# **RECEIVED**

By Alameda County Environmental Health 10:39 am, Apr 22, 2016

April 29, 2016

Mr. Mark Detterman Alameda County Environmental Health 1131 Harbor Bay Parkway Alameda, CA 94502

Re: Kerry & Associates - Palace Garage

14336 Washington Avenue San Leandro, California ACEH Case No. RO0000208

Dear Mr. Detterman,

I declare, under penalty of perjury, that the information and/or recommendations contained in the Sub-Slab Soil Vapor Investigation Report are true and correct to the best of my knowledge.

Sincerely,



April 22, 2016

Mr. Mark Detterman Alameda County Environmental Health Services 1311 Harbor Bay Parkway Alameda, California 94502

RE: SUB-SLAB SOIL VAPOR INVESTIGATION REPORT Kerry & Associates – Palace Garage 14336 Washington Boulevard San Leandro, California

Dear Mr. Detterman,

On behalf of Kerry & Associates, Innovex Environmental Management Inc. (INNOVEX) has prepared this Sub-Slab Soil Vapor Investigation Report (Report) for the Palace Garage site located at 14336 Washington Avenue, San Leandro, California (the Site, Figure 1). In a letter dated October 23, 2015, Alameda County Environmental Health Services (ACEH) expressed concerns that a potential for vapor intrusion into the building at the subject site may still exist. In particular, the ACEH noted soil vapor concentrations up to 73,000 micrograms per cubic meter (ug/m³) benzene and 300,000 ug/m³ ethylbenzene were reported at a location (boring SV-4) that may not contain a bioattentuation zone as indicated by the 1.8 to 2.2% oxygen content found in duplicate vapor samples (SV-4D) collected on October 11, 2013. Additionally, the ACEH noted the presence of methane at and above the Lower Explosive Level (LEL) of 5.4 to 5.5% in a sample collected from (insert location here) immediately adjacent to the building. The ACEH stated that while methane is not a concern to the Low Threat Closure Policy (LTCP), they do consider it a safety concern.

As such, the ACEH directed collection of sub-slab soil vapor samples and analysis for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and total xylenes (BTEX). The ACEH stated in their October 2015 letter that "additional naphthalene analysis by TO-17 does not appear warranted based on existing data." However, this request, with justification, was reversed in the ACEH work plan approval letter dated February 16, 2016. ACEH correspondence is provided in Attachment A.

In an attempt to directly evaluate the potential for vapor intrusion into the building, INNOVEX installed two sub-slab soil vapor probes within the building as outlined in the December 18, 2015 Sub-Slab Soil Vapor Investigation Work Plan. The locations of the sub-slab soil vapor probes are shown on Figure 2. Presented below is Site background information, details on the sub-slab soil vapor probe installation and sampling scope of work performed, an evaluation of the collected soil

vapor data against the outlined vapor intrusion concerns, and our conclusions and recommendations.

#### 1.0 SITE SUMMARY

#### 1.1 Location, Setting and Current Use

The Site is located on Washington Avenue in San Leandro, California (Figures 1 and 2). Land use in the vicinity of the Site is primarily industrial/commercial. The Site formerly operated as an automotive repair and towing service facility from 1967 through 1990. ACEH records indicate one 550-gallon underground storage tank (UST) was removed from the Site in 1991. The Site currently operates as an automotive body repair shop.

#### 1.2 Site History

On June 11, 2014, the ACEH issued a revised directive email requesting submittal of an Interim Remedial Action Plan (IRAP) detailing a scope of work to perform secondary source area removal of hydrocarbon-impacted soil in the vicinity of the former UST location at the Site and to close data gaps in the low-threat closure policy (LTCP) review identified by ACEH staff. The ACEH indicated in their directive email that Interim Remedial Actions appear appropriate in order to mitigate the risk of vapor intrusion and expeditiously move the Site towards closure.

On June 30, 2014, an IRAP was prepared and submitted to ACEH. The IRAP detailed a scope of work to perform secondary source area removal via excavation. ACEH staff approved the IRAP with some modifications on August 14, 2014.

Between May 15 and 29, 2015, interim remedial action field activities were conducted at the Site to remove the identified secondary source of hydrocarbon-impacted soil. Field activities consisted of excavating hydrocarbon-impacted soil to the extent practicable within the defined excavation boundary. The total depth of the excavation was approximately 16 feet below ground surface (bgs). A total of approximately 421 tons of impacted soil were excavated from the Site and transported for disposal. The open excavation was then backfilled with pre-approved aggregate base rock, and resurfaced to match existing Site conditions.

Analytical results from excavation sidewall and floor confirmation soil samples collected post-excavation indicated that the bulk of the secondary source was removed, with minimal concentrations of petroleum hydrocarbons remaining. It is expected that the hydrocarbons remaining in soil within the capillary fringe zone of the groundwater table will attenuate within a reasonable time frame. Based on the confirmation soil samples results, INNOVEX concluded that the secondary source and risk of vapor intrusion to adjacent buildings had been mitigated. ACEH indicated that upon completion of excavation activities and submittal of the IRAR, the environmental case associated with the Site would be evaluated for closure. Upon review of the Site conditions the ACEH noted a potential for vapor intrusion into the building at the subject site may still exist and a risk of explosion from elevated methane concentrations was a concern. As such a sub-slab vapor investigation was performed to provide additional information to ACEH for closure evaluation.

#### 2.0 SOIL VAPOR PROBE INSTALLATION AND SAMPLING

In an attempt to directly measure the potential for vapor intrusion into the existing Site building, INNOVEX installed and sampled two sub-slab soil vapor probes at the locations shown on Figure 2. Details of the vapor probe installation and sampling are presented below.

#### 2.1 Preliminary Field Activities

Prior to initiating field activities, INNOVEX contacted the ACEH to determine if drilling permits were required for the proposed scope of work. INNOVEX found that no permits were needed to advance soil probes into subsurface foundation engineered fill material; therefore, no permit applications were prepared. INNOVEX did however clear the Site for subsurface utilities. The utility clearance included notifying Underground Service Alert of the pending work a minimum of 48 hours prior to initiating the field investigation.

A health and safety plan (HASP) was also prepared for use by personnel implementing the Work Plan. The HASP addressed hazards associated with the fieldwork. A copy of the HASP was available on-Site during fieldwork. Field personnel were provided with a copy of the HASP prior to initiating work, and a safety tailgate meeting was conducted prior to beginning any field tasks to review the Site hazards and work scope.

#### 2.2 Soil Boring Advancement and Sampling

On March 4, 2016, INNOVEX personnel advanced sub-slab borings and installed vapor probes Slab-1 and Slab-2 at the locations shown on Figure 2. Prior to advancing the auger borings, the building's concrete slab was cored to allow access to the subsurface. Slab-1 was located in the northeast corner of the building near rear door, approximately 4 feet inside the building. Slab-2 was located in the same area as Slab-1 approximately 8 feet inside the building. The vapor probe borings were then advanced by hand auger to a depth of approximately 18 inches below ground surface (bgs). At this point, the interface between native soils and the engineered fill material was After reaching total depth, the vapor probes were encountered and auguring was stopped. installed according to protocols described in the Department of Toxic Substances Control's (DTSC's) Final Vapor Intrusion Guidance (October 2011) document. Once the interface between the sub-slab fill and native soil was encountered, each vapor probe was constructed at the interface. The probes were constructed using a 1-inch push-to-connect stainless steel filter attached to an appropriate length of \(\frac{1}{2}\)-inch Teflon tubing. The extra tubing was capped to eliminate ambient air intrusion into the tubing or probe. The vapor probe tip was then covered with #2/12 sand to approximately 2 inches above the probe to ensure proper airflow to the probe tip. Dry granular bentonite was then used to fill the borehole annular space to the base of the concrete slab. Hydrated granular bentonite was placed above the dry granular bentonite to the slab surface to ensure proper sealing. Prior to the introduction of these materials, the concrete surfaces within the borehole were cleaned with a damp towel to ensure a good seal. In order to protect the vapor probes, each probe was completed at the ground surface with a traffic-rated bolt-down well vault. General sub-slab vapor probe construction details are included as Attachment B.

#### 2.3 Soil Sample Handling and Analysis

Soil vapor sampling was conducted on March 17, 2016 in accordance with DTSC's October 2011 Guidance. Sub-slab soil vapor samples were collected at least 48 hours after probe installation and at least 5 days after any significant rain event of ½-inch or greater. Soil vapor samples were collected in batch-certified 1 liter Summa® canisters using a closed-circuit sampling train created by attaching a sample Summa® canister with flow regulator/restrictor and vacuum gauge via a steam cleaned stainless steel manifold to the vapor probe tubing at each vapor point.

A "shut-in test" was performed prior to connecting the manifold to the vapor point tubing. The test was performed by sealing all openings to ambient air, opening the purge Summa canister to establish a vacuum inside the sampling train, and waiting at least 5 minutes to ensure the vacuum remained stable over time. The "shut-in" test reduces the potential for ambient air to enter the soil vapor samples.

Using the same flow rate as used during sampling (between 100 and 200 milliliters per minute), approximately three purge volumes were purged from the sampling tubing prior to each sample collection. A purge volume test was not necessary because Summa canisters were used to collect the vapor samples. While sampling, the vacuum of the Summa canister was used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 inches of mercury was observed on the vacuum gauge.

Leak testing, using helium and a shroud, was performed during all sampling. A shroud was placed over the sampling train and probe connection. Helium was released into the shroud and an average concentration of at least 20 percent was maintained and monitored by a hand-held detector.

After sample collection was completed, the Summa canisters were packaged and sent Air Toxics of Folsom, California, a State-certified laboratory, for analysis. Soil vapor samples submitted for analysis were not chilled prior to transport to the lab. All samples were analyzed within 14 days of sample collection. After receipt by Air Toxics, the appropriate samples were analyzed for naphthalene by EPA Method TO-17; TPHg and BTEX constituents by EPA Method TO-15 (GC/MS); and oxygen, carbon dioxide, helium, methane, and nitrogen by ASTM D-1946 (GC/TCD). The presence of helium was used to evaluate if leaks were present in the sampling train during sampling. An ambient air leak up to 5 percent is acceptable since quantitative leak tracer testing was performed with a shroud.

Additionally, meteorological information was collected for the three days prior to sampling from the nearest meteorological station in the area. Information collected included temperature, humidity, wind speed, precipitation and barometric pressure. Meteorological data is provided in Table 1.

#### 3.0 WASTE DISPOSAL

Because of the minimal diameter (approximately 4 inches) and shallow depth of each boring, limited investigation-derived waste (IDW) was generated during field investigation activities. Sub-

slab fill that was removed during borehole advancement is being temporarily stored on-Site in a properly labeled 5-gallon, plastic bucket, pending characterization and disposal.

#### 4.0 ANALYTICAL EVALUATION AND RESULTS

Two vapor samples and one vapor sample duplicate were collected from sub-slab vapor probes Slab-1 and Slab-2. Laboratory analytical reports and chain-of-custody records are presented in Attachment C. Soil vapor analytical results are presented on Table 2, and summarized as follows:

- TPHg was reported in Slab-1 at a concentration of 4,800 ug/m<sup>3</sup> -.
- Benzene was reported in Slab-1 at a concentration of 4.5 ug/m<sup>3</sup>.
- Toluene was reported in Slab-1 at a concentration of 83 ug/m<sup>3</sup>.
- Ethylbenzene was reported in Slab-1 at a concentration of 8.6 ug/m<sup>3</sup>.
- Total xylenes were reported in Slab-1 at a concentration of 4.6 ug/m<sup>3</sup>.
- Methane was detected in sample Slab-1 at a concentration of 0.00028/%
- All constituents analyzed in samples Slab-2 and Slab-2 Dup were below laboratory reporting limits.
- Naphthalene was not detected above laboratory reporting limits in any of the samples collected.
- Helium was not detected in any of the vapor samples, indicating no significant leakage occurred during sample collection.

Upon receiving the samples, Air Toxics noted the naphthalene samples were outside the recommended temperature range of 4 degrees Celsius (C.). However, the samples were still analyzed. The laboratory noted that transport of the TO-17 sample tubes at 4 degrees C. is performed at the client's discretion. Laboratory studies demonstrate a high level of stability for VOCs in TO-17 tubes at room temperature for periods of up to 14 days. Tubes can be shipped to and from the field site at ambient conditions as long as the 14-day hold time is upheld. Since the samples were collected and shipped to Air Toxics within 48 hours and analyzed within 5 days, INNOVEX feels the variance in temperature upon receipt by the lab is minimal, and has not significantly affected the reported naphthalene data.

Soil vapor concentrations were evaluated against LTCP criteria for vapor intrusion to indoor air in a commercial use scenario, as established in Appendix 4 of the LTCP. Where LTCP screening criteria have not been established, results were compared to environmental screening levels for soil gas in commercial land use scenarios as published in the San Francisco Bay Regional Water Quality Control Board's Derivation and Application of Environmental Screening Levels (SFBRWQCB, 2013). Based on the data provided, concentrations of benzene, ethylbenzene, and methane are significantly diminished, and concentrations of all constituents reduced to below laboratory reporting limits between 4 and 8 feet inside the building. Oxygen was also reported in

the samples at concentrations up to 17%, indicating the threat of an explosive environment is minimal. The LTCP Appendix 4 is included as Attachment D.

#### 5.0 CONCLUSIONS

The purpose of this sub-slab soil vapor sampling event was to evaluate vapor intrusion concerns identified by ACEH for benzene, ethylbenzene, and methane.

Soil vapor concentrations reported from the sampling event are below their associated LTCP screening criteria for vapor intrusion to indoor air in a commercial/industrial land use scenario at sites with and without bioattenuation zones. Additionally, methane concentrations are significantly lower than previously reported in October, 2013, indicating the threat of an explosive environment is minimal. Based on the available data, INNOVEX believes excavation of the previously identified hydrocarbon-impacted soil was successful in reducing threats to human health and the environment. INNOVEX will complete the second of two semi-annual groundwater monitoring events in May 2016. If the data continues to show a reducing trend in hydrocarbon concentrations in groundwater, INNOVEX will recommend the Site for no further action status.

#### 6.0 LIMITATIONS

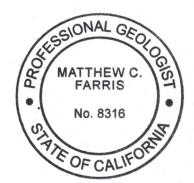
This Report is based on Site conditions, data, and other information available as of the date of the Report, and the conclusions and recommendations herein are applicable only to the time frame in which the Report was prepared. Background information used to prepare this Report including, but not limited to, previous field measurements, analytical results, Site plans and other data have been furnished to INNOVEX by Kerry & Associates. INNOVEX has relied on this information as furnished, and is neither responsible for nor has confirmed the accuracy of this information.

If you have any questions regarding this submission, please feel free to contact Mr. Brian Busch at (925) 566-8403 or at brian.busch@innovex.net.

Sincerely,

Innovex Environmental Management, Inc.

Matthew Farris, PG Senior Project Geologist



#### ATTACHMENTS:

Figure 1 Vicinity Map

Figure 2 Site Plan with Soil Vapor Probe Locations

Table 1 Meteorological Data

Table 2 Soil Vapor Analytical Data

Attachment A ACEH Correspondence

Attachment B General Sub-Slab Vapor Probe Construction Details

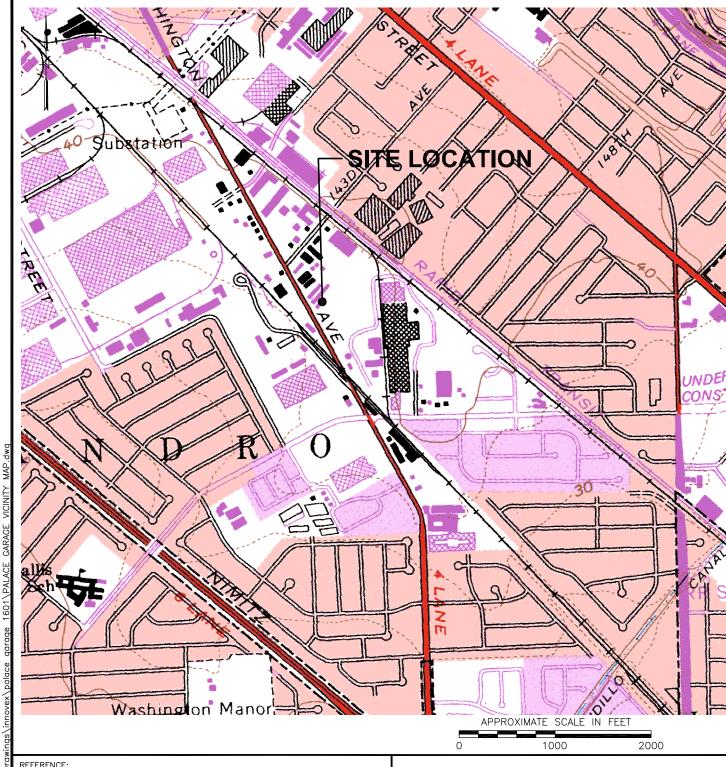
Attachment C Soil Vapor Laboratory Analytical Reports

Attachment D Soil Vapor Screening Criteria

cc: Mr. Jeff Kerry, Kerry & Associates

Mr. Gerald Donnelly

**FIGURES** 



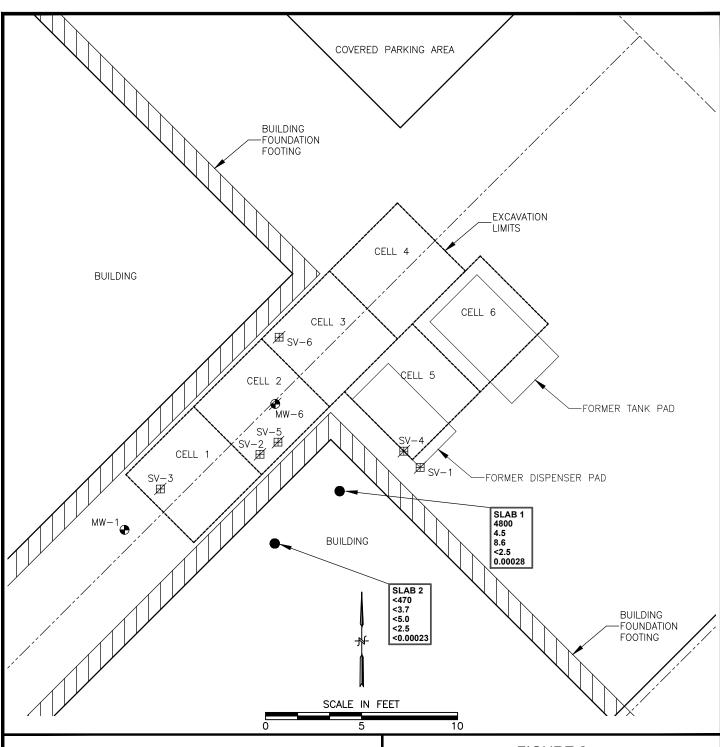
REFERENCE:
USGS 7.5 MIN QUAD MAP TITLED:SAN LEANDRO, CALIFORNIA DATED: 1959 REV: 1980

# FIGURE 1 SITE LOCATION MAP

PALACE GARAGE 14336 WASHINGTON AVENUE SAN LEANDRO, CALIFORNIA



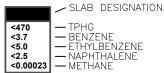
Sacramento • California •95834
Phone: (800) 988-7880



#### **LEGEND:**

- SUB-SLAB VAPOR PROBE LOCATION
- MONITORING WELL LOCATION
- DESTROYED MONITORING WELL LOCATION
- ☑ DESTROYED VAPOR PROBE

----- LIMITS OF EXCAVATION (MAY 2015)



#### **NOTES:**

- 1. BASEMAP SOURCE: MORROW SURVEYING 02/05/03
- 2. REPOTED IN UG/M3. METHANE REPORTED AS %.

#### FIGURE 2

# SITE PLAN WITH SUB SLAB VAPOR PROBE LOCATIONS

PALACE GARAGE 14336 WASHINGTON AVENUE SAN LEANDRO, CALIFORNIA



3900 Lennane Drive ● Suite 130 Sacramento ● California ● 95834 Phone: (800) 988-7880

**TABLES** 

# TABLE 1 METEOROLOGICAL DATA

Former Palace Garage 14336 Washington Ave. San Leandro, California

| Date<br>Sampled | Temperature<br>(°F) | Relative<br>Humidity<br>(%) | Wind<br>Speed<br>(mph) | Precipitation (inches) | Barometric<br>Pressure<br>(in) |
|-----------------|---------------------|-----------------------------|------------------------|------------------------|--------------------------------|
| 10/8/2013       | 71                  | 76                          | 5WNW                   | 0.00                   | 29.84                          |
| 10/9/2013       | 67                  | 73                          | 6S                     | 0.00                   | 29.69                          |
| 10/10/2013      | 68                  | 78                          | 5NW                    | 0.00                   | 29.91                          |
| 3/14/2016       | 57                  | 58                          | 7NNW                   | 0.000                  | 29.77                          |
| 3/15/2016       | 52                  | 60                          | 2NNE                   | 0.000                  | 29.83                          |
| 3/16/2016       | 52                  | 72                          | 1NE                    | 0.000                  | 30.02                          |

# Acronyms and Abbreviations:

| %   | =   | percent               |
|-----|-----|-----------------------|
| E   | =   | east                  |
| °F  | =   | degrees Farenheit     |
| in  | =   | inches (at sea level) |
| mph | =   | miles per hour        |
| N   | = - | north                 |
| S   | =   | south                 |
| W   | =   | west                  |
|     |     |                       |

# Table 2 Soil Vapor Analytical Data

Former Palace Garage 14336 Washington Blvd. San Leandro, CA

| Sample ID   | Date<br>Sampled | Sample<br>Depth<br>(feet bgs) | TPHg<br>(ug/m³) | Benzene<br>(ug/m³) | Toluene<br>(ug/m³) | Ethyl-<br>benzene<br>(ug/m³) | Total<br>Xylenes<br>(ug/m³) | Naphthalen<br>e (ug/m3) |
|-------------|-----------------|-------------------------------|-----------------|--------------------|--------------------|------------------------------|-----------------------------|-------------------------|
| SV-1        | 07/26/10        | 5                             | 85,000          | 880                | <190               | 8,900                        | 6,200                       |                         |
| SV-2        | 07/26/10        | 5                             | <7,200          | 15                 | 58                 | 9.0                          | 32                          |                         |
| SV-2 DUP    | 07/26/10        | 5                             | <7,200          | 15                 | 55                 | 8.8                          | 30                          |                         |
| SV-3        | 07/26/10        | 5                             | 13,000          | 23                 | 87                 | 7.7                          | 41                          |                         |
| Outdoor Air | 07/26/10        |                               | <7,200          | <3.3               | 6.2                | <4.4                         | <13.2                       |                         |
| SV-4        | 10/11/13        | 5                             | 34,000,000      | 66,000             | 4,200              | 270,000                      | 560,000                     | 8,400                   |
| SV-4D       | 10/11/13        | 5                             | 33,000,000      | 73,000             | 6,800              | 300,000                      | 604,000                     | 6,600                   |
| SV-5        | 10/11/13        | 5                             | 4,900           | <3.4               | 4.7                | 7.9                          | 22.8                        | 8.3                     |
| SV-6        | 10/11/13        | 5                             | 2,200,000       | <700               | 1,500              | <960                         | <1,920                      | 33                      |
| Slab-1      | 03/17/16        | 1.5                           | 4,800           | 4.5                | 83                 | 8.6                          | 46                          | <2.5                    |
| Slab-2      | 03/17/19        | 1.5                           | <470            | <3.7               | <4.3               | <5.0                         | <10                         | <2.5                    |
| Slab-2 Dup  | 03/17/16        | 1.5                           | <470            | <3.7               | <4.3               | <5.0                         | <10                         | <2.5                    |
|             |                 |                               |                 |                    |                    |                              |                             |                         |
| ESLs for Sh | allow Soil (    | Gas (C/I) <sup>1</sup>        | 29,000          | 280                | 180,000            | 3,300                        | 58,000                      | 240                     |

| Sample ID   | Date<br>Sampled | Sample<br>Depth<br>(feet bgs) | 2-Propanol<br>(ug/m³) | Methane<br>(%) | Carbon<br>Dioxide<br>(%) | Oxygen<br>(%) | Nitrogen<br>(%) | Helium (%) |
|-------------|-----------------|-------------------------------|-----------------------|----------------|--------------------------|---------------|-----------------|------------|
| SV-1        | 07/26/10        | 5                             | <130                  | 6,500          | <0.18                    | 20.2          | 82.7            |            |
| SV-2        | 07/26/10        | 5                             | <13                   | <3,300         | <0.19                    | 20.1          | 81.3            |            |
| SV-2 DUP    | 07/26/10        | 5                             | <13                   | <3,300         | <0.18                    | 19.7          | 80.7            |            |
| SV-3        | 07/26/10        | 5                             | <13                   | <3,300         | <0.19                    | 20.5          | 83.5            |            |
| Outdoor Air | 07/26/10        |                               | <13                   | <3,300         | <0.19                    | 19.6          | 79.9            |            |
| SV-4        | 10/11/13        | 5                             |                       | 5.4            | 13                       | 2.2           | 79              | <0.12      |
| SV-4D       | 10/11/13        | 5                             |                       | 5.5            | 14                       | 1.8           | 78              | 0.17       |
| SV-5        | 10/11/13        | 5                             |                       | 0.00059        | 6.6                      | 5.0           | 88              | <0.11      |
| SV-6        | 10/11/13        | 5                             |                       | 2.0            | 12                       | 2.2           | 84              | <0.11      |
| Slab-1      | 03/17/16        | 1.5                           |                       | 0.00028        | < 0.023                  | 17            | 83              | <0.12      |
| Slab-2      | 03/17/19        | 1.5                           |                       | <0.00024       | 0.21                     | 14            | 86              | <0.12      |
| Slab-2 Dup  | 03/17/16        | 1.5                           |                       | <0.00024       | 0.21                     | 14            | 86              | <0.12      |
| ESLs for Sh | allow Soil (    | Gas (C/I) <sup>1</sup>        | NE                    | NE             | NE                       | NE            | NE              | NE         |

# Table 2 Soil Vapor Analytical Data

Former Palace Garage 14336 Washington Blvd. San Leandro, CA

| Abbreviations: |   |   |
|----------------|---|---|
|                | = | Not Samples/ Not Analyzed   |
| TPHg           | = | Total Petroleum Hydrocarbons as gasoline  |
| ug/m³          | = | micrograms per cubic meter  |
| NE             | = | not established   |
| Bold           | = | detection above ESLs  |
| 1              | = | commercial/industrial land use from the 2007 Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater- Interim Final by the California Regional Water Quality Control Board, San Francisco Bay Region, November 2007, revised May 2008, Table F |

#### Notes:

All sample containers were 1-Liter Summa Canisters

TPHg, benzene, toluene, ethylbenzene, and total xylenes were analyzed by EPA Method TO-15 Naphthanlene analyzed by TO-17

Carbon dioxide, oxygen, methane, nitrogen and helium were analyzed by EPA Method ASTM D-1946

ATTACHMENT A ACEH CORRESPONDENCE

# ALAMEDA COUNTY HEALTH CARE SERVICES



ALEX BRISCOE, Agency Director



ENVIRONMENTAL HEALTH SERVICES **ENVIRONMENTAL PROTECTION** 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-8577

> (510) 567-6700 FAX (510) 337-9335

October 23, 2015

Mr. Jeff Kerry

Mr. Jeffery Kerry

Kerry & Associates

Jeffery & Dolores Kerry Trust & Jame Donnelley et. al.

151 Callan Avenue, Suite 300

19655 North Ripon Road

San Leandro, CA 94577

Ripon, CA 95366

(sent via electronic mail to:

dikerry1@aol.com)

Subject: Additional Request for Soil Vapor Monitoring; Fuel Leak Case No. R000000208; Palace Garage

(Global ID #T0600101043), 14336 Washington Avenue, San Leandro, CA 94578

Dear Mr. Kerry:

This letter is sent to augment the directive letter of September 24, 2015, recent discussions with the State Water Resource Control Board (SWRCB), and involve a concern regarding the potential for petroleum vapor intrusion to remain to the building at the subject site. Thus in addition to the request contained in the September 2015 letter, ACEH requests that you address the following technical comments and send us the reports described below.

#### TECHNICAL COMMENTS

1. Request for Vapor Verification Monitoring at SV-4 - Using existing vapor monitoring standard protocols for the site, ACEH requests the collection of additional soil vapor data at the location of SV-4. The need for the recently completed Interim Remedial Actions at the subject site were partially predicated on the previously reported soil vapor concentrations from vapor well SV-4, and the resulting risk of vapor intrusion to the immediately adjacent building. Soil vapor concentrations up to 73,000 ug/m3 benzene and 300,000 ug/m3 ethylbenzene were reported at a location that may not contain a bloattenuation zone as indicated by 1.8 to 2.2% oxygen at duplicate vapor samples. Additionally, the presence of methane at and above the Lower Explosive Level (LEL) of 5.4 and 5.5% immediately adjacent to a building, while not a concern of the Low Threat Closure Policy (LTCP), is a safety concern to ACEH.

ACEH requests the collection of soil vapor concentrations by TO-15 (gasoline, benzene, toluene, ethylbenzene, and total xylenes), as well as for methane, carbon dioxide, oxygen, and the tracer used at the time of sampling. Tracer concentrations should additionally be analyzed from the shroud. Using shroud tracer concentrations, the Department of Toxic Substance Control (DTSC) has guidelines for determining if a soil vapor sample is acceptable should tracer concentrations be detected in the soil vapor sample. Additional naphthalene analysis by TO-17 does not appear warranted based on existing data. Please submit a report by the date identified below.

#### TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with Attachment 1 and the following specified file naming convention and schedule:

December 18, 2015 - Soil Vapor Investigation File to be named: RO208\_SWI\_R\_yyyy-mm-dd Mr. Jeff Kerry RO000208 October 23, 2015, Page 2

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

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

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

Sincerely,

Market Jan

Digitally signed by Mark E. Detterman DN: cn=Mark E. Detterman, o, ou, email, c=US Date: 2015.10.23 12:14:30 -07:00

Mark E. Detterman, PG, CEG

Senior Hazardous Materials Specialist

Enclosures:

Attachment 1 - Responsible Party (ies) Legal Requirements / Obligations and Electronic

Report Upload (ftp) Instructions

CC:

Rick Marment, 9748 Weddington Circle, Granite Bay, CA 95746,

(sent via electronic mail to: r.mar@shorewest.net)

Matthew Farris, Closure Solutions, Inc. 4600 Northgate Bivd, Suite 230, Sacramento, CA 95834 (sent via electronic mail to: mfarris@innovex.net)

Dilan Roe (sent via electronic mail to dilan.roe@acgov.org)

Mark Detterman (sent via electronic mail to mark.detterman@acgov.org)

Electronic File, GeoTracker

# ALAMEDA COUNTY HEALTH CARE SERVICES



REBECCA GEBHART, Acting Director



ENVIRONMENTAL HEALTH SERVICES **ENVIRONMENTAL PROTECTION** 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577 (510) 567-6700 FAX (510) 337-9335

February 16, 2016

Mr. Jeff Kerry

Mr. Jeffery Kerry

Kerry & Associates

Jeffery & Dolores Kerry Trust & Jame Donnelley et. al.

151 Callan Avenue, Suite 300

19655 North Ripon Road

San Leandro, CA 94577

Ripon, CA 95366

(sent via electronic mail to:

dikerry1@aol.com)

Subject: Conditional Work Plan Approval; Fuel Leak Case No. RO00000208; Palace Garage (Global ID

#T0600101043), 14336 Washington Avenue, San Leandro, CA 94578.

Dear Mr. Kerry:

Alameda County Department of Environmental Health (ACDEH) staff has reviewed the case file including the Sub-Slab Soil Vapor Investigation Work Plan, dated December 18, 2015. The work plan was submitted on your behalf by Innovex Environmental Solutions, Inc (Innovex). Thank you for submitting the work plan.

Due to the loss of all vapor wells during the overexcavation, including SV-4, Innovex has proposed to install two sub-slab vapor wells in the building in order to gather data to evaluate the risk of vapor intrusion into the building. Innovex reports that essentially all remaining unexcavated areas proximal and outside the building are underlain by concrete foundations, that excavated areas have been backfilled with gravel, and gravel would present short-circuiting risks and concerns.

Based on ACEH staff review of the work plan, the proposed scope of work is conditionally approved for implementation provided that the technical comments below are incorporated during the proposed work. Submittal of a revised work plan or a work plan addendum is not required unless an alternate scope of work outside that described in the work plan or these technical comments is proposed. We request that you address the following technical comments, perform the proposed work, and send us the report described Please provide 72-hour advance written notification to this office (e-mail preferred to: mark.detterman@acgov.org) prior to the start of field activities.

#### TECHNICAL COMMENTS

- 1. Work Plan Modifications The referenced work plan proposes a series of actions with which ACEH is in general agreement of undertaking; however, ACEH requests several modifications to the approach. Please submit a report by the date specified below.
  - Naphthalene Analysis In order to evaluate contaminant concentrations in the sub-slab environment, it appears appropriate to additionally request the analysis of naphthalene sub-slab. vapor concentrations. The previous exclusion of naphthalene analysis presumed a standard vapor well installation depth of five feet below an existing foundation within the context of the LTCP Low Threat Closure Policy (LTCP). The Inability of collected soil samples for laboratory analysis within the upper five feet below grade surface (bgs) beneath the building (in order to determine the presence of a bloattenuation zone beneath the building) precludes an analysis of the data within the context of the LTCP. Therefore, please additionally analyze sub-slab naphthalene vapor concentrations. If Method TO-15 is used, DTSC guidelines regarding standard Nylaflow tubing indicate the analysis should be subsequently confirmation by Method TO-17. Alternatively analysis can simply be by Method TO-17.

Mr. Jeff Kerry RO000208 February 16, 2016, Page 2

#### TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with Attachment 1 and the following specified file naming convention and schedule:

April 29, 2016 – Vapor Intrusion Investigation
 File to be named: RO208\_SWI\_R\_yyyy-mm-dd

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

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

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

Sincerely,

Digitally signed by Mark Detterman DN: cn=Mark Detterman, o=ACEH,

OG#ACEH.

email=mark.detterman@acgov.org, c=US

Date: 2016.02.16 11:16:47 -08:00

Mark E. Detterman, PG, CEG Senior Hazardous Materials Specialist

Enclosures: Attachment 1 - Responsible Party (ies) Legal Requirements / Obligations and Electronic

Report Upload (ftp) Instructions

cc: Rick Marment, 9748 Weddington Circle, Granite Bay, CA 95746,

(sent via electronic mail to: r.mar@shorewest.net)

Matthew Farris, Closure Solutions, Inc. 4600 Northgate Blvd, Suite 230, Sacramento, CA 95834

(sent via electronic mail to: mfarris@innovex.net)

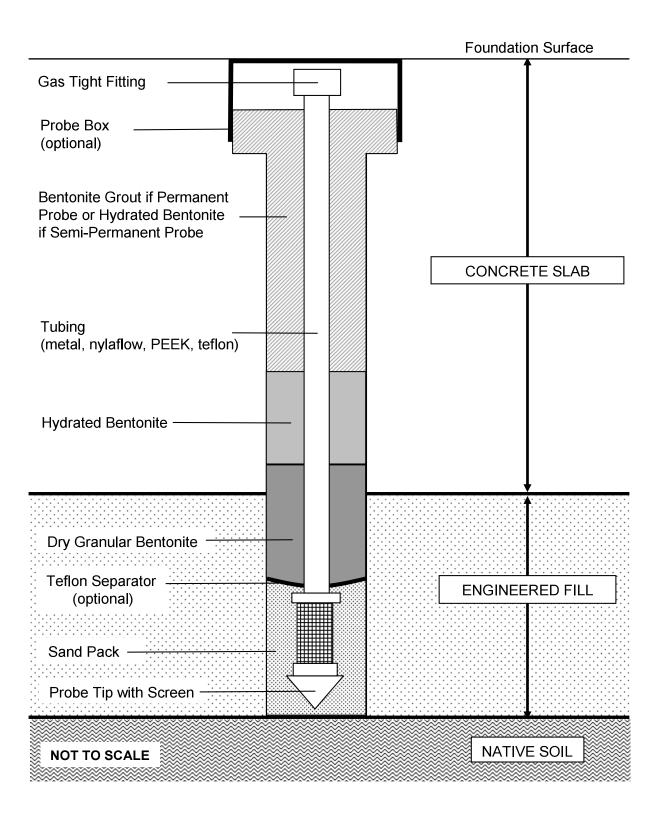
Dilan Roe (sent via electronic mail to dilan.roe@acgov.org)

Mark Detterman (sent via electronic mail to mark detterman@acgov.org)

Electronic File, GeoTracker

ATTACHMENT B SUB-SLAB VAPOR PROBE CONSTRUCTION DETAILS

#### SCHEMATIC DIAGRAM OF A SUBSLAB SAMPLING PROBE



ATTACHMENT C SOIL VAPOR LABORATORY ANALYTICAL REPOTS



3/28/2016

Mr. Matt Farris INNOVEX Environmental Management 3900 Lennane Dr. Suite 130 Sacramento CA 95834

Project Name: Project #:

Workorder #: 1603340A

Dear Mr. Matt Farris

The following report includes the data for the above referenced project for sample(s) received on 3/17/2016 at Air Toxics Ltd.

The data and associated QC analyzed by 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free 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** 

Kelly Butte



#### WORK ORDER #: 1603340A

#### Work Order Summary

CLIENT: Mr. Matt Farris BILL TO: Accounts Payable

INNOVEX Environmental INNOVEX Environmental

Management, Inc. (formerly known as

3900 Lennane Dr. Closure Solutions)
Suite 130 2300 Clayton Rd.

PHONE: Sacramento CA 95834

P.O. #

FAX: PROJECT #

DATE RECEIVED: 03/17/2016

DATE COMPLETED: 03/28/2016

CONTACT: Kelly Buettner

|            |            |             | RECEIPT    | FINAL           |
|------------|------------|-------------|------------|-----------------|
| FRACTION # | NAME       | <u>TEST</u> | VAC./PRES. | <b>PRESSURE</b> |
| 01A        | Slab 1     | TO-15       | 3.9 "Hg    | 14.7 psi        |
| 02A        | Slab 2     | TO-15       | 4.3 "Hg    | 14.9 psi        |
| 03A        | Slab 2 Dup | TO-15       | 4.1 "Hg    | 15.1 psi        |
| 04A        | Lab Blank  | TO-15       | NA         | NA              |
| 05A        | CCV        | TO-15       | NA         | NA              |
| 06A        | LCS        | TO-15       | NA         | NA              |
| 06AA       | LCSD       | TO-15       | NA         | NA              |
|            |            |             |            |                 |

|               | The | eide / | Payer |       |          |  |
|---------------|-----|--------|-------|-------|----------|--|
| CERTIFIED BY: |     |        | 0     | DATE: | 03/28/16 |  |

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.



#### LABORATORY NARRATIVE EPA Method TO-15 INNOVEX Environmental Management Workorder# 1603340A

Three 1 Liter Summa Canister samples were received on March 17, 2016. 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**

There were no receiving discrepancies.

#### **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.

The hydrocarbon profile present in sample Slab 1 did not resemble that of commercial gasoline and contains heavier hydrocarbons. Results were calculated using the response factor derived from the gasoline calibration.

#### **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
  - 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



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

Client Sample ID: Slab 1 Lab ID#: 1603340A-01A

| Compound                      | Rpt. Limit<br>(ppbv) | Amount<br>(ppbv) | Rpt. Limit<br>(ug/m3) | Amount<br>(ug/m3) |
|-------------------------------|----------------------|------------------|-----------------------|-------------------|
| Benzene                       | 1.2                  | 1.4              | 3.7                   | 4.5               |
| Toluene                       | 1.2                  | 22               | 4.3                   | 83                |
| Ethyl Benzene                 | 1.2                  | 2.0              | 5.0                   | 8.6               |
| m,p-Xylene                    | 1.2                  | 7.4              | 5.0                   | 32                |
| o-Xylene                      | 1.2                  | 3.3              | 5.0                   | 14                |
| TPH ref. to Gasoline (MW=100) | 120                  | 1200             | 470                   | 4800              |

Client Sample ID: Slab 2

Lab ID#: 1603340A-02A

No Detections Were Found.

**Client Sample ID: Slab 2 Dup** 

Lab ID#: 1603340A-03A
No Detections Were Found.



### Client Sample ID: Slab 1 Lab ID#: 1603340A-01A

#### EPA METHOD TO-15 GC/MS FULL SCAN

| File Name:   | a032309 | Date of Collection: 3/17/16 9:33:00 AM |
|--------------|---------|--|
| Dil. Factor: | 2.30    | Date of Analysis: 3/23/16 04:28 PM     |

| Compound                      | Rpt. Limit<br>(ppbv) | Amount<br>(ppbv) | Rpt. Limit<br>(ug/m3) | Amount<br>(ug/m3) |
|-------------------------------|----------------------|------------------|-----------------------|-------------------|
| Benzene                       | 1.2                  | 1.4              | 3.7                   | 4.5               |
| Toluene                       | 1.2                  | 22               | 4.3                   | 83                |
| Ethyl Benzene                 | 1.2                  | 2.0              | 5.0                   | 8.6               |
| m,p-Xylene                    | 1.2                  | 7.4              | 5.0                   | 32                |
| o-Xylene                      | 1.2                  | 3.3              | 5.0                   | 14                |
| TPH ref. to Gasoline (MW=100) | 120                  | 1200             | 470                   | 4800              |

#### **Container Type: 1 Liter Summa Canister**

|                       |           | Wethod |
|-----------------------|-----------|--------|
| Surrogates            | %Recovery | Limits |
| Toluene-d8            | 101       | 70-130 |
| 1,2-Dichloroethane-d4 | 98        | 70-130 |
| 4-Bromofluorobenzene  | 108       | 70-130 |



# Client Sample ID: Slab 2 Lab ID#: 1603340A-02A

#### EPA METHOD TO-15 GC/MS FULL SCAN

| File Name:   | a032310 | Date of Collection: 3/17/16 10:10:00 AM |
|--------------|---------|---|
| Dil. Factor: | 2.35    | Date of Analysis: 3/23/16 04:55 PM      |

| Compound                      | Rpt. Limit<br>(ppbv) | Amount<br>(ppbv) | Rpt. Limit<br>(ug/m3) | Amount<br>(ug/m3) |
|-------------------------------|----------------------|------------------|-----------------------|-------------------|
| Benzene                       | 1.2                  | Not Detected     | 3.8                   | Not Detected      |
| Toluene                       | 1.2                  | Not Detected     | 4.4                   | Not Detected      |
| Ethyl Benzene                 | 1.2                  | Not Detected     | 5.1                   | Not Detected      |
| m,p-Xylene                    | 1.2                  | Not Detected     | 5.1                   | Not Detected      |
| o-Xylene                      | 1.2                  | Not Detected     | 5.1                   | Not Detected      |
| TPH ref. to Gasoline (MW=100) | 120                  | Not Detected     | 480                   | Not Detected      |

#### **Container Type: 1 Liter Summa Canister**

| ••                    |           | Method |  |
|-----------------------|-----------|--------|--|
| Surrogates            | %Recovery | Limits |  |
| Toluene-d8            | 103       | 70-130 |  |
| 1,2-Dichloroethane-d4 | 95        | 70-130 |  |
| 4-Bromofluorobenzene  | 109       | 70-130 |  |



# Client Sample ID: Slab 2 Dup Lab ID#: 1603340A-03A

#### EPA METHOD TO-15 GC/MS FULL SCAN

| File Name:   | a032311 | Date of Collection: 3/17/16 10:20:00 AM |
|--------------|---------|---|
| Dil. Factor: | 2.35    | Date of Analysis: 3/23/16 05:22 PM      |

| Compound                      | Rpt. Limit<br>(ppbv) | Amount<br>(ppbv) | Rpt. Limit<br>(ug/m3) | Amount<br>(ug/m3) |
|-------------------------------|----------------------|------------------|-----------------------|-------------------|
| Benzene                       | 1.2                  | Not Detected     | 3.8                   | Not Detected      |
| Toluene                       | 1.2                  | Not Detected     | 4.4                   | Not Detected      |
| Ethyl Benzene                 | 1.2                  | Not Detected     | 5.1                   | Not Detected      |
| m,p-Xylene                    | 1.2                  | Not Detected     | 5.1                   | Not Detected      |
| o-Xylene                      | 1.2                  | Not Detected     | 5.1                   | Not Detected      |
| TPH ref. to Gasoline (MW=100) | 120                  | Not Detected     | 480                   | Not Detected      |

#### **Container Type: 1 Liter Summa Canister**

| ••                    |           | Method |  |
|-----------------------|-----------|--------|--|
| Surrogates            | %Recovery | Limits |  |
| Toluene-d8            | 104       | 70-130 |  |
| 1,2-Dichloroethane-d4 | 95        | 70-130 |  |
| 4-Bromofluorobenzene  | 111       | 70-130 |  |



# Client Sample ID: Lab Blank Lab ID#: 1603340A-04A

#### EPA METHOD TO-15 GC/MS FULL SCAN

| File Name:   | a032306 | Date of Collection: NA             |
|--------------|---------|------------------------------------|
| Dil. Factor: | 1.00    | Date of Analysis: 3/23/16 12:19 PM |
|              |         |                                    |

| Compound                      | Rpt. Limit<br>(ppbv) | Amount<br>(ppbv) | Rpt. Limit<br>(ug/m3) | Amount<br>(ug/m3) |
|-------------------------------|----------------------|------------------|-----------------------|-------------------|
| 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      |
| TPH ref. to Gasoline (MW=100) | 50                   | Not Detected     | 200                   | Not Detected      |

|                       |           | Method |
|-----------------------|-----------|--------|
| Surrogates            | %Recovery | Limits |
| Toluene-d8            | 102       | 70-130 |
| 1,2-Dichloroethane-d4 | 97        | 70-130 |
| 4-Bromofluorobenzene  | 110       | 70-130 |



# Client Sample ID: CCV Lab ID#: 1603340A-05A

#### EPA METHOD TO-15 GC/MS FULL SCAN

File Name: a032302 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 3/23/16 09:06 AM

| Compound                      | %Recovery |  |
|-------------------------------|-----------|--|
| Benzene                       | 91        |  |
| Toluene                       | 88        |  |
| Ethyl Benzene                 | 76        |  |
| m,p-Xylene                    | 78        |  |
| o-Xylene                      | 80        |  |
| TPH ref. to Gasoline (MW=100) | 100       |  |

|                       |           | Method |
|-----------------------|-----------|--------|
| Surrogates            | %Recovery | Limits |
| Toluene-d8            | 101       | 70-130 |
| 1,2-Dichloroethane-d4 | 96        | 70-130 |
| 4-Bromofluorobenzene  | 109       | 70-130 |



# Client Sample ID: LCS Lab ID#: 1603340A-06A

#### EPA METHOD TO-15 GC/MS FULL SCAN

| File Name:   | a032303 | Date of Collection: NA             |
|--------------|---------|------------------------------------|
| Dil. Factor: | 1.00    | Date of Analysis: 3/23/16 09:46 AM |

|                               |            | Method |  |
|-------------------------------|------------|--------|--|
| Compound                      | %Recovery  | Limits |  |
| Benzene                       | 87         | 70-130 |  |
| Toluene                       | 84         | 70-130 |  |
| Ethyl Benzene                 | 72         | 70-130 |  |
| m,p-Xylene                    | 74         | 70-130 |  |
| o-Xylene                      | 77         | 70-130 |  |
| TPH ref. to Gasoline (MW=100) | Not Spiked |        |  |

| урагин паттрричани    |           | Method<br>Limits |
|-----------------------|-----------|------------------|
| Surrogates            | %Recovery |                  |
| Toluene-d8            | 99        | 70-130           |
| 1,2-Dichloroethane-d4 | 94        | 70-130           |
| 4-Bromofluorobenzene  | 109       | 70-130           |



# Client Sample ID: LCSD Lab ID#: 1603340A-06AA

#### EPA METHOD TO-15 GC/MS FULL SCAN

| File Name:   | a032304 | Date of Collection: NA             |
|--------------|---------|------------------------------------|
| Dil. Factor: | 1.00    | Date of Analysis: 3/23/16 10:12 AM |

| 70-130 |
|--------|
| 70 100 |
| 70-130 |
| 70-130 |
| 70-130 |
| 70-130 |
|        |
| _      |

|                       |           | Method<br>Limits |
|-----------------------|-----------|------------------|
| Surrogates            | %Recovery |                  |
| Toluene-d8            | 99        | 70-130           |
| 1,2-Dichloroethane-d4 | 96        | 70-130           |
| 4-Bromofluorobenzene  | 109       | 70-130           |



3/29/2016 Mr. Matt Farris INNOVEX Environmental Management 3900 Lennane Dr.

Suite 130

Sacramento CA 95834

Project Name: Project #:

Workorder #: 1603339

Dear Mr. Matt Farris

The following report includes the data for the above referenced project for sample(s) received on 3/17/2016 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-17 VI 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to 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** 

Welly Butte



#### **WORK ORDER #: 1603339**

Work Order Summary

CLIENT: Mr. Matt Farris BILL TO: Accounts Payable

INNOVEX Environmental Management INNOVEX Environmental Management,

3900 Lennane Dr. Inc. (formerly known as Closure

Suite 130 Solutions)

Sacramento, CA 95834 2300 Clayton Rd.

**PHONE:** 916-760-7579 **P.O.** #

FAX: PROJECT #

**DATE RECEIVED:** 03/17/2016 **CONTACT:** Kelly Buettner

**DATE COMPLETED:** 03/29/2016

| FRACTION # | <u>NAME</u> | <u>TEST</u>       |
|------------|-------------|-------------------|
| 01A        | Slab 1      | Modified TO-17 VI |
| 02A        | Slab 2      | Modified TO-17 VI |
| 03A        | Slab 2 Dup  | Modified TO-17 VI |
| 04A        | Lab Blank   | Modified TO-17 VI |
| 05A        | CCV         | Modified TO-17 VI |
| 06A        | LCS         | Modified TO-17 VI |
| 06AA       | LCSD        | Modified TO-17 VI |
|            |             |                   |

|               | the | ide May | <b>5</b> |          |
|---------------|-----|---------|----------|----------|
| CERTIFIED BY: |     | 00      | DATE:    | 03/29/16 |

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program) Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016. Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.



#### LABORATORY NARRATIVE Modified EPA Method TO-17 (VI Tubes) INNOVEX Environmental Management Workorder# 1603339

Three TO-17 VI Tube samples were received on March 17, 2016. The laboratory performed the analysis via modified EPA Method TO-17 using GC/MS in the full scan mode. TO-17 'VI' sorbent tubes are thermally desorbed onto a secondary trap. The trap is thermally desorbed to elute the components into the GC/MS system for compound separation and detection.

A modification that may be applied to EPA Method TO-17 at the client's discretion is the requirement to transport sorbent tubes at 4 deg C. Laboratory studies demonstrate a high level of stability for VOCs on the TO-17 'VI' tube at room temperature for periods of up to 14 days. Tubes can be shipped to and from the field site at ambient conditions as long as the 14-day sample hold time is upheld. Trip blanks and field surrogate spikes are used as additional control measures to monitor recovery and background contribution during tube transport.

Since the TO-17 VI application significantly extends the scope of target compounds addressed in EPA Method TO-15 and TO-17, the laboratory has implemented several method modifications outlined in the table below. Specific project requirements may over-ride the laboratory modifications.

| Requirement              | TO-17   | ATL Modifications   |
|--------------------------|---|---|
| Initial Calibration      | %RSD =30% with 2 allowed out up to 40%</td <td>VOC list: %RSD<!--=30% with 2 allowed out up to 40% SVOC list: %RSD</=30% with 2 allowed out up to 40%</td--></td> | VOC list: %RSD =30% with 2 allowed out up to 40% SVOC list: %RSD</=30% with 2 allowed out up to 40%</td   |
| Daily Calibration        | %D for each target compound within +/-30%.  | Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene within +/-40%D   |
| Audit Accuracy           | 70-130%   | Second source recovery limits for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene = 60-140%.   |
| Distributed Volume Pairs | Collection of distributed volume pairs required for monitoring ambient air to insure high quality.  | If site is well-characterized or performance previously verified, single tube sampling may be appropriate.  Distributed pairs may be impractical for soil gas collection due to configuration and volume constraints. |
| Analytical Precision     | =20% RPD</td <td>&lt;30% RPD for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene.</td>   | <30% RPD for Fluorene, Phenanthrene, Anthracene, Fluoranthene, and Pyrene.  |

#### **Receiving Notes**

A Temperature Blank was included with the shipment. Temperature was measured and was not within  $4\pm2$  °C. Coolant in the form of blue ice was present. Analysis proceeded.

### **Analytical Notes**

A sampling volume of 0.400 L was used to convert ng to ug/m3 for the associated Lab Blank.

#### **Definition of Data Qualifying Flags**

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

- B Compound present in blank (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
  - 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



# **Summary of Detected Compounds EPA METHOD TO-17**

Client Sample ID: Slab 1

Lab ID#: 1603339-01A

No Detections Were Found.

Client Sample ID: Slab 2

Lab ID#: 1603339-02A

No Detections Were Found.

Client Sample ID: Slab 2 Dup

Lab ID#: 1603339-03A
No Detections Were Found.



Client Sample ID: Slab 1 Lab ID#: 1603339-01A EPA METHOD TO-17

|   | File Name:   | 11031821 | Date of Extraction: NADate of Collection: 3/17/16 10:40:00 AM |
|---|--------------|----------|---|
| I | Dil. Factor: | 1.00     | Date of Analysis: 3/19/16 01:22 AM                            |

| Compound    | Rpt. Limit | Rpt. Limit | Amount       | Amount       |
|-------------|------------|------------|--------------|--------------|
|             | (ng)       | (ug/m3)    | (ng)         | (ug/m3)      |
| Naphthalene | 1.0        | 2.5        | Not Detected | Not Detected |

Air Sample Volume(L): 0.400 Container Type: TO-17 VI Tube

|                |           | Method |
|----------------|-----------|--------|
| Surrogates     | %Recovery | Limits |
| Naphthalene-d8 | 111       | 50-150 |



Client Sample ID: Slab 2 Lab ID#: 1603339-02A EPA METHOD TO-17

| ı |              |          |   |
|---|--------------|----------|---|
|   | File Name:   | 11031822 | Date of Extraction: NADate of Collection: 3/17/16 10:46:00 AM |
|   | Dil. Factor: | 1.00     | Date of Analysis: 3/19/16 02:09 AM                            |

| Compound    | Rpt. Limit | Rpt. Limit | Amount       | Amount       |
|-------------|------------|------------|--------------|--------------|
|             | (ng)       | (ug/m3)    | (ng)         | (ug/m3)      |
| Naphthalene | 1.0        | 2.5        | Not Detected | Not Detected |

Air Sample Volume(L): 0.400 Container Type: TO-17 VI Tube

| Surrogates     | %Recovery | Method<br>Limits |
|----------------|-----------|------------------|
| Naphthalene-d8 | 118       | 50-150           |



Client Sample ID: Slab 2 Dup Lab ID#: 1603339-03A EPA METHOD TO-17

| ı |              |          |   |
|---|--------------|----------|---|
| ı | File Name:   | 11031823 | Date of Extraction: NADate of Collection: 3/17/16 10:52:00 AM |
| ı | Dil. Factor: | 1.00     | Date of Analysis: 3/19/16 02:56 AM                            |

| Compound    | Rpt. Limit | Rpt. Limit | Amount       | Amount       |
|-------------|------------|------------|--------------|--------------|
|             | (ng)       | (ug/m3)    | (ng)         | (ug/m3)      |
| Naphthalene | 1.0        | 2.5        | Not Detected | Not Detected |

Air Sample Volume(L): 0.400 Container Type: TO-17 VI Tube

|                |           | Method |
|----------------|-----------|--------|
| Surrogates     | %Recovery | Limits |
| Naphthalene-d8 | 118       | 50-150 |



Client Sample ID: Lab Blank Lab ID#: 1603339-04A EPA METHOD TO-17

| File Name:   | 11031808 | Date of Extraction: NADate of Collection: NA |
|--------------|----------|--|
| Dil. Factor: | 1.00     | Date of Analysis: 3/18/16 02:43 PM           |

|             | Rpt. Limit | Rpt. Limit | Amount       | Amount       |
|-------------|------------|------------|--------------|--------------|
| Compound    | (ng)       | (ug/m3)    | (ng)         | (ug/m3)      |
| Naphthalene | 1.0        | 2.5        | Not Detected | Not Detected |

Air Sample Volume(L): 0.400

|                |           | Method |
|----------------|-----------|--------|
| Surrogates     | %Recovery | Limits |
| Naphthalene-d8 | 123       | 50-150 |



Client Sample ID: CCV Lab ID#: 1603339-05A EPA METHOD TO-17

File Name: 11031805 Date of Extraction: NADate of Collection: NA

Dil. Factor: 1.00 Date of Analysis: 3/18/16 12:18 PM

Compound %Recovery

Naphthalene 118

Air Sample Volume(L): 1.00

Container Type: NA - Not Applicable

Surrogates%RecoveryLimitsNaphthalene-d812350-150



Client Sample ID: LCS Lab ID#: 1603339-06A EPA METHOD TO-17

| File Name: | 11031806 | Date of Extraction: | NADate of Collection: NA |
|------------|----------|---------------------|--------------------------|
|            |          |                     |                          |

Dil. Factor: 1.00 Date of Analysis: 3/18/16 01:06 PM

|             |           | Wethod |
|-------------|-----------|--------|
| Compound    | %Recovery | Limits |
| Naphthalene | 125       | 70-130 |

Air Sample Volume(L): 1.00

|                |           | Method |
|----------------|-----------|--------|
| Surrogates     | %Recovery | Limits |
| Naphthalene-d8 | 115       | 50-150 |



Client Sample ID: LCSD Lab ID#: 1603339-06AA EPA METHOD TO-17

| File Name: | 11031807 | Date of Extraction: | NADate of Collection: NA |
|------------|----------|---------------------|--------------------------|

Dil. Factor: 1.00 Date of Analysis: 3/18/16 01:55 PM

|             |           | Wethod |
|-------------|-----------|--------|
| Compound    | %Recovery | Limits |
| Naphthalene | 127       | 70-130 |

Air Sample Volume(L): 1.00

|                |           | Method |
|----------------|-----------|--------|
| Surrogates     | %Recovery | Limits |
| Naphthalene-d8 | 112       | 50-150 |



3/30/2016 Mr. Matt Farris **INNOVEX Environmental Management** 3900 Lennane Dr.

Suite 130

Sacramento CA 95834

Project Name: Project #:

Workorder #: 1603340B

Dear Mr. Matt Farris

The following report includes the data for the above referenced project for sample(s) received on 3/17/2016 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 Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free 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** 

Kelly Butte



#### WORK ORDER #: 1603340B

#### Work Order Summary

CLIENT: Mr. Matt Farris BILL TO: Accounts Payable

INNOVEX Environmental INNOVEX Environmental

Management, Inc. (formerly known as 3900 Lennane Dr. Closure Solutions)

P.O. #

Suite 130 2300 Clayton Rd.

PHONE: Sacramento CA 95834

FAX: PROJECT #

DATE RECEIVED: 03/17/2016

DATE COMPLETED: 03/30/2016

CONTACT: Kelly Buettner

|            |            |                      | RECEIPT    | FINAL           |
|------------|------------|----------------------|------------|-----------------|
| FRACTION # | NAME       | <u>TEST</u>          | VAC./PRES. | <b>PRESSURE</b> |
| 01A        | Slab 1     | Modified ASTM D-1946 | 3.9 "Hg    | 14.7 psi        |
| 02A        | Slab 2     | Modified ASTM D-1946 | 4.3 "Hg    | 14.9 psi        |
| 03A        | Slab 2 Dup | Modified ASTM D-1946 | 4.1 "Hg    | 15.1 psi        |
| 04A        | Lab Blank  | Modified ASTM D-1946 | NA         | NA              |
| 04B        | Lab Blank  | Modified ASTM D-1946 | NA         | NA              |
| 05A        | LCS        | Modified ASTM D-1946 | NA         | NA              |
| 05AA       | LCSD       | Modified ASTM D-1946 | NA         | NA              |

|               | 1/4 | ide Tayer |                           |  |
|---------------|-----|-----------|---------------------------|--|
| CERTIFIED BY: |     |           | DATE: $\frac{03/30/16}{}$ |  |

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.



### LABORATORY NARRATIVE Modified ASTM D-1946 INNOVEX Environmental Management Workorder# 1603340B

Three 1 Liter Summa Canister samples were received on March 17, 2016. 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 minimum of 5-point calibration curve is performed.  Quantitation is based on average Response Factor.  |
| 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**

There were no receiving discrepancies.

## **Analytical Notes**

There were no analytical discrepancies.

## **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



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

Client Sample ID: Slab 1 Lab ID#: 1603340B-01A

|          | Rpt. Limit | Amount  |
|----------|------------|---------|
| Compound | (%)        | (%)     |
| Oxygen   | 0.23       | 17      |
| Nitrogen | 0.23       | 83      |
| Methane  | 0.00023    | 0.00028 |

Client Sample ID: Slab 2 Lab ID#: 1603340B-02A

|                | Rpt. Limit | Amount |
|----------------|------------|--------|
| Compound       | (%)        | (%)    |
| Oxygen         | 0.24       | 14     |
| Nitrogen       | 0.24       | 86     |
| Carbon Dioxide | 0.024      | 0.21   |

Client Sample ID: Slab 2 Dup

Lab ID#: 1603340B-03A

|                | Rpt. Limit | Amount |
|----------------|------------|--------|
| Compound       | (%)        | (%)    |
| Oxygen         | 0.24       | 14     |
| Nitrogen       | 0.24       | 86     |
| Carbon Dioxide | 0.024      | 0.21   |



## Client Sample ID: Slab 1 Lab ID#: 1603340B-01A

## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:<br>Dil. Factor: | 10032411<br>2.30 |                   | ction: 3/17/16 9:33:00 AM<br>/sis: 3/24/16 01:16 PM |
|----------------------------|------------------|-------------------|---|
| Compound                   |                  | Rpt. Limit<br>(%) | Amount<br>(%)                                       |
| Oxygen                     |                  | 0.23              | 17  |
| Nitrogen                   |                  | 0.23              | 83  |
| Carbon Dioxide             |                  | 0.023             | Not Detected  |
| Methane                    |                  | 0.00023           | 0.00028   |
| Helium                     |                  | 0.12              | Not Detected  |

**Container Type: 1 Liter Summa Canister** 



## Client Sample ID: Slab 2 Lab ID#: 1603340B-02A

## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:<br>Dil. Factor: | 10032412<br>2.35 |                   | ction: 3/17/16 10:10:00 AM<br>/sis: 3/24/16 02:11 PM |
|----------------------------|------------------|-------------------|--|
| Compound                   |                  | Rpt. Limit<br>(%) | Amount<br>(%)  |
| Oxygen                     |                  | 0.24              | 14   |
| Nitrogen                   |                  | 0.24              | 86   |
| Carbon Dioxide             |                  | 0.024             | 0.21   |
| Methane                    |                  | 0.00024           | Not Detected   |
| Helium                     |                  | 0.12              | Not Detected   |

**Container Type: 1 Liter Summa Canister** 



## Client Sample ID: Slab 2 Dup Lab ID#: 1603340B-03A

## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:<br>Dil. Factor: | 10032413<br>2.35 |                   | ction:  3/17/16 10:20:00 AN<br>/sis:  3/24/16 02:52 PM |
|----------------------------|------------------|-------------------|--|
| Compound                   |                  | Rpt. Limit<br>(%) | Amount<br>(%)  |
| Oxygen                     |                  | 0.24              | 14   |
| Nitrogen                   |                  | 0.24              | 86   |
| Carbon Dioxide             |                  | 0.024             | 0.21   |
| Methane                    |                  | 0.00024           | Not Detected   |
| Helium                     |                  | 0.12              | Not Detected   |

Container Type: 1 Liter Summa Canister



## Client Sample ID: Lab Blank Lab ID#: 1603340B-04A

## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:<br>Dil. Factor: | 10032403<br>1.00  | Date of Colle<br>Date of Analy | ection: NA<br>ysis: 3/24/16 09:21 AM |
|----------------------------|-------------------|--------------------------------|--------------------------------------|
| Compound                   | Rpt. Limit<br>(%) |                                | Amount<br>(%)                        |
| Oxygen                     |                   | 0.10                           | Not Detected                         |
| Nitrogen                   |                   | 0.10                           | Not Detected                         |
| Carbon Dioxide             |                   | 0.010                          | Not Detected                         |

0.00010

Not Detected

**Container Type: NA - Not Applicable** 

Methane



## Client Sample ID: Lab Blank Lab ID#: 1603340B-04B

## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:   | 10032404c | Date of Colle | ction: NA             |
|--------------|-----------|---------------|-----------------------|
| Dil. Factor: | 1.00      | Date of Analy | sis: 3/24/16 09:45 AM |
|              |           | Rpt. Limit    | Amount                |
| Compound     |           | (%)           | (%)                   |
| Helium       |           | 0.050         | Not Detected          |



## Client Sample ID: LCS Lab ID#: 1603340B-05A

## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:   | 10032402 | Date of Collection: NA             |
|--------------|----------|------------------------------------|
| Dil. Factor: | 1.00     | Date of Analysis: 3/24/16 08:55 AM |

|                |           | Method |
|----------------|-----------|--------|
| Compound       | %Recovery | Limits |
| Oxygen         | 100       | 85-115 |
| Nitrogen       | 93        | 85-115 |
| Carbon Dioxide | 100       | 85-115 |
| Methane        | 101       | 85-115 |
| Helium         | 103       | 85-115 |



## Client Sample ID: LCSD Lab ID#: 1603340B-05AA

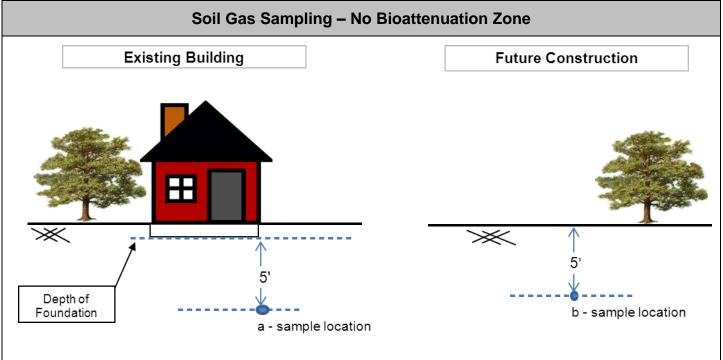
## NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

| File Name:   | 10032416 | Date of Collection: NA             |
|--------------|----------|------------------------------------|
| Dil. Factor: | 1.00     | Date of Analysis: 3/24/16 04:22 PM |

|                |           | Method<br>Limits |
|----------------|-----------|------------------|
| Compound       | %Recovery |                  |
| Oxygen         | 100       | 85-115           |
| Nitrogen       | 92        | 85-115           |
| Carbon Dioxide | 100       | 85-115           |
| Methane        | 103       | 85-115           |
| Helium         | 102       | 85-115           |

ATTACHMENT D SOIL VAPOR SCREENING CRITERIA

Appendix 4
Scenario 4 - Direct Measurement of Soil Gas Concentrations
(1 of 2)



The criteria in the table below apply unless the requirements for a bioattenuation zone, established below, are satisfied.

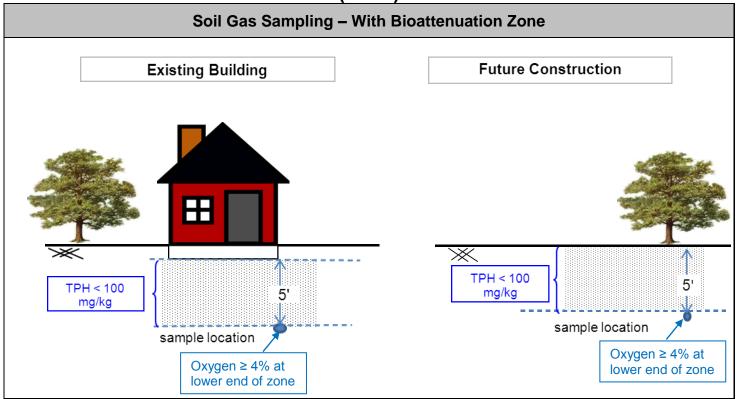
When applying the criteria below, the soil gas sample must be obtained from the following locations:

- a. Beneath or adjacent to an existing building: The soil gas sample shall be collected at least five feet below the bottom of the building foundation.
- b. Future construction: The soil gas sample shall be collected from at least five feet below ground surface.

| Soil Gas Criteria (μg/m³) |                                |        |  |
|---------------------------|--------------------------------|--------|--|
|                           | No Bioattenuation Zone*        |        |  |
|                           | Residential Commercial         |        |  |
| Constituent               | Soil Gas Concentration (µg/m³) |        |  |
| Benzene                   | < 85                           | < 280  |  |
| Ethylbenzene              | <1,100                         | <3,600 |  |
| Naphthalene               | < 93                           | < 310  |  |

<sup>\*</sup>For the no bioattenuation zone, the screening criteria are same as the California Human Health Screening Levels (CHHSLs) with engineered fill below sub-slab.

Appendix 4
Scenario 4 - Direct Measurement of Soil Gas Concentrations
(2 of 2)



The criteria in the table below apply if the following requirements for a biattenuation zone are satisfied:

- 1. There is a minimum of five vertical feet of soil between the soil vapor measurement and the foundation of an existing building or ground surface of future construction.
- 2. TPH (TPHg + TPHd) is less than 100 mg/kg (measured in at least two depths within the five-foot zone.)
- 3. Oxygen is greater than or equal to four percent measured at the bottom of the five-foot zone.

| Soil Gas Criteria (μg/m³) |                                |            |  |
|---------------------------|--------------------------------|------------|--|
|                           | With Bioattenuation Zone**     |            |  |
|                           | Residential Commercial         |            |  |
| Constituent               | Soil Gas Concentration (µg/m³) |            |  |
| Benzene                   | < 85,000                       | < 280,000  |  |
| Ethylbenzene              | <1,100,000                     | <3,600,000 |  |
| Naphthalene               | < 93,000                       | < 310,000  |  |

<sup>\*\*</sup>A 1000-fold bioattenuation of petroleum vapors is assumed for the bioattenuation zone.