, offsite monitoring wells MW-5 through MW-8 were installed and onsite well MW-1 was destroyed. Additional information is available in GTI's July 31, 1992 *Environmental Assessment Report*.

1993 Feasibility Study

In October 1993, PEG completed a remedial feasibility study and recommended natural attenuation as the cleanup method. Additional information is available in PEG's October 4, 1993 *Remedial Feasibility Study*.

1996 Product Piping and Dispenser Replacement

In September 1996, the product piping and dispensers were replaced. Soil samples were collected from beneath the dispensers and product piping at depths ranging from 2 to 3 fbg. Approximately 100 cubic yards of soil was removed and disposed of offsite. Additional information is available in Touchstone Development's November 1, 1996 *Product Piping Removal and Soil Sampling Report*.

1996 Well Destruction

In October 1996, one well was destroyed. Additional information is available in RRM Engineering Contracting Firm's October 2, 1996 *Well 1S/3W25R80 Abandonment Document Letter*.

1999 Well Installation

In April 1999, onsite monitoring well MW-9 was installed, and ¾-inch diameter wells MW-2 through MW-4 were destroyed and replaced with 2-inch diameter wells MW-2A through MW-4A. Additional information is available in Gettler-Ryan's May 26, 1999 *Monitoring Well Destruction and Installation Report*.

2001 Site Conceptual Model

In October 2001, Delta Environmental Consultants, Inc. (Delta) completed a site conceptual model and recommended further offsite, downgradient delineation of dissolved hydrocarbons by installing additional monitoring wells to the southwest. Additional information is available in Delta's October 15, 2001 *Site Conceptual Model*.

2006 Offsite Borings

In August 2006, Cambria Environmental Technology, Inc. (Cambria) supervised the advancement of offsite borings SB-8 and SB-9 as part of the ongoing site assessment. Boring SB-10 was not advanced due to refusal and boring SB-11 was not advanced due to its location on the opposite side of a newly installed culvert. Additional information is available in Cambria's October 20, 2006 *Additional Subsurface Investigation Report*.

2007 Offsite Sump Sampling

In May 2007, Conestoga-Rovers & Associates (CRA) collected a single grab-groundwater sample from the sump located downgradient of the site in the basement of the Diocese of Oakland office building . CRA agreed with ACEH to add sump monitoring to the semi-annual groundwater monitoring and sampling schedule once an access agreement was in place to allow regularly scheduled sump sampling. Additional information is available in CRA's July 12, 2007 *Offsite Sampling Report*.

2010 Station Demolition and Fueling Facilities Removal

On August 10, 2010, CRA observed Musco Excavators, Inc. remove the USTs and associated fuel piping. CRA collected soil samples EX-1 through EX-6 beneath the former USTs at 9.5 fbg, P-1 through P-14 beneath the former product piping at 4 and 6 fbg, and soil stockpile samples SS-1 through SS-3. Groundwater sample GW-1 was collected from the UST excavation. Additional information is available in CRA's September 9, 2010 *Underground Storage Tank Removal and Soil Sampling Report*.

2013 Subsurface Investigation

On November 11 through 13, 2013, CRA observed Vapor Tech Services (VTS) advance soil borings B-1 through B-7 onsite and offsite to depths between 11 to 27.5 fbg to assess downgradient delineation of petroleum hydrocarbons. CRA also observed the installation of sub-slab vapor probes SSVP-1 through SSVP-3 in the adjacent property located at 3014 Lakeshore Avenue to assess vapor intrusion risk. CRA sampled indoor, outdoor, and crawl space air, and sub-slab soil vapor at adjacent properties downgradient to the site. Additional information is available in CRA's February 14, 2014 *Subsurface Investigation Report*.

2014 Soil Vapor Assessment

On October 2014, CRA sampled sub-slab probes SSVP-1, SSVP-2, and SSVP-3, collected five indoor air samples (IA-1 in the front office, IA-2 in the office cubicle area, IA-3 in the back office, IA-4 in the office annex's main room, and IA-5 in the basement were the sump is located), one crawl space sample (CS-1 in the office annex's crawl space), and one outdoor air sample from the upwind location (OA-1) between the main building and annex office building at 3014 Lakeshore Avenue. CRA also collected one indoor sample (A-6 located within the front of the building within the first floor office space), one crawl space sample (CS-2), and one outdoor upwind air sample (OA-2) in the northeast corner at 3008 Lakeshore Avenue. Additional information is available in CRA's December 12, 2014 *Crawl Space, Indoor and Outdoor Ambient Air, and Sub-Slab Soil Gas Investigation Report*.

2016 Well Installation and Soil Boring Assessment

In October 2016, to further delineate the downgradient extent of the dissolved hydrocarbon plume to the west-southwest, well MW-10 was installed offsite. The two wells proposed crossgradient to the northwest in the sidewalk along Lake Merritt Park were not installed due to a 10- to12-foot diameter storm drain corridor encountered beneath the sidewalk (B-8). To determine if the storm drain along the southern edge of the site is a preferential pathway, soil borings B-9 and B-10 were advanced adjacent to the storm drain and grab-groundwater samples were collected for analysis. Additionally, to further delineate hydrocarbons in soil beneath the former product lines and dispensers, borings B-11, B-12, and B-13 were advanced. Additional information is available in GHD's December 7, 2016 *Site Investigation Report*.

Attachment C
GHD's Standard Operating Procedure for Soil Vapor Probe Installation and Sampling

Attachment C STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

This document presents GHD Services, Inc.'s (GHD's) standard field procedures for soil vapor probe installation and sampling. These procedures are designed to comply with Federal, State, and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

Shallow Soil Vapor Probe Installation

The shallow soil vapor probe method for soil vapor sampling utilizes a hand auger or drill rig to advance a boring for the installation of a soil vapor sampling probe. Soil vapor probes facilitate the collection of in-situ vapor samples. Once the boring is advanced to the final depth, #2/12 filter pack is poured through a tremie pipe to fill the bottom 6 inches of the boring. A permeable, stainless-steel probe tip is connected to ¼-inch outside diameter Teflon tubing via a push-to-connect fitting. The probe tip is then placed approximately 6 inches from the bottom of the boring and covered by 6 inches of #2/16 filter sand. A 12 inch layer of dry granular bentonite is placed on top of the filter pack. Pre-hydrated granular bentonite is then poured to fill the borehole. The tube is labeled, capped, and placed within a traditional well box finished flush to grade. Soil vapor samples will be collected no sooner than 48 hours after installation of the soil vapor probe to allow adequate time for representative soil vapors to accumulate. Soil vapor sample collection will not be scheduled until after a minimum of three consecutive precipitation-free days and irrigation onsite has ceased.

Purging

At least three purge volumes of vapor are removed from the soil vapor probe prior to sampling. The purge volume is defined as the amount of air within the probe and tubing. Purging is performed using the vacuum of a dedicated Summa canister, a flow regulator set to the same flow rate used for sampling, and vacuum gauges. Immediately after purging, soil vapor samples will be collected using the appropriate size Summa canister with attached flow regulator and sediment filter.

Sampling Soil Vapor Probes

Samples collected using a SUMMA™ canister will have the SUMMA™ canister connected to the sampling tube of each vapor probe. Prior to collecting soil vapor samples, the initial vacuum of the canisters is measured and recorded on the chain-of-custody. The vacuum of the SUMMA™ canister is used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 inches of mercury is observed on the vacuum gauge and recorded on the chain-of-custody. The flow controllers should be set to 100-200 milliliters per minute. Field duplicates should be collected for every day of sampling and/or for every 10 samples collected.

In accordance with the Department of Toxic Substances Control (DTSC) *Advisory – Active Soil Gas Investigation* guidaznce document, dated April 2012, leak testing is necessary during sampling. Helium is recommended, although shaving cream is acceptable. Helium is pumped into a shroud that contains the entire sampling apparatus and the soil vapor probe well vault. A helium meter is used to quantify the percentage helium in the shroud during sampling.

Samples collected for TO-17 analysis will be collected using a TO-17 Sorbent Tubes connected to the sampling tube of each vapor probe. A 60 cc syringe will be used to draw the sample into the sorbent tubes. Field duplicates should be collected for each day of sampling and/or for every 10 samples collected.

A leak test will be performed prior to connecting the sampling equipment to the vapor tubing. The test is performed by inserting the sorbent tube into the tube holder on the syringe assembly, turning the valve into the 'off' position, pulling the plunger of the syringe. If the plunger does not move or immediately returns to the starting position, the system is leak tight and is ready for sampling.

Vapor Sample Storage, Handling, and Transport

Samples are stored and transported under chain-of-custody to a state-certified analytic laboratory. Samples should never be cooled due to the possibility of condensation within the canister.

Soil Vapor Probe Destruction

The soil vapor probes will be preserved until they are no longer needed for risk evaluation purposes. At that time, they will be destroyed by extracting the tubing, hand augering to remove the sand and bentonite, and backfilling the boring with neat cement. The boring will be patched with asphalt or concrete, as appropriate.