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May 21, 2013

RECEIVED
By Alameda County Environmental Health at 11:11 am, May 23, 2013

Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **76 Service Station #1156 (Chevron Site #351645)**
4276 MacArthur Boulevard, Oakland, California

ACEH Fuel Leak Case No. RO0000409
RWQCB Case No. 01-2474
GeoTracker Global ID T0600102279

I have reviewed the attached report dated May 2013.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by AECOM, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13257(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,

Roya Kambin
Project Manager

Attachment: *Report on Vapor Intrusion Investigation*

Prepared for:
EMC
San Ramon, California

Prepared by:
AECOM
Camarillo, California
May 2013

Report on Vapor Intrusion Investigation

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

ACEH Case No. RO0000409
RWQCB Case No. 01-2474

AECOM

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Report on Vapor Intrusion Investigation

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

ACEH Case No. RO0000409
RWQCB Case No. 01-2474

This report was prepared consistent with currently and generally accepted environmental consulting principles and practices. The material and data in this report were prepared under the supervision and direction of the undersigned.

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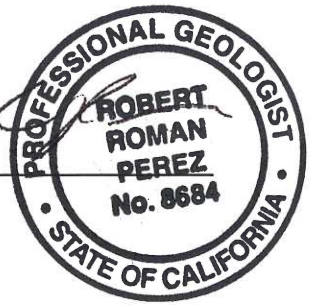

Executive Summary

On behalf of Chevron Environmental Management Company, for itself and as Attorney-in-Fact for Union Oil Company of California (hereinafter “EMC”), AECOM is pleased to submit this Report on Vapor Intrusion Investigation. The work was performed to assess the potential for vapor intrusion to indoor air at the Oakland Veterinary Hospital (OVH) (4258 MacArthur Boulevard), located adjacent to the northwest of the 76 service station site (4276 MacArthur Boulevard).

AECOM installed two soil vapor wells (SV-1 and SV-2) adjacent to the OVH building on March 14, 2013. Three soil samples were collected from these wells and submitted to BC Laboratories, Inc., for chemical analyses. Total petroleum hydrocarbons as gasoline (TPH-g) was reported in soil sample SV-1-S-N-5.0-20130314 at a concentration of 2.5 milligrams per kilogram (mg/kg). No other analytes were detected in the soil samples at or above the laboratory limits of quantitation.

On April 8, 2013, soil vapor samples were collected from the soil vapor wells located adjacent to the OVH building (SV-1 and SV-2) and from the existing soil vapor wells located at the 76 service station site. Soil vapor data were evaluated to estimate the potential risk to current and future OVH building occupants associated with the vapor intrusion pathway. The maximum detected soil vapor concentration of each of the analyzed compounds from the April 8, 2013, sampling event was compared to the California Human Health Screening Levels (CHHSLs) (California Environmental Protection Agency [CalEPA], 2010) and the San Francisco Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs) (SFRWQCB, 2013). TPH-g and benzene were detected in the soil vapor sample collected from the OVH property at concentrations above the published commercial/industrial and residential CHHSLs and/or ESLs. TPH-g, benzene, ethylbenzene, and m,p-xylenes were detected in soil vapor samples from the 76 service station site at concentrations above the published commercial/industrial and residential CHHSLs and/or ESLs. Air-phase petroleum hydrocarbon (APH) analyses were performed to provide more specific information on the type of TPH-g compounds present in the soil vapor samples, resulting in detections of constituents within the following carbon ranges – C5-C6 aliphatics, C6-C8 aliphatics, and C8-C10 aliphatics (on both the OVH and 76 service station sites), and C8-C10 aromatics (on only the 76 service station site).

Based on the above findings, AECOM recommends using the vapor intrusion model developed by Johnson and Ettinger (JE Model) and spreadsheets provided by Department of Toxic Substance Control (DTSC)/Human and Ecological Risk Division (CalEPA, 2004) to estimate the potential excess lifetime cancer risk (ELCR) and non-cancer hazard quotient (HQ) associated with constituents of potential concern (COPC) concentrations in soil vapor for a current and future on-site commercial/industrial worker and a future potential on-site residential exposure scenario.

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1.0 Introduction

On behalf of Chevron Environmental Management Company, for itself and as Attorney-in-Fact for Union Oil Company of California (hereinafter "EMC"), AECOM is pleased to submit this Report on Vapor Intrusion Investigation. AECOM has prepared this report in association with Alameda County Environmental Health (ACEH) Case No. RO0000409, for 76 Service Station No. 1156 (Chevron site 351645), located at 4276 MacArthur Boulevard, Oakland, California (see **Figure 1**).

1.1 Background and Objectives

Elevated concentrations of petroleum hydrocarbons were previously detected in soil vapor along the northwestern portion of the 76 service station site (Delta, 2009). AECOM has prepared this report in accordance with the *Work Plan for Vapor Intrusion Investigation and Risk Assessment* (AECOM, 2012), to assess the potential for vapor intrusion to indoor air at the Oakland Veterinary Hospital (OVH) site (4258 MacArthur Boulevard), located adjacent to the northwest of the 76 service station site (see **Figure 2**, Site Plan). The work plan for the tasks performed was approved by the ACEH in a letter dated October 4, 2012 (ACEH, 2012). Modifications to the work plan, as set forth in the "Technical Comments" section of the October 4, 2012, letter were incorporated into the task performed. The due date for this report was extended to May 30, 2013, in an email communication from ACEH dated December 13, 2012.

The investigation focused on soil vapor sampling beneath the paved area adjacent to the OVH building. The assessment activities described in this report include the installation and sampling of two soil vapor wells (SV-1 and SV-2) and the evaluation of potential soil vapor inhalation risks using soil vapor concentration data. At the request of ACEH (ACEH, 2012) soil vapor samples were also collected from the existing vapor well network (SVW-1 through SVW-6) located at the 76 service station site.

The scope of work was developed using EMC protocols and regulatory guidance documents, including the California Department of Toxic Substances Control (DTSC) *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (California Environmental Protection Agency [CalEPA], 2011), the DTSC and Los Angeles Regional Water Quality Control Board (RWQCB) *Advisory – Active Soil Gas Investigation* (CalEPA, 2012), and the American Petroleum Institute's *Collecting and Interpreting Soil Gas Samples from the Vadose Zone: A Practical Strategy for Assessing the Subsurface Vapor-to-Indoor Air Migration Pathway at Petroleum Hydrocarbon Sites* (2005).

A report for additional site assessment activities, including investigation of the unknown vault located on the northwestern side of the station building, was submitted under separate cover on April 23, 2013.

1.2 Site Location and Description

The site is located at the northern corner of the intersection between MacArthur Boulevard and High Street in an urbanized area of Oakland, California, at the base of the San Leandro Hills. The OVH abuts the site to the northwest.

The site area consists of mixed commercial and residential development. A drug store is located beyond the OVH to the northwest. Single-family dwellings border the site to the northeast. An apartment building and commercial businesses (cleaners, tax service, pizza place, and sandwich shop) are present across High Street to the southeast. A vacant lot is located south of the station site at the south corner of the MacArthur Boulevard and High Street intersection. A vacant lot is also located across MacArthur Boulevard to the southwest of the station site.

Based on site survey data (Morrow Surveying 2013), surface elevations at the site range from 179.42 feet above mean sea level (amsl) at MW-4B to 173.12 feet amsl at MW-9B. The elevation at the northeastern site boundary is noticeably higher than at MW-4B (see **Figure 2**). Additionally, the elevation at MW-5 is 169.67 feet amsl. MW-5 is located in the street in front of the OVH (adjacent to the northwest of the station site). To summarize, the southwest portion of the station site is at least 8 feet lower in elevation than the northeast portion; and the western corner is approximately 4 feet lower in elevation than the southern corner.

The lithology observed during this investigation was generally consistent with previous investigations. The subsurface is predominantly fine-grained material made up of lean clays and silty sands with varying percentages of sands and gravels. The soil encountered was generally dry to moist.

2.0 Vapor Well Installation

2.1 Pre-Field Activities

Prior to installing the soil vapor wells at the OVH, AECOM marked the well locations and notified Underground Service Alert more than 48 hours before commencing intrusive field activities. AECOM conducted a detailed survey of underground utilities in the area and conducted additional investigation around the previously identified "unknown vault". Those results were included in the Report of Limited Site Assessment (AECOM, 2013), previously provided under separate cover. The vapor wells were located based on the presence of subsurface utilities identified during a geophysical survey. AECOM secured the necessary well permits from Alameda County Public Works Agency (ACPWA). AECOM contracted Confluence, Inc., a State of California C-57 licensed drilling contractor, to install the soil vapor wells (SV-1 and SV-2) at the OVH. Prior to the start of field activities, AECOM notified the OVH property owner, ACPWA, ACEH, and EMC of the upcoming work.

2.2 Field Methods and Procedures

On March 14, 2013, AECOM personnel, under the direction of a State of California Professional Geologist, oversaw the installation of two soil vapor monitoring wells (SV-1 and SV-2) at the OVH. Confluence, Inc. advanced two 3-inch-diameter hand auger boreholes to 5.5 feet below ground surface (bgs) for the installation of the soil vapor monitoring wells. The locations of these wells relative to other Site features are shown on the Site Plan (**Figure 2**).

Each boring was logged by an AECOM geologist following the Unified Soil Classification System (USCS), in general accordance with American Society for Testing and Materials (ASTM) Method D2488-00 visual and manual methods, and Munsell Soil Color Charts. (It should be noted that AECOM's use of ASTM D2488-00 does not necessarily imply conformance with other related ASTM standards referenced therein.) Soils encountered in the two hand auger borings were predominantly fine-grained beneath 4 to 6 inches of concrete. SV-1 contained lean clay from 4 inches to 3.5 feet, underlain by silt with sand (USCS classification CL and ML, respectively) to the total depth of the boring. SV-2 contained silty sand from 6 inches to 3.0 feet, underlain by lean clay (USCS classification SM and CL, respectively) to the total depth of the boring. Boring logs are included in **Appendix A**.

A soil sample was collected from each boring at a depth of 5 feet using a slide-hammer sampler fitted with brass sample tubes. Soil samples were field screened for volatile organic compounds (VOCs) using a photo-ionization detector. Soil samples were preserved for laboratory analysis by sealing the sample tubes with Teflon® liners and plastic end caps and placing the samples on ice.

Each vapor well consists of one 6-inch-long, 0.375-inch-diameter, stainless steel mesh screen with a 0.14-millimeter pore size, placed in the borehole between approximately 4.3 to 4.9 feet bgs. The well screens are attached via a Swagelok® fitting to 0.25-inch Teflon® tubing. Approximately 2 feet of Teflon® tubing is coiled at the top of each well. Each borehole annulus was backfilled with approximately 1 foot of #2-12 sand filter pack around the well screens. One foot of dry granular bentonite transitional seal was placed above the filter pack, followed by hydrated bentonite, and 1 foot of cement at the top of the wells. The surface completion for each well consisted of a traffic-rated 6-inch-diameter well box and lid, installed slightly above surface grade, and sealed with a neat cement grout apron. The end of the Teflon® tubing was fitted with a gas-tight Swagelok® valve to allow for vapor sampling. Vapor well construction details are provided in **Appendix B**.

2.3 Analytical Results – Soil

AECOM submitted three soil samples to BC Laboratories, Inc (BC Labs) located in Bakersfield, California (a California state-certified analytical laboratory) for chemical analyses. Each sample was analyzed for total petroleum hydrocarbons as gasoline (TPH-g) by the United States Environmental Protection Agency (USEPA) Method 8015M, and for benzene, toluene, ethylbenzene, total xylenes (BTEX) by USEPA Method 8260B. Soil samples were also subcontracted by BC Labs to PTS Laboratories (PTS) of Santa Fe Springs, California, for physical analysis, including fraction organic carbon, total porosity, dry bulk density (ASTM Method D2937), air and water-filled porosity, and grain size distribution (ASTM Method D422).

TPH-g was reported in SV-1-S-N-5.0-20130314 at a concentration of 2.5 milligrams per kilogram (mg/kg). No other analytes were detected in the soil samples at or above the laboratory limits of quantitation. The results of these analyses are summarized in **Table 1**. A complete copy of the laboratory analytical report, including chain-of-custody documentation, is provided in **Appendix C**.

One soil sample was collected from each of the two soil borings at a depth of approximately 5 feet bgs for geotechnical analysis. These results are presented in **Table 2**. The PTS grain size analysis indicates coarser soils than were observed in the field. A copy of the complete geotechnical analytical report from PTS is included in **Appendix C**.

3.0 Soil Vapor Sampling

3.1 Vapor Well Installation

As described above in Section 2.2, two new soil vapor monitoring wells were installed at the OVH on March 14, 2013.

3.2 Soil Vapor Sampling Procedures

The following subsections provide general information regarding the procedures followed during collection of the soil vapor samples. Sampling methods followed the procedures recommended by CalEPA (2011 and 2012).

3.2.1 Sampling Equipment

All gauges and flow control manifolds were supplied by Eurofins Air Toxics of Folsom, California (Air Toxics). The gauges and manifolds were connected by chromatography-grade, stainless steel tubing and dedicated airtight, flexible, Teflon® tubing, supplied by the laboratory, that have a low capacity for adsorbing VOCs.

In order to draw the soil vapor to the surface, a vacuum was created using an evacuated Summa® canister, supplied by Air Toxics. A valve was used to isolate the purging canister from a separate tube that was connected to the vapor sample canister. **Figure 3** shows a typical equipment sample train for the soil vapor sampling activities.

Samples were collected in 1-liter Summa® canisters provided by Air Toxics. All the canisters used for the sampling were 100% certified as clean in order to support use of the soil gas sample results in human health risk assessment. Each canister was field-verified to have a vacuum of at least -25 inches of mercury (Hg) prior to sampling.

3.2.2 Leak Testing

Leakage of atmospheric air into the equipment during sampling can compromise sample integrity and dilute measured soil vapor hydrocarbon concentrations. Sampling equipment was thoroughly inspected to ensure tight fittings between all components. To minimize the potential for leakage, the soil vapor sampling rate was kept at less than 200 milliliters per minute (mL/min) using a flow controller supplied by Air Toxics. Prior to sampling, the Summa® canister valve was opened to the still closed Swagelok® valve for 10 minutes and the initial vacuum pressure recorded. Purging and sampling were not commenced until the sample train passed the leak test by maintaining constant vacuum for 10 minutes. Three samples (SVW-1, SVW-2, and EB-1) failed the leak test initially, after which the fittings were checked and re-tightened. The leak test was performed again using the same methods until the sample train passed the test.

Helium was used as the tracer gas to test for air leakage into the sampling system for the purpose of sample integrity verification, in general accordance with the CalEPA guidance document (2012). A clear plastic chamber was placed over the well head and sealed to the ground surface with a rubber mat. Helium from a cylinder was discharged into the chamber, and a helium detector was used to ensure that the air inside the chamber contained approximately 19.4 to 46.6 percent (%) helium during sampling. Laboratory analysis for helium was used to assess if leakage occurred during sampling.

Helium leakage was detected in one sample from vapor well SVW-1at 0.65%, which is below the acceptable leakage of up to 10%, therefore all of the sample results are considered valid.

3.2.3 Purging

Prior to collecting a soil vapor sample, the sample train and vapor well were purged using a purge canister to ensure that the vapor samples collected were representative of actual soil vapor concentrations. Purge volumes were calculated based on the dimension specifications of all above-ground gauges, tubing, sampling equipment, and below-ground tubing. The volumes of the well screen and sand pack were not included in the purge volume calculation since they are assumed to be in equilibrium with soil vapor in the subsurface. [The vapor wells were allowed to equilibrate for approximately 60 hours; 48 hours is the minimum equilibration time specified in the guidance documents for wells installed with auger-type drilling equipment.] The flow rate for purging was the same as that used for sampling (less than 200 mL/min). Three tubing volumes were purged before sampling, based on the guidance documents referenced above. Calculated purge volumes and durations were recorded on the vapor sampling field sheets included as **Appendix D**.

3.2.4 Sample Collection

Sample collection from each of the soil vapor wells was started immediately after purging. Sample train integrity testing was performed using helium, concurrent with sampling, as described above. To begin sampling, the valve on the Summa® canister was opened and the time and initial pressure were documented. As the canister filled, the pressure gauge on the flow controller was observed to ensure that the vacuum in the canister was decreasing over time. Each canister was allowed to fill for up to 30 minutes or, until the canister vacuum had decreased to at least -5 inches Hg.

Once the samples were collected, the Summa® canisters were closed and sealed using brass caps supplied by Air Toxics. Samples were labeled following standard chain-of-custody (COC) protocols, including noting the final canister vacuums and the serial numbers of all canisters and flow controllers. AECOM documented the sampling activities, such as sampling times and conditions, in the field sheets included in **Appendix D**. Samples were delivered directly to the analytical laboratory under COC protocols within 24 hours of sampling. AECOM delivered the vapor samples to Air Toxics, a California state certified laboratory, for chemical analyses.

3.3 Sampling Event

A sampling event of both new soil vapor wells (SV-1 and SV-2) and the existing vapor well network (SVW-1 through SVW-6) at 5 feet bgs was conducted on April 8, 2013. No significant (greater than 0.5 inch) rainfall occurred during or immediately prior to (within 24 hours) this event. An equipment blank was also collected and analyzed. A duplicate sample was planned to be collected at vapor well SV-1, the sample and duplicate were both fouled by water that was pulled into the containers from the well.

Samples were collected over a period of 6 to 40 minutes using a 1-liter Summa canister. Samples at SV-1 and SVW-4 were not collected due to water in the vapor well.

One equipment blank sample (EB-1) was collected by running laboratory-certified zero air through a manifold with a 1-foot length of Teflon® tubing connected to the sample container. Sample EB-1 was collected over a period of 20 minutes and was collected with a final canister vacuum of 0.0 inches Hg (reported upon receipt by the laboratory to be 0.3 pounds per square inch pressure).

The final container vacuum’s ranged from 0.3 pounds per square inch to 11.4 inches Hg. Sample SVW-1-V-N-5-20130408 was allowed to fill for a total of 40 minutes, and only decreased to 11.4 inches Hg. Sampling was stopped when the vacuum readings were no longer decreasing.

3.4 Analytical Results-Vapor

Air Toxics analyzed a total of six soil vapor samples (from the eight soil vapor wells) and one equipment blank. The samples were analyzed for TPH-g, benzene, toluene, ethylbenzene and total xylenes (collectively referred to as (BTEX), methyl tert-butyl ether (MTBE), and naphthalene by Method TO-15 Air-phase Petroleum Hydrocarbon (APH) Fractions (Sp)-Full list + Naph + APH; and atmospheric gas percentages (oxygen, methane, carbon dioxide, and nitrogen) and the tracer gas helium by modified ASTM Method D-1946, to assess sample train integrity during the sampling event.

Method TO-15 soil vapor analytical results are summarized in **Table 3**, with references to California Human Health Screening Levels (CHHSLs) and Environmental Screening Levels (ESLs) for commercial/industrial locations. APH fractions are presented in **Table 4**. A discussion of the laboratory analytical results is provided below in Section 3.5. The laboratory analytical reports, including COC documentation, are included in **Appendix C**.

Helium was detected above laboratory reporting limits only in sample SVW-1-V-N-5-20130408 at 0.65 percent collected during the April 8, 2013, event, indicating that there was no infiltration of outside air into the samples. Fixed gas results are presented in **Table 5**.

3.5 Discussion of Results

TPH-g was detected in each of the soil vapor samples analyzed at concentrations ranging from 1,400 micrograms per cubic meter (µg/m^3) at SVW-1 to 260,000,000 µg/m^3 at SVW-6. APH fraction analysis showed that the TPH-g was composed primarily of aliphatic materials C5-C10 in length.

Benzene was detected in each of the soil vapor samples analyzed at concentrations ranging from 9.8 µg/m^3 at SVW-1 to 1,400,000 µg/m^3 at SVW-6. Benzene concentrations in samples SV-2, SVW-2, SVW-3, SVW-5 and SVW-6 are greater than the commercial/industrial CHHSLs and future residential CHHSLs and/or ESLs.

Ethylbenzene was detected in SVW-2, SVW-3, SVW-5, and SVW-6 at concentrations ranging from 12,000 µg/m^3 at SVW-2 to 700,000 µg/m^3 at SVW-6. Ethylbenzene concentrations in samples SVW-2, SVW-3, SVW-5 and SVW-6 are greater than the current and future commercial/industrial and future residential CHHSLs and/or ESLs. Sample dilution due to high concentrations of TPH-g caused the detection limit for ethylbenzene to be above CHHSLs/ESLs in sample SV-2.

m,p-Xylene was detected in SV-2, SVW-2, SVW-3, SVW-5 and SVW-6 at concentrations ranging from1,600 µg/m^3 in SV-2 to 660,000 µg/m^3 in SVW-3. m,p-Xylene concentrations in samples SVW-3 and SVW-6 are greater than the current and future commercial/industrial and future residential CHHSLs and/or ESLs.

MTBE, o-xylene and naphthalene were not detected in soil vapor samples from this sampling event. However, detection limits for MTBE and naphthalene were elevated above CHHSLs and/or ESLs in samples SV-2 and SVW-2 (naphthalene only) and SVW-3, SVW-5 and SVW-6 (MTBE and naphthalene) because the samples required dilution due to high concentrations of TPH-g. Toluene was detected below the CHHSLs and ESLs.

Methane was detected in each sample at concentrations ranging from 0.00081 to 40 percent (%) by volume. There are no published CHHSLs or ESLs for methane gas. Methane is discussed further in section 4.2.2.

4.0 Soil Vapor Screening Level Evaluation

In accordance with the ACEH letter dated October 4, 2012, the soil vapor results were compared to applicable screening criteria, which is the first step of an evaluation to determine if a potentially complete vapor intrusion pathway exists at the OVH site. A tiered, or step-wise, approach is recommended in accordance with CalEPA guidance (2011) and San Francisco Regional Water Quality Control Board (SFRWQCB) (2013) vapor intrusion guidance. The approach consists of first comparing site soil vapor concentrations to conservative soil vapor screening levels for current and future commercial/industrial and future residential exposure scenarios, in order to select constituents of potential concern (COPCs). Further steps include indoor air modeling, and an estimate of potential risk, as appropriate. In accordance with the ACEH October 4, 2012, letter the current evaluation was limited to step one. The methods and results of the vapor intrusion risk evaluation are discussed below.

4.1 Methods

The detected soil vapor concentrations of each of the analyzed compounds from the April 8, 2013, sampling event were compared to the CHHSLs (CalEPA, 2010) and the SFRWQCB ESLs (2013). For compounds that were not detected, the detection limit for each compound was also compared to the CHHSLs and ESLs for informational purposes. The comparison of soil vapor results to CHHSLs and ESLs is presented in **Tables 3 and 4**.

CHHSLs and ESLs are conservative screening levels, for residential and commercial/industrial exposure scenarios, based on conservative modeling inputs. They are designed to be protective of human health and may be used to assess the need for further risk evaluation. CHHSLs and ESLs are based on a target potential excess lifetime cancer risk (ELCR) of $1x10^{-6}$ and a target hazard quotient (HQ) of 1. Soil vapor concentrations below these screening levels do not pose a human health risk of concern (CalEPA, 2005 and 2011, SFRWQCB, 2013), and compounds present at these levels do not require further risk evaluation. Compounds detected in soil vapor at concentrations greater than these screening values are identified as COPCs, for which further evaluation is recommended before a determination can be made on whether the vapor intrusion pathway is complete and whether it poses a health concern via the inhalation pathway.

Soil vapor CHHSLs and ESLs were developed by CalEPA and SFRWQCB, respectively, by applying default attenuation factors to risk-based indoor air screening levels. The CHHSLs (CalEPA, 2010) were developed based on CalEPA's default attenuation factors (CalEPA, 2011) and are available for scenarios in which a building is constructed on sub-slab gravel with or without engineered fill (CalEPA (2010) Tables 2 and 3, respectively). The CHHSLs for a building constructed on sub-slab gravel *with* engineered fill are appropriate for evaluating a future building scenario and utilize attenuation factors of approximately 0.001 and 0.0005 for future commercial/industrial and residential buildings, respectively (CalEPA, 2010 and 2011). The CHHSLs for a building constructed on sub-slab gravel *without* engineered fill are appropriate for evaluating a current building scenario and utilize an attenuation factor of 0.001 for a future commercial/industrial building (CalEPA, 2010 and 2011). Therefore, the published soil vapor CHHSLs are considered appropriate for use in the screening step. The published soil vapor ESLs were developed by SFRWQCB using attenuation factors equal to CalEPA's recommended attenuation factors for an existing building. Therefore, soil vapor ESLs for use in the evaluation for this site were developed by applying CalEPA's recommended attenuation factors for a future residential and current and future commercial/industrial building to the published indoor air ESLs (SFRWQCB, 2013).

4.2 Results

As shown in **Table 3**, TPH-g, benzene, ethylbenzene and m,p-xylene, were detected in soil vapor samples collected from the 76 service station site (samples SVW-1, SVW-2, SVW-3, SVW-5, and SVW-6) above the CHHSLs and ESLs for a current and future commercial/industrial, and future residential exposure scenario. TPH-g and benzene were detected in soil vapor sample SV-2, collected from the OVH property above the CHHSLs and ESLs for a current and future commercial/industrial, and future residential exposure scenario. COPCs identified for further evaluation of the 76 service station property are TPH-g, benzene, ethylbenzene and m,p-xylene. COPCs identified for further evaluation of the OVH property are TPH-g and benzene.

Analysis of the soil vapor samples for the aliphatic and aromatic carbon ranges (using APH analysis) was performed to provide more specific information on the type of TPH-g compounds present in the soil vapor samples. The analytical results for the carbon ranges are presented in **Table 4**. This analysis resulted in detections of C5-C6 aliphatics, C6-C8 aliphatics, C8-C10 aliphatics and C8-C10 aromatics. There are no published CHHSLs or ESLs for the carbon fractions analyzed by APH methods; therefore, the detected carbon fractions (C5-C6 aliphatics, C6-C8 aliphatics, and C8-C10 aliphatics [on the OVH and 76 service station properties] and C8-C10 aromatics [on the 76 service station property only]), were selected as COPCs for further evaluation, to represent TPH-g.

Due to the elevated TPH-g concentrations in soil vapor samples SV-2, SVW-2, SVW-3, SVW-5 and SVW-6, dilution of these samples was required by the laboratory. As a result of the dilution, the detection limit for ethylbenzene was elevated above the ESL for the future residential exposure scenario in sample SV-2; the detection limits for MTBE were elevated above the CHHSLs and/or ESLs for the current and future commercial/industrial and future residential exposure scenarios in samples SVW-3, SVW-5 and SVW-6; and the detection limits for naphthalene were elevated above the CHHSLs and ESLs for the current and future commercial/industrial and future residential exposure scenarios in samples SV-2, SVW-2, SVW-3, SVW-5 and SVW-6. These elevated detection limits contribute some uncertainty to the screening level evaluation for these compounds.

Methane was detected in concentrations ranging from 0.00081 to 40% by volume (**Table 5**). Samples SVW-3 and SVW-6 had concentrations of 40 and 37%, respectively, which exceed the upper explosive limit of 15% by volume. Methane can result from bacterial degradation of hydrocarbons in the subsurface. At concentrations above 15% methane can be explosive and it can be an asphyxiant. In the subsurface, explosion cannot occur due to insufficient oxygen and lack of an ignition source; however, this could pose a potential hazard in enclosed spaces on the surface (e.g., utility vaults) where methane could accumulate.

5.0 Conclusions and Recommendations

5.1 Summary of Findings and Conclusions

Soil vapor sampling conducted at the site and the OVH in April 2013 was evaluated to determine the distribution of petroleum hydrocarbon impacts in soil vapor, and to determine whether further evaluation is needed to determine if a potentially complete vapor intrusion pathway exists at the OVH. A summary of the sample results is provided below.

- TPH-g was detected in soil vapor samples SV-2, SVW-2, SVW-3, SVW-5 and SVW-6 at concentrations above residential and commercial/industrial CHHSLs and ESLs (6,600,000 µg/m^3 to 260,000,000 µg/m^3). Analysis of the soil vapor samples for the aliphatic and aromatic carbon ranges, performed to provide more specific information on the type of TPH-g compounds present in the soil vapor samples, resulted in detections of C5-C6 aliphatics, C6-C8 aliphatics, C8-C10 aliphatics and C8-C10 aromatics.

- Benzene was detected in soil vapor samples SV-2, SVW-2, SVW-3, SVW-5 and SVW-6 at concentrations above residential and commercial/industrial CHHSLs and ESLs (4,900 µg/m^3 to 1,400,000 µg/m^3).

- Ethylbenzene was detected in soil vapor samples SVW-2, SVW-3, SVW-5 and SVW-6 at concentrations above residential and commercial/industrial CHHSLs and ESLs (12,000 µg/m3 to 700,000 µg/m^3). Sample dilution due to high concentrations of TPH-g caused detection limits for ethylbenzene to be above residential ESLs in soil vapor sample SV-2.

- m,p-Xylenes were detected in soil vapor samples SVW-3 and SVW-6 at concentrations above residential and commercial/industrial ESLs (660,000 µg/m^3 and 580,000 µg/m^3, respectively).

- MTBE, o-xylene, and naphthalene were not detected in vapor samples collected during the April 2013 sampling event. Detection limits for these constituents were elevated (above CHHSLs and/or ESLs) in soil vapor samples SV-2, SVW-2, SVW-3, SVW-5 and/or SVW-6 because the samples required laboratory dilution. Toluene was detected below the CHHSLs and ESLs.

- Helium was used as the tracer gas to test for air leakage into the sampling system for the purpose of sample integrity verification, in general accordance with the CalEPA (2012) guidance document. Helium leakage was detected in one sample from vapor well SVW-1 at 0.65%, which is below the acceptable leakage of up to 10%. Helium was not detected in any other samples, indicating there was no significant leakage of ambient air into the samples and the vapor samples were representative of the soil vapor conditions.

- Methane was detected in each sample at concentrations ranging from 0.00081 to 40% by volume. There are no published CHHSLs or ESLs for methane gas. At concentrations above 15 percent methane can be explosive and it can be an asphyxiant. In the subsurface, explosion cannot occur due to insufficient oxygen and lack of an ignition source; however, this could pose a potential hazard in enclosed spaces on the surface (e.g., utility vaults) where methane could accumulate.

- As a result of the screening evaluation, carbon ranges C5-C6 aliphatics, C6-C8 aliphatics, C8-C10 aliphatics, and C8-C10 aromatics (as surrogates for TPH-g), benzene, ethylbenzene and m,p-xylenes were the only compounds selected as COPCs for further evaluation of both the current and future commercial/industrial and future residential exposure pathways, based on soil vapor samples collected on the 76 service station property. Carbon ranges C5-C6 aliphatics, C6-C8 aliphatics, and C8-C10 aliphatics (as surrogates for TPH-g) and benzene were the only compounds selected as COPCs for further evaluation of both the current and future commercial/industrial and future residential exposure pathways, based on soil vapor samples collected on the OVH property COPCs were identified based on soil vapor samples collected at 5 feet bgs.

5.2 Recommendations

Based on the above findings, AECOM recommends using the vapor intrusion model developed by Johnson and Ettinger (JE Model) and spreadsheets provided by DTSC/Human and Ecological Risk Division (CalEPA, 2004) to estimate the potential ELCR and non-cancer hazard index (HI) associated with COPC concentrations in soil vapor for a current and future on-site commercial/industrial worker and a future potential on-site residential exposure scenario.

6.0 References

ACEH, 2012. *Conditional Work Plan Approval,* dated October 4, 2012.

AECOM, 2012. *Work Plan for Vapor Intrusion Investigation and Risk Assessment,* dated August 27, 2012. Submitted to ACEH.

AECOM, 2013. *Report on Limited Site Assessment,* dated April 20, 2013. Submitted to ACEH.

American Petroleum Institute, 2005. Collecting and Interpreting Soil Gas Samples from the Vadose Zone: A Practical Strategy for Assessing the Subsurface-Vapor-to-Indoor-Air Mitigation Pathway at Petroleum Hydrocarbon Sites. Final Draft. November 2005.

CalEPA, 2004. USEPA Advanced Version (3.1) of the Johnson and Ettinger Model. February 2004. Model adjusted to use CalEPA DTSC's recommended input parameters (from CalEPA, 2011) and most updated toxicity information.

CalEPA, 2005. Use of California Human Health Screening levels (CHHSLs) in Evaluation of Contaminated Properties. California Environmental Protection Agency. Office of Environmental Health Hazard Assessment. January 2005.

CalEPA, 2010. California EPA's Office of Environmental Health Hazard Assessment. Soil Gas Screening Numbers. [http://oehha.ca.gov/risk/chhsltable.html].

CalEPA, 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). Department of Toxic Substances Control. October.

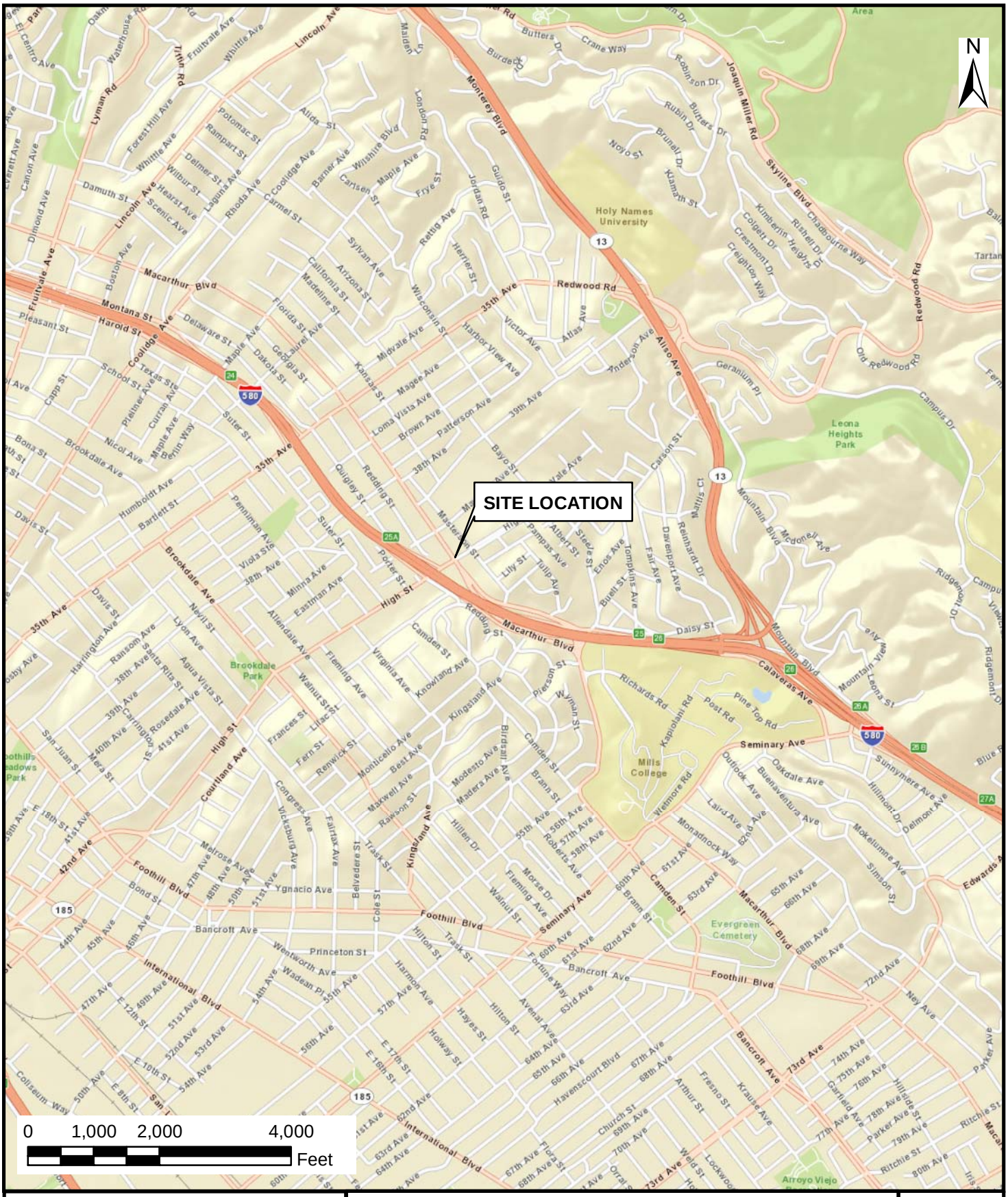
CalEPA, 2012. Advisory – Active Soil Gas Investigations. Jointly issued by the Regional Water Quality Control Board, Los Angeles Region, San Francisco Region, and the Department of Toxic Substances Control. April.

Delta, 2009. Site Investigation Report, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California, dated September 8. Prepared for ConocoPhillips Company, 76 Broadway, Sacramento, California. Prepared by Delta Consultants, 11050 White Rock Road, Suite 110, Rancho Cordova, California 95670.

Morrow Surveying, 2013. Monitoring Well Exhibit, 76 Service Station #1156, 4276 MacArthur Blvd., Oakland, Alameda County, California. Dated April 2013. Prepared by Morrow Surveying, 1255 Starboard Drive, West Sacramento, California 95691. Field Book: 1152. Dwg. 1856-046-MAM.

San Francisco Regional Water Quality Control Board (SFRWQCB), 2013. February 2013 Update to Environmental Screening Levels. California Regional Water Quality Control Board, San Francisco Bay Region. February 8, 2013.

Figures



AECOM
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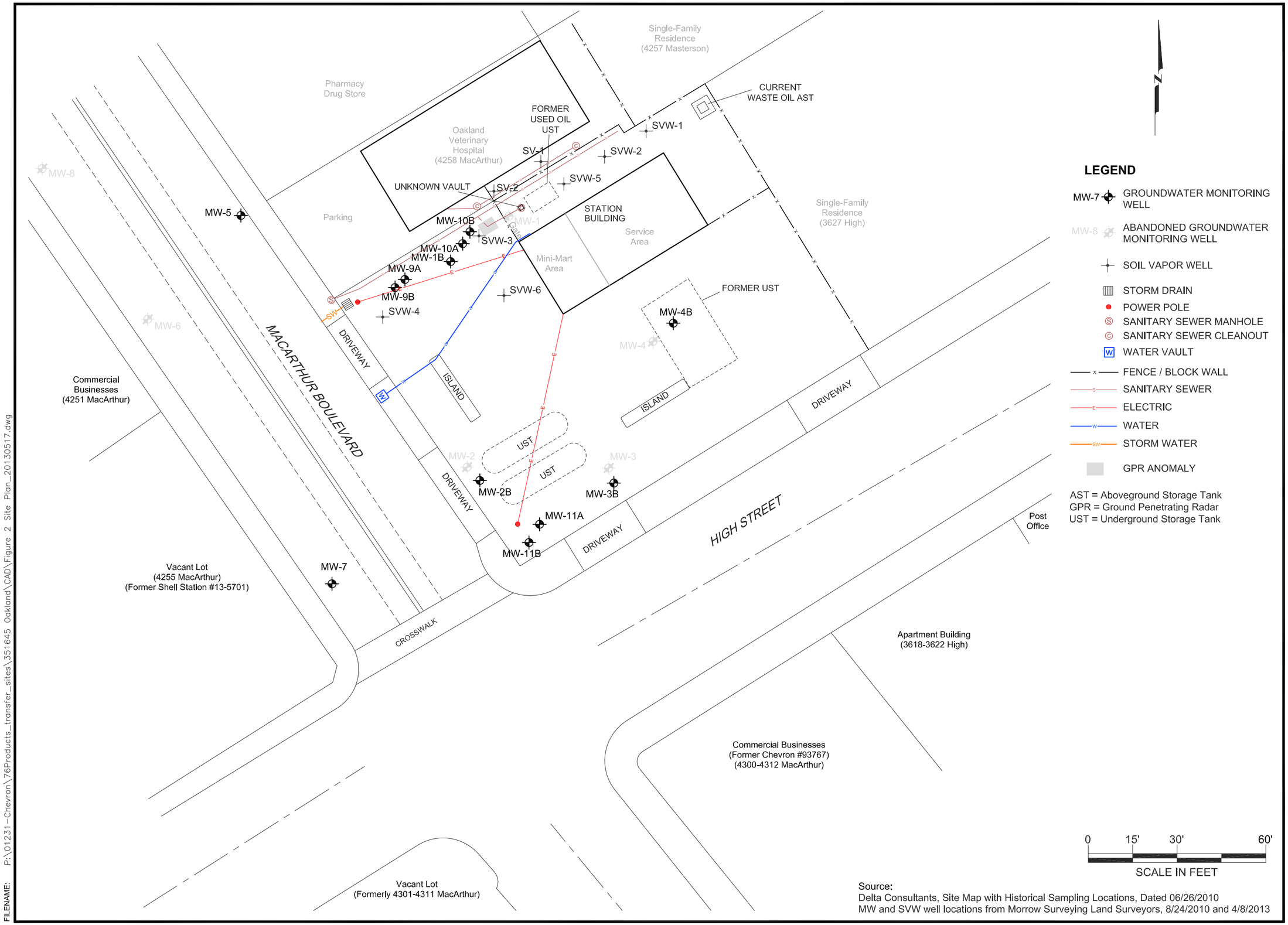
FAX: 805.388.3577
WEB: HTTP://WWW.AECOM.COM

SITE LOCATION MAP

76 Service Station #1156 (Chevron Site #351645)
4276 MacArthur Boulevard
Oakland, California

FIGURE NUMBER:
1

DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
M. Scop	5/2/2012	60249149	1 of 1



Source:
Delta Consultants, Site Map with Historical Sampling Locations, Dated 06/26/2010
MW and SVW well locations from Morrow Surveying Land Surveyors, 8/24/2010 and 4/8/2013

FILENAME: P:\01231-Chevron\76Products_transfer_sites\351645 Oakland\CAD\Figure 2 Site Plan_20130517.dwg

REVISIONS			
NO.:	DESCRIPTION:	DATE:	BY:
1	PG review edits	05/17/13	JH

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
X	J.Harms	RP	B. Evans

AECOM
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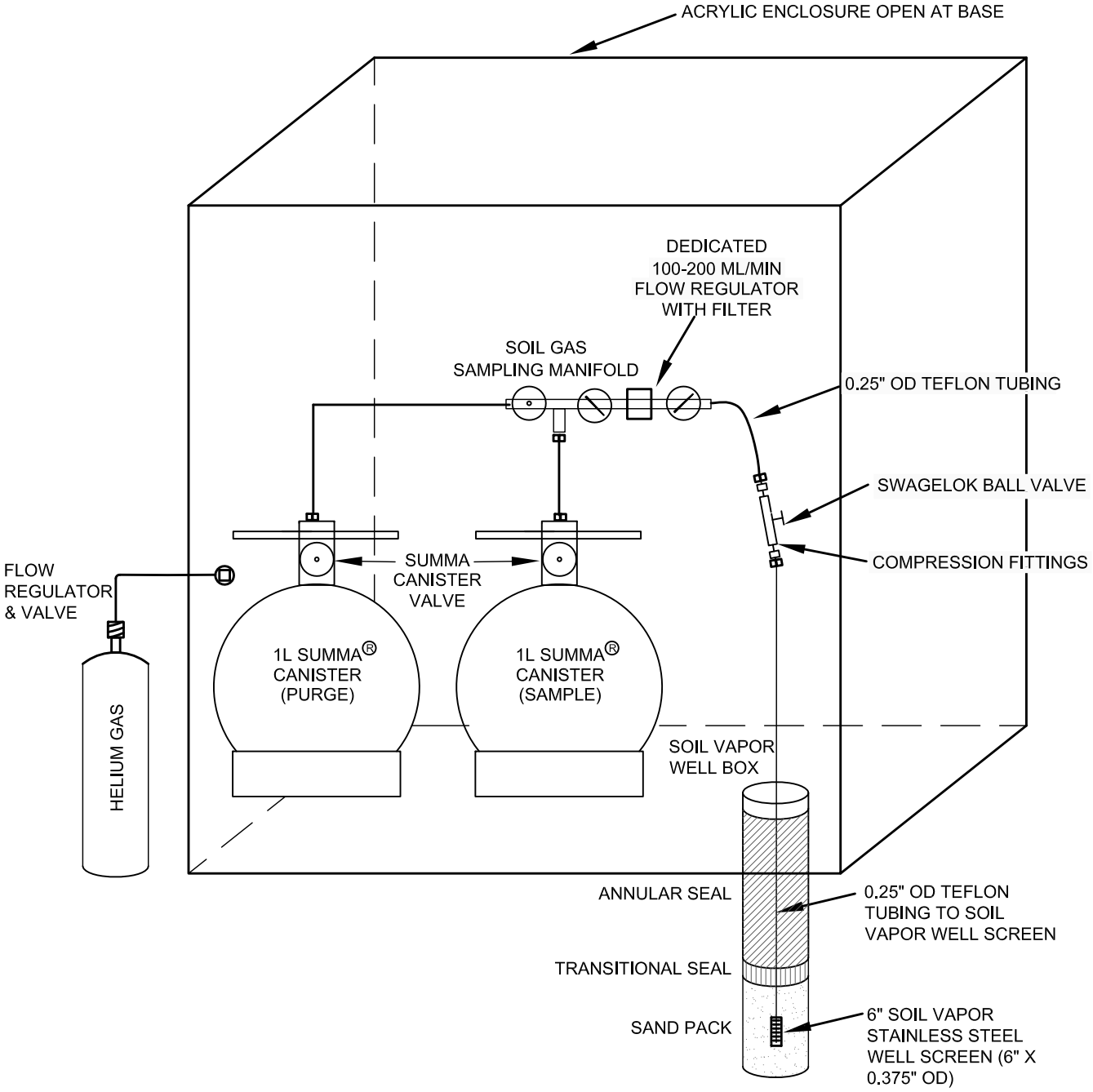
PHONE: (805) 388-3775
FAX: (805) 388-3577

SITE PLAN
Former Unocal Station #11156 (351645)
4276 MacArthur Boulevard
Oakland, California

SCALE:	DATE:	PROJECT NUMBER:
1" = 30'	5/2/2012	60264254 - A50

FIGURE NUMBER:
2

SHEET NUMBER:
X



AECOM
10461 OLD PLACERVILLE ROAD SUITE 170
SACRAMENTO, CALIFORNIA 95827
PHONE: (916) 361-6400
FAX: (916) 361-6401
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SOIL VAPOR SAMPLING APPARATUS

FORMER UNOCAL#7005 (351645)
4276 MACARTHUR BLVD
OAKLAND, CALIFORNIA

FIGURE NUMBER: 3

DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
JH	05/07/13	60264254	1

P:\01231-Chevron\76Products_transfer_sites\351645 Oakland\CAD\351645_APPARATUS.dwg[May-21-201315:10

Tables

Table 1
Soil Chemical Analysis Results
Former Unocal #1156 (351645)
4276 MacArthur Blvd, Oakland, California

Sample ID	Benzene	Ethylbenzene	Toluene	Xylenes (Total)	TPH-GRO (C6-C12)
SV-1-S-N-5-20130314	<0.0050	<0.0050	<0.0050	<0.010	**2.5**
SV-1-S-Y-5-20130314	<0.0050	<0.0050	<0.0050	<0.010	<1.0
SV-2-S-N-5-20130314	<0.0050	<0.0050	<0.0050	<0.010	<1.0
LOQ	0.005	0.005	0.005	0.01	1.0

Notes:
Analyses were conducted by USEPA methods 8260 and 8015B modified.
Non-detected analytes are reported as less than (<) practical quantitation limits.
LOQ = Limit of Quantitation (also called practical quantitation limit or lab reporting limit)
Bold = Analyte detected above LOQ
All results are in milligrams per kilogram (mg/kg)

Table 2
Soil Geotechnical Analysis Results
Former Unocal #1156 (351645)
4276 MacArthur Blvd, Oakland, California

			Porosity (%)			Organic Carbon				Particle Size Distribution (weight %)				
Sample ID	Depth (ft)	Dry Bulk Density (g/cc)	Total	Air-Filled	Water Filled	Total	Fraction	Mean Grain Size Description	Median Grain Size (mm)	Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt/Clay
SV-1-S-N- 5-20130314 (1305472-01)	5	1.47	44.9	22.8	22.1	330	3.30E-04	medium sand	0.634	14.75	9.79	37.23	29.84	8.40
SV-2-S-N- 5-20130314 (1305472-03)	5	1.52	42.5	6.2	36.3	710	7.10E-04	coarse sand	0.362	24.82	2.45	18.89	37.72	16.12

Notes:
% = percent
ft = feet
g/cc = grams per cubic centimeter
mm = millimeters

Table 3
Soil Vapor Analytical Results and Comparison to CHHSLs and ESLs
Chevron Facility 351645
Former Unocal Station No. 1156
4276 MacArthur Boulevard
Oakland, California

SAMPLE ID	DATE	DEPTH (feet)	TPH-g ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethylbenzene ($\mu g/m^3$)	MTBE ($\mu g/m^3$)	o-Xylenes ($\mu g/m^3$)	m,p-Xylene ($\mu g/m^3$)	Naphthalene ($\mu g/m^3$)
Screening Levels										
Soil Vapor CHHSLs										
current/future commercial/industrial (AF=0.001) (a)			***NA***	***120***	***380,000***	***1,400***	***13,000***	***880,000***	***890,000***	***110***
future residential (AF=0.001) (b)			***NA***	***85***	***320,000***	***1,100***	***8,600***	***740,000***	***800,000***	***93***
Soil Vapor ESLs										
current/future commercial/industrial (AF=0.001) (c)			***3,066,000***	***423***	***1,314,000***	***4,906***	***47,169***	***438,000***	***438,000***	***361***
future residential (AF=0.001) (d)			***730,000***	***84***	***312,857***	***973***	***9,359***	***104,286***	***104,286***	***72***
Soil Vapor Results										
SV-2-V-N-5-20130408	4/8/2013	5	**6,600,000**	**4,900**	**1,500**	**<1,100**	<910	<1,100	**1,600**	**<5,300**
SVW-1-V-N-5-20130408	4/8/2013	5	1,400	9.8	<6.1	<7.0	<5.8	<7.0	<7.0	<34
SVW-2-V-N-5-20130408	4/8/2013	5	**37,000,000**	**59,000**	<4,500	**12,000**	<4,300	<5,200	**9,400**	<25,000
SVW-3-V-N-5-20130408	4/8/2013	5	**180,000,000**	**1,200,000**	<41,000	**630,000**	<39,000	<47,000	**660,000**	<230,000
SVW-5-V-N-5-20130408	4/8/2013	5	**240,000,000**	**870,000**	<45,000	**160,000**	<43,000	<51,000	100,000	<250,000
SVW-6-V-N-5-20130408	4/8/2013	5	**260,000,000**	**1,400,000**	<39,000	**700,000**	<37,000	<45,000	**580,000**	<220,000

Notes:

Samples could not be collected from SV-1 and SVW-4 due to water in the wells.

Shading indicates an exceedence of the future residential and/or current or future commercial/industrial CHHSL and/or ESL. Detected concentrations are bolded; non-detects are not.

< = Analyte was not detected above indicated laboratory reporting limit. AF = Attenuation Factor.

CalEPA = California Environmental Protection Agency.

CalEPA. 2010. California EPA's Office of Environmental Health Hazard Assessment. Soil Gas Screening Numbers. [http://oehha.ca.gov/risk/chhsltable.html].

CalEPA, 2011 = CalEPA Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October 2011.

CHHSL = California Human Health Screening Levels.

ESL = Environmental Screening Levels.

MTBE = Methyl tert-butyl ether. NA - Not available.

OEHHA - Office of Environmental Health Hazard Assessment.

SF RWQCB, 2013 = California Regional Water Quality Control Board, San Francisco Bay Region. February 2013 update to Environmental Screening Levels. February 8, 2013.

TPH-g = Total Petroleum Hydrocarbons as gasoline.

($\mu g/m^3$) = Micrograms per cubic meter.

(a) CalEPA, 2010. OEHHA Soil Gas Screening Numbers. Updated 9/23/10. Commercial/industrial values for buildings constructed without engineered fill (Table 3). The CHHSLs presented are based on CalEPA's recommended default AF for an existing commercial/industrial building. However, these values are protective of a future commercial/industrial building scenario.

(b) CalEPA, 2010. OEHHA Soil Gas Screening Numbers. Updated 9/23/10. Residential values for buildings constructed with engineererd fill (Table 2).

(c) SF RWQCB, 2013. Commercial/industrial soil vapor ESL (Table E).

(d) SF RWQCB, 2013. Residential indoor Air ESL divided by 0.001, the associated default attenuation factor recommended by CalEPA (2011), Table 2.

Table 4
Soil Vapor Analytical Results and Comparison to CHHSLs and ESLs - Air Phase Hydrocarbon (APH) Fractions
Chevron Facility 351645
Former Unocal Station No. 1156
4276 MacArthur Boulevard
Oakland, California

SAMPLE ID	DATE	DEPTH (ft.)	C5-C6 Aliphatic Hydrocarbons ($\mu g/m^3$)	>C6-C8 Aliphatic Hydrocarbons ($\mu g/m^3$)	>C8-C10 Aliphatic Hydrocarbons ($\mu g/m^3$)	>C10-C12 Aliphatic Hydrocarbons ($\mu g/m^3$)	>C8-C10 Aromatic Hydrocarbons ($\mu g/m^3$)	>C10-C12 Aromatic Hydrocarbons ($\mu g/m^3$)
Screening Levels								
Soil Vapor CHHSLs (a)			***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
Soil Vapor ESLs (b)			***NA***	***NA***	***NA***	***NA***	***NA***	***NA***
Soil Vapor Results								
SV-2-V-N-5-20130408	4/8/2013	5	440,000	3,800,000	260,000	<35,000	<25,000	<28,000
SVW-1-V-N-5-20130408	4/8/2013	5	520	180	<190	<220	<160	<180
SVW-2-V-N-5-20130408	4/8/2013	5	6,700,000	16,000,000	670,000	<170,000	<120,000	<130,000
SVW-3-V-N-5-20130408	4/8/2013	5	39,000,000	66,000,000	<1,300,000	<1,500,000	1,400,000	<1,200,000
SVW-5-V-N-5-20130408	4/8/2013	5	71,000,000	71,000,000	2,200,000	<1,600,000	<1,200,000	<1,300,000
SVW-6-V-N-5-20130408	4/8/2013	5	87,000,000	75,000,000	1,400,000	<1,400,000	1,300,000	<1,100,000

Notes:

< = Analyte was not detected above indicated laboratory reporting limit.

CalEPA. 2010. California EPA's Office of Environmental Health Hazard Assessment. Soil Gas Screening Numbers. [http://oehha.ca.gov/risk/chhsltable.html].

CHHSL = California Human Health Screening Levels.

ESL = Environmental Screening Levels.

NA = Not available.

OEHHA - Office of Environmental Health Hazard Assessment.

($\mu g/m^3$) = Micrograms per cubic meter.

(a) CalEPA, 2010. OEHHA Soil Gas Screening Numbers. Updated 9/23/10.

(b) SF RWQCB, 2013. California Regional Water Quality Control Board, San Francisco Bay Region. February 2013 update to Environmental Screening Levels. February 8, 2013.

Table 5
Atmospheric Gas Analytical Results
Chevron Facility 351645
Former Unocal Station No. 1156
4276 MacArthur Boulevard
Oakland, California

SAMPLE ID	DATE	OXYGEN *(%)*	METHANE *(%)*	CARBON DIOXIDE *(%)*	HELIUM *(%)*	NITROGEN *(%)*
SV-2-V-N-5-20130408	4/8/2013	1.9	0.49	2.7	<0.13	94
SVW-1-V-N-5-20130408	4/8/2013	6.5	0.00081	2.5	0.65	90
SVW-2-V-N-5-20130408	4/8/2013	1.4	5.4	11	<0.12	82
SVW-3-V-N-5-20130408	4/8/2013	0.83	40	10	<0.11	44
SVW-5-V-N-5-20130408	4/8/2013	1.3	8.4	16	<0.12	67
SVW-6-V-N-5-20130408	4/8/2013	1.3	37	15	<0.10	35

Notes

(%) = Percentage of gas detected in sample canister by modified ASTM D-1946.

< = Gas not detected above indicated laboratory reporting limit.

Appendix A

Soil Boring Logs

AECOM	Client: Chevron EMC	Boring No. SV-1
	Project Number: 60264254.A10	
	Site Description/Location: 4276 MacArthur Boulevard, Oakland, CA	Project Manager: J Harms
AECOM 10461 Old Placerville Road Sacramento, CA 95827 (916) 361-6400 www.aecom.com	Coordinates: 2113771.8 N 6071956.9 E Elevation: 175.71 FT Datum: NAD 83	Sheet: 1 of 1
	Drilling Equipment/Method: Hand Auger/Manual	Well Installed: Yes
	Sample Type(s): Grab Boring Diameter: 2.5 IN.	Ambient PID: ppm
Approved By: R Perez	Logged By: J Harms Date/Time Started: 03-14-13	Depth of Boring: 5.5 ft bgs
Drilling Contractor: Confluence Env.	Backfill: Grout/Bentonite Date/Time Finished: 03-14-13	Water Level: Not Encountered

Depth (ft)	Sample ID	Sample Time	Sample Depth (ft)	Recovery (ft)	Blow Counts	PID Reading (ppm)	USCS	Graphic Log	Soil Boundary (ft bgs)	Visual Description Soil Type (USCS Class) - [gr%,sd%,st%,cl%]	Elevation (ft amsl)
									0.3	CONCRETE.	
						2.4				LEAN CLAY (CL) - [0,0,15,85] olive gray (5Y 4/2); dry; very stiff; medium plasticity; few silt; brown mottling; hydrocarbon odor.	175
						0.7	CL			@1.5 feet bgs transition in color to olive gray (5Y 5/2); slight hydrocarbon odor.	
						4.4			3.5	@3 feet bgs trace sand (5%) and few silt (10%); transition in color to pale yellow (5Y 7/4); no hydrocarbon odor.	
						26.7	CL		4.5	LEAN CLAY WITH SAND (CL) - [0,20,5,75] pale olive (5Y 6/3); moist; firm; low plasticity; fine sand; trace silt.	
5	SV-1-5	0930				33.9	ML		5.5	SILT WITH SAND (ML) - [5,25,45,25] grayish yellow (5GY 7/2); moist; firm; non-plastic; subangular, poorly graded fine sand; fine subangular gravel (max 0.25"); 45% silt, hydrocarbon odor.	

Geologist terminated boring due to target depth achieved.

Notes:

Hand Auger

AECOM

AECOM
10461 Old Placerville Road
Sacramento, CA 95827
(916) 361-6400
www.aecom.com

Client: Chevron EMC			**Boring No. SV-2**
Project Number: 60264254.A10			
Site Description/Location: 4276 MacArthur Boulevard, Oakland, CA			*Project Manager:* J Harms
Coordinates: 2113761.8 N 6071941 E	*Elevation:* 175.85 FT	*Datum:* NAD 83	*Sheet:* 1 of 1
Drilling Equipment/Method: Hand Auger/Manual			*Well Installed:* Yes
Sample Type(s): Grab	*Boring Diameter:* 2.5 IN.		*Ambient PID:* ppm
Approved By: R Perez	*Logged By:* J Harms	*Date/Time Started:* 03-14-13	*Depth of Boring:* 5.5 ft bgs
Drilling Contractor: Confluence Env.	*Backfill:* Grout/Bentonite	*Date/Time Finished:* 03-14-13	*Water Level:* Not Encountered

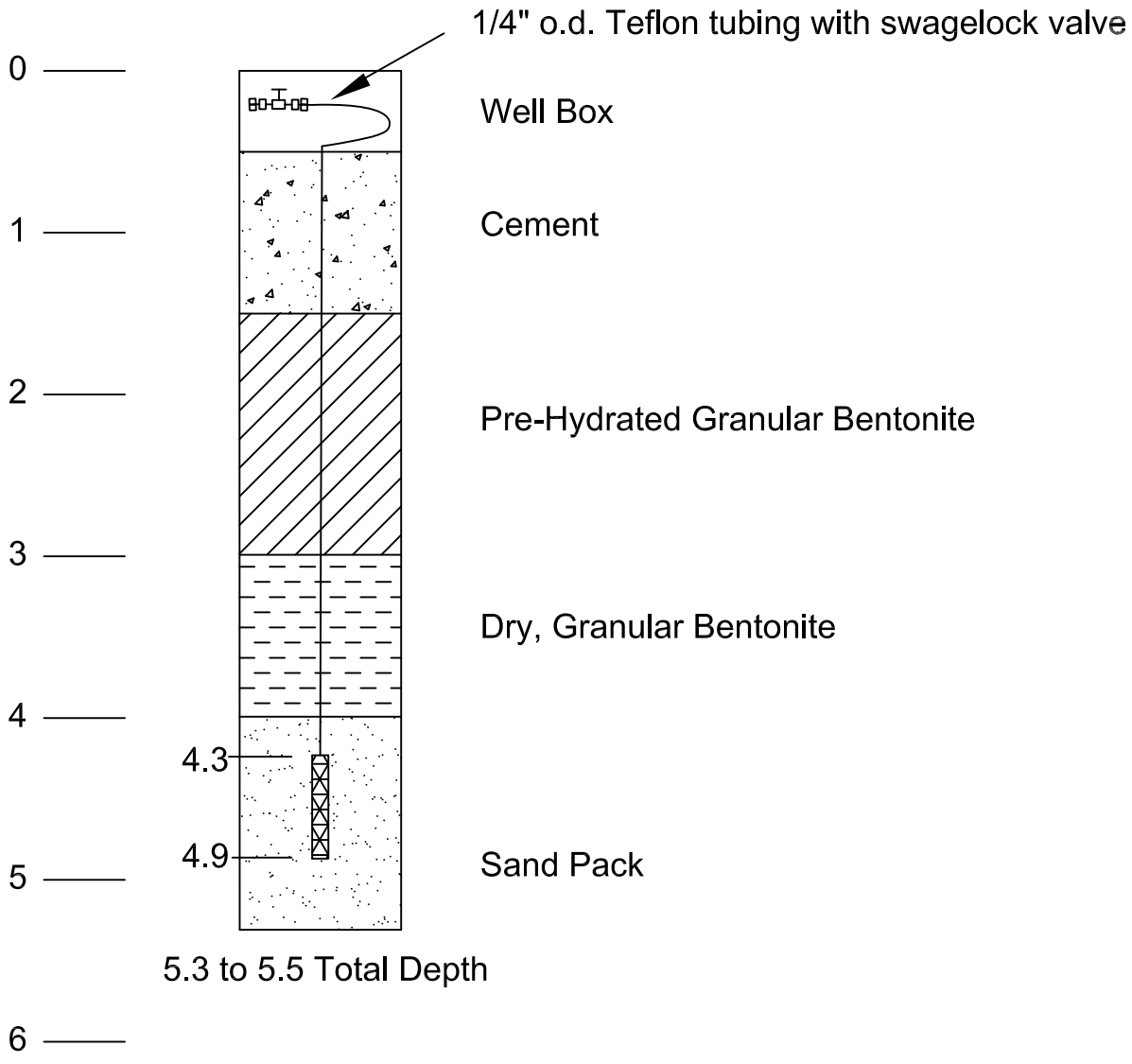
Depth (ft)	Sample ID	Sample Time	Sample Depth (ft)	Recovery (ft)	Blow Counts	PID Reading (ppm)	USCS	Graphic Log	Soil Boundary (ft bgs)	Visual Description Soil Type (USCS Class) - [gr%,sd%,st%,cl%]	Elevation (ft amsl)
									0.5	CONCRETE.	
						0	SM			SILTY SAND (SM) - [0,75,25,0] brown (10YR 4/3); dry; loose; poorly graded fine to medium sand; few silt (25%), no odor.	175
						0				@1.5 feet bgs trace clay (5%); moist; firm.	
						0			3.0		
						0	CL			LEAN CLAY (CL) - [0,0,15,85] olive gray (5Y 5/2); dry; firm; medium plasticity; little silt (15%), no odor.	
5	SV-2-5	1030				0			5.5		
										Geologist terminated boring due to target depth achieved.	

Notes:

Hand Auger

Appendix B

Well Construction Diagram



AECOM_color.jpg

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FAX: (805) 388-3577
WEB: HTTP://WWW.AECOM.COM

SOIL VAPOR WELL CONSTRUCTION DIAGRAM

Former Unocal Station #1156 (351645)
4276 MacArthur Boulevard
Oakland, California

Appendix **B**

DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
J. Harms	5/17/2013	60264254 - A10	X

FILENAME: P:\01231-Chevron\76Products_transfer_sites\351645 Oakland\CAD\351645_well construction.dwg

Attachment C

Laboratory Analytical Reports

BC Laboratories, Inc.
Environmental Testing Laboratory Since 1949

Date of Report: 04/22/2013

Brenda Evans

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Project: 1156
BC Work Order: 1305472
Invoice ID: B144367

Enclosed are the results of analyses for samples received by the laboratory on 3/18/2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Molly Meyers

Contact Person: Molly Meyers
Client Service Rep

Authorized Signature

4100 Atlas Court Bakersfield, CA 93308 (661) 327-4911 FAX (661) 327-1918 www.bclabs.com

Table of Contents

CHAIN OF CUSTODY

AECOM

Lab: BC Laboratories

TAT: Standard

Report results to:

Name	Brenda Evans (brenda.evans@aecom.com)
Company	AECOM
Mailing Address	1220 Avenida Acaso
City, State, Zip	Camarillo, CA 93012
Telephone No.	805.233.3988
Fax No.	805.388.3577

Project Information

Chevron Facility:	351645
Site Address:	4276 MacArthur Blvd, Oakland CA
AECOM No.	60264254.A10

13-05472

Special instructions and/or specific regulatory requirements:

Sample Identification	Date Sampled	Time Sampled	Matrix/ Media	No. of Conts.	TPHg 8015M	BTEX 8260b	fraction organic carbon	total porosity (ASTM D2937)	dry bulk density (ASTM D2937)	air & water filled porosity	grain size distribution (ASTM D422)			Sample Condition/Comments	Preservative
SV-1-5-N-5.0-20130314	3-14-13	0930	So.1	2	X	X	X	X	X	X	X				none
SV-1-5-Y-5.0-20130314	3-14-13	0940	So.1	1	X	X									none
SV-2-5-N-5.0-20130314	3-14-13	1030	So.1	2	X	X	X	X	X	X	X				none
														CHK BY JPW DISTRIBUTION SUB-OUT	

Relinquished by:	Date/Time 3/18/13 1455	**Received by:** Mary Bogan	Date/Time 3-18-13 1455
Relinquished by: Mary Bogan	Date/Time 3-18-13 1815	**Received by:**	Date/Time 3-18-13 18:15
Method of Shipment: ~~Fedex~~ Courier		**Sample Condition on Receipt:**	

REL 3-18-13 21:55 3/18/13 2155

4100 Atlas Court Bakersfield, CA 93308 (661) 327-4911 FAX (661) 327-1918 www.bclabs.com

Chain of Custody and Cooler Receipt Form for 1305472 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Rev. No. 13 08/17/12 Page 1 Of 1

Submission #: 1305472

SHIPPING INFORMATION
Federal Express ☐ UPS ☐ Hand Delivery ☐
BC Lab Field Service ☒ Other ☐ (Specify)_____

SHIPPING CONTAINER
Ice Chest ☒ None ☐
Box ☐ Other ☐ (Specify)_____

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 0.9 * Container: soil sleeve Thermometer ID: 20782 JNW 3/18

Temperature: (A) 1.0 °C / (C) 1.2 °C *

Date/Time 3-18-13

Analyst Init JNW 2205

SAMPLE CONTAINERS	SAMPLE NUMBERS									
	1	2	3	4	5	6	7	8	9	10
QT GENERAL MINERAL/ GENERAL PHYSICAL										
PT PE UNPRESERVED										
QT INORGANIC CHEMICAL METALS										
PT INORGANIC CHEMICAL METALS										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT TOX										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
QT EPA 413.1, 413.2, 418.1										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
100ml EPA 547										
100ml EPA 531.1										
QT EPA 548										
QT EPA 549										
QT EPA 632										
QT EPA 8015M										
QT AMBER										
8 OZ. JAR										
32 OZ. JAR										
SOIL SLEEVE	AB	A	AB							
PCB VIAL										
PLASTIC BAG										
FERROUS IRON										
ENCORE										
SMART KIT										

omments:_____

ample Numbering Completed By: KIQ Date/Time: 3/19/13 @ 0010

= Actual / C = Corrected

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1305472-01	**COC Number:**	---	**Receive Date:**	03/18/2013 21:55
	Project Number:	1156	**Sampling Date:**	03/14/2013 09:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	SV-1-S-N-5.0-130314	**Lab Matrix:**	Solids
	Sampled By:	AEOR	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	SV-1
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1305472-02	**COC Number:**	---	**Receive Date:**	03/18/2013 21:55
	Project Number:	1156	**Sampling Date:**	03/14/2013 09:40
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	SV-1-S-Y-5.0-130314	**Lab Matrix:**	Solids
	Sampled By:	AEOR	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	SV-1
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	
1305472-03	**COC Number:**	---	**Receive Date:**	03/18/2013 21:55
	Project Number:	1156	**Sampling Date:**	03/14/2013 10:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	SV-2-S-N-5.0-130314	**Lab Matrix:**	Solids
	Sampled By:	AEOR	**Sample Type:**	Soil
			Delivery Work Order:	
			Global ID:	
			Location ID (FieldPoint):	SV-2
			Matrix:	SO
			Sample QC Type (SACode):	CS
			Cooler ID:	

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1305472-01 | **Client Sample Name:** 1156, SV-1-S-N-5.0-130314, 3/14/2013 9:30:00AM

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010	EPA-8260B	ND		1
p- & m-Xylenes	ND	mg/kg	0.0050	EPA-8260B	ND		1
o-Xylene	ND	mg/kg	0.0050	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	103	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	99.4	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	92.7	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	03/19/13	03/19/13 16:57	ADC	MS-V2	1	BWC1345

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1305472-01 | **Client Sample Name:** 1156, SV-1-S-N-5.0-130314, 3/14/2013 9:30:00AM

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	**2.5**	**mg/kg**	**1.0**	**EPA-8015B**	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	105	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	03/21/13	03/22/13 11:31	JJH	GC-V8	1	BWC1502

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1305472-02 | **Client Sample Name:** 1156, SV-1-S-Y-5.0-130314, 3/14/2013 9:40:00AM

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010	EPA-8260B	ND		1
p- & m-Xylenes	ND	mg/kg	0.0050	EPA-8260B	ND		1
o-Xylene	ND	mg/kg	0.0050	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	107	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	98.2	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	100	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	03/19/13	03/19/13 17:23	ADC	MS-V2	1	BWC1345

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1305472-02 | **Client Sample Name:** 1156, SV-1-S-Y-5.0-130314, 3/14/2013 9:40:00AM

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	mg/kg	1.0	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	102	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	03/21/13	03/22/13 10:30	JJH	GC-V8	1	BWC1502

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Volatile Organic Analysis (EPA Method 8260)

BCL Sample ID: 1305472-03 | **Client Sample Name:** 1156, SV-2-S-N-5.0-130314, 3/14/2013 10:30:00AM

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Ethylbenzene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Toluene	ND	mg/kg	0.0050	EPA-8260B	ND		1
Total Xylenes	ND	mg/kg	0.010	EPA-8260B	ND		1
p- & m-Xylenes	ND	mg/kg	0.0050	EPA-8260B	ND		1
o-Xylene	ND	mg/kg	0.0050	EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	103	%	70 - 121 (LCL - UCL)	EPA-8260B			1
Toluene-d8 (Surrogate)	96.6	%	81 - 117 (LCL - UCL)	EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	95.4	%	74 - 121 (LCL - UCL)	EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	03/19/13	03/19/13 17:49	ADC	MS-V2	1	BWC1345

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1305472-03 | **Client Sample Name:** 1156, SV-2-S-N-5.0-130314, 3/14/2013 10:30:00AM

Constituent	Result	Units	PQL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	mg/kg	1.0	EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	77.5	%	70 - 130 (LCL - UCL)	EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	03/21/13	03/22/13 11:01	JJH	GC-V8	1	BWC1502

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWC1345						
Benzene	BWC1345-BLK1	ND	mg/kg	0.0050		
Ethylbenzene	BWC1345-BLK1	ND	mg/kg	0.0050		
Toluene	BWC1345-BLK1	ND	mg/kg	0.0050		
Total Xylenes	BWC1345-BLK1	ND	mg/kg	0.010		
p- & m-Xylenes	BWC1345-BLK1	ND	mg/kg	0.0050		
o-Xylene	BWC1345-BLK1	ND	mg/kg	0.0050		
1,2-Dichloroethane-d4 (Surrogate)	BWC1345-BLK1	96.6	%	70 - 121 (LCL - UCL)		
Toluene-d8 (Surrogate)	BWC1345-BLK1	95.6	%	81 - 117 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	BWC1345-BLK1	93.6	%	74 - 121 (LCL - UCL)		

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BWC1345										
Benzene	BWC1345-BS1	LCS	0.12178	0.12500	mg/kg	97.4		70 - 130		
Toluene	BWC1345-BS1	LCS	0.12030	0.12500	mg/kg	96.2		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	BWC1345-BS1	LCS	0.048960	0.050000	mg/kg	97.9		70 - 121		
Toluene-d8 (Surrogate)	BWC1345-BS1	LCS	0.049470	0.050000	mg/kg	98.9		81 - 117		
4-Bromofluorobenzene (Surrogate)	BWC1345-BS1	LCS	0.047040	0.050000	mg/kg	94.1		74 - 121		

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Volatile Organic Analysis (EPA Method 8260)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BWC1345	Used client sample: N										
Benzene	MS	1305402-13	ND	0.12297	0.12500	mg/kg		98.4		70 - 130	
	MSD	1305402-13	ND	0.12394	0.12500	mg/kg	0.8	99.2	20	70 - 130	
Toluene	MS	1305402-13	ND	0.12184	0.12500	mg/kg		97.5		70 - 130	
	MSD	1305402-13	ND	0.12777	0.12500	mg/kg	4.8	102	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1305402-13	ND	0.048150	0.050000	mg/kg		96.3		70 - 121	
	MSD	1305402-13	ND	0.050360	0.050000	mg/kg	4.5	101		70 - 121	
Toluene-d8 (Surrogate)	MS	1305402-13	ND	0.048190	0.050000	mg/kg		96.4		81 - 117	
	MSD	1305402-13	ND	0.049850	0.050000	mg/kg	3.4	99.7		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	1305402-13	ND	0.050330	0.050000	mg/kg		101		74 - 121	
	MSD	1305402-13	ND	0.048430	0.050000	mg/kg	3.8	96.9		74 - 121	

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: BWC1502						
Gasoline Range Organics (C4 - C12)	BWC1502-BLK1	ND	mg/kg	1.0		
a,a,a-Trifluorotoluene (FID Surrogate)	BWC1502-BLK1	97.5	%	70 - 130 (LCL - UCL)		

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: BWC1502										
Gasoline Range Organics (C4 - C12)	BWC1502-BS1	LCS	5.5080	5.0000	mg/kg	110		85 - 115		
a,a,a-Trifluorotoluene (FID Surrogate)	BWC1502-BS1	LCS	0.041000	0.040000	mg/kg	102		70 - 130		

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: BWC1502	Used client sample: N										
Gasoline Range Organics (C4 - C12)	MS	1305402-12	ND	5.4870	5.0000	mg/kg		110		70 - 130	
	MSD	1305402-12	ND	5.2870	5.0000	mg/kg	3.7	106	20	70 - 130	
a,a,a-Trifluorotoluene (FID Surrogate)	MS	1305402-12	ND	0.042000	0.040000	mg/kg		105		70 - 130	
	MSD	1305402-12	ND	0.043000	0.040000	mg/kg	2.4	108		70 - 130	

PTS Laboratories, Inc.

8100 Secura Way • Santa Fe Springs, CA 90670
Telephone (562) 347-2500 • Fax (562) 907-3610

April 10, 2013

Molly Meyers
BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308

Re: PTS File No: 43193
Physical Properties Data
1305472

Dear Ms. Meyers:

Please find enclosed report for Physical Properties analyses conducted upon samples received from your 1305472 project. All analyses were performed by applicable ASTM, EPA, or API methodologies. An electronic version of the report has previously been sent to your attention via the internet. The samples are currently in storage and will be retained for thirty days past completion of testing at no charge. Please note that the samples will be disposed of at that time. You may contact me regarding storage, disposal, or return of the samples.

PTS Laboratories appreciates the opportunity to be of service. If you have any questions or require additional information, please contact Morgan Richards at (562) 347-2509.

Sincerely,
PTS Laboratories

for Michael S

Michael Mark Brady, P.G.
District Manager

Encl.

PTS Laboratories

Project Name: N/A
Project Number: 1305472

PTS File No: 43193
Client: BC Laboratories

TEST PROGRAM - 20130326

CORE ID	Depth ft.	Core Recovery ft.	Grain Size Analysis ASTM D422	TOC/foc Walkley-Black	Dry Bulk Density API RP40	Total/Air/Water Porosity API RP 40		Notes
		Plugs:	Grab	Grab	Vert. 1.5"	Vert. 1.5"		
Date Received: 20130326								
1305472-01	N/A	0.50	X	X	X	X		
1305472-03	N/A	0.50	X	X	X	X		
TOTALS:	2 cores	1.00	2	2	2	2		

Laboratory Test Program Notes

Contaminant identification: _____

Standard TAT for basic analysis is 10 business days.

ASTM D422: Dry Sieve only, Hydrometer analysis must be requested prior to initiating tests. Additional costs would apply.

Substitute API RP40 for ASTM D2937 approved per M. Meyers/BC Laboratories 20130328

Page 1 of 1

PTS Laboratories

PTS File No: 43193
Client: BC Laboratories

PHYSICAL PROPERTIES DATA

PROJECT NAME: N/A
PROJECT NO: 1305472

			METHODS:	API RP 40	API RP 40		
SAMPLE ID.	DEPTH, ft.	SAMPLE ORIENTATION (1)	ANALYSIS DATE	DRY BULK DENSITY, g/cc	POROSITY, %Vb (2) TOTAL	AIR-FILLED	WATER-FILLED
1305472-01	N/A	V	20130403	1.47	44.9	22.8	22.1
1305472-03	N/A	V	20130403	1.52	42.5	6.2	36.3

(1) Sample Orientation: H = horizontal; V = vertical; R = remold (2) Total Porosity = no pore fluids in place; all interconnected pore channels; Air Filled = pore channels not occupied by pore fluids; Vb = Bulk Volume, cc

Page 1 of 1

PTS Laboratories

PTS File No: 43193
Client: BC Laboratories

ORGANIC CARBON DATA - TOC (foc)

(METHODOLOGY: WALKLEY-BLACK)

PROJECT NAME: N/A
PROJECT NO: 1305472

SAMPLE ID.	DEPTH, ft.	ANALYSIS DATE	ANALYSIS TIME	SAMPLE MATRIX	TOTAL ORGANIC CARBON, mg/kg	FRACTION ORGANIC CARBON, g/g
1305472-01	N/A	20130409	1045	SOIL	330	3.30E-04
1305472-03	N/A	20130409	1045	SOIL	710	7.10E-04
Blank	N/A	20130409	1045	BLANK	ND	ND
SRM D079-542	N/A	20130409	1045	SRM	3140	3.14E-03
				Reporting Limit:	100	1.00E-04

QC DATA

SRM ID/Lot No.	REC (%)	Control Limits	Certified Concentration mg/kg	QC Performance Acceptance Limits, mg/kg Lower	Upper
SRM D079-542	92	75-125	3400	2550	4250

ND = Not Detected

Eff. 20130309

Page 1 of 1

PTS Laboratories, Inc.

BC Laboratories
PTS File No: 43193

PARTICLE SIZE SUMMARY

(METHODOLOGY: ASTM D422)

PROJECT NAME: N/A
PROJECT NO: 1305472

Sample ID	Depth, ft.	Description USCS/ASTM (1)	Median Grain Size, mm	Particle Size Distribution, wt. percent				
				Gravel	Sand Size			Silt/Clay
					Coarse	Medium	Fine	
1305472-01	N/A	Medium sand	0.634	14.75	9.79	37.23	29.84	8.40
1305472-03	N/A	Coarse sand	0.362	24.82	2.45	18.89	37.72	16.12

(1) based on Mean fromTrask

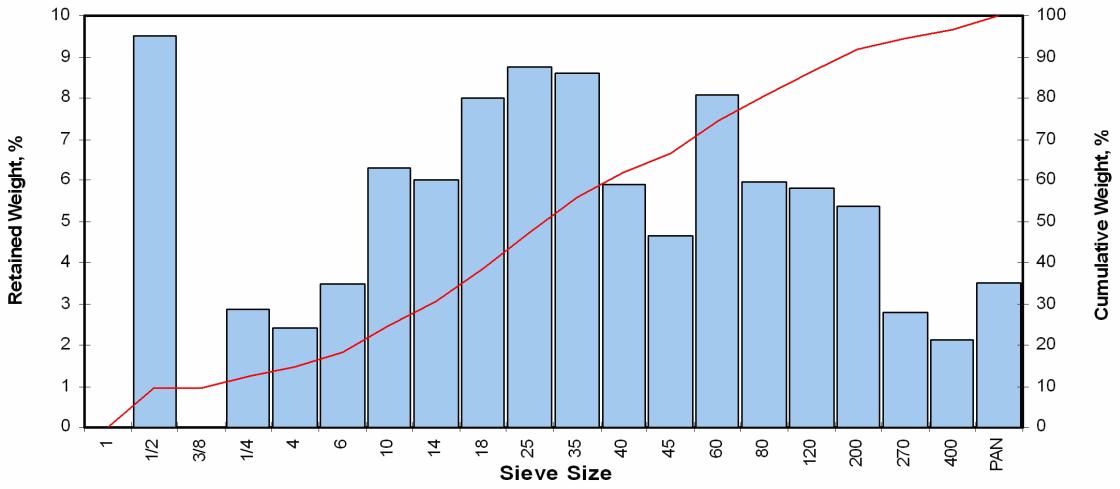
Page 1 of 3

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D422M

Client:	BC Laboratories	**PTS File No:**	43193
Project:	N/A	**Sample ID:**	1305472-01
Project No:	1305472	**Depth, ft:**	N/A

Gravel	Sand			Silt/Clay
	coarse	medium	fine	



Opening Inches	Opening Millimeters	Phi of Screen	U.S. Sieve No.	Sample Weight grams	Incremental Weight, percent	Cumulative Weight, percent
0.9844	25.002	-4.64	1	0.00	0.00	0.00
0.4922	12.501	-3.64	1/2	7.43	9.49	9.49
0.3740	9.500	-3.25	3/8	0.00	0.00	9.49
0.2500	6.351	-2.67	1/4	2.23	2.85	12.34
0.1873	4.757	-2.25	4	1.88	2.40	14.75
0.1324	3.364	-1.75	6	2.73	3.49	18.23
0.0787	2.000	-1.00	10	4.93	6.30	24.53
0.0557	1.414	-0.50	14	4.70	6.01	30.54
0.0394	1.000	0.00	18	6.27	8.01	38.55
0.0278	0.707	0.50	25	6.85	8.75	47.30
0.0197	0.500	1.00	35	6.72	8.59	55.89
0.0166	0.420	1.25	40	4.60	5.88	61.77
0.0139	0.354	1.50	45	3.64	4.65	66.42
0.0098	0.250	2.00	60	6.31	8.06	74.48
0.0070	0.177	2.50	80	4.68	5.98	80.46
0.0049	0.125	3.00	120	4.54	5.80	86.26
0.0029	0.074	3.75	200	4.18	5.34	91.60
0.0021	0.053	4.25	270	2.18	2.79	94.39
0.0015	0.037	4.75	400	1.65	2.11	96.50
			PAN	2.74	3.50	100.00
TOTALS				78.26	100.00	100.00

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	-3.91	0.5913	15.020
10	-3.14	0.3482	8.845
16	-2.07	0.1653	4.200
25	-0.96	0.0766	1.947
40	0.08	0.0372	0.944
50	0.66	0.0250	0.634
60	1.17	0.0174	0.443
75	2.04	0.0096	0.243
84	2.80	0.0056	0.143
90	3.52	0.0034	0.087
95	4.39	0.0019	0.048

Measure	Trask	Inman	Folk-Ward
Median, phi	0.66	0.66	0.66
Median, in.	0.0250	0.0250	0.0250
Median, mm	0.634	0.634	0.634
Mean, phi	-0.13	0.37	0.46
Mean, in.	0.0431	0.0305	0.0285
Mean, mm	1.095	0.775	0.725
Sorting	2.833	2.438	2.477
Skewness	1.084	-0.119	-0.109
Kurtosis	0.097	0.703	1.133

Grain Size Description (ASTM-USCS Scale)	Medium sand (based on Mean from Trask)

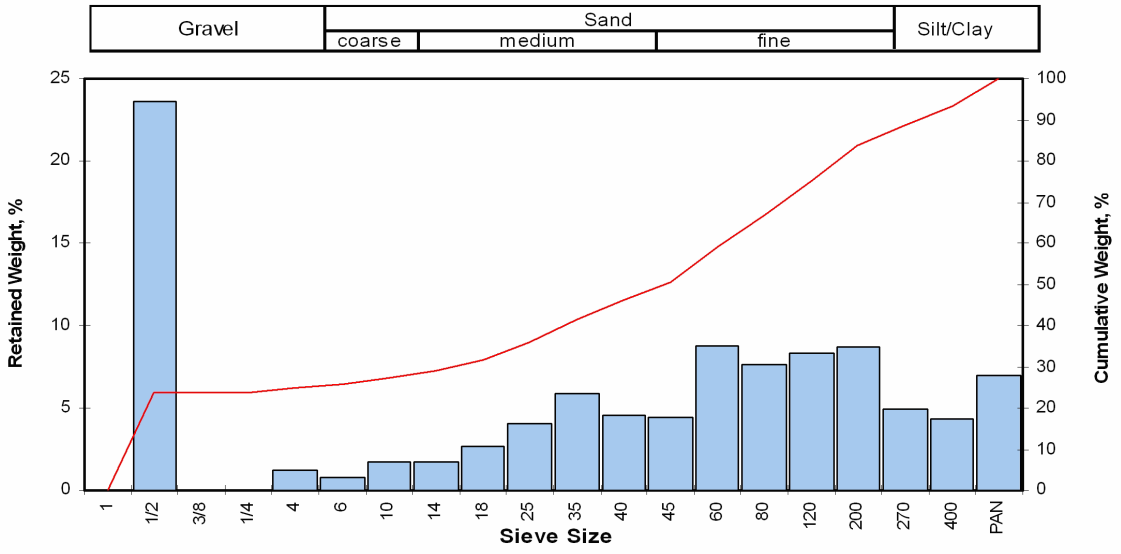
Description	Retained on Sieve #	Weight Percent
Gravel	4	14.75
Coarse Sand	10	9.79
Medium Sand	40	37.23
Fine Sand	200	29.84
Silt/Clay	<200	8.40
	Total	100

Phone: (562) 907-3607 Fax: (562) 907-3610

PTS Laboratories, Inc.

Particle Size Analysis - ASTM D422M

Client:	BC Laboratories	**PTS File No:**	43193
Project:	N/A	**Sample ID:**	1305472-03
Project No:	1305472	**Depth, ft:**	N/A



Opening		Phi of	U.S. Sieve	Sample Weight	Incremental Weight,	Cumulative Weight,
Inches	Millimeters	Screen	No.	grams	percent	percent
0.9844	25.002	-4.64	1	0.00	0.00	0.00
0.4922	12.501	-3.64	1/2	21.15	23.63	23.63
0.3740	9.500	-3.25	3/8	0.00	0.00	23.63
0.2500	6.351	-2.67	1/4	0.00	0.00	23.63
0.1873	4.757	-2.25	4	1.07	1.20	24.82
0.1324	3.364	-1.75	6	0.69	0.77	25.59
0.0787	2.000	-1.00	10	1.50	1.68	27.27
0.0557	1.414	-0.50	14	1.56	1.74	29.01
0.0394	1.000	0.00	18	2.40	2.68	31.69
0.0278	0.707	0.50	25	3.67	4.10	35.79
0.0197	0.500	1.00	35	5.25	5.86	41.66
0.0166	0.420	1.25	40	4.03	4.50	46.16
0.0139	0.354	1.50	45	3.95	4.41	50.57
0.0098	0.250	2.00	60	7.82	8.74	59.31
0.0070	0.177	2.50	80	6.82	7.62	66.92
0.0049	0.125	3.00	120	7.40	8.27	75.19
0.0029	0.074	3.75	200	7.78	8.69	83.88
0.0021	0.053	4.25	270	4.36	4.87	88.75
0.0015	0.037	4.75	400	3.86	4.31	93.06
			PAN	6.21	6.94	100.00
TOTALS				89.52	100.00	100.00

Cumulative Weight Percent greater than

Weight percent	Phi Value	Particle Size Inches	Particle Size Millimeters
5	-4.23	0.7365	18.708
10	-3.81	0.5511	13.999
16	-3.31	0.3891	9.884
25	-2.13	0.1728	4.390
40	0.86	0.0217	0.551
50	1.47	0.0142	0.362
60	2.05	0.0095	0.242
75	2.99	0.0050	0.126
84	3.76	0.0029	0.074
90	4.39	0.0019	0.048
95			

Measure	Trask	Inman	Folk-Ward
Median, phi	1.47	1.47	1.47
Median, in.	0.0142	0.0142	0.0142
Median, mm	0.362	0.362	0.362
Mean, phi	-1.17	0.23	0.64
Mean, in.	0.0889	0.0336	0.0252
Mean, mm	2.258	0.853	0.641
Sorting	5.902	3.534	
Skewness	2.057	-0.351	
Kurtosis	0.153		

Grain Size Description (ASTM-USCS Scale)	Coarse sand (based on Mean from Trask)

Description	Retained on Sieve #	Weight Percent
Gravel	4	24.82
Coarse Sand	10	2.45
Medium Sand	40	18.89
Fine Sand	200	37.72
Silt/Clay	<200	16.12
	Total	100

Phone: (562) 907-3607 Fax: (562) 907-3610

SUBCONTRACT ORDER

BC Laboratories

1305472 43193

SENDING LABORATORY:

BC Laboratories
4100 Atlas Ct
Bakersfield, CA 93308
Phone: 661-327-4911
Fax: 661-327-1918
Project Manager: Molly Meyers

RECEIVING LABORATORY:

PTS Laboratories, Inc. $PTSLB
8100 Secura Way
Santa Fe Springs, CA 90670
Phone :562-907-3607
Fax: (562) 907-3610

Analysis	Due	Expires	Laboratory ID	Comments
✓**Sample ID: 1305472-01**	**Solids**	**Sampled:03/14/13 09:30**		
oiWalkleyBlack_s TOC PTSLB	04/01/13 17:00	03/13/14 09:30		TOC/FOC
oiAPI-RP40s Total Porosity PTSLB	04/01/13 17:00	03/13/14 09:30		
oiAPI-RP40s Air-Filled Porosity PTSLB	04/01/13 17:00	03/13/14 09:30		AIR AND WATER FILLED POROSITY
oiA-D422Ms Grain Size Distr PTSLB	04/01/13 17:00	03/13/14 09:30		
oiA-D2937s Bulk Density PTSLB	04/01/13 17:00	03/13/14 09:30		
Containers Supplied: Soil sleeve				
✓**Sample ID: 1305472-03**	**Solids**	**Sampled:03/14/13 10:30**		
oiWalkleyBlack_s TOC PTSLB	04/01/13 17:00	03/13/14 10:30		TOC/FOC
oiAPI-RP40s Total Porosity PTSLB	04/01/13 17:00	03/13/14 10:30		
oiAPI-RP40s Air-Filled Porosity PTSLB	04/01/13 17:00	03/13/14 10:30		AIR AND WATER FILLED POROSITY
oiA-D422Ms Grain Size Distr PTSLB	04/01/13 17:00	03/13/14 10:30		
oiA-D2937s Bulk Density PTSLB	04/01/13 17:00	03/13/14 10:30		
Containers Supplied: Soil Sleeve				

Released By	Date	Received By	Date
Vom Chan	3/25/13		3/26/13 12:35 54.4°F
Released By	Date	Received By	Date

Page 1 of 1

AECOM
1220 Avenida Acaso
Camarillo, CA 93012

Reported: 04/22/2013 16:17
Project: 1156
Project Number: 351645
Project Manager: Brenda Evans

Notes And Definitions

MDL	Method Detection Limit
ND	Analyte Not Detected at or above the reporting limit
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference

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4/25/2013
Mr. Jim Harms
AECOM Environment
10461 Old Placerville Road
Suite 170
Sacramento CA 95827

Project Name: 351645
Project #: 60264254-A10
Workorder #: 1304248A

Dear Mr. Jim Harms

The following report includes the data for the above referenced project for sample(s) received on 4/10/2013 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1304248A

Work Order Summary

CLIENT:	Mr. Jim Harms AECOM Environment 10461 Old Placerville Road Suite 170 Sacramento, CA 95827	**BILL TO:**	Accounts Payable Camarillo AECOM Environment 1220 Avenida Acaso Camarillo, CA 93012
PHONE:	916-362-7100	**P.O. #**	44896ACM
FAX:	916-362-8100	**PROJECT #**	60264254-A10 351645
DATE RECEIVED:	04/10/2013	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/25/2013		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVW-3-V-N-5-20130408	Modified TO-15	2.2 "Hg	15 psi
02A	SVW-6-V-N-5-20130408	Modified TO-15	0.6 "Hg	15.1 psi
03A	SVW-1-V-N-5-20130408	Modified TO-15	11.4 "Hg	14.6 psi
04A	EB-1-V-N-20130408	Modified TO-15	0.3 psi	14 psi
05A	SVW-2-V-N-5-20130408	Modified TO-15	5.3 "Hg	14.4 psi
06A	SV-2-V-N-5-20130408	Modified TO-15	6.3 "Hg	14.5 psi
07A	SVW-5-V-N-5-20130408	Modified TO-15	3.9 "Hg	15.6 psi
08A	Lab Blank	Modified TO-15	NA	NA
08B	Lab Blank	Modified TO-15	NA	NA
09A	CCV	Modified TO-15	NA	NA
09B	CCV	Modified TO-15	NA	NA
10A	LCS	Modified TO-15	NA	NA
10AA	LCSD	Modified TO-15	NA	NA
10B	LCS	Modified TO-15	NA	NA
10BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 04/25/13

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
AECOM Environment
Workorder# 1304248A

Seven 1 Liter Summa Canister (100% Certified) samples were received on April 10, 2013. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuum for sample EB-1-V-N-20130408 was measured at ambient pressure in the field. This ambient pressure reading was confirmed by the laboratory upon sample receipt.

Analytical Notes

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Dilution was performed on samples SVW-3-V-N-5-20130408, SVW-6-V-N-5-20130408, SVW-2-V-N-5, 20130408, SV-2-V-N-5-20130408, and SVW-5-V-N-5-20130408 due to the presence of high level non-target species.

The recovery of surrogate 1,2-Dichloroethane-d4 in samples SVW-2-V-N-5-20130408 and SV-2-V-N-5-20130408 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV and/or LCS.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	11000	380000	35000	1200000
Ethyl Benzene	11000	150000	47000	630000
m,p-Xylene	11000	150000	47000	660000
TPH ref. to Gasoline (MW=100)	540000	45000000	2200000	180000000

Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	10000	440000	33000	1400000
Ethyl Benzene	10000	160000	45000	700000
m,p-Xylene	10000	130000	45000	580000
TPH ref. to Gasoline (MW=100)	520000	65000000	2100000	260000000

Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.6	3.0	5.1	9.8
TPH ref. to Gasoline (MW=100)	80	340	330	1400

Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248A-04A

No Detections Were Found.

Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1200	18000	3800	59000
Ethyl Benzene	1200	2800	5200	12000
m,p-Xylene	1200	2200	5200	9400

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248A-05A

TPH ref. to Gasoline (MW=100)	60000	9000000	240000	37000000

Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	250	1500	800	4900
Toluene	250	400	950	1500
m,p-Xylene	250	380	1100	1600
TPH ref. to Gasoline (MW=100)	13000	1600000	52000	6600000

Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	12000	270000	38000	870000
Ethyl Benzene	12000	36000	51000	160000
m,p-Xylene	12000	23000	51000	100000
TPH ref. to Gasoline (MW=100)	590000	59000000	2400000	240000000

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Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042220**	**Date of Collection:**	**4/8/13 9:01:00 AM**
Dil. Factor:	**21800**	**Date of Analysis:**	**4/22/13 10:33 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	11000	Not Detected	39000	Not Detected
Benzene	11000	380000	35000	1200000
Toluene	11000	Not Detected	41000	Not Detected
Ethyl Benzene	11000	150000	47000	630000
m,p-Xylene	11000	150000	47000	660000
o-Xylene	11000	Not Detected	47000	Not Detected
Naphthalene	44000	Not Detected	230000	Not Detected
TPH ref. to Gasoline (MW=100)	540000	45000000	2200000	180000000

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	109	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042221**	**Date of Collection:**	**4/8/13 9:52:00 AM**
Dil. Factor:	**20700**	**Date of Analysis:**	**4/22/13 11:04 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	10000	Not Detected	37000	Not Detected
Benzene	10000	440000	33000	1400000
Toluene	10000	Not Detected	39000	Not Detected
Ethyl Benzene	10000	160000	45000	700000
m,p-Xylene	10000	130000	45000	580000
o-Xylene	10000	Not Detected	45000	Not Detected
Naphthalene	41000	Not Detected	220000	Not Detected
TPH ref. to Gasoline (MW=100)	520000	65000000	2100000	260000000

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042225**	**Date of Collection:**	**4/8/13 11:11:00 AM**
Dil. Factor:	**3.22**	**Date of Analysis:**	**4/23/13 10:14 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	1.6	Not Detected	5.8	Not Detected
Benzene	1.6	3.0	5.1	9.8
Toluene	1.6	Not Detected	6.1	Not Detected
Ethyl Benzene	1.6	Not Detected	7.0	Not Detected
m,p-Xylene	1.6	Not Detected	7.0	Not Detected
o-Xylene	1.6	Not Detected	7.0	Not Detected
Naphthalene	6.4	Not Detected	34	Not Detected
TPH ref. to Gasoline (MW=100)	80	340	330	1400

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	86	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042218**	**Date of Collection:**	**4/8/13 11:50:00 AM**
Dil. Factor:	**1.91**	**Date of Analysis:**	**4/22/13 09:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.96	Not Detected	3.4	Not Detected
Benzene	0.96	Not Detected	3.0	Not Detected
Toluene	0.96	Not Detected	3.6	Not Detected
Ethyl Benzene	0.96	Not Detected	4.1	Not Detected
m,p-Xylene	0.96	Not Detected	4.1	Not Detected
o-Xylene	0.96	Not Detected	4.1	Not Detected
Naphthalene	3.8	Not Detected	20	Not Detected
TPH ref. to Gasoline (MW=100)	48	Not Detected	200	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042219**	**Date of Collection:**	**4/8/13 11:56:00 AM**
Dil. Factor:	**2400**	**Date of Analysis:**	**4/22/13 09:54 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	1200	Not Detected	4300	Not Detected
Benzene	1200	18000	3800	59000
Toluene	1200	Not Detected	4500	Not Detected
Ethyl Benzene	1200	2800	5200	12000
m,p-Xylene	1200	2200	5200	9400
o-Xylene	1200	Not Detected	5200	Not Detected
Naphthalene	4800	Not Detected	25000	Not Detected
TPH ref. to Gasoline (MW=100)	60000	9000000	240000	37000000

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130
1,2-Dichloroethane-d4	133 Q	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042321**	**Date of Collection: 4/8/13 2:25:00 PM**	
Dil. Factor:	**504**	**Date of Analysis: 4/24/13 10:32 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	250	Not Detected	910	Not Detected
Benzene	250	1500	800	4900
Toluene	250	400	950	1500
Ethyl Benzene	250	Not Detected	1100	Not Detected
m,p-Xylene	250	380	1100	1600
o-Xylene	250	Not Detected	1100	Not Detected
Naphthalene	1000	Not Detected	5300	Not Detected
TPH ref. to Gasoline (MW=100)	13000	1600000	52000	6600000

Q = Exceeds Quality Control limits of 70% to 130%, due to matrix effects.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	140 Q	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042222**	**Date of Collection: 4/8/13 3:08:00 PM**	
Dil. Factor:	**23700**	**Date of Analysis: 4/23/13 08:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	12000	Not Detected	43000	Not Detected
Benzene	12000	270000	38000	870000
Toluene	12000	Not Detected	45000	Not Detected
Ethyl Benzene	12000	36000	51000	160000
m,p-Xylene	12000	23000	51000	100000
o-Xylene	12000	Not Detected	51000	Not Detected
Naphthalene	47000	Not Detected	250000	Not Detected
TPH ref. to Gasoline (MW=100)	590000	59000000	2400000	240000000

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	91	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1304248A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042217**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 08:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected
TPH ref. to Gasoline (MW=100)	25	Not Detected	100	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1304248A-08B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042307**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 02:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Naphthalene	2.0	Not Detected	10	Not Detected
TPH ref. to Gasoline (MW=100)	25	Not Detected	100	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 1304248A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 10:45 AM**	

Compound	%Recovery
Methyl tert-butyl ether	96
Benzene	94
Toluene	96
Ethyl Benzene	108
m,p-Xylene	109
o-Xylene	110
Naphthalene	86
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: CCV

Lab ID#: 1304248A-09B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 11:28 AM**	

Compound	%Recovery
Methyl tert-butyl ether	112
Benzene	94
Toluene	93
Ethyl Benzene	107
m,p-Xylene	109
o-Xylene	112
Naphthalene	98
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 1304248A-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 12:40 PM**	

Compound	**%Recovery**
Methyl tert-butyl ether	95
Benzene	92
Toluene	80
Ethyl Benzene	103
m,p-Xylene	107
o-Xylene	106
Naphthalene	82
TPH ref. to Gasoline (MW=100)	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	87	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 1304248A-10AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042205**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 01:47 PM**	

Compound	**%Recovery**
Methyl tert-butyl ether	100
Benzene	93
Toluene	95
Ethyl Benzene	103
m,p-Xylene	108
o-Xylene	107
Naphthalene	82
TPH ref. to Gasoline (MW=100)	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: LCS

Lab ID#: 1304248A-10B

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 12:07 PM**	

Compound	**%Recovery**
Methyl tert-butyl ether	103
Benzene	91
Toluene	88
Ethyl Benzene	103
m,p-Xylene	106
o-Xylene	108
Naphthalene	79
TPH ref. to Gasoline (MW=100)	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 1304248A-10BB

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042304**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 12:32 PM**	

Compound	**%Recovery**
Methyl tert-butyl ether	107
Benzene	92
Toluene	90
Ethyl Benzene	102
m,p-Xylene	107
o-Xylene	106
Naphthalene	81
TPH ref. to Gasoline (MW=100)	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	105	70-130

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4/24/2013
Mr. Jim Harms
AECOM Environment
10461 Old Placerville Road
Suite 170
Sacramento CA 95827

Project Name: 351645
Project #: 60264254-A10
Workorder #: 1304248C

Dear Mr. Jim Harms

The following report includes the data for the above referenced project for sample(s) received on 4/10/2013 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1304248C

Work Order Summary

CLIENT:	Mr. Jim Harms AECOM Environment 10461 Old Placerville Road Suite 170 Sacramento, CA 95827	**BILL TO:**	Accounts Payable Camarillo AECOM Environment 1220 Avenida Acaso Camarillo, CA 93012
PHONE:	916-362-7100	**P.O. #**	44896ACM
FAX:	916-362-8100	**PROJECT #**	60264254-A10 351645
DATE RECEIVED:	04/10/2013	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/24/2013		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVW-3-V-N-5-20130408	Modified ASTM D-1946	2.2 "Hg	15 psi
02A	SVW-6-V-N-5-20130408	Modified ASTM D-1946	0.6 "Hg	15.1 psi
03A	SVW-1-V-N-5-20130408	Modified ASTM D-1946	11.4 "Hg	14.6 psi
04A	EB-1-V-N-20130408	Modified ASTM D-1946	0.3 psi	14 psi
05A	SVW-2-V-N-5-20130408	Modified ASTM D-1946	5.3 "Hg	14.4 psi
06A	SV-2-V-N-5-20130408	Modified ASTM D-1946	6.3 "Hg	14.5 psi
07A	SVW-5-V-N-5-20130408	Modified ASTM D-1946	3.9 "Hg	15.6 psi
08A	Lab Blank	Modified ASTM D-1946	NA	NA
08B	Lab Blank	Modified ASTM D-1946	NA	NA
09A	LCS	Modified ASTM D-1946	NA	NA
09AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 04/24/13

Technical Director

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-4, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2012, Expiration date: 10/17/2013.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM Environment
Workorder# 1304248C

Seven 1 Liter Summa Canister (100% Certified) samples were received on April 10, 2013. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuum for sample EB-1-V-N-20130408 was measured at ambient pressure. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

The reporting limit for Nitrogen was raised from 0.10% to 0.50%.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248C-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	0.83
Nitrogen	1.1	44
Carbon Dioxide	0.022	10
Methane	0.00022	40

Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248C-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.3
Nitrogen	1.0	35
Carbon Dioxide	0.021	15
Methane	0.00021	37

Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248C-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.32	6.5
Nitrogen	1.6	90
Carbon Dioxide	0.032	2.5
Methane	0.00032	0.00081
Helium	0.16	0.65

Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248C-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.19	0.31
Nitrogen	0.96	100

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248C-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.4
Nitrogen	1.2	82
Carbon Dioxide	0.024	11
Methane	0.00024	5.4

Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248C-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.9
Nitrogen	1.3	94
Carbon Dioxide	0.025	2.7
Methane	0.00025	0.49

Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248C-07A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.3
Nitrogen	1.2	67
Carbon Dioxide	0.024	16
Methane	0.00024	8.4

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Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248C-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042308**	**Date of Collection: 4/8/13 9:01:00 AM**	
Dil. Factor:	**2.18**	**Date of Analysis: 4/23/13 09:31 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	0.83
Nitrogen	1.1	44
Carbon Dioxide	0.022	10
Methane	0.00022	40
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248C-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042309**	**Date of Collection: 4/8/13 9:52:00 AM**	
Dil. Factor:	**2.07**	**Date of Analysis: 4/23/13 09:59 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	1.3
Nitrogen	1.0	35
Carbon Dioxide	0.021	15
Methane	0.00021	37
Helium	0.10	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248C-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042311**	**Date of Collection: 4/8/13 11:11:00 AM**	
Dil. Factor:	**3.22**	**Date of Analysis: 4/23/13 10:57 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.32	6.5
Nitrogen	1.6	90
Carbon Dioxide	0.032	2.5
Methane	0.00032	0.00081
Helium	0.16	0.65

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248C-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042312**	**Date of Collection:**	**4/8/13 11:50:00 AM**
Dil. Factor:	**1.91**	**Date of Analysis:**	**4/23/13 11:22 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.19	0.31
Nitrogen	0.96	100
Carbon Dioxide	0.019	Not Detected
Methane	0.00019	Not Detected
Helium	0.096	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248C-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042313**	**Date of Collection: 4/8/13 11:56:00 AM**	
Dil. Factor:	**2.40**	**Date of Analysis: 4/23/13 11:46 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.4
Nitrogen	1.2	82
Carbon Dioxide	0.024	11
Methane	0.00024	5.4
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248C-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042314**	**Date of Collection: 4/8/13 2:25:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 4/23/13 12:34 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	1.9
Nitrogen	1.3	94
Carbon Dioxide	0.025	2.7
Methane	0.00025	0.49
Helium	0.13	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248C-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042315**	**Date of Collection: 4/8/13 3:08:00 PM**	
Dil. Factor:	**2.37**	**Date of Analysis: 4/23/13 12:59 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.3
Nitrogen	1.2	67
Carbon Dioxide	0.024	16
Methane	0.00024	8.4
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: Lab Blank

Lab ID#: 1304248C-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042306**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 08:29 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.10	Not Detected
Nitrogen	0.50	Not Detected
Carbon Dioxide	0.010	Not Detected
Methane	0.00010	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1304248C-08B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042305c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 08:01 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1304248C-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 06:43 AM**	

Compound	%Recovery
Oxygen	102
Nitrogen	101
Carbon Dioxide	101
Methane	99
Helium	100

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1304248C-09AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10042331**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 09:06 PM**	

Compound	%Recovery
Oxygen	103
Nitrogen	100
Carbon Dioxide	101
Methane	99
Helium	100

Container Type: NA - Not Applicable

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4/26/2013
Mr. Jim Harms
AECOM Environment
10461 Old Placerville Road
Suite 170
Sacramento CA 95827

Project Name: 351645
Project #: 60264254-A10
Workorder #: 1304248B

Dear Mr. Jim Harms

The following report includes the data for the above referenced project for sample(s) received on 4/10/2013 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 APH are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1304248B

Work Order Summary

CLIENT:	Mr. Jim Harms AECOM Environment 10461 Old Placerville Road Suite 170 Sacramento, CA 95827	**BILL TO:**	Accounts Payable Camarillo AECOM Environment 1220 Avenida Acaso Camarillo, CA 93012
PHONE:	916-362-7100	**P.O. #**	44896ACM
FAX:	916-362-8100	**PROJECT #**	60264254-A10 351645
DATE RECEIVED:	04/10/2013	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/26/2013		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SVW-3-V-N-5-20130408	Modified TO-15 APH	2.2 "Hg	15 psi
01B	SVW-3-V-N-5-20130408	Modified TO-15 APH	2.2 "Hg	15 psi
02A	SVW-6-V-N-5-20130408	Modified TO-15 APH	0.6 "Hg	15.1 psi
02B	SVW-6-V-N-5-20130408	Modified TO-15 APH	0.6 "Hg	15.1 psi
03A	SVW-1-V-N-5-20130408	Modified TO-15 APH	11.4 "Hg	14.6 psi
03B	SVW-1-V-N-5-20130408	Modified TO-15 APH	11.4 "Hg	14.6 psi
04A	EB-1-V-N-20130408	Modified TO-15 APH	0.3 psi	14 psi
04B	EB-1-V-N-20130408	Modified TO-15 APH	0.3 psi	14 psi
05A	SVW-2-V-N-5-20130408	Modified TO-15 APH	5.3 "Hg	14.4 psi
05B	SVW-2-V-N-5-20130408	Modified TO-15 APH	5.3 "Hg	14.4 psi
06A	SV-2-V-N-5-20130408	Modified TO-15 APH	6.3 "Hg	14.5 psi
06B	SV-2-V-N-5-20130408	Modified TO-15 APH	6.3 "Hg	14.5 psi
07A	SVW-5-V-N-5-20130408	Modified TO-15 APH	3.9 "Hg	15.6 psi
07B	SVW-5-V-N-5-20130408	Modified TO-15 APH	3.9 "Hg	15.6 psi
08A	Lab Blank	Modified TO-15 APH	NA	NA
08B	Lab Blank	Modified TO-15 APH	NA	NA
08C	Lab Blank	Modified TO-15 APH	NA	NA
08D	Lab Blank	Modified TO-15 APH	NA	NA
09A	CCV	Modified TO-15 APH	NA	NA
09B	CCV	Modified TO-15 APH	NA	NA
09C	CCV	Modified TO-15 APH	NA	NA
09D	CCV	Modified TO-15 APH	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 04/26/13

Technical Director

Certification numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-4, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2012, Expiration date: 10/17/2013.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15 & VPH Fractions
AECOM Environment
Workorder# 1304248B

Seven 1 Liter Summa Canister (100% Certified) samples were received on April 10, 2013. The laboratory performed analysis via EPA Method TO-15 and Air Toxics VPH (Volatile Petroleum Hydrocarbon) methods for the Determination of VPH Fractions using GC/MS in the full scan mode. The method involves concentrating up to 0.5 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis. This method is designed to measure gaseous phase aliphatic and aromatic compounds in ambient air and soil gas collected in stainless steel Summa canisters. Air Toxics VPH method is a hybrid of EPA TO-15, MADEP APH and WSDE VPH methods. Chromatographic peaks were identified via mass spectrum as either aliphatic or aromatic petroleum hydrocarbons and included in the appropriate range as defined by the method. The volatile Aliphatic hydrocarbons are collectively quantified within the C5 to C6 range, C6 to C8 range, C8 to C10 range and the C10 to C12 range. Additionally, the volatile Aromatic hydrocarbons are collectively quantified within the C8 to C10 range and the C10 to C12 range. The Aromatic ranges refer to the equivalent carbon (EC) ranges.

Aliphatic data is calculated from the Total Ion chromatogram which has been reprocessed in a duplicate file differentiated from the original by the addition of an alphanumeric extension. The Aromatic calculation also uses the information contained in the associated Extracted Ion file.

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuum for sample EB-1-V-N-20130408 was measured at ambient pressure. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Dilution was performed on samples SVW-3-V-N-5-20130408, SVW-6-V-N-5-20130408, SVW-2-V-N-5-20130408, SV-2-V-N-5-20130408 and SVW-5-V-N-5-20130408 due to matrix interference.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248B-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	220000	12000000	700000	39000000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	220000	16000000	890000	66000000

Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248B-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	220000	280000	1100000	1400000

Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248B-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	210000	27000000	670000	87000000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	210000	18000000	850000	75000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	210000	240000	1200000	1400000

Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248B-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	210000	270000	1000000	1300000

Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248B-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	32	160	100	520

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Summary of Detected Compounds
MODIFIED METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248B-03A

>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	32	44	130	180

Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248B-03B

No Detections Were Found.

Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248B-04A

No Detections Were Found.

Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248B-04B

No Detections Were Found.

Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248B-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	24000	2100000	78000	6700000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	24000	3900000	98000	16000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	24000	120000	140000	670000

Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248B-05B

No Detections Were Found.

Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248B-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	5000	130000	16000	440000

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Summary of Detected Compounds
MODIFIED METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248B-06A

>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	5000	940000	21000	3800000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	5000	45000	29000	260000

Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248B-06B

No Detections Were Found.

Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248B-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	240000	22000000	770000	71000000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	240000	17000000	970000	71000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	240000	380000	1400000	2200000

Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248B-07B

No Detections Were Found.

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Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248B-01A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042220a**	**Date of Collection: 4/8/13 9:01:00 AM**	
Dil. Factor:	**21800**	**Date of Analysis: 4/22/13 10:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	220000	12000000	700000	39000000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	220000	16000000	890000	66000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	220000	Not Detected	1300000	Not Detected
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	220000	Not Detected	1500000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-3-V-N-5-20130408

Lab ID#: 1304248B-01B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042220c**	**Date of Collection: 4/8/13 9:01:00 AM**	
Dil. Factor:	**21800**	**Date of Analysis: 4/22/13 10:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	220000	280000	1100000	1400000
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	220000	Not Detected	1200000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248B-02A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042221a**	**Date of Collection: 4/8/13 9:52:00 AM**	
Dil. Factor:	**20700**	**Date of Analysis: 4/22/13 11:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	210000	27000000	670000	87000000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	210000	18000000	850000	75000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	210000	240000	1200000	1400000
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	210000	Not Detected	1400000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-6-V-N-5-20130408

Lab ID#: 1304248B-02B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042221c**	**Date of Collection: 4/8/13 9:52:00 AM**	
Dil. Factor:	**20700**	**Date of Analysis: 4/22/13 11:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	210000	270000	1000000	1300000
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	210000	Not Detected	1100000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248B-03A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042225a**	**Date of Collection: 4/8/13 11:11:00 AM**	
Dil. Factor:	**3.22**	**Date of Analysis: 4/23/13 10:14 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	32	160	100	520
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	32	44	130	180
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	32	Not Detected	190	Not Detected
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	32	Not Detected	220	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-1-V-N-5-20130408

Lab ID#: 1304248B-03B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042225c**	**Date of Collection: 4/8/13 11:11:00 AM**	
Dil. Factor:	**3.22**	**Date of Analysis: 4/23/13 10:14 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	32	Not Detected	160	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	32	Not Detected	180	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248B-04A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042218a**	**Date of Collection: 4/8/13 11:50:00 AM**	
Dil. Factor:	**1.91**	**Date of Analysis: 4/22/13 09:18 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	19	Not Detected	62	Not Detected
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	19	Not Detected	78	Not Detected
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	19	Not Detected	110	Not Detected
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	19	Not Detected	130	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: EB-1-V-N-20130408

Lab ID#: 1304248B-04B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042218c**	**Date of Collection: 4/8/13 11:50:00 AM**	
Dil. Factor:	**1.91**	**Date of Analysis: 4/22/13 09:18 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	19	Not Detected	94	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	19	Not Detected	100	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248B-05A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042219a**	**Date of Collection: 4/8/13 11:56:00 AM**	
Dil. Factor:	**2400**	**Date of Analysis: 4/22/13 09:54 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	24000	2100000	78000	6700000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	24000	3900000	98000	16000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	24000	120000	140000	670000
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	24000	Not Detected	170000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-2-V-N-5-20130408

Lab ID#: 1304248B-05B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042219c**	**Date of Collection: 4/8/13 11:56:00 AM**	
Dil. Factor:	**2400**	**Date of Analysis: 4/22/13 09:54 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	24000	Not Detected	120000	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	24000	Not Detected	130000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248B-06A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042321a**	**Date of Collection: 4/8/13 2:25:00 PM**	
Dil. Factor:	**504**	**Date of Analysis: 4/24/13 10:32 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	5000	130000	16000	440000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	5000	940000	21000	3800000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	5000	45000	29000	260000
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	5000	Not Detected	35000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SV-2-V-N-5-20130408

Lab ID#: 1304248B-06B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042321c**	**Date of Collection: 4/8/13 2:25:00 PM**	
Dil. Factor:	**504**	**Date of Analysis: 4/24/13 10:32 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	5000	Not Detected	25000	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	5000	Not Detected	28000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248B-07A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042222a**	**Date of Collection: 4/8/13 3:08:00 PM**	
Dil. Factor:	**23700**	**Date of Analysis: 4/23/13 08:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	240000	22000000	770000	71000000
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	240000	17000000	970000	71000000
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	240000	380000	1400000	2200000
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	240000	Not Detected	1600000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: SVW-5-V-N-5-20130408

Lab ID#: 1304248B-07B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042222c**	**Date of Collection: 4/8/13 3:08:00 PM**	
Dil. Factor:	**23700**	**Date of Analysis: 4/23/13 08:23 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	240000	Not Detected	1200000	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	240000	Not Detected	1300000	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: Lab Blank

Lab ID#: 1304248B-08A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042217a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 08:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	10	Not Detected	32	Not Detected
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	10	Not Detected	41	Not Detected
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	10	Not Detected	58	Not Detected
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	10	Not Detected	70	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1304248B-08B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042217c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 08:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	10	Not Detected	49	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	10	Not Detected	55	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1304248B-08C

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042307a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 02:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	10	Not Detected	32	Not Detected
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	10	Not Detected	41	Not Detected
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	10	Not Detected	58	Not Detected
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	10	Not Detected	70	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1304248B-08D

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042307c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 02:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	10	Not Detected	49	Not Detected
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	10	Not Detected	55	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 1304248B-09A

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042206a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 02:20 PM**	

Compound	%Recovery
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	68 Q
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	73
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	74
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	90

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 1304248B-09B

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042206c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/22/13 02:20 PM**	

Compound	%Recovery
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	116
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	133

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 1304248B-09C

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042305a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 01:23 PM**	

Compound	%Recovery
C5-C6 Aliphatic Hydrocarbons (ref. to Pentane + Hexane)	72
>C6-C8 Aliphatic Hydrocarbons (ref. to Heptane)	73
>C8-C10 Aliphatic Hydrocarbons (ref. to Decane)	69
>C10-C12 Aliphatic Hydrocarbons (ref. to Dodecane)	84

Container Type: NA - Not Applicable

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Client Sample ID: CCV

Lab ID#: 1304248B-09D

MODIFIED METHOD TO-15 GC/MS FULL SCAN

File Name:	**3042305c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/23/13 01:23 PM**	

Compound	%Recovery
>C8-C10 Aromatic Hydrocarbons (ref. to 1,2,3-TMB)	115
>C10-C12 Aromatic Hydrocarbons (ref. to 1,2,4,5-TMB)	131

Container Type: NA - Not Applicable

CHAIN OF CUSTODY

AECOM

Lab: Eurofins Air Toxics

TAT: standard

Report results to:

Name	Brenda Evans (brenda.evans@aecom.com)
Company	AECOM
Mailing Address	1220 Avenida Acaso
City, State, Zip	Camarillo, CA 93012
Telephone No.	805.233.3988
Fax No.	805.388.3577

Project Information

Chevron Facility:	351645
Site Address:	4276 MacArthur Boulevard, Oakland, CA
AECOM No.	60264254-A10

1304248

Special instructions and/or specific regulatory requirements:

report results in micrograms per cubic meter

Sample Identification	Date Sampled	Time Sampled	Can #	CO2, He, N2, O2, CH4 - ASTM D-1946 mod	TPHg, BTEX, MTBE, Naph by Modified TO-15 APH Fractions (Sp)-Full list+Nap+APH	Canister Pressure/Vacuum Initial	Canister Pressure/Vacuum Final	Initial	Final	Comments
SVW-3-V-N-5-20130408	4-8-13	0901	15747	X	X	-29	-3.5			01A
SVW-6-V-N-5-20130408	4-8-13	0952	37800	X	X	-29	-2.5			02A
SVW-1-V-N-5-20130408	4-8-13	1111	37792	X	X	-29	-12			03A
EB 1-V-N-20130408	4-8-13	1150	31654	X	X	-29	0			04A
SVW-2-V-N-5-20130408	4-8-13	1156	21021	X	X	-29.8	-5			05A
SV-2-V-N-5-20130408	4-8-13	1425	36392	X	X	-29.5	-5			06A
SVW-5-V-N-5-20130408	4-8-13	1508	36581	X	X	-29	-4			07A

Relinquished by: [signature] *Date/Time* 4/10/13 1414 *Received by:* [signature] ATL *Date/Time* 04/10/13 1414

Relinquished by: *Date/Time* *Received by:* *Date/Time*

Method of Shipment: Hand Delivery *Sample Condition on Receipt:*

Attachment D

Vapor Sampling Field Sheets

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron | Date 4/8/13
Project Number: 60264254
Site Location: 4276 MacArthur Blvd, Oakland, CA
Field Personnel: Jim Harms
Subslab probe,

Sample Data	Sample ID	SV-1	DUPE				
	Canister Serial No.	35669	33792				
	Flow Controller Serial No.	20947	20947			20902	
	Sample Depth (Ft.)	5					
	Tubing length	9'					
	Purge Volume and Rate	148.5 / 170					
	Calculated Duration of Purge (3 tubing volumes)	52.4					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	1217	1228	1238	1250	1256	
	Initial Canister Vacuum (inches Hg)	-21	-21	-21	-21	-19.5	
	Time Sample-Train Leak Test Ends	1223	1233	1242	1254	13.07	
	Duration of Leak Test	~~6min~~	~~5~~ 5min	4 min	4 min	10 min	
	Final Canister Vacuum (inches Hg)	-17 Fail	-19 Fail	-20	-20 Fail	-19.5	
Purge	Time Beginning of Purge					1309	
	Time End of Purge					1310	
	Actual Duration of Purge					54	
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)					-28.5	
	Time Canister Opened					1311	
	Measured Helium % initial	46.6					
	2 min.	40.4	35 min.				
	4 min.	37.7	40 min.				
	6min.	37.1	45 min.				
	8min.	37.4	50 min.				
	10 min.	35.0	55 min.				
	15 min.	31.0	60 min.				
	20 min.	37.8	____ min.				
	25 min.	32.7	____ min.				
	30 min.	Water in well	____ min.		No Sample		
	Comments		____ min.				
	Time Canister Closed						
	Final Canister Pressure (inches Hg)						
	Time of Sample Collection						

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

V = 9 x 5.5 = 49.5

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron | Date 4/18/13

Project Number: 60264254

Site Location: 4276 MacArthur Blvd, Oakland, CA

Field Personnel: Jim Harms

Subslab probe,

Sample Data	Sample ID	SV-2					
	Canister Serial No.	360392					
	Flow Controller Serial No.	20946					
	Sample Depth (Ft.)	5'					
	Tubing length	9'					
	Purge Volume and Rate	148.5/170					
	Calculated Duration of Purge (3 tubing volumes)	52.4					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	1359					
	Initial Canister Vacuum (inches Hg)	-22.5					
	Time Sample-Train Leak Test Ends	1409					
	Duration of Leak Test	~~22.5~~ 10 mins					
	Final Canister Vacuum (inches Hg)	-22.5					
Purge	Time Beginning of Purge	1403					
	Time End of Purge	1404					
	Actual Duration of Purge	53sec					
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)	-29.5					
	Time Canister Opened	1405					
	Measured Helium % initial	38.2					
	2 min.	37.6	35 min.				
	4 min.	34.4	40 min.				
	6min.	32.0	45 min.				
	8min.	28.2	50 min.				
	10 min.	28.1	55 min.				
	15 min.	29.2	60 min.				
	20 min.	29	____ min.				
	25 min.		____ min.				
	30 min.		____ min.				
	Comments		____ min.				
	Time Canister Closed	1425					
	Final Canister Pressure (inches Hg)	-5					
	Time of Sample Collection	1425					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron
Project Number: 60264254
Site Location: 4276 MacArthur Blvd, Oakland, CA
Date: 4/8/13
Field Personnel: Jim Harms
Subslab probe,

Sample Data	Sample ID	SVW-1					
	Canister Serial No.	37792					
	Flow Controller Serial No.	20906					
	Sample Depth (Ft.)	5					
	Tubing length	9					
	Purge Volume and Rate	146.5/170					
	Calculated Duration of Purge (3 tubing volumes)	52.4					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	1017					
	Initial Canister Vacuum (inches Hg)	-5					
	Time Sample-Train Leak Test Ends	107					
	Duration of Leak Test	10 min					
	Final Canister Vacuum (inches Hg)	-5					
Purge	Time Beginning of Purge	1027					
	Time End of Purge	1028					
	Actual Duration of Purge	53					
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)	-29					
	Time Canister Opened	1031					
	Measured Helium % initial	25.7					
	2 min.	29.3	35 min.	26.4			
	4 min.	27.1	40 min.	22.9			
	6min.	25.4	45 min.				
	8min.	25.6	50 min.				
	10 min.	26.3	55 min.				
	15 min.	28.8	60 min.				
	20 min.	22.6	____ min.				
	25 min.	28.5	____ min.				
	30 min.	22.0	____ min.				
	Comments	Slow	____ min.				
	Time Canister Closed	1111					
	Final Canister Pressure (inches Hg)	-22					
	Time of Sample Collection	1111					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

9 x 5.5 = 49.5

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron
Project Number: 60264254
Site Location: 4276 MacArthur Blvd, Oakland, CA
Field Personnel: Jim Harms
Subslab probe,
Date 4/8/13

Sample Data	Sample ID	SVW-2					
	Canister Serial No.	21021					
	Flow Controller Serial No.	20141					
	Sample Depth (Ft.)	5					
	Tubing length	9					
	Purge Volume and Rate	148.5 / 170					
	Calculated Duration of Purge (3 tubing volumes)	52.4					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	11:24	11:27				
	Initial Canister Vacuum (Inches Hg)	EMPTY Purge Can	-23.5				
	Time Sample-Train Leak Test Ends		1137				
	Duration of Leak Test	Not Sail	10 min				
	Final Canister Vacuum (inches Hg)		-23.5				
Purge	Time Beginning of Purge		1137				
	Time End of Purge		54				
	Actual Duration of Purge		1139				
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)		-29				
	Time Canister Opened		1140				
	Measured Helium % initial	31.0					
	2 min.	22.5	35 min.				
	4 min.	31.9	40 min.				
	6min.	26.1	45 min.				
	8min.	27.6	50 min.				
	10 min.	29.0	55 min.				
	15 min.	23.2	60 min.				
	20 min.		____ min.				
	25 min.		____ min.				
	30 min.		____ min.				
	Comments		____ min.				
	Time Canister Closed	1156					
	Final Canister Pressure (inches Hg)	-4.9					
	Time of Sample Collection	1156					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

IV = 9 x 5.5 = 49.5

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron
Project Number: 60264254
Date 4/8/13
Site Location: 4276 MacArthur Blvd, Oakland, CA
Field Personnel: Jim Harms
Subslab probe.

Sample Data	Sample ID	SVW3					
	Canister Serial No.	15747					
	Flow Controller Serial No.	20137					
	Sample Depth (Ft.)	5					
	Tubing length	8					
	Purge Volume and Rate	~~182~~ 182/170					
	Calculated Duration of Purge (3 tubing volumes)	~~182~~ 46.5sec					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	8:39					
	Initial Canister Vacuum (inches Hg)	-16					
	Time Sample-Train Leak Test Ends	8:49					
	Duration of Leak Test	10 min					
	Final Canister Vacuum (inches Hg)	-16					
Purge	Time Beginning of Purge	8:51					
	Time End of Purge	~~47~~ sec					
	Actual Duration of Purge	8:52					
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)	-29					
	Time Canister Opened	0855					
	Measured Helium % initial	49.1					
	2 min.	~~40~~ .7	35 min.				
	4 min.	39.2	40 min.				
	6min.	37.3	45 min.				
	8min.		50 min.				
	10 min.		55 min.				
	15 min.		60 min.				
	20 min.		____ min.				
	25 min.		____ min.				
	30 min.		____ min.				
	Comments		____ min.				
	Time Canister Closed	901					
	Final Canister Pressure (inches Hg)	-3.5					
	Time of Sample Collection	901					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron

Project Number: 60264254

Site Location: ~~1840 North Main Street, Walnut Creek, CA~~ Oakland 351645

Date 4/8/2013

Field Personnel: Jim Harms

Sample Data	Sample ID	SVW-4					
	Canister Serial No.	11897	34582				
	Flow Controller Serial No.	20139					
	Sample Height (Ft.)	5					
	Tubing length						
	Purge Volume and Rate						
Sample Collection and Vacuum	Initial Canister Vacuum (inches Hg)	Water in Line @1548. Cannot sample					
	Time Canister Opened						
	30 min.						
	60 min.						
	90min.						
	120min.						
	150 min.						
	180 min.						
	210 min.						
	240 min.						
	270 min.						
	300 min.						
	330 min.						
	360 min.						
	390 min.						
	420 min.						
	450 min.						
	480 min.						
	Comments						
	Time Canister Closed						
	Final Canister Pressure (inches Hg)						
	Time of Sample Collection						

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron Date 4/8/13

Project Number: ~~60288855.A10~~ 60288254

Site Location: ~~1840 North Main Street, Walnut Creek, CA~~ 351645 Oakland

Field Personnel: Jim Harms

Subslab probe, 1/4" stainless steel probe

Sample Data	Sample ID	SVW-5					
	Canister Serial No.	3638					
	Flow Controller Serial No.	30968					
	Sample Depth (Ft.)	5'					
	Tubing length	8'					
	Purge Volume and Rate	132/170					
	Calculated Duration of Purge (3 tubing volumes)	46.5					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	1444					
	Initial Canister Vacuum (inches Hg)	-15					
	Time Sample-Train Leak Test Ends	1454					
	Duration of Leak Test	~~4~~ 10 min					
	Final Canister Vacuum (inches Hg)	-15					
Purge	Time Beginning of Purge	1458					
	Time End of Purge	1459					
	Actual Duration of Purge	47					
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)	-29					
	Time Canister Opened	1500					
	Measured Helium % initial	31.2					
	2 min.	25.2	35 min.				
	4 min.	40.4	40 min.				
	6min.	30.2	45 min.				
	8min.	29.9	50 min.				
	10 min.		55 min.				
	15 min.		60 min.				
	20 min.		____ min.				
	25 min.		____ min.				
	30 min.		____ min.				
	Comments		____ min.				
	Time Canister Closed	1508					
	Final Canister Pressure (inches Hg)	-4					
	Time of Sample Collection	1508					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron | Date 4-8-13

Project Number: 60264254

Site Location: 4276 MacArthur Blvd, Oakland, CA

Field Personnel: Jim Harms

Subslab probe,

Sample Data	Sample ID	SVW-6					
	Canister Serial No.	37800					
	Flow Controller Serial No.	20261					
	Sample Depth (Ft.)	5'					
	Tubing length	8'					
	Purge Volume and Rate	132/ ~~150~~ 170					
	Calculated Duration of Purge (3 tubing volumes)	46.75sec.					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	~~9:30~~ 9:30					
	Initial Canister Vacuum (inches Hg)	-9.5					
	Time Sample-Train Leak Test Ends	9:40					
	Duration of Leak Test	10 min					
	Final Canister Vacuum (inches Hg)	-9.5					
Purge	Time Beginning of Purge	941					
	Time End of Purge	942					
	Actual Duration of Purge	~47sec					
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)	-29					
	Time Canister Opened	9:46					
	Measured Helium % initial	27.2					
	2 min.	23.2	35 min.				
	4 min.	22.7	40 min.				
	6min.	19.4	45 min.				
	8min.		50 min.				
	10 min.		55 min.				
	15 min.		60 min.				
	20 min.		____ min.				
	25 min.		____ min.				
	30 min.		____ min.				
	Comments		____ min.				
	Time Canister Closed	9:52					
	Final Canister Pressure (inches Hg)	-2.5					
	Time of Sample Collection	9:52					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

Soil Vapor Sample Collection Data

AECOM

10461 Old Placerville Rd ste 170
Sacramento, CA 95827

Client: Chevron | Date 4-8-13

Project Number: 60264254

Site Location: 4276 MacArthur Blvd, Oakland, CA

Field Personnel: Jim Harms

Subslab probe,

Sample Data	Sample ID	EB-1					
	Canister Serial No.						
	Flow Controller Serial No.	20911					
	Sample Depth (Ft.)	—					
	Tubing length	2'					
	Purge Volume and Rate	NA					
	Calculated Duration of Purge (3 tubing volumes)	NA					
10-Minute Leak Test	Time Sample-Train Leak Test Begins	1056	1058	1101			
	Initial Canister Vacuum (inches Hg)	26	24	21.5			
	Time Sample-Train Leak Test Ends	fail	fail	1111			
	Duration of Leak Test			~~21.5~~ 10			
	Final Canister Vacuum (inches Hg)			21.5			
Purge	Time Beginning of Purge	NA					
	Time End of Purge	NA					
	Actual Duration of Purge	NA					
Sample Collection and Tracer Gas Monitoring	Initial Canister Vacuum (inches Hg)	-28					
	Time Canister Opened	1130					
	Measured Helium % initial						
	2 min.		35 min.				
	4 min.		40 min.				
	6min.		45 min.				
	8min.		50 min.				
	10 min.		55 min.				
	15 min.		60 min.				
	20 min.		____ min.				
	25 min.		____ min.				
	30 min.		____ min.				
	Comments		____ min.				
	Time Canister Closed	1150					
	Final Canister Pressure (inches Hg)	0					
	Time of Sample Collection	1150					

Notes:
Calculating Purge Volume: Length of tube (ft.) x 5.5 cc/linear foot (1/4" OD Teflon Tube)

CHAIN OF CUSTODY

AECOM

Lab: Eurofins Air Toxics

TAT: standard

Report results to:

Name	Brenda Evans (brenda.evans@aecom.com)
Company	AECOM
Mailing Address	1220 Avenida Acaso
City, State, Zip	Camarillo, CA 93012
Telephone No.	805.233.3988
Fax No.	805.388.3577

Project Information

Chevron Facility:	351645
Site Address:	4276 MacArthur Boulevard, Oakland, CA
AECOM No.	60264254-A10

Special instructions and/or specific regulatory requirements:

report results in micrograms per cubic meter

Sample Identification	Date Sampled	Time Sampled	Can #	CO2, He, N2, O2, CH4 - ASTM D-1946 mod	TPHg, BTEX, MTBE, Naph by Modified TO-15 APH Fractions (Sp)-Full list+Nap+APH	Canister Pressure/Vacuum Initial	Canister Pressure/Vacuum Final	Initial	Final	Comments
SVW-3-V-N-5-20130408	4-8-13	0901	15747	X	X	-29	-3.5			
SVW-6-V-N-5-20130408	4-8-13	0952	37800	X	X	-29	-2.5			
SVW-1-V-N-5-20130408	4-8-13	1111	37792	X	X	-29	-12			
EB-1-V-N-20130408	4-8-13	1150	31654	X	X	-29	0			
SVW-2-V-N-5-20130408	4-8-13	1156	21021	X	X	-29.5	-5			
SV-2-V-N-5-20130408	4-8-13	1425	36392	X	X	-29.5	-5			
SVW-5-V-N-5-20130408	4-8-13	1508	36381	X	X	-29	-4			

Relinquished by: [signature] ***Date/Time*** 4/10/13 1414 ***Received by:*** [signature] ATL ***Date/Time*** 04/10/13 1414

Relinquished by: ***Date/Time*** ***Received by:*** ***Date/Time***

Method of Shipment: Hand Delivery ***Sample Condition on Receipt:***

Certificate of Calibration

EQUIPMENT/MODEL	DESCRIPTION	SERIAL NUMBER
OAKTON PH CON 10	PH/COND METER	689144

This instrument has been calibrated using calibration solution and procedures which are traceable to N.I.S.T.. Test and calibration data is on file with the manufacturer.

Calibration Date	Calibration Solution	Technical Rep.
04/04/13	pH 7/4/10 1413 µS/cm CONDUCTIVITY	JESSICA

EnviroSupply & Service INC.

www.envirosupply.net

1-800-201-8150