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PERJURY STATEMENT

Subject: Fuel Lake Case No. Ro0002981 and Geotracker Clobal ID T1000000416, Red Hanger Cleaners,
6335-6339 College Ave., Oakland, CA 94618

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



Ted Cleveland

Vice President – Eastern Region
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September 30, 2016
Report 0461.R6

Mr. Gary Bates
EFI Global, Inc.
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SUBJECT: SOIL VAPOR EXTRACTION REMEDIATION PROGRESS REPORT
Spills Leaks, Investigation and Cleanup Leak Case No RO0002981
Geotracker Global ID T10000000416
Red Hanger Kleaners
6239 College Avenue
Oakland, California

Dear Mr. Bates:

P&D Environmental, Inc. (P&D) has prepared this soil vapor extraction remediation progress report documenting the following subject site activities:

- Cleaning of the first floor space in June and the first week of July 2016 preparation for indoor air sampling.
- Indoor air sampling, which was performed during a 24-hour period on July 13 and 14, 2016.
- Collection of soil gas samples from all of the soil gas wells at the subject site on August 10 and 11, 2016.
- Continued operation and monitoring of the Soil Vapor Extraction (SVE) system at the site.
- Evaluation of a natural gas leak at the adjacent property to the northeast of the subject site at 6241-6247 College Avenue.

This work was performed on behalf of the property owner Ronald Elvidge and EFI Global, Inc. (EFI). The objective of the work was to evaluate indoor air and soil gas Tetrachloroethene (PCE) concentrations following the June 10, 2016 startup of the SVE system in accordance with recommendations set forth in P&D's Site Investigation and Soil Vapor Extraction Report dated July 11, 2016 (document 0461.R5) and in accordance with verbal communications with the Alameda County Department of Environmental Health (ACDEH). The ACDEH approved the scope of work in a letter dated July 14, 2016.

The indoor air samples were collected during SVE system operation following completion of removal of drums of investigation-derived waste and cleaning of the first floor space at the site. Following collection of the indoor air samples on July 14, 2016 the SVE system was temporarily shut off on July 26, 2016 in preparation for soil gas sample collection. Following completion of soil gas sample collection on August 11, 2016, the SVE system was re-started on August 11, 2016.

September 30, 2016
Report 0461.R6

A Site Location Map is attached as Figure 1, Site Plans showing the locations of Indoor and Ambient Air Sample Collection Locations on the first, second and third floors of the building are attached as Figure 2, Figure 3, and Figure 4, respectively, Site Plans showing December 2, 2015 PCE concentrations in shallow soil gas and in deep soil gas, are attached as Figure 5 and Figure 6, respectively, and Site Plans showing August 10, 2016 and August 11, 2016 PCE concentrations in shallow soil gas and in deep soil gas, are attached as Figure 7 and Figure 8, respectively. All work was performed under the direct supervision of a California professional geologist.

BACKGROUND

A detailed discussion of the historical site use as a drycleaner from 1987 to 2015 (approximately 28 years) and of all known historical subsurface investigations is provided in P&D's Soil Gas Investigation Work Plan dated October 16, 2015 (document 0461.W1). The work plan includes all known available soil, groundwater, soil gas, and indoor air sample results (through October 13, 2015) for the subject site and also discusses the available known historical dry cleaner operations from 1953 to 1987 (approximately 34 years) at the nearby former Kay's Cleaners located at 6251-6255 College Avenue. Review of the available data shows that trichloroethene (TCE) has not been detected in any soil, groundwater, or soil gas samples. Documentation of the evaluation and mitigation of indoor air quality at the subject site (including post-mitigation air sample results for samples collected on October 21, 2015) are provided in P&D's November 3, 2015 Indoor Air Investigation Report (document 0461.R2). The report concluded that indoor air mitigation measures had successfully mitigated indoor air PCE and TCE concentrations to below commercial trigger and Environmental Screening Level concentrations for common areas and tenant spaces.

Documentation of the evaluation and mitigation of indoor air quality at the subject site (including post-mitigation air sample results for samples collected on October 21, 2015) is provided in P&D's November 3, 2015 Indoor Air Investigation Report (document 0461.R2). The report concluded that indoor air mitigation measures had successfully mitigated indoor air PCE and TCE concentrations to below commercial trigger and Environmental Screening Level concentrations for common areas and tenant spaces.

Documentation of a sub-slab depressurization feasibility test that was performed on November 16, 2015 in the former Red Hanger Kleaners dry cleaner store at the subject site is provided in P&D's December 14, 2015 Sub-Slab Depressurization Feasibility Test Report (document 0461.R4). During the sub-slab depressurization feasibility test a vacuum of between 12 and 13 inches of water column (in. WC) was applied under the building slab and the highest recorded vacuum at soil gas well SG9-17 (located within the footprint of the subject site former dry cleaner store) was approximately 0.1 in. WC, and the highest recorded vacuum at soil gas well SG10-7 (located within the footprint of the subject site former dry cleaner store) was approximately 0.09 in. WC. The information obtained during the feasibility test demonstrated that although a sub-slab grade beam appeared to function as a barrier to the eastward migration of PCE vapors beneath the floor

September 30, 2016
Report 0461.R6

slab, vacuum was readily observed at all observation locations beneath the floor slab. The readily observed vacuum is attributed to the uniform presence of approximately 8 to 9.5 inches of coarse-grained material consisting primarily of gravel located beneath the floor slab.

Documentation of soil gas well installation during November 2015 and associated soil gas sample collection on December 2, 2015 at the subject site is provided in P&D's January 21, 2016 Soil Gas Investigation Report (document 0461.R3). The sample results for shallow (approximately 7 foot depth) and deeper (approximately 17 foot depth) soil gas samples collected on December 2, 2015 are shown as Figures 5 and 6 attached with this Report. A detailed discussion of the site geology and hydrogeology based upon available historical boring logs, in addition to a summary of the depth to groundwater during historical site investigations is provided in the P&D January 21, 2016 report.

Documentation of drilling and collection of groundwater samples from boreholes B9 through B14, installation of two additional onsite soil gas wells designated as SG4-17 and SG11-17, installation of eight SVE wells designated as SVE1 through SVE8, installation of one additional sub-slab extraction location inside the building designated as SSE5, SVE feasibility testing using existing soil gas wells and Vapor Pins at the site, SVE system installation, SVE system start up on June 10, 2016, and initial SVE system monitoring is provided in P&D's Site Investigation and Soil Vapor Extraction Report dated July 11, 2016 (document 0461.R5).

FIELD ACTIVITIES

Field activities were performed on the following dates:

- Cleaning of first floor space in June and the first week of July, 2016.
- Indoor and ambient air sampling was performed, at locations shown on Figures 2 through 4, during a 24-hour period on July 13 and 14, 2016.
- Collection of soil gas samples from all of the soil gas wells at the subject site on August 10 and 11, 2016.
- Monitoring of the SVE system on July 19, 2016, August 16, 2016, and August 24, 2016.

Each of these activities is discussed in further detail below.

Cleaning of First Floor Space Prior to Indoor Air Sample Collection

Following removal of the drummed investigation-derived waste from the first floor space on June 16, 2016 (documentation of drum removal and disposal is provided in P&D's July 11, 2016 Site Investigation and Soil Vapor Extraction Report), all overhead ducting and hanging lights were removed from the first floor tenant space. The bottom of the ventilation duct to the roof was sealed near the ceiling of the first floor tenant space using sheet metal with sheet metal

September 30, 2016
Report 0461.R6

screws and caulked with a polyurethane caulk. A leaf blower was used to remove lint and accumulated dust from the walls and horizontal surfaces. The floor was subsequently swept, and the walls, horizontal surfaces, and floor were damp mopped with water to remove dust, with the damp mopping completed by July 8, 2016. On July 11 and 12, 2016 (the two days prior to indoor air sampling) a blower was installed at the back door of the first floor tenant space and the front doors were opened to allow ventilation of the space.

Indoor and Ambient Air Sampling

From July 13 to July 14, 2014 indoor and ambient (outdoor) air samples were collected during a period of approximately 24 hours using SIM-certified 6-liter Summa canisters, SIM-certified 24-hour flow controllers, SIM-certified sampling canes, and a SIM-certified duplicate tee. The Summa canister inlets were at a height of approximately five feet above the ground surface. The indoor air samples were collected at locations where indoor air samples have been historically collected in the subject site building on the first floor (IA1, IA2), on the second floor in the hallway adjacent to the elevator (IA4), on the third floor in the men's bathroom (IA5), and in the elevator pit (sample designation Elevator Pit). A duplicate indoor air sample designated as IA5 DUP was collected at location IA5. One ambient air sample was collected at location and BG-2 Ambient where ambient air samples have historically been collected during indoor air evaluation at the site. Following completion of sample collection the Summa canisters were placed into boxes pending delivery to the laboratory via courier. Chain of custody procedures were observed for all sample handling.

The locations of the ambient and indoor air sample collection locations are shown on Figures 2 through 4, and measurements of Summa canister initial and final vacuums, and beginning and ending sample collection times were recorded on an Air Sampling Data Sheet that is provided in Appendix A of this report.

Soil Gas Well Sample Collection

On August 10 and 11, 2016 soil gas samples were collected from all of the soil gas wells at the site, including the two soil gas wells SG4-17 and SG11-17 that were installed on March 28, 2016 but were not sampled at the time of installation because of elevated groundwater levels. The locations of soil gas wells SG1-7, SG2-7, SG2-17, SG3-17, SG4-7, SG4-17, SG5-7, SG5-17, SG6-7, SG6-17, SG7-7, SG7-17, SG8-7, SG9-17, SG10-7, and SG11-17 are shown in Figures 5 through 8. All of the soil gas wells were sampled in the following manner.

A soil gas sampling manifold with a 1-liter Summa canister as the sampling canister for each sampling location (see Figure 9) was assembled in a shroud consisting of a 35-gallon Rubbermaid bin that had been modified by cutting viewing ports into the sides of the shroud and covering the viewing ports with transparent polycarbonate sheets. A hole measuring approximately two inches

square in the bottom of the shroud allowed the shroud to cover the soil gas well while still allowing access to the sampling location through the bottom of the shroud. At the time that the sampling manifold was assembled, the vacuum for the sample canister was verified with a vacuum gauge and recorded.

Prior to sampling each soil gas well, a 10 minute shut-in test of the sampling manifold was performed by closing the valve located between the filter and the pressure gauge, opening the purge canister valve, and recording the manifold system vacuum (see Figure 9). No purge testing for purge volume determination was performed based on the large volume of the soil gas well sand packs. Following successful verification of the manifold shut-in test, the tubing volume plus 200 cubic centimeters was extracted prior to sample collection at each sample collection location. The purge time was calculated for each sample collection location using a nominal flow rate provided by the flow controller of 150 cubic centimeters per minute. Copies of the purge volume calculation sheets are attached with this report as Appendix B.

Following completion of purging and prior to sampling, a lid was placed onto the shroud and a tracer gas 1,1-Difluoroethane (DFA) was sprayed into the shroud interior for one second through a tube connected to a hole in the side of the shroud. Gloves in the lid of the shroud were used to open the sample canister valve. The pressure gage on the inlet side of the flow controller (see Figure 9) was monitored during sample collection to verify that the vacuum applied to the soil gas well did not exceed 100 in. WC. Once the vacuum for the sample canister valve had decreased to 5 inches of mercury, the gloves in the lid of the bin were used to close the sample canister valve. Duplicate soil gas samples were collected into Summa canisters at locations SG4-7 and SG9-17 using a stainless steel sampling tee for the Summa canisters using methods described above. Following the completion of sample collection the soil gas Summa canister samples were stored in a box and promptly shipped to the laboratory for extraction and analysis.

During Summa canister sample collection an air sample was collected from the shroud atmosphere to quantify the shroud tracer gas concentration while the soil gas sample was being collected. The shroud atmosphere sample was collected into a Tedlar bag that was placed into a vacuum chamber with the Tedlar bag inlet connected to a new piece of polyethylene tubing that was inserted into the shroud atmosphere through a hole in the side of the shroud. The shroud Tedlar bag samples were stored in a cooler to prevent exposure to light or crushing and promptly shipped to the laboratory for extraction and analysis. Chain of custody procedures were observed for all sample handling.

New polyethylene tubing and clean, unused vacuum gages and stainless steel sampling manifolds were used at each sample collection location. Measurements of vacuums, purging and equilibration time intervals, and PID readings were recorded on Soil Gas Sampling Data Sheets that are attached with this report as Appendix B.

SVE System Operation and Monitoring

The site SVE system consists of a positive displacement blower with a variable frequency drive (VFD), a moisture separator (knockout tank), and two 2,000-pound vessels containing granular activated carbon (GAC). The system was installed at the site between May 23 and June 10, 2016 and was started on June 10, 2016. The system was plumbed with 4-inch diameter Schedule 40 PVC pipe to allow vapors extracted from SVE wells SVE1 through SVE8 and sub-slab extraction location SSE5 to be pulled sequentially through the moisture separator tank (referred to in the field notes as the knock out (KO) tank), the first carbon vessel (designated as air abatement device A1) and the second carbon vessel (designated as air abatement device A2) before being pulled into the blower and then discharged through a stack to the atmosphere at a height of three feet above the roof line. The SVE blower and associated control equipment was enclosed in a trailer. The piping from all of the extraction locations was plumbed to a manifold located adjacent to the trailer. The extraction locations consist of SVE wells SVE1 through SVE8 and sub-slab extraction location SSE5. A Process and Flow Diagram showing the SVE system components is attached with this report as Figure C1 in Appendix C and a Facility Layout diagram showing the locations of the SVE system components and piping at the site is attached with this report as Figure C2 in Appendix C.

Documentation of SVE system installation, start up, and initial system monitoring is provided in P&D's July 11, 2016 Site Investigation and Soil Vapor Extraction Report (document 0461.R5). P&D is currently required by BAAQMD permit conditions to monitor the SVE system on a monthly basis. Due to the renovation of the first floor space for a new tenant, the piping at sub-slab extraction locations SSE1 through SSE4 were removed on August 26, 2016 and the holes in the floor slab at these locations were filled with cement.

The SVE system was started on June 10, 2016 and was continuously operated until July 26, 2016 when the system was temporarily shut down in preparation for soil gas well sample collection. Soil gas well soil gas samples were collected on August 10 and 11, 2016 and the SVE system was restarted on August 11, 2016 after completion of soil gas sample collection.

Following the SVE system startup on June 10, 2016, the SVE system has operated continuously since June 20, 2016 at 56 Hz with all SVE well valves and the SSE5 valve completely open with the following exceptions:

- The SVE system was temporarily shut down on July 26, 2016 in preparation for soil gas well sample collection and was restarted on August 11, 2016.
- When the SVE system was restarted on August 11, 2016 the SSE5 valve remained temporarily closed until the valve was opened on August 19, 2016. The SSE5 valve was temporarily closed for evaluation of sub-slab vacuum in the absence of vacuum applied at SSE5.

September 30, 2016
Report 0461.R6

- The valve for SSE5 was temporarily closed on August 26, 26 for removal of SSE1 through SSE4, and was subsequently reopened on September 2, 2016.

Subsequent to the last SVE system monitoring episode on June 24, 2016 that is documented in P&D's July 11, 2016 Site Investigation and Soil Vapor Extraction Report, the SVE system was monitored on July 19, August 16, and August 24, 2016. The system air flow rate and temperature were measured using a TSI Velocicalc Model 9535 digital hot wire anemometer at the inlet to the first carbon vessel (A1). System vacuum was measured at each of the following locations:

- Wellheads of SVE1 through SVE8,
- Sub-slab extraction location SSE5,
- Vapor Pins VP1 through VP8,
- Inlet to the first carbon vessel (A1),
- Inlet to the second carbon vessel (A2),
- Outlet to the second carbon vessel,
- The SVE piping manifold for air flow from SVE wells SVE2, SVE3, and SVE8 were monitored on July 19, 2016 and August 24, 2016 but not on August 16, 2016,
- The soil gas wells and Vapor Pins were monitored on August 16, 2016 and August 24, 2016 but not on July 19, 2016,
- Sub-slab extraction locations SSE1 through SSE4 (originally installed for the sub-slab depressurization feasibility test) were monitored on August 16, 2016 and August 24, 2016 but not on July 19, 2016.

Air quality was also periodically evaluated with a PID and oxygen meter by using an air pump to pull air from the location being evaluated into a 1-gallon container on a continuous basis. The PID was equipped with a 10.6 eV bulb and was calibrated with a 100 parts per million (ppm) isobutylene standard prior to the beginning of use.

Monitoring was performed with the following equipment:

- Air flow and temperature were monitored with a hot wire anemometer TSI Velocicalc Model 9545.
- Vacuum was monitored at extraction and monitoring locations with digital monometers as follows:
 - Dwyer Model 476A-0 with range of -20 to +20 +/- 0.3 in. WC,
 - Dwyer Model 475-3-FM with range of 0 to -200 +/- 1.0 in. WC), and
- Air quality was monitored using the following instruments:
 - Thermo Environmental Instruments PID Model 580B equipped with a 10.6 eV bulb (organic vapors),
 - RKI Instruments Model Eagle (oxygen).

September 30, 2016
Report 0461.R6

The SVE system air flow rate, temperature, and vacuum measurements were recorded on SVE System Air Flow and Temperature Monitoring Data Sheets; vacuum readings from all of the SVE wells, soil gas wells, Vapor Pins, the inlet to the moisture separator, inlet to the first carbon vessel (A1), inlet to the second carbon vessel (A2), and outlet from the second carbon vessel were recorded on SVE Well Monitoring Field Sheets. Vacuum readings were recorded in in. WC, PID readings in ppm, oxygen readings in percent, and methane readings in ppm. The SVE system monitoring data field forms for on July 19, August 16, and August 24, 2016 are provided in Appendix C.

Review of Appendix C shows that the system operated with a total system flow of approximately 450 cfm and all SVE system air quality evaluations with the PID have shown 0.0 ppm. The wellhead vacuums were as follows:

- Approximately 18 in. WC was observed in wells SVE1 through SVE8 on July 19, 2016.
- Approximately 25 in. WC was observed in wells SVE1 through SVE8 on August 16, 2016.
- Approximately 15 in. WC was observed in wells SVE1 through SVE8 on August 24, 2016.

Natural Gas Leak Evaluation

On July 15, 2016 P&D personnel met with a Pacific Gas & Electric inspector to evaluate a suspected natural gas leak associated with reported natural gas odors at the adjacent property located to the northeast of the subject site at 6241-6247 College Avenue (see Figures 5 through 8). Although the PG&E inspector did not identify a natural gas leak, methane detected at SVE extraction locations and in the SVE system is interpreted to originate from a natural gas leak at the adjacent property at 6241-6247 College Avenue.

WEATHER

Weather data, including precipitation and barometric pressure for July 1, 2016 through August 31, 2016 are provided in Appendix D. The range of dates for weather encompasses the dates of indoor and ambient air sample collection on July 13 and 14, 2016 and the dates of soil gas sample collection on August 10 and 11, 2016. Review of the data in Appendix D shows that the only precipitation that occurred was 0.01 inches on August 5, 2016.

The weather station is located on the north side of Prince Street immediately east of the intersection of Prince Street and College Avenue in Berkeley at an elevation of 253 feet above sea level, approximately 0.4 miles to the north-northeast of the subject site. The subject site is located at an elevation of approximately 210 feet above sea level. An internet link to the weather station information is provided in Appendix D.

The weather station used to obtain weather information for previous P&D investigation reports that was located on the north side of Forest Avenue and west of the intersection of Piedmont Avenue

September 30, 2016
Report 0461.R6

and Forest Avenue in Berkeley approximately 0.8 miles to the north-northeast of the subject site stopped reporting on July 21, 2016.

LABORATORY ANALYSIS

All of the air and soil gas samples were analyzed at Eurofins/ Air Toxics Ltd. of Folsom, California. All of the samples were analyzed for Volatile Organic Compounds (VOCs) using EPA Method TO-15.

The indoor and ambient air sample results are summarized in Table 1, the soil gas sample results are summarized in Table 2A, and the soil gas shroud sample results are summarized in Table 2B. The 2016 sample results are hi-lited yellow in Tables 2A and 2B to differentiate the results from the 2015 sample results. The percent shroud information reported in Table 2A is the ratio of the detected tracer gas concentration in the soil gas sample to the corresponding shroud air tracer gas concentration, expressed as a percentage. Copies of the laboratory analytical reports and chain of custody documentation are attached with this report as Appendix E.

RISK AND HAZARD ANALYSIS

The only complete pathway for contaminant exposure at the subject site is considered to be potential vapor intrusion from soil gas to indoor air. A parking lot is located immediately to the south of the subject site, and College Avenue is located immediately to the east of the subject site. The structures that are located immediately adjacent to the subject site to the north, northeast, and west are identified as follows (see Figures 5 through 8):

- To the north: 309 63rd Street – commercial storage on the ground floor and residential apartments above the ground floor.
- To the northeast: 6251 top 6255 College Avenue – commercial stores on the ground floor and residential apartments above the ground floor.
- To the northeast: 6241 top 6247 College Avenue – commercial stores on the ground floor and commercial use above the ground floor.
- To the west: 323 63rd Street – residential two story buildings. Based on the number of visible electrical meters each building appears to consist of a 4-plex. A crawl space was observed at each building.

Risk analysis is the evaluation of the predicted increased incidence of cancer resulting from exposure to Chemicals of Potential Concern (COPCs), and is reported for each COPC as the incremental carcinogenic risk. Hazard analysis is the evaluation of the predicted increased non-cancer adverse health effects resulting from exposure to COPCs, and is reported for each COPC as the hazard quotient. In addition, cumulative incremental carcinogenic risk (the total of the risks posed by all of the COPCs in a sample when all of the individual COPC risks are added together)

and hazard indices (the total of the hazards posed by all of the COPCs in a sample when all of the individual COPC hazards are added together) were also calculated for all detected compounds for each sample.

The cumulative incremental risk is calculated as the increased number of cases of cancer that might develop in a population of one million people in addition to the background risk of Americans developing cancer. According to the American Cancer Society the background risk for an American eventually developing cancer during their life time is one chance in two (also expressed as 500,000 per million, or expressed as 5E-01). In determining what is an acceptable level of risk, the Department of Toxic Substances Control (DTSC) has determined that lifetime incremental cumulative cancer risks posed by a site should not exceed 1 per million without further evaluation. The DTSC recommends that activities to reduce exposure to COPCs be evaluated when the cumulative risk exceeds 100 per million. The DTSC also recommends that further action be evaluated when the hazard quotient exceeds 1. These recommendations are based on conservative (erring on the side of caution) assumptions in determining actions associated with calculated risk or hazard.

The Interim Final December 2013 San Francisco Bay Regional Water Quality Control Board (RWQCB) User's Guide: Derivation and Application of Environmental Screening Levels (the User's Guide) recommends using methods for calculation of risk and hazard associated with potential vapor intrusion identified in various DTSC guidance documents. The incremental carcinogenic risk and hazard quotient were calculated for each detected compound for each of the soil gas samples using the DTSC Human and Ecological Risk Office (HERO) California-specific screening-level spreadsheet version of the Johnson & Ettinger soil gas vapor intrusion model. The DTSC most recently updated the screening-level vapor intrusion model spreadsheet in December 2014.

The Inhalation Unit Risk factor (IUR) value used for risk calculation and the Reference Concentration (RfC) values used for hazard calculation were obtained from the most recent version of the DTSC HERO Vapor Intrusion Screening Model for Soil Gas VLOOKUP Table (last updated December 2014). These values are consistent with the values provided in the most recent version of the DTSC HERO Human Health Risk Assessment Note Number 3 dated June 2016. DTSC RfC values were converted from milligrams per cubic meter (mg/m^3) to micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) for hazard calculation. The 2013 RWQCB User's Guide Table J-2 PCE RfC value of 270 $\mu\text{g}/\text{m}^3$ was superseded for risk calculation by the 2014 DTSC PCE RfC value of 35 $\mu\text{g}/\text{m}^3$.

Default exposure parameter values provided in the December 2014 DTSC HERO vapor intrusion screening model for soil gas for a residential land use scenario were used for evaluation of the soil gas sample results at locations SG1, SG2, SG3, SG4 and SG5 as follows:

- averaging time for carcinogens of 70 years,

September 30, 2016
Report 0461.R6

- averaging time for non-carcinogens of 26 years,
- exposure duration for 26 years,
- exposure frequency of 350 days per year,
- exposure time of 24 hours per day, and
- air exchange rate of 0.5 per hour.

Default exposure parameter values provided in the December 2014 DTSC HERO Vapor Intrusion Screening Model for Soil Gas for a commercial land use scenario were used for evaluation of the soil gas sample results at locations SG6, SG7, SG8, SG9, SG10 and SG11 as follows:

- averaging time for carcinogens of 70 years,
- averaging time for non-carcinogens of 25 years,
- exposure duration for 25 years,
- exposure frequency of 250 days per year,
- exposure time of 8 hours per day, and
- air exchange rate of 1.0 per hour.

The soil gas sample depth used for risk and hazard calculation was 6.0 feet (182.88 centimeters) for the 7-foot deep soil gas wells and 16.0 feet (487.68 centimeters) for the 17-foot deep soil gas wells based on the depth of the soil gas well filter in the center of the sand filter pack. The soil type used was silt (SI), and the default value of 5 liters per minute was used for the average vapor flow rate into a building with a footprint measuring 10 meter by 10 meter building (100 square meters).

In addition, the cumulative incremental carcinogenic risk (the total of the risks posed by all of the COPCs in a sample when all of the individual COPC risks are added together) and hazard indices (the total of the hazards posed by all of the COPCs in a sample when all of the individual COPC hazards are added together) were calculated for all detected compounds for each sample.

The August 10 and 11, 2016 soil gas sample incremental risk and hazard quotient calculation results are provided in Table 3A. The soil gas sample incremental risk and hazard quotient calculation results for each of the December 2, 2015 and the August 10 and 11, 2016 sampling events are summarized in Table 3B. The 2016 sample results are hi-lited yellow in Table 3B to differentiate the 2016 results from the 2015 results. The vapor intrusion model spreadsheet input sheets which include a calculation results summary for each calculation are attached with this report as Appendix F.

Soil gas model sensitivity analysis of the soil gas model was performed using PCE for a total of ten scenarios, including an evaluation of the DTSC HERO vapor intrusion screening model for soil gas spreadsheet default values for a residential exposure scenario with a soil type of silty (SI) and a soil gas sampling depth of 5.0 feet (152 cm). A summary of soil gas model sensitivity analysis is provided in Table 4, and the sensitivity analysis vapor intrusion model spreadsheet input sheets

September 30, 2016
Report 0461.R6

which include a results summary for each calculation are attached with this report as Appendix G. Calculation of risk and hazard for PCE and TCE in indoor air was not performed because none of the detected concentrations exceeded their respective RWQCB February 2016 (Revision 3) Table IA-1 Indoor Air direct exposure human health screening levels for a commercial land use scenario. Calculation of risk and hazard for carbon tetrachloride and chloroform in indoor air was not performed because these compounds are presently not considered to be related to historical operations at the former Red Hanger Kleaners.

DISCUSSION

Each of indoor and ambient air, soil gas, SVE system operation, and risk and hazard are discussed below.

Indoor and Ambient Air

Review of Table 1 shows that PCE and TCE were not detected in the ambient air sample and were not detected in any of the air samples at concentrations exceeding their respective RWQCB February 2016 (Revision 3) Table IA-1 Indoor Air direct exposure human health screening levels for a commercial land use scenario. Additionally, the detected PCE concentration in the elevator pit sample was less than 1 ug/m^3 , which is lower than the PCE air concentrations historically detected in the elevator pit of 43 and 44 ug/m^3 . Carbon tetrachloride and chloroform were detected in the ambient air sample, and were detected in almost all of the indoor air samples at concentrations exceeding the RWQCB February 2016 (Revision 3) Table IA-1 Indoor Air direct exposure human health screening levels for a commercial land use scenario, with the concentrations being generally consistent with historically detected concentrations.

To date, TCE and carbon tetrachloride have not been detected in any soil gas samples, and chloroform has only been detected in soil gas samples at a depth of 17 feet at two locations. Although chloroform has historically been used for cleaning in the dry cleaning industry, it is unknown if chloroform was historically used at the subject site. Chloroform is also commonly associated with municipal water supplies. Similarly, although carbon tetrachloride has historically been used for cleaning in the dry cleaning industry, it is unknown if carbon tetrachloride was used at the subject site. Carbon tetrachloride is also commonly associated with refrigeration and fire suppression systems.

Soil Gas

Review of the Table 2A Percent Shroud column shows that the tracer gas concentrations detected in the soil gas samples are less than 5 percent of the associated shroud atmosphere tracer gas concentrations (see Table 2B), indicating that atmospheric dilution of the samples during sample collection is not a concern, with the exception of sample SG5-17 where the sample tracer gas

concentration was 6.5 percent. Although the SG11-17 soil gas sample tracer gas concentration was 4.9 percent (less than 5 percent), based on the tracer gas concentration detected in samples SG5-17 and SG11-17 these samples are not considered to be a valid samples, with soil gas concentrations anticipated to be higher than identified by the laboratory based on atmospheric dilution of the samples.

Comparison of the August 2016 soil gas sample results with the December 2015 results in Table 2A shows that the PCE soil gas concentrations in 2016 are all lower than the corresponding 2015 sample results for all soil gas wells.

Review of shallow and deep soil gas concentrations in December 2015 shown in Figures 5 and 6, respectively shows that the highest concentrations of PCE soil gas were consistently detected in the vicinity of the sanitary sewer pipe immediately to the north of the former Red Hanger Kleeners store, with the highest PCE shallow soil gas concentration detected immediately to the south of the sanitary sewer cleanout and the highest deep soil gas concentrations detected adjacent to and immediately downgradient of the sanitary sewer cleanout. Review of shallow and deep soil gas concentrations in August 2016 shown in Figures 7 and 8, respectively shows a similar distribution of PCE in soil gas as observed in December 2015.

Benzene is not a decomposition product of PCE. The source of the historically detected benzene in soil gas is presently unknown. Review of Table 1A shows that benzene was only detected in deep soil gas samples with the exception of sample SG8-7, where benzene was detected at a concentration below the RWQCB December 2013 Table E-2 residential exposure scenario ESL. The widespread presence of benzene in deep soil gas at the subject site suggests that the benzene originates from an offsite upgradient source. The former fuel underground storage tank pit of a former fuel release site is located directly upgradient of the subject site at 6201 Claremont Avenue, approximately 80 feet to the east of the subject site.

SVE System Operation

The SVE system was started on June 10, 2016 and has operated continuously since then with the exception of July 26, 2016 to August 11, 2016 when the system was temporarily shut down for soil gas well sample collection. Following abatement of system noise on June 21, 2016 all of the valves for extraction locations SVE1 through SVE8 and SSE5 have remained fully open with operation of the SVE system at 56 Hz with the exception of the valve for SSE5 being closed during the following dates.

- When the SVE system was restarted on August 11, 2016 the SSE5 valve remained temporarily closed until the valve was opened on August 19, 2016. The SSE5 valve was temporarily closed for evaluation of sub-slab vacuum in the absence of vacuum applied at SSE5.

September 30, 2016
Report 0461.R6

- The valve for SSE5 was temporarily closed on August 26, 26 for removal of SSE1 through SSE4, and was subsequently reopened on September 2, 2016.

SVE system monitoring on July 19, August 16 and August 24, 2016 shows that the system operated with a total system flow of approximately 450 cfm and all SVE system air quality evaluations with the PID have shown 0.0 ppm. The wellhead vacuums were as follows:

- Approximately 18 in. WC was observed in wells SVE1 through SVE8 on July 19, 2016 (SSE5 valve open).
- Approximately 25 in. WC was observed in wells SVE1 through SVE8 on August 16, 2016 (SSE5 valve closed).
- Approximately 15 in. WC was observed in wells SVE1 through SVE8 on August 24, 2016 (SSE5 valve open).

Operation of the SVE system with the SSE5 valve closed resulted in negligible vacuum measured beneath the building floor slab. Based on the absence of vacuum beneath the floor slab with the SSE5 valve closed, it was decided to operate the SVE system with the SSE5 valve open.

Risk and Hazard Evaluation

The only complete pathway for contaminant exposure at the subject site is considered to be potential vapor intrusion from soil gas to indoor air. A residential exposure scenario was used for evaluation of the soil gas sample results at locations SG1, SG2, SG3, SG4 and SG5, and a commercial exposure scenario was used for evaluation of the soil gas sample results at locations SG6, SG7, SG8, SG9, SG10 and SG11 using the DTSC HERO California-specific screening-level spreadsheet version of the Johnson & Ettinger soil gas vapor intrusion model.

Comparison of the risk and hazard identified for soil gas samples collected in 2015 and 2016 (see Table 3B) shows that the calculated risk and hazard for the 2016 samples is substantially reduced for all of the 2016 samples. Review of the soil gas model sensitivity analysis in Table 4 shows that the model is not very sensitive to changes in temperature, is moderately sensitive to changes in soil type, and is sensitive to changes in average vapor flow rate into building (Q_{soil}), sample depth, and COPC concentration.

Calculation of risk and hazard for PCE and TCE in indoor air was not performed because none of the detected concentrations exceeded their respective RWQCB February 2016 (Revision 3) Table IA-1 Indoor Air direct exposure human health screening levels for a commercial land use scenario. Calculation of risk and hazard for carbon tetrachloride and chloroform in indoor air was not performed because these compounds are presently not considered to be related to historical operations at the former Red Hanger Kleaners.

September 30, 2016
Report 0461.R6

DISTRIBUTION

Copies of this report should be uploaded to the county ftp site and to GeoTracker.

LIMITATIONS

This report was prepared solely for the use of Ron Elvidge and EFI Global, Inc. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with the site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgment based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

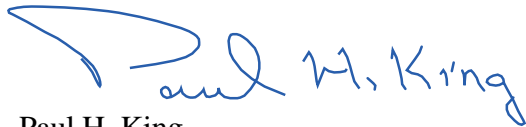
This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgment based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

September 30, 2016
Report 0461.R6

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.



Paul H. King
California Professional Geologist #5901
Expires: 12/31/17



Attachments:

- Table 1 - Summary of Indoor and Ambient Air Sample Laboratory Analytical Results
- Table 2A - Summary of Soil Gas Sample Analytical Results
- Table 2B - Summary of Soil Gas Shroud Sample Laboratory Analytical Results - Difluoroethane
- Table 3A - 8/10/16 and 8/11/16 Soil Gas Risk and Hazard Calculation Results
- Table 3B - 12/2/15, 8/10/16 and 8/11/16 Soil Gas Risk and Hazard Calculation Summary
- Table 4 - Summary of Soil Gas Model Sensitivity Analysis

- Figure 1 - Site Location Map
- Figure 2 - Site Plan Showing Air Sample Collection Locations - First Floor
- Figure 3 - Site Plan Showing Air Sample Collection Locations - Second Floor
- Figure 4 - Site Plan Showing Air Sample Collection Locations - Third Floor
- Figure 5 - Site Plan Showing 12/2/15 PCE Concentrations in Shallow Soil Gas
- Figure 6 - Site Plan Showing 12/2/15 PCE Concentrations in Deep Soil Gas
- Figure 7 - Site Plan Showing 8/10/16 and 8/11/16 PCE Concentrations in Shallow Soil Gas
- Figure 8 - Site Plan Showing 8/10/16 and 8/11/16 PCE Concentrations in Deep Soil Gas
- Figure 9 - Typical Soil Gas Sampling Manifold

- Appendix A - Air Sampling Data Sheet
- Appendix B - Purge Volume Calculations and Soil Gas Sampling Data Sheets
- Appendix C - SVE System Monitoring Data
- Appendix D - Weather Information
- Appendix E - Laboratory Analytical Reports and Chain of Custody Documentation
- Appendix F - DTSC December 2014 Vapor Intrusion Risk and Hazard Calculation Work Sheets
- Appendix G - Soil Gas Model Sensitivity Analysis Risk and Hazard Calculation Work Sheets

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0461.R6

TABLES

Table 1
Summary of Indoor and Ambient Air Sample Laboratory Analytical Results

Sample Location/ID	Sample Date	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Carbon Tetrachloride	Chloroform	Chloromethane	Dichlorodifluoromethane (Freon 12)	1,2-DCA	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
IA-1	5/29/2015	0.62	1.6	0.31	0.87	0.29	0.50	0.32	1.3	2.5	ND<0.13	3.5	ND<0.17	ND<0.12	ND<0.63	ND<0.040
IA1	7/14/2016	0.32	1.1	0.15	0.44	0.16	0.49	0.66	1.4	2.9	ND<0.13	1.1	0.99	ND<0.13	ND<0.63	ND<0.041
IA-2	5/29/2015	0.61	1.7	0.37	1.2	0.46	0.54	0.34	1.2	2.6	ND<0.13	3.3	ND<0.17	ND<0.12	ND<0.62	ND<0.040
IA2 (1st Floor)	8/6/2015	0.38	1.2	0.22	0.67	0.23	0.54, a	0.28	0.89	2.1	ND<0.13	4.2	0.40	ND<0.13	ND<0.64	ND<0.041
IA2	7/14/2016	0.32	1.1	0.15	0.46	0.16	0.50	0.63	1.1	2.8	ND<0.14	1.3	0.97	ND<0.13	ND<0.67	ND<0.043
IA-4*	5/29/2015	0.43	1.9	0.30	0.87	0.34	0.51	3.3	1.6	2.7	0.25	4.0	8.8	ND<0.13	ND<0.63	ND<0.041
IA4 (2nd Floor)	8/6/2015	0.42	2.4	0.41	1.0	0.46	0.52, a	5.4	1.0	2.2	0.24	3.6	8.1	ND<0.12	ND<0.63	ND<0.040
IA4 (Hallway)	8/13/2015	0.28	1.6	6.8	6.0	1.7	0.41	3.8	0.82	1.7	0.32	3.7	5.6	ND<0.10	ND<0.53	ND<0.034
IA4 (Hallway)	9/4/2015	0.432	3.19	1.24	2.07	0.765	0.634	4.17	1.12	2.82	0.365	7.15	8.09	ND<0.0397	ND<0.0396	ND<0.0256
IA4 Hallway	10/13/2015	ND<0.28	0.52	ND<0.15	0.33	ND<0.15	ND<0.22	0.70	1.1	2.4	ND<0.27	0.24	0.34	ND<0.14	ND<0.69	ND<0.045
IA4	7/14/2016	ND<0.27	0.44	ND<0.14	ND<0.29	ND<0.14	0.46	2.6	1.2	2.8	0.17	ND<0.23	1.7	ND<0.13	ND<0.67	ND<0.043
IA-5*	5/29/2015	0.40	1.6	0.25	0.74	0.35	0.48	3.2	1.5	2.8	0.14	4.1	6.6	ND<0.12	ND<0.63	ND<0.040
IA5 Men's Room (3rd Floor)	8/6/2015	0.43	2.6	0.47	1.1	0.42	0.42, a	6.6	1.1	2.1	0.20	4.7	6.5	ND<0.13	ND<0.63	ND<0.041
IA5 (Men's Room)	8/13/2015	0.44	2.7	4.1	3.9	1.1	0.69	7.6	1.4	2.3	0.25	5.5	8.1	ND<0.13	ND<0.66	ND<0.042
IA5 Men's Room (3rd Floor)	9/4/2015	0.462	2.88	0.871	1.64	0.568	0.542	6.72	1.15	2.60	0.234	8.01	8.98	ND<0.0397	ND<0.0396	ND<0.0256
IA5 Men's Room (3rd Floor)	10/13/2015	0.32	1.1	0.24	0.67	0.26	ND<0.22	2.0	1.2	2.3	ND<0.14	0.80	0.27	ND<0.14	ND<0.69	ND<0.045
IA5 Men's Room (3rd Floor)	10/21/2015	0.32	1.0	0.23	0.57	0.24	ND<0.22	1.8	1.0	2.2	ND<0.14	0.88	0.33	ND<0.14	ND<0.70	ND<0.045

Table 1
Summary of Indoor and Ambient Air Sample Laboratory Analytical Results

Sample Location/ID	Sample Date	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Carbon Tetrachloride	Chloroform	Chloromethane	Dichlorodifluoromethane (Freon 12)	1,2-DCA	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
IA5	7/14/2016	ND<0.27	1.2	ND<0.15	ND<0.29	ND<0.15	0.28	6.9	1.2	2.9	0.14	0.51	1.6	ND<0.13	ND<0.67	ND<0.043
IA5-DUP	7/14/2016	ND<0.27	0.67	ND<0.15	ND<0.30	ND<0.15	0.34	6.7	1.2	2.7	ND<0.14	0.49	1.6	ND<0.14	ND<0.68	ND<0.044
Elevator Pit	8/6/2015	0.50	1.4	0.24	0.79	0.29	0.55, a	0.98	0.89	2.0	ND<0.11	43	1.3	ND<0.11	ND<0.55	ND<0.036
Elevator Pit	10/21/2015	1.2	3.7	0.68	2.3	0.86	0.44	2.4	3.1	2.2	ND<0.13	44	3.4	ND<0.13	ND<0.64	ND<0.041
Elevator Pit	7/14/2016	0.31	1.1	0.15	0.46	0.16	0.50	2.1	1.1	2.8	ND<0.12	0.82	2.5	ND<0.11	ND<0.57	ND<0.036
BG-2	5/29/2015	0.66	1.4	0.26	0.99	0.43	0.51	ND<0.15	1.3	2.5	ND<0.13	ND<0.21	ND<0.17	ND<0.12	ND<0.62	ND<0.040
BG-2 Ambient	8/6/2015	0.30	1.5	0.19	0.59	0.22	0.48, a	ND<0.15	0.91	2.3	ND<0.12	ND<0.21	ND<0.17	ND<0.12	ND<0.61	ND<0.040
BG-2 Ambient	8/13/2015	ND<0.25	0.68	0.14	0.37	0.21	0.60	ND<0.15	1.1	2.5	ND<0.13	ND<0.21	ND<0.17	ND<0.12	ND<0.62	ND<0.040
BG2 Ambient	9/4/2015	0.319	1.54	0.229	0.848	0.319	0.653	ND<0.0488	1.22	2.91	0.0596	0.213	ND<0.0537	ND<0.0397	ND<0.0396	ND<0.0256
BG2 Ambient	10/13/2015	0.98	3.0	0.59	2.0	0.72	0.39	0.27	1.1	2.3	ND<0.12	ND<0.20	ND<0.16	ND<0.12	ND<0.59	ND<0.038
BG2 Ambient	10/21/2015	0.77	2.1	0.42	1.4	0.51	0.36	0.22	1.1	2.3	ND<0.13	ND<0.21	ND<0.17	ND<0.12	ND<0.62	ND<0.040
BG2 Ambient	7/14/2016	0.30	1.0	0.14	0.43	0.15	0.53	0.17	1.2	2.8	ND<0.12	ND<0.21	ND<0.16	ND<0.12	ND<0.60	ND<0.039
ESL		0.42	1,300	4.9	440 Combined		0.29	0.53	390	No Value	0.47	2.1	3.0	35	350	0.16
NOTES:																
1,2-DCA = 1,2-Dichloroethane																
PCE = Tetrachloroethene																
TCE = Trichloroethene																
cis-1,2-DCE = cis-1,2-Dichloroethene																
trans-1,2-DCE = trans-1,2-Dichloroethene																
ND = Not Detected.																
a = Laboratory note: Estimated value.																
* = Results reported in revised lab report reissued on 08/13/2015.																
ESL = Environmental Screening Level, by San Francisco Bay Regional Water Quality Control Board, Updated February 2016 (Revision 3), from Table IA-1 - Indoor Air Direct Exposure Human Health Screening Levels, Commercial/Industrial Land Use.																
Results in BOLD exceed their respective ESL value.																
Results and ESLs in micrograms per cubic meter (ug/m ³), unless otherwise noted.																

Table 2A
Summary of Soil Gas Sample Analytical Results

Sample ID	Sample Date	Sand Pack Interval (Feet bgs)	Probe Depth (Feet bgs)	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Other VOCs by EPA TO-15	1,1-Difluoroethane	Percent Shroud
SG1-7	12/2/2015	5.0 to 7.0	6.0	10	11	ND<10	ND<10	ND<10	5,800	ND<13	ND<9.6	ND<9.6	ND<6.2	ND, except Carbon Disulfide = 54	1,800	0
SG1-7	8/10/2016	5.0 to 7.0	6.0	ND<39	ND<46	ND<53	ND<53	ND<53	1,000	ND<65	ND<48	ND<48	ND<31	All ND	140	0
SG2-7	12/2/2015	5.0 to 7.0	6.0	ND<81	ND<95	ND<110	ND<110	ND<110	59,000	ND<140	ND<100	ND<100	ND<65	All ND	3,100	0
SG2-7	8/10/2016	5.0 to 7.0	6.0	ND<41	ND<48	ND<55	ND<55	ND<55	15,000	ND<68	ND<50	ND<50	ND<32	All ND	4,200	0
SG2-17	12/2/2015	15.0 to 17.0	16.0	ND<480	ND<570	ND<660	ND<660	ND<660	120,000	ND<810	ND<600	ND<600	ND<380	All ND	4,200	0
SG2-17	8/10/2016	15.0 to 17.0	16.0	ND<41	ND<48	ND<55	ND<55	ND<55	39,000	ND<68	ND<50	ND<50	ND<32	ND, except Chloroform = 74, Tetrahydrofuran = 59	480	0
SG3-17	12/2/2015	15.0 to 17.0	16.0	130	ND<90	ND<100	ND<100	ND<100	62,000	ND<130	ND<95	ND<95	ND<61	ND, except Cyclohexane = 110	520	0
SG3-17	8/10/2016	15.0 to 17.0	16.0	ND<39	ND<46	ND<52	ND<52	ND<52	10,000	ND<65	ND<48	ND<48	ND<31	All ND	ND<130	0
SG4-7	12/2/2015	5.0 to 7.0	6.0	ND<15	ND<18	ND<20	ND<20	ND<20	3,700	ND<25	ND<18	ND<18	ND<12	All ND	100,000, a	2.5
SG4-7	8/10/2016	5.0 to 7.0	6.0	ND<39	ND<46	ND<53	ND<53	ND<53	ND<82	ND<65	ND<48	ND<48	ND<31	All ND	1,700	0
SG4-7 DUP	12/2/2015	5.0 to 7.0	6.0	ND<7.4	ND<8.8	ND<10	ND<10	ND<10	3,700	ND<12	ND<9.2	ND<9.2	ND<5.9	All ND	6,400, a	0
SG4-7 DUP	8/10/2016	5.0 to 7.0	6.0	ND<39	ND<46	ND<54	ND<54	ND<54	83	ND<66	ND<49	ND<49	ND<32	All ND	44,000, a	0
SG4-17	8/10/2016	15.0 to 17.0	16.0	ND<38	ND<45	ND<52	ND<52	ND<52	9,800	ND<64	ND<48	ND<48	ND<31	All ND	180	0
SG5-7	12/2/2015	5.0 to 7.0	6.0	ND<38	ND<45	ND<52	ND<52	ND<52	23,000	ND<64	ND<48	ND<48	ND<31	All ND	600	0
SG5-7	8/10/2016	5.0 to 7.0	6.0	ND<37	ND<44	ND<50	ND<50	ND<50	5,500	ND<62	ND<46	ND<46	ND<30	All ND	3,200	0
SG5-17	12/2/2015	15.0 to 17.0	16.0	56	54	ND<26	ND<26	ND<26	15,000	ND<32	ND<24	ND<24	ND<15	ND, except Carbon Disulfide = 140	570	0
SG5-17	8/10/2016	15.0 to 17.0	16.0	ND<990	ND<1,200	ND<1,300	ND<1,300	ND<1,300	2,400	ND<1,700	ND<1,200	ND<1,200	ND<790	All ND	840,000, a	6.5
SG6-7	12/2/2015	5.0 to 7.0	6.0	ND<220	ND<260	ND<310	ND<310	ND<310	61,000	ND<380	ND<280	ND<280	ND<180	All ND	2,000	0
SG6-7	8/10/2016	5.0 to 7.0	6.0	ND<41	ND<49	ND<56	ND<56	ND<56	8,400	ND<69	ND<51	ND<51	ND<33	All ND	660	0
SG6-17	12/2/2015	15.0 to 17.0	16.0	140	170	ND<90	ND<90	ND<90	41,000	ND<110	ND<82	ND<82	ND<53	ND, except Hexane = 89	540	0
SG6-17	8/10/2016	15.0 to 17.0	16.0	ND<41	ND<49	ND<56	ND<56	ND<56	8,600	ND<69	ND<51	ND<51	ND<33	All ND	300	0
SG7-7	12/2/2015	5.0 to 7.0	6.0	ND<14	ND<16	ND<18	ND<18	ND<18	7,000	ND<23	ND<17	ND<17	ND<11	All ND	1,500	0
SG7-7	8/10/2016	5.0 to 7.0	6.0	ND<38	ND<45	ND<52	ND<52	ND<52	ND<81	ND<64	ND<47	ND<47	ND<30	ND, except Tetrahydrofuran = 70	260	0
SG7-17	12/2/2015	15.0 to 17.0	16.0	ND<120	ND<140	ND<160	ND<160	ND<160	37,000	ND<200	ND<140	ND<140	ND<94	All ND	ND<400	0
SG7-17	8/10/2016	15.0 to 17.0	16.0	ND<39	ND<46	ND<53	ND<53	ND<53	5,700	ND<66	ND<48	ND<48	ND<31	All ND	ND<130	0
SG8-7	12/2/2015	5.0 to 7.0	6.0	13	ND<4.5	ND<5.2	ND<5.2	ND<5.2	850	ND<6.4	ND<4.7	ND<4.7	ND<3.0	All ND	210	0
SG8-7	8/10/2016	5.0 to 7.0	6.0	ND<36	ND<42	ND<49	ND<49	ND<49	110	ND<60	ND<45	ND<45	ND<29	All ND	330	0
SG9-17	12/2/2015	15.0 to 17.0	16.0	42	30	ND<18	ND<18	ND<18	4,000	ND<23	ND<17	ND<17	ND<11	ND, except Chloroform = 46, Carbon Disulfide = 170, Hexane = 29	66,000, a	0
SG9-17	8/11/2016	15.0 to 17.0	16.0	ND<40	ND<47	75	370	110	860	ND<67	ND<50	ND<50	ND<32	All ND	41,000, a	0
SG9-17 DUP	12/2/2015	15.0 to 17.0	16.0	44	34	ND<21	ND<21	ND<21	4,600	ND<26	ND<18	ND<18	ND<12	ND, except Chloroform = 54, Carbon Disulfide = 190, Hexane = 39	9,200, a	0
SG9-17 DUP	8/11/2016	15.0 to 17.0	16.0	ND<40	ND<47	56	370	92	930	ND<68	ND<50	ND<50	ND<32	All ND	8,600, a	0
SG10-7	12/2/2015	5.0 to 7.0	6.0	ND<72	ND<85	ND<98	ND<98	ND<98	1,100	ND<120	ND<90	ND<90	ND<58	All ND	680,000, a	8.7
SG10-7	8/11/2016	5.0 to 7.0	6.0	ND<42	ND<50	ND<57	ND<57	ND<57	ND<90	ND<71	ND<52	ND<52	ND<34	All ND	320	0
SG11-17	8/10/2016	15.0 to 17.0	16.0	ND<750	ND<1,200	ND<1,000	ND<1,000	ND<1,000	34,000	ND<1,200	ND<930	ND<930	ND<600	All ND	470,000	4.9

Table 2A
Summary of Soil Gas Sample Analytical Results

Sample ID	Sample Date	Sand Pack Interval (Feet bgs)	Probe Depth (Feet bgs)	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Other VOCs by EPA TO-15	1,1-Difluoroethane	Percent Shroud
<i>ESL¹</i>				<i>48</i>	<i>160,000</i>	<i>560</i>	<i>Combined = 52,000</i>		<i>240</i>	<i>240</i>	<i>4,200</i>	<i>42,000</i>	<i>4.7</i>	<i>Chloroform = 61, Carbon Disulfide = No Value, Cyclohexane = No Value, Hexane = No Value, Tetrahydrofuran = No Value,</i>	<i>No Value</i>	<i>No Value</i>
<i>ESL²</i>				<i>420</i>	<i>1,300,000</i>	<i>4,900</i>	<i>Combined = 440,000</i>		<i>2,100</i>	<i>3,000</i>	<i>35,000</i>	<i>350,000</i>	<i>160</i>	<i>Chloroform = 530, Carbon Disulfide = No Value, Cyclohexane = No Value, Hexane = No Value, Tetrahydrofuran = No Value,</i>	<i>No Value</i>	<i>No Value</i>
Notes:																
Feet bgs = Feet Below Ground Surface.																
PCE = Tetrachloroethene.																
TCE = Trichloroethene.																
cis-1,2-TCE = cis-1,2-Dichloroethene.																
trans-1,2-TCE = trans-1,2-Dichloroethene.																
DFA = 1,1-Difluoroethane. (tracer gas)																
ND = Not Detected.																
a = Laboratory Note: exceeds instrument calibration range.																
Percent Shroud = The ratio of tracer gas concentration detected in the soil gas sample to the tracer gas concentration detected in the shroud air sample, expressed as a percentage.																
<i>ESL¹</i> = Environmental Screening Level, by San Francisco Bay – Regional Water Quality Control Board , updated February 2016 (Revision 3), from Table SG-1 – Subslab/Soil Gas Vapor Intrusion Human Health Screening Levels. Residential Land Use.																
<i>ESL²</i> = Environmental Screening Level, by San Francisco Bay – Regional Water Quality Control Board , updated February 2016 (Revision 3), from Table SG-1 – Subslab/Soil Gas Vapor Intrusion Human Health Screening Levels. Commercial/Industrial Land Use.																
Values in bold exceed their respective ESL¹ values.																
<u>Underlined values exceed their respective ESL² values.</u>																
Results in micrograms per cubic meter (µg/m ³), unless otherwise indicated																

Table 2B
 Summary of Soil Gas Shroud Sample Laboratory Analytical Results - Difluoroethane

Sample ID	Sample Date	DFA, #
SG1-7	8/10/2016	9,000,000
SG2-7	8/10/2016	6,400,000
SG2-17	8/10/2016	16,000,000
SG3-17	8/10/2016	31,000,000
SG4-7	8/10/2016	18,000,000
SG4-17	8/10/2016	16,000,000
SG5-7	8/10/2016	9,400,000
SG5-17	8/10/2016	13,000,000
SG6-7	8/10/2016	7,700,000
SG6-17	8/10/2016	9,700,000
SG7-7	8/10/2016	7,700,000
SG7-17	8/10/2016	12,000,000
SG8-7	8/10/2016	7,600,000
SG9-17	8/11/2016	6,500,000
SG10-7	8/11/2016	7,700,000
SG11-17	8/10/2016	9,600,000
Notes:		
ND = Not Detected.		
# = 1,1-Difluoroethane (DFA) used as leak detection compound for TO-15 analysis.		
Results in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), unless otherwise indicated.		

Table 3A
8/10/16 and 8/11/16 Soil Gas Risk and Hazard Calculation Results

Sample Location and Depth (Feet)	Chemical	Land Use	Concentration (µg/m ³)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	NOTES	CAS#
Samples Collected August 10 and 11, 2016							
SG1-7 6.0	PCE	RESIDENTIAL	1,000	1.3E-06	1.7E-02		127184
			TOTALS	1.3E-06	1.7E-02		
SG2-7 6.0	PCE	RESIDENTIAL	15,000	2.0E-05	2.6E-01		127184
			TOTALS	2.0E-05	2.6E-01		
SG2-17 16.0	PCE	RESIDENTIAL	39,000	2.2E-05	2.9E-01		127184
	Chloroform		74	2.4E-07	2.8E-04		67663
	Tetrahydrofuran		59	NA	1.3E-05		109999
			TOTALS	2.2E-05	2.9E-01		
SG3-17 16.0	PCE	RESIDENTIAL	10,000	5.7E-06	7.4E-02		127184
			TOTALS	5.7E-06	7.4E-02		
SG4-7 DUP 6.0	PCE	RESIDENTIAL	83	1.1E-07	1.4E-03		127184
			TOTALS	1.1E-07	1.4E-03		
SG4-17 16.0	PCE	RESIDENTIAL	9,800	5.5E-06	7.2E-02		127184
			TOTALS	5.5E-06	7.2E-02		
SG5-7 6.0	PCE	RESIDENTIAL	5,500	7.3E-06	9.5E-02		127184
			TOTALS	7.3E-06	9.5E-02		
SG5-17 16.0	PCE	RESIDENTIAL	2,400	1.4E-06	1.8E-02		127184
			TOTALS	1.4E-06	1.8E-02		
SG6-7 6.0	PCE	Commercial	8,400	1.3E-06	1.7E-02		127184
			TOTALS	1.3E-06	1.7E-02		
SG6-17 16.0	PCE	Commercial	8,600	5.6E-07	7.6E-03		127184
			TOTALS	5.6E-07	7.6E-03		
SG7-7 6.0	Tetrahydrofuran	Commercial	70	NA	3.9E-06		109999
			TOTALS	0.0E+00	3.9E-06		
SG7-17 16.0	PCE	Commercial	5,700	3.7E-07	5.0E-03		127184
			TOTALS	3.7E-07	5.0E-03		
SG8-7 6.0	PCE	Commercial	110	1.7E-08	2.3E-04		127184
			TOTALS	1.7E-08	2.3E-04		

Table 3A
8/10/16 and 8/11/16 Soil Gas Risk and Hazard Calculation Results

Sample Location and Depth (Feet)	Chemical	Land Use	Concentration (µg/m ³)	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	NOTES	CAS#
Samples Collected August 10 and 11, 2016							
SG9-17	Ethylbenzene	Commercial	75	2.7E-09	3.0E-06		100414
16.0	m,p-Xylene		370	NA	1.5E-04	used p-Xylene CAS number	106423
	o-Xylene		110	NA	4.4E-05		95476
	PCE		860	5.6E-08	7.6E-04		127184
			TOTALS	5.9E-08	9.6E-04		
SG9-17 DUP	Ethylbenzene	Commercial	56	2.0E-09	2.2E-06		100414
16.0	m,p-Xylene		370	NA	1.5E-04	used p-Xylene CAS number	106423
	o-Xylene		92	NA	3.7E-05		95476
	PCE		930	6.0E-08	8.2E-04		127184
			TOTALS	6.2E-08	1.0E-03		
SG11-17	PCE	Commercial	34,000	2.2E-06	3.0E-02		127184
16.0			TOTALS	2.2E-06	3.0E-02		
NOTES							
PCE = Tetrachloroethene.							
At Locations SG1-7, SG2-7, SG4-7, and SG5-7 spreadsheet default values were used for a residential exposure, with a vadose zone soil type SI (silt), and a sample depth of 6.0 feet (182.88 cm). At locations SG6-7, SG7-7, SG8-7, and SG10-7 spreadsheet default values were used for a commercial exposure with a vadose zone soil type of SI, and a sample depth of 6.0 feet (182.88 cm). At Locations SG2-17, SG3-17, and SG5-17 spreadsheet default values were used for a residential exposure, with a vadose zone soil type SI, and a sample depth of 16.0 feet (487.68 cm). At locations SG6-17, SG7-17, and SG9-17 spreadsheet default values were used for a commercial exposure with a vadose zone soil type SI, and a sample depth of 16.0 feet (487.68 cm).							

Table 3B
12/2/15, 8/10/16 and 8/11/16 Soil Gas Risk and Hazard Calculation Results Summary

Soil Gas Sample Designation	Sample Collection Date	Land Use	Calculated	Calculated	Calculated	Calculated Hazard Index	Recommendations Based on
			Cumulative Incremental Carcinogenic Risk	Cumulative Incremental Carcinogenic Risk Alternate Description	Cumulative Incremental Carcinogenic Risk Alternate Description		DTSC-Recommended Guidance for Action or Response (Minimum of Two Adequately-Spaced (With Respect To Time) Soil Gas Sampling Events Needed)
SG1-7	8/10/2016	Residential	1.30E-06	0.0000013	1.3 in a million	0.017	Evaluate need for action- risk greater than 1 in a million.
SG1-7	12/2/2015	Residential	7.80E-06	0.0000078	7.8 in a million	0.1	Evaluate need for action- risk greater than 1 in a million.
SG2-7	8/10/2016	Residential	2.00E-05	0.000020	20 in a million	0.26	Evaluate need for action- risk greater than 1 in a million.
SG2-7	12/2/2015	Residential	7.80E-05	0.0000780	78 in a million	1	Evaluate need for action- risk greater than 1 in a million and hazard greater than 1.
SG2-17	8/10/2016	Residential	2.20E-05	0.000022	22 in a million	0.29	Evaluate need for action- risk greater than 1 in a million.
SG2-17	12/2/2015	Residential	6.80E-05	0.0000680	68 in a million	0.89	Evaluate need for action- risk greater than 1 in a million.
SG3-17	8/10/2016	Residential	5.70E-06	0.000057	5.7 in a million	0.074	Evaluate need for action- risk greater than 1 in a million.
SG3-17	12/2/2015	Residential	3.60E-05	0.0000360	36 in a million	0.48	Evaluate need for action- risk greater than 1 in a million.
SG4-7	8/10/2016	Residential	0.00E+00	0.00	0 in a million	0.00	No further action.
SG4-7	12/2/2015	Residential	4.90E-06	0.0000049	4.9 in a million	0.064	Evaluate need for action- risk greater than 1 in a million.
SG4-7 DUP	8/10/2016	Residential	1.10E-07	0.00000011	0.11 in a million	0.0014	No further action.
SG4-7 DUP	12/2/2015	Residential	4.90E-06	0.0000049	4.9 in a million	0.064	Evaluate need for action- risk greater than 1 in a million.
SG4-17	8/10/2016	Residential	5.50E-06	0.0000055	5.5 in a million	0.072	Evaluate need for action- risk greater than 1 in a million.
SG5-7	8/10/2016	Residential	7.30E-06	0.0000073	7.3 in a million	0.095	Evaluate need for action- risk greater than 1 in a million.
SG5-7	12/2/2015	Residential	3.10E-05	0.0000310	31 in a million	0.4	Evaluate need for action- risk greater than 1 in a million.
SG5-17	8/10/2016	Residential	1.40E-06	0.0000014	1.4 in a million	0.018	Evaluate need for action- risk greater than 1 in a million.
SG5-17	12/2/2015	Residential	8.80E-06	0.0000088	8.8 in a million	0.12	Evaluate need for action- risk greater than 1 in a million.
SG6-7	8/10/2016	Commercial	1.30E-06	0.0000013	1.3 in a million	0.017	Evaluate need for action- risk greater than 1 in a million.
SG6-7	12/2/2015	Commercial	9.30E-06	0.0000093	9.3 in a million	0.13	Evaluate need for action- risk greater than 1 in a million.
SG6-17	8/10/2016	Commercial	5.60E-07	0.00000056	0.56 in a million	0.0076	No further action.
SG6-17	12/2/2015	Commercial	2.80E-06	0.0000028	2.8 in a million	0.038	Evaluate need for action- risk greater than 1 in a million.
SG7-7	8/10/2016	Commercial	0.00E+00	0.00	0 in a million	0.00	No further action.
SG7-7	12/2/2015	Commercial	1.10E-06	0.0000011	1.1 in a million	0.014	Evaluate need for action- risk greater than 1 in a million.
SG7-17	8/10/2016	Commercial	3.70E-07	0.00000037	0.37 in a million	0.005	No further action.
SG7-17	12/2/2015	Commercial	2.40E-06	0.0000024	2.4 in a million	0.033	Evaluate need for action- risk greater than 1 in a million.
SG8-7	8/10/2016	Commercial	1.70E-08	0.000000017	0.017 in a million	0.00023	No further action.
SG8-7	12/2/2015	Commercial	1.40E-07	0.00000014	0.14 in a million	0.0023	No further action.
SG9-17	8/11/2016	Commercial	5.90E-08	0.000000059	0.059 in a million	0.00096	No further action.
SG9-17	12/2/2015	Commercial	3.00E-07	0.0000003	0.30 in a million	0.0042	No further action.
SG9-17 DUP	8/11/2016	Commercial	6.20E-08	0.000000062	0.062 in a million	0.00100	No further action.
SG9-17 DUP	12/2/2015	Commercial	3.40E-07	0.00000034	0.34 in a million	0.0048	No further action.
SG10-7	8/11/2016	Commercial	0.00E+00	0.00	0 in a million	0.00	No further action.
SG10-7	12/2/2015	Commercial	1.70E-07	0.000000017	0.17 in a million	0.0023	No further action.
SG11-17	8/10/2016	Commercial	2.20E-06	0.0000022	2.2 in a million	0.003	Evaluate need for action- risk greater than 1 in a million.

Notes:

RISK MANAGEMENT MATRIX FOR VAPOR INTRUSION			
Risk	Hazard	Response	Activities
Less than 1 in a million	$x \leq 1.0$	No Further Action	None
1 to 100 in a million	$x \geq 1.0$	Evaluate Need for Action	Possible Actions o Additional Data Collection o Monitoring o Additional Risk Characterization o Mitigation o Source Remediation
More than 100 in a million		Response Action Needed	o Vapor Intrusion Mitigation o Source Remediation

Table 4

Summary of Soil Gas Model Sensitivity Analysis

DTSC Vapor Intrusion Soil Gas Model (December 2014)					
				Incremental	Hazard
				risk from	quotient
				vapor	from vapor
				intrusion to	intrusion to
				indoor air,	indoor air,
		Concentration	Sample Result	carcinogen	noncarcinogen
Chemical		(ug/m ³)	Location	(unitless)	(unitless)
Scenario 1 = Table 1A Highest Concentration with Residential Model Default Values Except for					
	Soil Type = SL.				
PCE		120,000	SG2-17	1.8E-04	2.4E+00
Scenario 2 = Scenario 1 values except average soil temperature is 15 degrees C.					
PCE		120,000	SG2-17	1.8E-04	2.4E+00
Scenario 3 = Scenario 1 values except soil type is CL.					
PCE		120,000	SG2-17	1.4E-04	1.9E+00
Scenario 4 = Scenario 1 values except soil type is S.					
PCE		120,000	SG2-17	2.6E-04	3.4E+00
Scenario 5 = Scenario 1 values except Q_{soil} 1 Liter per minute.					
PCE		120,000	SG2-17	8.4E-05	1.1E+00
Scenario 6 = Scenario 1 values except Q_{soil} 100 Liters per minute.					
PCE		120,000	SG2-17	2.6E-04	3.4E+00
Scenario 7 = Scenario 1 values except soil gas sampling depth is 182.88 cm (6.0 ft).					
PCE		120,000	SG2-17	1.6E-04	2.1E+00
Scenario 8 = Scenario 1 values except soil gas sampling depth is 487.68 cm (16 ft).					
PCE		120,000	SG2-17	6.8E-05	8.9E-01
Scenario 9 = Scenario 1 values except PCE concentration = 12,000 ug/m3.					
PCE		12,000	None	1.8E-05	2.4E-01
Scenario 10 = Scenario 1 values except PCE concentration = 1,200,000 ug/m3.					
PCE		12,000,000	None	2.6E-03	3.4E+01
Notes					
PCE = Tetrachloroethene.					

FIGURES

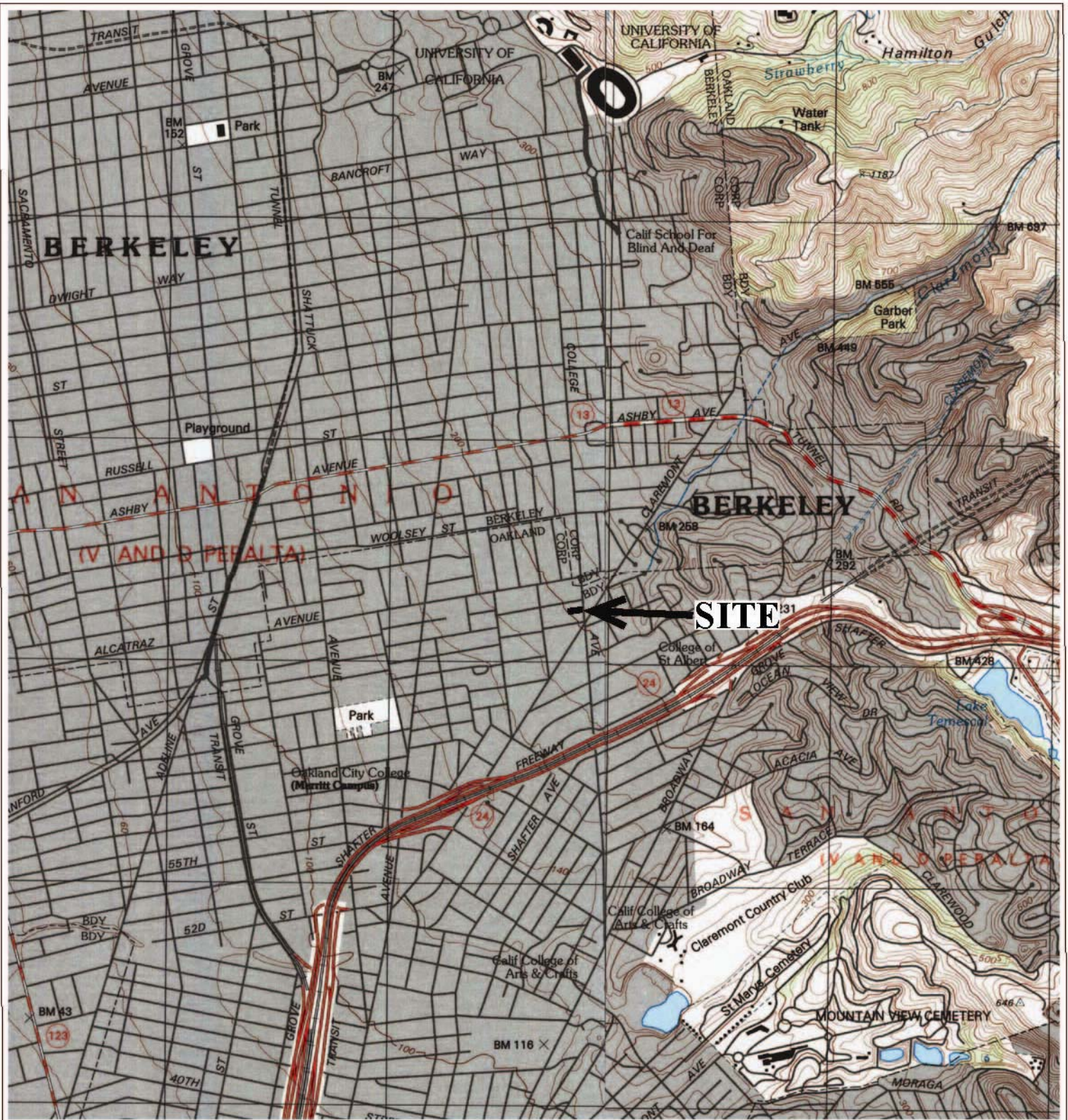
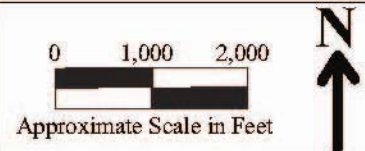


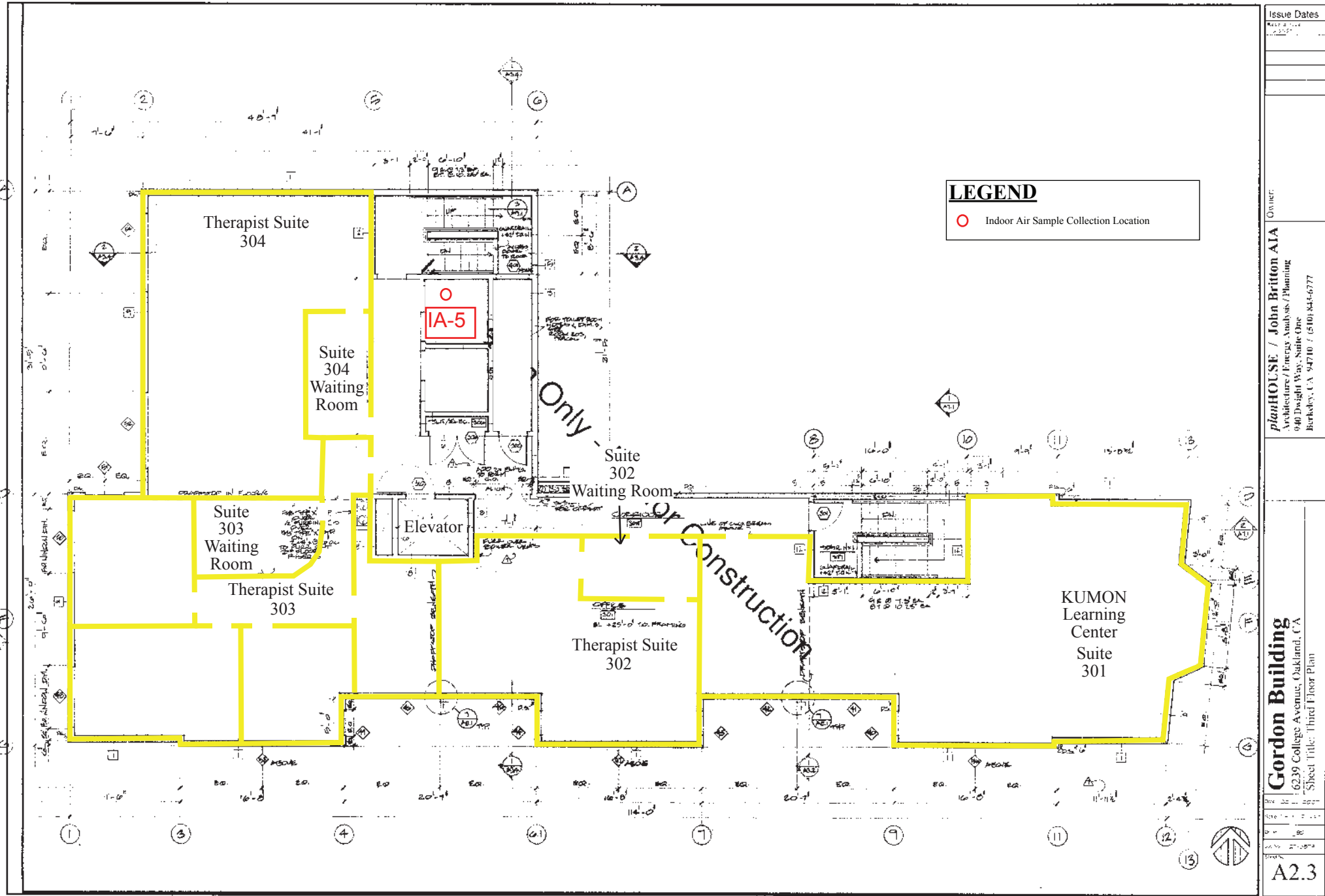
Figure 1
 Site Location Map
 Red Hanger Kleaners
 6239 College Avenue
 Oakland, California

Base Map From:
 U.S. Geologic Survey 7.5 Minute Quadrangles
 Oakland East, and Oakland West, both maps
 edited 1996.

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland CA 94610



Approximate Scale in Feet



LEGEND
 ○ Indoor Air Sample Collection Location

Issue Dates	Owner:
	planHOUSE / John Britton AIA
	Architecture / Energy Analysis / Planning
	940 Dwight Way, Suite One
	Berkeley, CA 94710 / (510) 844-6777
	Gordon Building
	6239 College Avenue, Oakland, CA
	Sheet Title: Third Floor Plan
	A2.3

Figure 4
 Site Plan Showing Air Sample Collection Locations - Third Floor

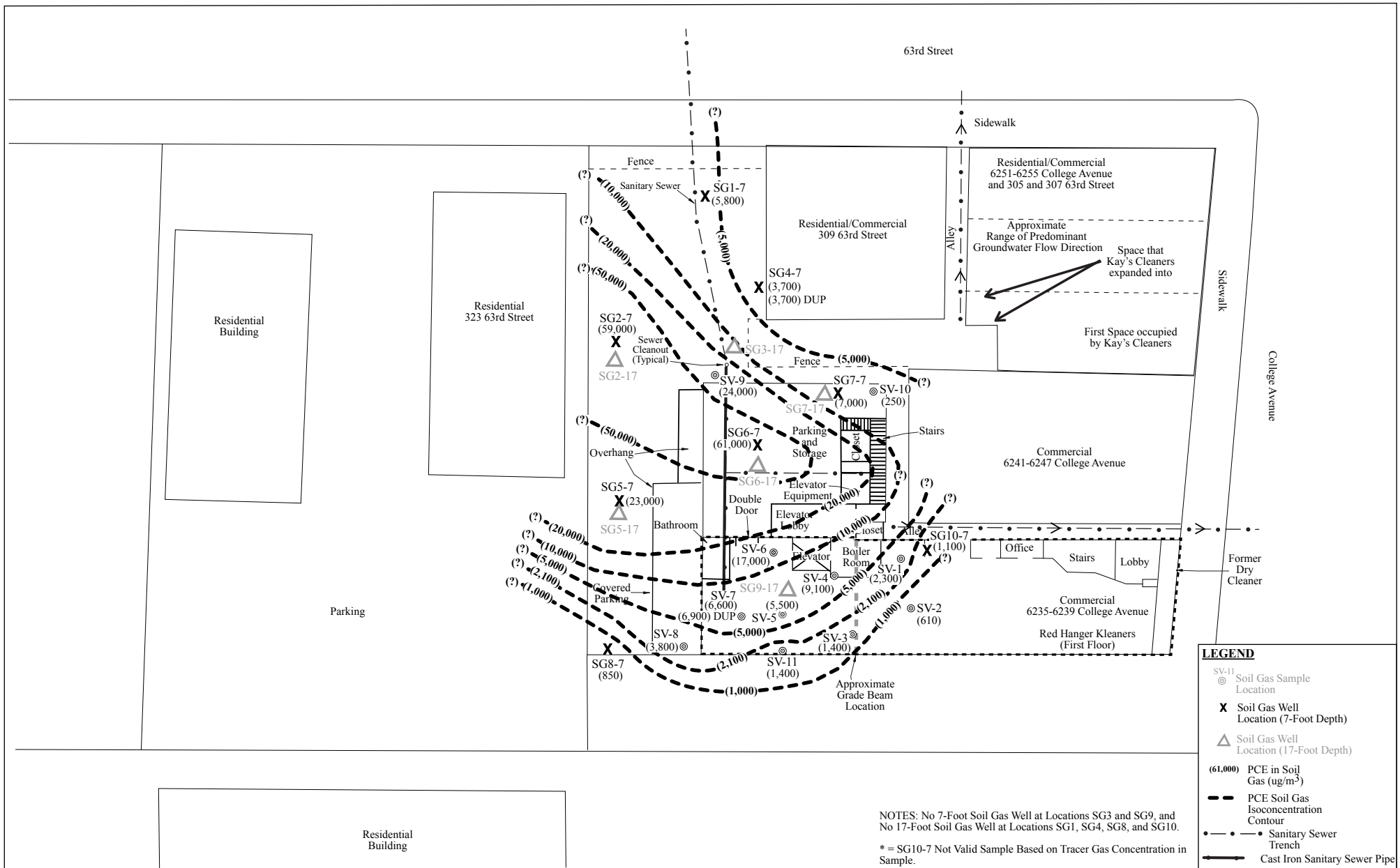
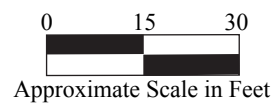


Figure 5
 Site Plan Showing 12/2/15 PCE Concentrations in Shallow Soil Gas
 Red Hanger Kleaners
 6239 College Avenue
 Oakland, California

Base Map from:
 Gordon Building, July 30, 2007, Alameda
 County Assessor's Map, Revised June 15, 1989,
 and Google Earth, 2015

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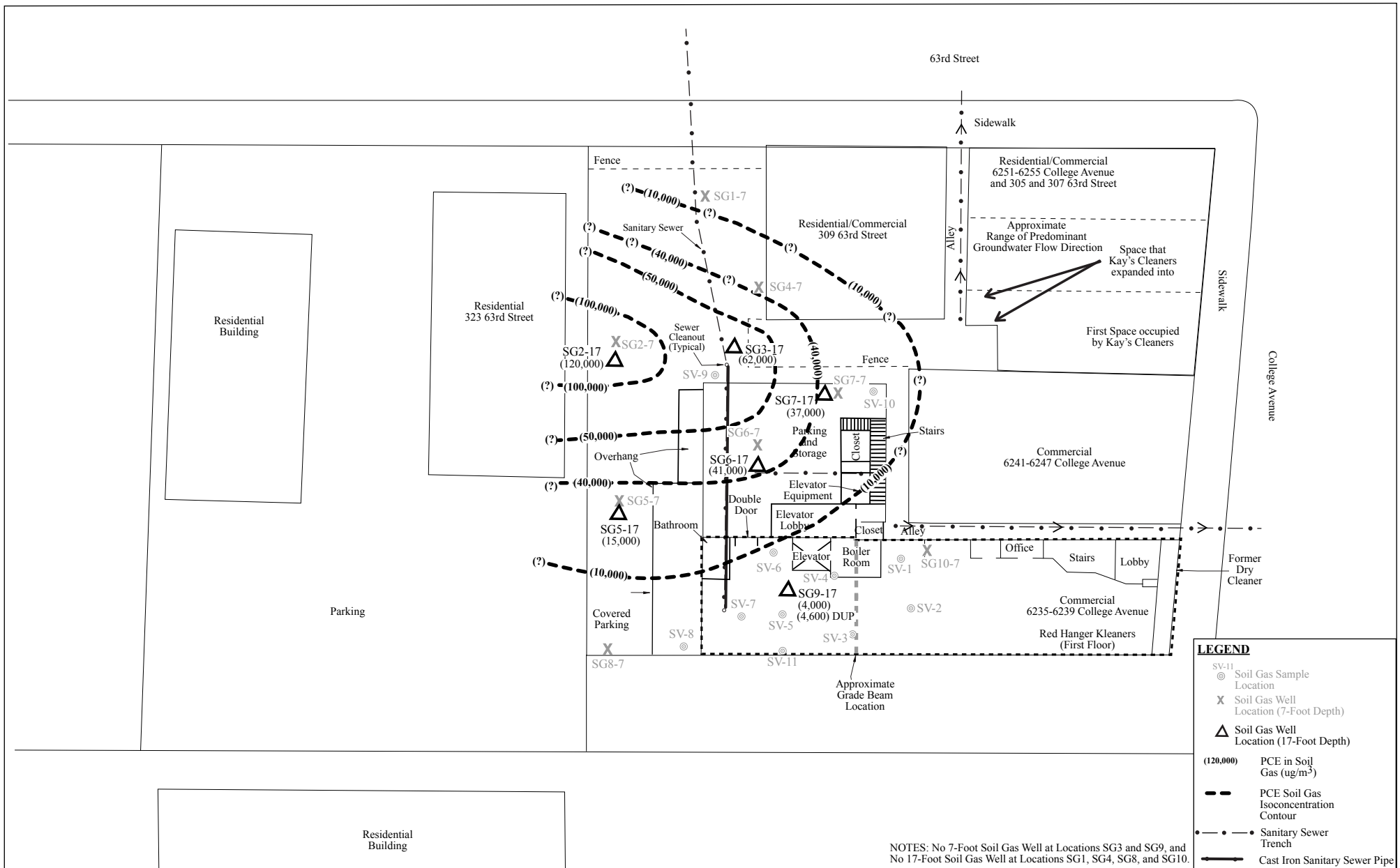


Figure 6
 Site Plan Showing 12/2/15 PCE Concentrations in Deep Soil Gas
 Red Hanger Kleaners
 6239 College Avenue
 Oakland, California

Base Map from:
 Gordon Building, July 30, 2007, Alameda
 County Assessor's Map, Revised June 15, 1989,
 and Google Earth, 2015

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 55 Santa Clara Ave., Suite 240
 Oakland, CA 94610

0 15 30

 Approximate Scale in Feet

N ↑

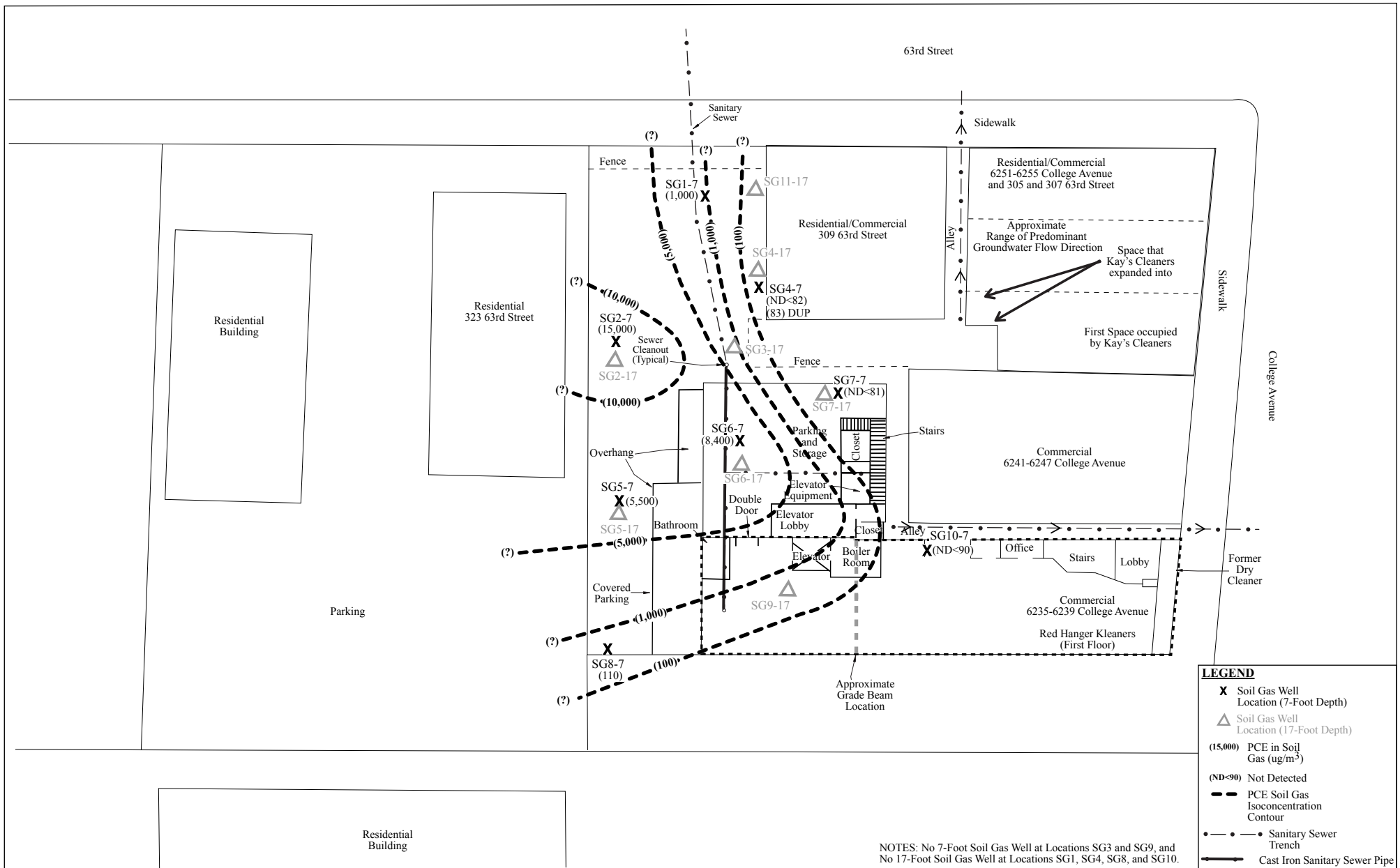
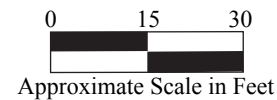
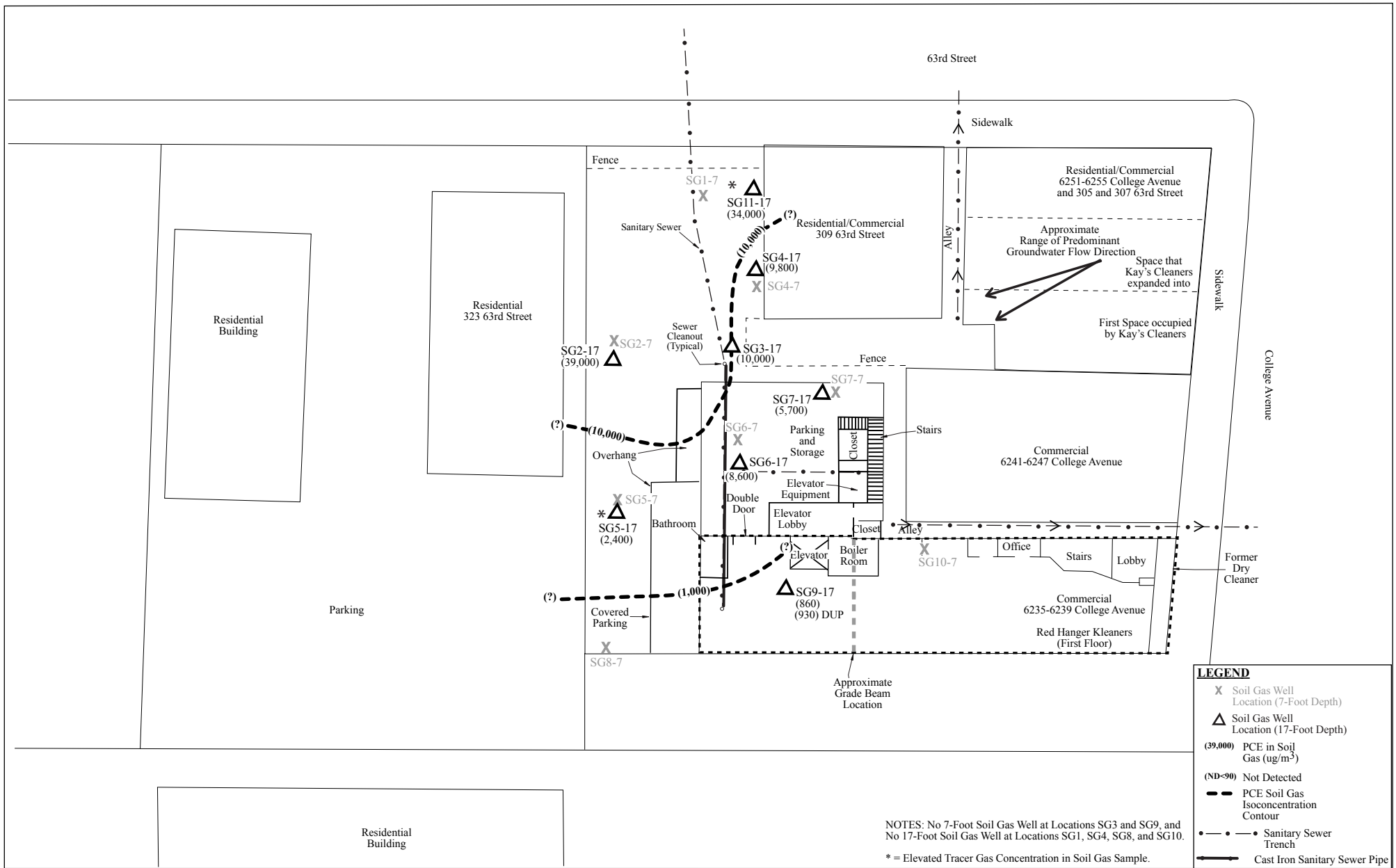


Figure 7
 Site Plan Showing 8/10/16 and 8/11/16 PCE Concentrations in Shallow Soil Gas
 Red Hanger Kleaners
 6239 College Avenue
 Oakland, California

Base Map from:
 Gordon Building, July 30, 2007, Alameda
 County Assessor's Map, Revised June 15, 1989,
 and Google Earth, 2015

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Base Map from:
 Gordon Building, July 30, 2007, Alameda
 County Assessor's Map, Revised June 15, 1989,
 and Google Earth, 2015

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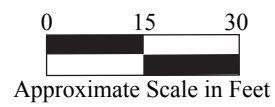




Figure 9
Typical Soil Gas Sampling Manifold
Red Hanger Kleaners
6239 College Avenue
Oakland, California

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Oakland, CA 94610

APPENDIX A

Air Sampling Data Sheet

AIR SAMPLING DATA SHEET **RED HANGER CLEANERS**

Address **6239 COLLEGE AVE., OAKLAND, CA**
 Job # **0461**
 Date **7/13/16 AND 7/14/16**
 Sampler Name **MLDD**

Sample Location Designation	Canister #	Start pump flow rate (cc/min) and time	End pump flow rate (cc/min) and time	Sample Canister Initial Vacuum Check (In. Hg) and time	7/13/16	7/14/16	NOTES
					Begin sample collection vacuum (In. Hg) and time	End sample collection vacuum (In. Hg) and time	
ELEVATOR PIT	12004	flow time	flow time	vac -30 time 0550	vac -30 time 061122	vac -3.5 time 065442	
IA1	5666	flow time	flow time	vac -30 time 0612	vac -30 time 062534	vac -8 time 063210	
IA2	00316	flow time	flow time	vac -30 time 0614	vac -30 time 062621	vac -6 time 063305	
IA4	36044	flow time	flow time	vac -30 time 0628	vac -30 time 063505	vac -6 time 063504	
IA5	1602	flow time	flow time	vac -30 time 0630	vac -30 time 063705	vac -6 time 063802	
IA5 DUP	00343	flow time	flow time	vac -30 time 0632	vac -30 time 063705	vac -8 time 063802	
BG2 AMBIENT	35143	flow time	flow time	vac -30 time 0602	vac -30 time 060912	vac -8 time 065711	
		flow time	flow time	vac time	vac time	vac time	
		flow time	flow time	vac time	vac time	vac time	
		flow time	flow time	vac time	vac time	vac time	
		flow time	flow time	vac time	vac time	vac time	
		flow time	flow time	vac time	vac time	vac time	

NOTES : **SAMPLE : 6-LITER SUMMA WITH 24-hour SIM CERTIFIED FLOW CONTROLLER.**

APPENDIX B

Purge Volume Calculations and Soil Gas Sampling Data Sheets

Soil Gas Purge Volume Calculations

One Purge Volume is calculated as the volume of the tubing interior plus 200 cubic centimeters.

The tubing interior volume is calculated as follows:

V tubing = pi x (r x r) x h, where pi = 3.14, r = 0.187 in./2, and h = 8 ft.

V tubing = 3.14 x (0.0935 x 0.0935) x (8 ft. x 12 in./ft) = 2.64 cubic inches.

The sand interval volume is calculated as follows:

V sand interval = pi x (r x r) x h x porosity, where pi = 3.14, r = 0 in./2, h = 24 in., and porosity = 0.35

V sand interval = 3.14 x (0 x 0) x 24 x 0.35 = 0.00 cubic inches.

The total volume for one purge volume is V tubing + V sand interval, where

V total = 2.64 cubic inches + 0.00 cubic inches = 2.64 cubic inches.

To convert to cubic centimeters:

V total = 2.64 cubic inches x 16.39 cubic centimeters/cubic inches = 43.2 cubic centimeters.

The total tubing volume to be purged is 1 purge volumes.

V purge total = 43.2 cubic centimeters x 1 = 43 cubic centimeters.

V TOTAL = 43 + default 200 cubic centimeters = 243

The flow controller has a nominal flow rate of 150 cubic centimeters per minute.

The purge time is calculated as follows:

T purge = 243 cubic centimeters/ 150 cubic centimeters per minute = 1.62 minutes.

Converting the purge time to seconds, 1.62 minutes x 60seconds/ minute = 97 seconds.

Notes:

Yellow hi-lite indicates data entry required.

Blue hi-lite indicates values are calculated or automatically updated.

Sand interval is 2 ft from 5 to 7 ft bgs, filter is at center of sand pack, 2 ft tubing stickup above grade, 6 ft + 2 ft = 8 ft tubing, is hydrated, cement seal above bentonite.

Soil Gas Purge Volume Calculations

One Purge Volume is calculated as the volume of the tubing interior plus 200 cubic centimeters.

The tubing interior volume is calculated as follows:

V tubing = pi x (r x r) x h, where pi = 3.14, r = 0.187 in./2, and h = 18 ft.

V tubing = 3.14 x (0.0935 x 0.0935) x (18 ft. x 12 in./ft) = 5.93 cubic inches.

The sand interval volume is calculated as follows:

V sand interval = pi x (r x r) x h x porosity, where pi = 3.14, r = 0 in./2, h = 24 in., and porosity = 0.35

V sand interval = 3.14 x (0 x 0) x 24 x 0.35 = 0.00 cubic inches.

The total volume for one purge volume is V tubing + V sand interval, where

V total = 5.93 cubic inches + 0.00 cubic inches = 5.93 cubic inches.

To convert to cubic centimeters:

V total = 5.93 cubic inches x 16.39 cubic centimeters/cubic inches = 97.2 cubic centimeters.

The total tubing volume to be purged is 1 purge volumes.

V purge total = 97.2 cubic centimeters x 1 = 97 cubic centimeters.

V TOTAL = 97 + default 200 cubic centimeters = 297

The flow controller has a nominal flow rate of 150 cubic centimeters per minute.

The purge time is calculated as follows:

T purge = 297 cubic centimeters/ 150 cubic centimeters per minute = 1.98 minutes.

Converting the purge time to seconds, 1.98 minutes x 60seconds/ minute = 119 seconds.

Notes:

Yellow hi-lite indicates data entry required.

Blue hi-lite indicates values are calculated or automatically updated.

Sand interval is 2 ft from 15 to 17 ft bgs, filter is at center of sand pack, 2 ft tubing stickup above grade, 16 ft + 2 ft = 18 ft tubing, 0.5 ft of bentonite above sand is hydrated, cement seal above bentonite.

SOIL GAS SAMPLING DATA SHEET														
Address 6239 COLLEGE AVE., OAKLAND, CA										Probe Method (check one)				
Job # 8761										<input type="radio"/> PRT				
Date 8-10-16 AND 8-11-16										<input type="radio"/> Temp Well				
Sampler Name M-R-B										<input checked="" type="radio"/> Permanent Well				
Drilling Company VIRONEX										<input checked="" type="radio"/> Vapor Pin				
Soil Gas Location Designation	Probe Depth (Ft.)	Time Probe Installation Completed	Canister #	Sample Canister Initial Vacuum Check (In. Hg) and time	Start leak check vacuum (In. Hg) and time	End leak check vacuum (In. Hg) and time	ADDITIONAL leak check vacuum (In. Hg) and time	Start PURGE time	End PURGE time	Start of tracer gas injection time	Begin sample collection vacuum (In. Hg) and time	End sample collection vacuum (In. Hg) and time	PID value in Teflon tube after sample collection	NOTES
SG1-7	6		211915	vac -29 time 0941	vac -26 time 1235	vac -26 time 1245	vac	time 125000	time 125137	time 1255	vac -29 time 125400	vac -5 time 130108	ppm 0 time 1303	DFA 1255
SG2-7	6		1025	vac -30 time 0745	vac -26 time 0750	vac -26 time 0800	vac	time 080500	time 080637	time 0819	vac -30 time 081800	vac -5 time 082612	ppm 0.9 time 0828	DFA 0819
SG2-17	16		3043	vac -28 time 0830	vac -26 time 0835	vac -26 time 0845	vac	time 085000	time 085158	time 0859	vac -28 time 085830	vac -5 time 090355	ppm 3.3 time 0905	DFA 0859
SG3-17	16		31796	vac -29 time 0920	vac -26 time 0930	vac -26 time 0940	vac	time 095600	time 095758	time 1003	vac -29 time 100200	vac -5 time 100605	ppm 0.1 time 1011	DFA 1003
SG4-7	6		37656	vac -27.5 time 0925	vac -26 time 1030	vac -26 time 1040	vac	time 104900	time 105037	time 1056	vac -27 time 105500	vac -5 time 110835	ppm 0 time 1110	DFA 1056
SG4-7	6		33639	vac -27 time 0928	vac -26 time 1030	vac -26 time 1040	vac	time 104900	time 105037	time 1056	vac -27 time 105500	vac -5 time 110835	ppm	
SG4-17	16		8003	vac -29.5 time 0932	vac -26 time 1110	vac -26 time 1120	vac	time 113200	time 113358	time 1138	vac -29 time 113700	vac -5 time 114528	ppm 0 time 1147	DFA 1138
SG5-7	6		37424	vac -27.5 time 1405	vac -26 time 1410	vac -26 time 1420	vac	time 144100	time 144237	time 1447	vac -27 time 144600	vac -5 time 145446	ppm 0 time 1455	DFA 1447
SG5-17	16		11430	vac -29 time 1413	vac -26 time 1500	vac -26 time 1510	vac	time 151800	time 151958	time 1530	vac -29 time 152900	vac -5 time 155412	ppm 0 time 1556	DFA 1530
SG6-7	6		35673	vac -29.5 time 1635	vac -26 time 1710	vac -26 time 1720	vac	time 172700	time 172837	time 1734	vac -29 time 173300	vac -5 time 174112	ppm 0 time 1743	DFA 1734
SG6-17	16		37355	vac -29.5 time 1638	vac -26 time 1640	vac -26 time 1650	vac	time 165600	time 165758	time 1703	vac -29 time 170200	vac -5 time 170922	ppm 0 time 1711	DFA 1703
SG7-7	6		30832	vac -25 time 1538	vac -26 time 1745	vac -26 time 1755	vac	time 170100	time 170237	time 1805	vac -25 time 180400	vac -5 time 181206	ppm 0 time 1814	DFA 1805
SG7-17	16		37840	vac -29 time 1540	vac -26 time 1810	vac -26 time 1820	vac	time 182900	time 183058	time 1833	vac -29 time 183200	vac -5 time 184146	ppm 0 time 1842	DFA 1833

SOIL GAS SAMPLING DATA SHEET														
Address		6239 COLLEGE AVE., OAKLAND, CA												
Job #		0467												
Date		8-10-16 AND 8/11/16												
Sampler Name		MLBP												
Drilling Company		VIRTEX												
		Probe Method (check one)												
		<input type="radio"/> PRT <input type="radio"/> Temp Well <input checked="" type="radio"/> Permanent Well <input type="radio"/> Vapor Pin												
Soil Gas Location Designation	Probe Depth (Ft.)	Time Probe Installation Completed	Canister #	Sample Canister Initial Vacuum Check (In. Hg) and time	Start leak check vacuum (In. Hg) and time	End leak check vacuum (In. Hg) and time	ADDITIONAL leak check vacuum (In. Hg) and time	Start PURGE time	End PURGE time	Start of tracer gas injection time	Begin sample collection vacuum (In. Hg) and time	End sample collection vacuum (In. Hg) and time	PID value in Teflon tube after sample collection	NOTES
8/11/16 SG8-7	6		37823	vac -25 time 1530	vac -26 time 1550	vac -26 time 1600	vac	time 161800	time 161937	time 16192	vac -35 time 162100	vac -5 time 162635	ppm 0 time 1628	DFA 1622
8/11/16 SG9-17	16		37728	vac -29 time 1005	vac -35 time 1010	vac -25 time 1020	vac	time 104400	time 104558	time 1053	vac -29 time 105200	vac -5 time 110853	ppm 0 time 1110	DFA 1053
8/11/16 SG9-17	16		11438	vac -28.5 time 1000	vac -25 time 1010	vac -25 time 1020	vac	time 104400	time 104558	time	vac -28 time 105300	vac -5 time 110853	ppm	
8/11/16 SG10-7	6		35633	vac -30 time 1050	vac -25 time 1100	vac -25 time 1110	vac	time 112000	time 112137	time 1125	vac -30 time 112400	vac -5 time 112938	ppm 0 time 1131	DFA 1125
SG11-17	16		31767	vac -29 time 0936	vac -26 time 1150	vac -26 time 1200	vac	time 121700	time 121858	time 1221	vac -29 time 122200	vac -5 time 123133	ppm 3.2 time 1233	DFA 1221
SG				vac time	vac time	vac time	vac time	time	time	time	vac time	vac time	ppm time	
SG				vac time	vac time	vac time	vac time	time	time	time	vac time	vac time	ppm time	
SG				vac time	vac time	vac time	vac time	time	time	time	vac time	vac time	ppm time	
SG				vac time	vac time	vac time	vac time	time	time	time	vac time	vac time	ppm time	
SG				vac time	vac time	vac time	vac time	time	time	time	vac time	vac time	ppm time	
SG				vac time	vac time	vac time	vac time	time	time	time	vac time	vac time	ppm time	

APPENDIX C

SVE SYSTEM MONITORING, WELL MONITORING, AND AIR QUALITY DATA

- **FIGURE C1 - PROCESS AND FLOW DIAGRAM**
- **FIGURE C2 - FACILITY LAYOUT**
- **SVE SYSTEM AIR FLOW AND TEMPERATURE
MONITORING DATA SHEETS (3 pp)**
- **SVE WELL MONITORING FIELD SHEETS (3 pp)**
- **SVE SYSTEM AIR QUALITY MONITORING DATA
SHEETS (3 pp)**

FIGURES C1 AND C2

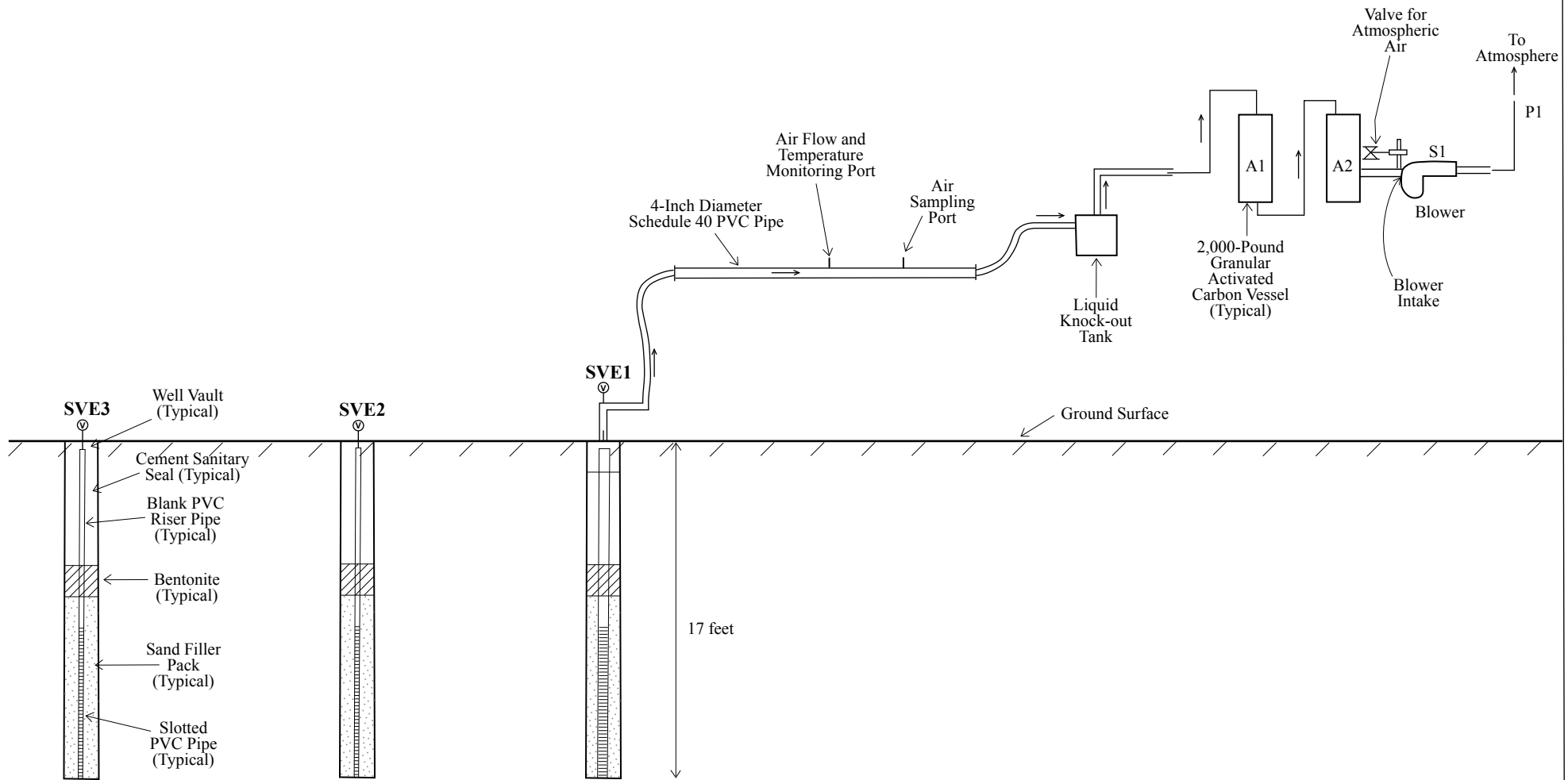
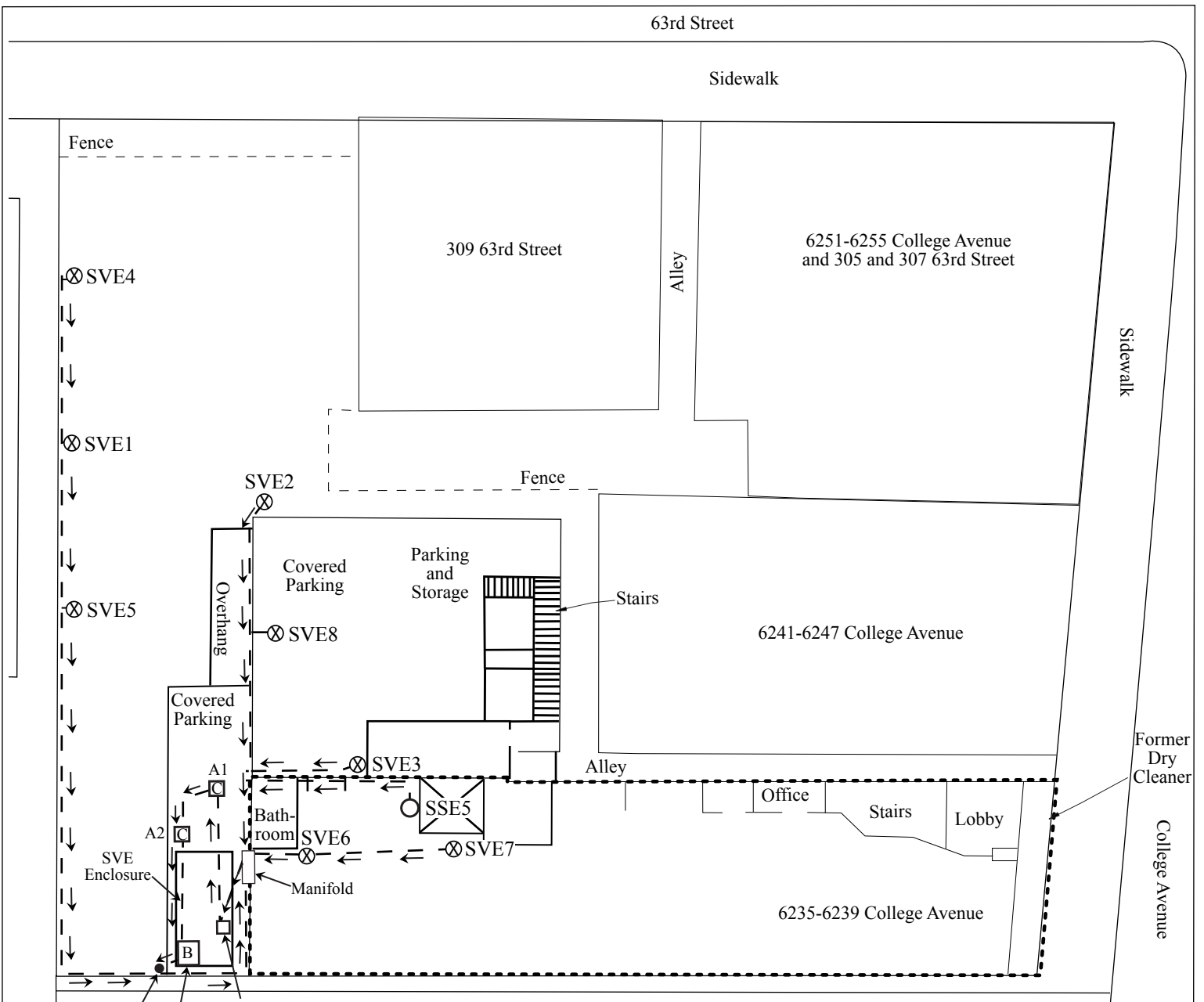


Figure C1
 Process and Flow Diagram
 Red Hanger Kleeners
 6239 College Avenue
 Oakland, California

P&D Environmental, Inc.
 55 Santa Clara Ave., Suite 240
 Oakland, CA 94610

NO SCALE



Emission Point P1
3-feet Above Roof Line

Blower (S1)

Moisture Condensation Tank

LEGEND

- ⊗ SVE Well
- 4-Inch Diameter Sub-Slab Extraction Location
- - - Piping
- Flow Direction
- [B] Blower
- [C] Carbon Vessels
- Emission Point

Figure C2
Facility Layout
Red Hanger Kleaners
6239 College Avenue
Oakland, California

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 10 20
Approximate Scale in Feet

JULY 19, 2016

**SVE SYSTEM AIR FLOW AND
TEMPERATURE MONITORING DATA
SHEETS**

SVE SYSTEM AIR FLOW AND TEMPERATURE MONITORING DATA SHEET

Date		Page <u>1</u> of <u>1</u>									
Site		Red Hanger Kleaners, 6239 College Ave, Oakland (Job # 0461)									
Air Velocity Meter Model #		TSI-9545									
Initials of Field Person		JHM									
Blower Speed (Hz)	Monitored Location	Monitoring Date & Time	Vacuum (In WC)	Monitored Pipe Diameter (inches)	Air Flow (cfm)	Air Flow (fpm)	Temp (F)	Relative Humidity (Percent)	Dew Point (F)	Wet Bulb Temp (F)	
56.0	SVE1	7/19/16 1107	-18.34	4	18.99	218	68.8	55.1	51.9	58.6	
	SVE2	1109	-17.99	4	23.63	271	68.2	55.8	52.1	58.3	
	SVE3	1111	-17.93	4	23.01	264	67.2	58.2	51.8	57.9	
	SVE4	1113	-18.38	4	28.50	327	68.0	56.0	51.9	58.5	
	SVE5	1115	-18.39	4	69.24	793	68.1	56.7	52.1	58.5	
	SVE6	1117	-18.65	4	44.17	506	67.3	57.9	51.9	58.0	
	SVE7	1119	-18.44	4	30.88	345	66.5	60.2	52.2	58.0	
	SVE8	1125	-17.90	4	44.16	506	68.8	55.4	52.1	58.7	
	SSE5	1121	-18.11	4	147.23	1687	69.5	54.8	51.9	58.5	
	SVE 2,3,8	1123	-17.99	4	101.22	1160	68.7	56.8	52.3	58.6	
	INLET TO A1	1130		4	453.21	5193	69.4	59.7	53.5	59.8	

SVE WELL MONITORING FIELD SHEETS

**SVE SYSTEM AIR QUALITY MONITORING
DATA SHEETS**

AUGUST 16, 2016

**SVE SYSTEM AIR FLOW AND
TEMPERATURE MONITORING DATA
SHEETS**

SVE WELL MONITORING FIELD SHEETS

SVE Well Monitoring Field Sheet

Date		Page			of	
8/16/16		1			1	
Site		Red Hanger Kleaners, 6239 College Ave, Oakland (Job # 0461)				
Initials of Field Person		JHM				
Monitoring Date/Time	Wells Extracting	Monitored Location ID	Vacuum (inches of water)	PID (ppm)	Comments	
8/16/16		SVE1	-25.0			
		SVE2	-26.1			
		SVE3	-26.0			
		SVE4	-24.9			
		SVE5	-24.8			
		SVE6	-26.6			
		SVE7	-26.5			
		SVE8	-25.9			
		SG1-7	-0.11			
		SG2-7	-0.57			
		SG2-17	-0.93			
		SG3-17	-2.64			
		SG4-7	0.00			
		SG4-17	-0.16			
		SG5-7	-0.67			
		SG5-17	+0.15			
		SG6-7	-0.86			
		SG6-17	-2.16			
		SG7-7	-0.46			
		SG7-17	-0.46			
		SG8-7	0.00			
		SG9-17	-2.85			
		SG10-7	-0.16			
		SG11-17	0.00			
		SSE1	-0.10			
		SSE3	0.00			
		SSE2	0.00			
		SSE4	0.00		SSES CLOSED	
		VP1	0.00			
		VP2	0.00			
		VP3	0.00			
		VP4	0.00			
		VP5	0.00			
		VP6	0.00			
		VP8	0.00			

**SVE SYSTEM AIR QUALITY MONITORING
DATA SHEETS**

AUGUST 24, 2016

**SVE SYSTEM AIR FLOW AND
TEMPERATURE MONITORING DATA
SHEETS**

SVE WELL MONITORING FIELD SHEETS

SVE Well Monitoring Field Sheet

Date <i>8/24/16</i>		Page <i>1</i> of <i>1</i>			
Site		Red Hanger Kleaners, 6239 College Ave, Oakland (Job # 0461)			
Initials of Field Person		<i>JHM</i>			
Monitoring Date/Time	Wells Extracting	Monitored Location ID	Vacuum (inches of water)	PID (ppm)	Comments
<i>8/24/16</i>		SVE1	-15.5		
0753		SVE2	-15.2		
0754		SVE3	-15.2		
0755		SVE4	-15.5		
0756		SVE5	-15.5		
0756		SVE6	-15.9		
0759		SVE7	-15.7		
0759		SVE8	-13.2		
0800		SVE 2,3,8	-15.3		
0806		SG1-7	0.00		
0813		SG2-7	-0.47		
0814		SG2-17	-0.84		
0818		SG3-17	-1.62		
0822		SG4-7	0.00		
0824		SG4-17	-0.49		
0827		SG5-7	-0.21		
0830		SG5-17	0.00		
0835		SG6-7	-2.06		
0838		SG6-17	-1.51		
0841		SG7-7	-0.36		
0845		SG7-17	-0.98		
0852		SG8-7	0.00		
0846		SG9-17	-1.83		
0848		SG10-7	-0.16		
0809		SG11-17	-0.28		
0854		SSE1	-1.21		
0855		SSE2	-0.62		
0855		SSE3	-0.23		
0856		SSE4	-0.16		
0902		SSE5	-15.5		
0858		VP1	-0.13		
0858		VP2	-0.10		
0859		VP3	-0.16		
0900		VP4	-0.08		
0900		VP5	-0.74		
0901		VP6	-1.74		
0901		VP8	-0.15		

**SVE SYSTEM AIR QUALITY MONITORING
DATA SHEETS**

APPENDIX D

Weather Information

https://www.wunderground.com/personal-weather-station/dashboard?ID=KCABERKE41#history/tdata/s20160701/e20160831/mcustom																
About This Weather Station																
Weather Station ID: KCABERKE41																
Station Name: Elmwood																
Latitude / Longitude: N 37 ° 51 ' 18 " , W 122 ° 15 ' 5 "																
Elevation: 253																
City: Berkeley																
State: CA																
Hardware: AcuRite Pro Weather Center																
Software: Acu-Link.com																

Weather History Table

July 1, 2016 - August 31, 2016

2016	Temperature			Dew Point			Humidity			Speed			Pressure			Precip. Accum.
	High	Avg	Low	High	Avg	Low	High	Avg	Low	High	Avg	Gust	High	Avg	Low	
1	75.7 °F	59.8 °F	50.5 °F	55.7 °F	51.5 °F	47.7 °F	92 %	76 %	50 %	7 mph	1 mph	0 mph	29.68 in	29.62 in	29.57 in	0 in
2	73.9 °F	59.7 °F	50.7 °F	56.2 °F	52.5 °F	48.1 °F	94 %	79 %	54 %	7 mph	1 mph	0 mph	29.74 in	29.69 in	29.64 in	0 in
3	73.2 °F	59.6 °F	53.2 °F	56.2 °F	53.1 °F	50.9 °F	93 %	80 %	54 %	4 mph	1 mph	0 mph	29.81 in	29.77 in	29.73 in	0 in
4	71.1 °F	60.4 °F	54.3 °F	57 °F	53.9 °F	51.9 °F	92 %	80 %	60 %	5 mph	1 mph	0 mph	29.81 in	29.77 in	29.73 in	0 in
5	75.2 °F	59.6 °F	55 °F	55.4 °F	52.5 °F	49.9 °F	89 %	78 %	49 %	4 mph	0 mph	0 mph	29.79 in	29.75 in	29.7 in	0 in
6	76.5 °F	60.2 °F	53.6 °F	55.2 °F	52.1 °F	49.7 °F	87 %	76 %	47 %	4 mph	0 mph	0 mph	29.78 in	29.74 in	29.71 in	0 in
7	75.9 °F	60.3 °F	54 °F	57.2 °F	53 °F	50.8 °F	90 %	78 %	51 %	3 mph	0 mph	0 mph	29.78 in	29.75 in	29.72 in	0 in
8	81.7 °F	62.7 °F	54.5 °F	58.9 °F	54.9 °F	51.8 °F	93 %	78 %	44 %	6 mph	0 mph	0 mph	29.8 in	29.77 in	29.74 in	0 in
9	83.3 °F	65.7 °F	52.2 °F	63.3 °F	57.1 °F	48.8 °F	91 %	76 %	46 %	3 mph	0 mph	0 mph	29.87 in	29.83 in	29.78 in	0 in
10	89.2 °F	66.3 °F	49.6 °F	57.5 °F	51.3 °F	47.1 °F	95 %	64 %	32 %	3 mph	0 mph	0 mph	29.86 in	29.78 in	29.7 in	0 in
11	85.3 °F	66 °F	52 °F	58.8 °F	53.9 °F	48.9 °F	91 %	68 %	40 %	7 mph	0 mph	0 mph	29.73 in	29.68 in	29.63 in	0 in
12	85.8 °F	64.3 °F	54.9 °F	57.1 °F	53.4 °F	51.4 °F	89 %	71 %	37 %	3 mph	0 mph	0 mph	29.76 in	29.72 in	29.67 in	0 in
13	87.6 °F	65.5 °F	50.7 °F	60.9 °F	54.2 °F	48.4 °F	93 %	70 %	38 %	4 mph	0 mph	0 mph	29.77 in	29.73 in	29.69 in	0 in
14	79.3 °F	62.1 °F	51.4 °F	58.7 °F	53.6 °F	48 °F	95 %	76 %	48 %	6 mph	0 mph	0 mph	29.76 in	29.72 in	29.68 in	0 in
15	77.5 °F	61.7 °F	49.3 °F	58 °F	53.9 °F	46.7 °F	96 %	77 %	50 %	6 mph	1 mph	0 mph	29.72 in	29.67 in	29.63 in	0 in
16	76.5 °F	61.7 °F	55.8 °F	58.1 °F	54.3 °F	51.8 °F	90 %	78 %	51 %	7 mph	1 mph	0 mph	29.69 in	29.66 in	29.63 in	0 in
17	77.2 °F	60.2 °F	54.7 °F	57.2 °F	53.2 °F	51.4 °F	89 %	79 %	48 %	3 mph	0 mph	0 mph	29.75 in	29.69 in	29.63 in	0 in
18	76.5 °F	60.9 °F	54.9 °F	58.2 °F	54.2 °F	52 °F	90 %	80 %	52 %	4 mph	0 mph	0 mph	29.86 in	29.81 in	29.75 in	0 in
19	78.6 °F	58.1 °F	54.3 °F	54.8 °F	52.2 °F	50.5 °F	89 %	82 %	44 %	2 mph	0 mph	0 mph	29.88 in	29.83 in	29.77 in	0 in
20	81 °F	72.6 °F	55.9 °F	57.9 °F	56.1 °F	52.1 °F	87 %	58 %	45 %	5 mph	1 mph	0 mph	29.83 in	29.79 in	29.75 in	0 in
21	77.2 °F	64.3 °F	55.2 °F	57.9 °F	54.3 °F	51.1 °F	88 %	72 %	50 %	3 mph	0 mph	0 mph	30.11 in	29.95 in	29.79 in	0 in
22	80.6 °F	64.2 °F	51.3 °F	59.4 °F	54.5 °F	48.6 °F	95 %	73 %	47 %	3 mph	0 mph	0 mph	30.13 in	30.07 in	30.01 in	0 in
23	84.6 °F	65.8 °F	50.7 °F	59.3 °F	54.2 °F	48.2 °F	92 %	69 %	37 %	4 mph	0 mph	0 mph	30 in	29.92 in	29.84 in	0 in
24	78.6 °F	62.1 °F	51.8 °F	58.2 °F	53.6 °F	49.5 °F	92 %	76 %	49 %	5 mph	0 mph	0 mph	29.92 in	29.87 in	29.82 in	0 in
25	82.4 °F	63.9 °F	54.7 °F	58.9 °F	54.5 °F	50.9 °F	90 %	74 %	45 %	4 mph	0 mph	0 mph	29.95 in	29.92 in	29.89 in	0 in
26	89.6 °F	65.9 °F	50.2 °F	61.7 °F	53.7 °F	48 °F	96 %	70 %	29 %	4 mph	0 mph	0 mph	29.92 in	29.88 in	29.83 in	0 in
27	81.5 °F	63.2 °F	53.4 °F	59.3 °F	54.5 °F	51.2 °F	93 %	76 %	46 %	5 mph	0 mph	0 mph	29.93 in	29.89 in	29.84 in	0 in
28	76.5 °F	61.4 °F	52.9 °F	58.3 °F	53.6 °F	50.9 °F	94 %	77 %	53 %	5 mph	0 mph	0 mph	29.94 in	29.9 in	29.85 in	0 in
29	78.6 °F	63.6 °F	54.3 °F	57.9 °F	54.7 °F	51.7 °F	91 %	75 %	49 %	4 mph	0 mph	0 mph	29.89 in	29.84 in	29.79 in	0 in
30	72 °F	61.1 °F	54.5 °F	58.3 °F	54.7 °F	52.5 °F	93 %	80 %	60 %	4 mph	0 mph	0 mph	29.87 in	29.83 in	29.79 in	0 in
31	68.9 °F	63.2 °F	55 °F	58.4 °F	56.4 °F	52.3 °F	92 %	79 %	69 %	5 mph	1 mph	0 mph	29.95 in	29.9 in	29.85 in	0 in

2016	Temperature			Dew Point			Humidity			Speed			Pressure			Precip. Accum.
	High	Avg	Low	High	Avg	Low	High	Avg	Low	High	Avg	Gust	High	Avg	Low	
Aug 1	71.6 °F	64.7 °F	57 °F	57.3 °F	55.5 °F	52.5 °F	87 %	73 %	60 %	5 mph	1 mph	0 mph	30.02 in	29.97 in	29.92 in	0 in
2	72.1 °F	60.7 °F	54 °F	57.9 °F	54.3 °F	51.1 °F	91 %	80 %	61 %	2 mph	0 mph	0 mph	30.05 in	30 in	29.95 in	0 in
3	72 °F	59.8 °F	49.1 °F	58.4 °F	53.3 °F	46.9 °F	95 %	80 %	61 %	2 mph	0 mph	0 mph	30 in	29.96 in	29.92 in	0 in
4	63.1 °F	57.8 °F	54.7 °F	55.3 °F	52.6 °F	50.9 °F	89 %	83 %	74 %	3 mph	0 mph	0 mph	29.98 in	29.94 in	29.9 in	0 in
5	69.1 °F	59.2 °F	55.6 °F	56.4 °F	53.7 °F	51.5 °F	92 %	83 %	64 %	3 mph	0 mph	0 mph	29.95 in	29.92 in	29.88 in	0.01 in
6	69.4 °F	59 °F	54.1 °F	56 °F	52.7 °F	51.4 °F	91 %	80 %	60 %	3 mph	0 mph	0 mph	29.92 in	29.89 in	29.85 in	0 in
7	84.4 °F	62.9 °F	55.6 °F	58.1 °F	53.4 °F	50.8 °F	89 %	73 %	40 %	3 mph	0 mph	0 mph	29.93 in	29.88 in	29.83 in	0 in
8	87.3 °F	65.1 °F	55.8 °F	59.5 °F	55 °F	52 °F	88 %	73 %	39 %	3 mph	0 mph	0 mph	29.87 in	29.72 in	29.56 in	0 in
9	80.4 °F	64 °F	54.5 °F	59.9 °F	55 °F	50.8 °F	89 %	74 %	48 %	2 mph	0 mph	0 mph	29.86 in	29.72 in	29.57 in	0 in
10	78.1 °F	62.3 °F	53.1 °F	58.9 °F	54.5 °F	50.2 °F	93 %	78 %	51 %	4 mph	0 mph	0 mph	29.69 in	29.64 in	29.58 in	0 in
11	76.8 °F	64.3 °F	55.4 °F	59.2 °F	55.7 °F	52.2 °F	91 %	75 %	54 %	5 mph	0 mph	0 mph	29.79 in	29.74 in	29.68 in	0 in
13	83.3 °F	61.4 °F	77.7 °F	60.6 °F	59.9 °F	59.5 °F	54 %	48 %	45 %	1 mph	0 mph	0 mph	29.74 in	29.73 in	29.72 in	0 in
14	81.5 °F	76.2 °F	65.1 °F	59.9 °F	58.2 °F	56.2 °F	73 %	54 %	48 %	1 mph	0 mph	0 mph	29.7 in	29.67 in	29.65 in	0 in
15	75.9 °F	75.9 °F	75.9 °F	58 °F	58 °F	58 °F	54 %	54 %	54 %	1 mph	1 mph	0 mph	29.71 in	29.71 in	29.71 in	0 in
17	77.5 °F	66.6 °F	57.6 °F	59.6 °F	56.6 °F	54.4 °F	89 %	72 %	53 %	4 mph	0 mph	0 mph	29.88 in	29.74 in	29.59 in	0 in
18	76.1 °F	62.1 °F	56.5 °F	60.2 °F	55.9 °F	53.9 °F	93 %	81 %	56 %	5 mph	0 mph	0 mph	29.9 in	29.74 in	29.59 in	0 in
19	75.4 °F	62.3 °F	57.2 °F	58.8 °F	55.5 °F	53.7 °F	89 %	79 %	56 %	4 mph	0 mph	0 mph	29.96 in	29.92 in	29.87 in	0 in
20	78.1 °F	63.1 °F	56.8 °F	60.1 °F	55.5 °F	53.2 °F	88 %	77 %	53 %	2 mph	0 mph	0 mph	29.99 in	29.94 in	29.9 in	0 in
21	77.7 °F	63.6 °F	57.4 °F	58.9 °F	55.2 °F	53.2 °F	86 %	75 %	51 %	3 mph	0 mph	0 mph	29.96 in	29.93 in	29.91 in	0 in
22	78.3 °F	62.9 °F	56.5 °F	58.9 °F	55.2 °F	52.9 °F	90 %	77 %	51 %	2 mph	0 mph	0 mph	30 in	29.96 in	29.92 in	0 in
23	77.9 °F	63.3 °F	57.9 °F	59.2 °F	55.5 °F	53.4 °F	86 %	77 %	52 %	3 mph	0 mph	0 mph	30.09 in	29.96 in	29.83 in	0 in
24	81.5 °F	62.4 °F	56.7 °F	58.7 °F	54.8 °F	52.6 °F	87 %	78 %	46 %	5 mph	0 mph	0 mph	29.87 in	29.8 in	29.73 in	0 in
25	76.6 °F	61.3 °F	54.9 °F	59.1 °F	54.6 °F	51.4 °F	89 %	80 %	54 %	2 mph	0 mph	0 mph	29.74 in	29.68 in	29.63 in	0 in
26	77 °F	64.4 °F	59.2 °F	60.2 °F	56.4 °F	53.9 °F	86 %	76 %	53 %	3 mph	0 mph	0 mph	29.73 in	29.68 in	29.64 in	0 in
27	74.7 °F	63.8 °F	59.5 °F	58.9 °F	55.5 °F	53.9 °F	82 %	75 %	56 %	3 mph	0 mph	0 mph	29.78 in	29.74 in	29.71 in	0 in
28	80.6 °F	65.1 °F	55.8 °F	58.2 °F	54.9 °F	52.1 °F	88 %	71 %	45 %	2 mph	0 mph	0 mph	29.85 in	29.82 in	29.78 in	0 in
29	86.9 °F	65.2 °F	55.2 °F	60.4 °F	55.3 °F	51.4 °F	88 %	73 %	41 %	3 mph	0 mph	0 mph	29.87 in	29.81 in	29.74 in	0 in
30	88.3 °F	67.9 °F	57.6 °F	61.2 °F	57.2 °F	54.4 °F	90 %	71 %	40 %	2 mph	0 mph	0 mph	29.77 in	29.7 in	29.64 in	0 in
31	83.3 °F	65.6 °F	55 °F	59.9 °F	56.6 °F	52.1 °F	93 %	75 %	44 %	4 mph	0 mph	0 mph	29.72 in	29.68 in	29.65 in	0 in

APPENDIX E

Laboratory Analytical Reports and Chain of Custody Documentation

Air Samples

- **Air Toxics Workorder # 1607236 - July 14, 2016 Indoor and Ambient Air Samples**

Soil Gas and Shroud Air Samples

- **Air Toxics Workorder # 1608198 - August 10 and 11, 2016 Soil Gas Samples**
- **Air Toxics Workorder # 1608178 - August 10 and 11, 2016 Shroud Air Samples**

7/21/2016
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Red Hanger Kleaners
Project #: 0461
Workorder #: 1607236

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 7/14/2016 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Kyle Vagadori
Project Manager

WORK ORDER #: 1607236

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	BILL TO:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	P.O. #	
FAX:	510-834-0772	PROJECT #	0461 Red Hanger Kleaners
DATE RECEIVED:	07/14/2016	CONTACT:	Kyle Vagadori
DATE COMPLETED:	07/20/2016		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	ELEVATOR PIT	Modified TO-15 SIM	1.8 "Hg	5.1 psi
02A	IA1	Modified TO-15 SIM	4.7 "Hg	5.1 psi
03A	IA2	Modified TO-15 SIM	6.1 "Hg	5.2 psi
04A	IA4	Modified TO-15 SIM	6.1 "Hg	4.9 psi
05A	IA5	Modified TO-15 SIM	5.9 "Hg	5.2 psi
06A	IA5-DUP	Modified TO-15 SIM	6.5 "Hg	5 psi
07A	BG2-AMBIENT	Modified TO-15 SIM	3.5 "Hg	5 psi
08A	Lab Blank	Modified TO-15 SIM	NA	NA
09A	CCV	Modified TO-15 SIM	NA	NA
10A	LCS	Modified TO-15 SIM	NA	NA
10AA	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY: 

 Technical Director

DATE: 07/21/16

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.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 SIM
P & D Environmental
Workorder# 1607236

Seven 6 Liter Summa Canister (SIM Certified) samples were received on July 14, 2016. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition 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.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	$\leq 30\%$ RSD with 2 compounds allowed out to $< 40\%$ RSD	Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to $< 40\%$ RSD
Daily Calibration	$\pm 30\%$ Difference	Project specific; default criteria is $\leq 30\%$ Difference with 10% of compounds allowed out up to $\leq 40\%$.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

The Summa canister for sample BG2-AMBIENT was leaking upon arrival. The client was notified and the analysis proceeded. Reported analyte concentrations are considered to be estimated.

Analytical Notes

There were no analytical discrepancies.

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 MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: ELEVATOR PIT

Lab ID#: 1607236-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.029	0.57	0.14	2.8
Chloromethane	0.072	0.56	0.15	1.1
Chloroform	0.029	0.43	0.14	2.1
Carbon Tetrachloride	0.029	0.080	0.18	0.50
Benzene	0.072	0.098	0.23	0.31
Trichloroethene	0.029	0.47	0.15	2.5
Toluene	0.029	0.30	0.11	1.1
Tetrachloroethene	0.029	0.12	0.19	0.82
Ethyl Benzene	0.029	0.034	0.12	0.15
m,p-Xylene	0.057	0.10	0.25	0.46
o-Xylene	0.029	0.036	0.12	0.16

Client Sample ID: IA1

Lab ID#: 1607236-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.58	0.16	2.9
Chloromethane	0.080	0.67	0.16	1.4
Chloroform	0.032	0.14	0.16	0.66
Carbon Tetrachloride	0.032	0.078	0.20	0.49
Benzene	0.080	0.10	0.26	0.32
Trichloroethene	0.032	0.18	0.17	0.99
Toluene	0.032	0.29	0.12	1.1
Tetrachloroethene	0.032	0.16	0.22	1.1
Ethyl Benzene	0.032	0.034	0.14	0.15
m,p-Xylene	0.064	0.10	0.28	0.44
o-Xylene	0.032	0.037	0.14	0.16

Client Sample ID: IA2

Lab ID#: 1607236-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.56	0.17	2.8

Summary of Detected Compounds MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: IA2

Lab ID#: 1607236-03A

Chloromethane	0.085	0.54	0.18	1.1
Chloroform	0.034	0.13	0.17	0.63
Carbon Tetrachloride	0.034	0.080	0.21	0.50
Benzene	0.085	0.10	0.27	0.32
Trichloroethene	0.034	0.18	0.18	0.97
Toluene	0.034	0.30	0.13	1.1
Tetrachloroethene	0.034	0.18	0.23	1.3
Ethyl Benzene	0.034	0.034	0.15	0.15
m,p-Xylene	0.068	0.10	0.30	0.46
o-Xylene	0.034	0.037	0.15	0.16

Client Sample ID: IA4

Lab ID#: 1607236-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.56	0.17	2.8
Chloromethane	0.084	0.56	0.17	1.2
Chloroform	0.034	0.54	0.16	2.6
Carbon Tetrachloride	0.034	0.074	0.21	0.46
1,2-Dichloroethane	0.034	0.043	0.14	0.17
Trichloroethene	0.034	0.32	0.18	1.7
Toluene	0.034	0.12	0.13	0.44

Client Sample ID: IA5

Lab ID#: 1607236-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.58	0.17	2.9
Chloromethane	0.084	0.61	0.17	1.2
Chloroform	0.034	1.4	0.16	6.9
Carbon Tetrachloride	0.034	0.045	0.21	0.28
1,2-Dichloroethane	0.034	0.034	0.14	0.14
Trichloroethene	0.034	0.30	0.18	1.6
Toluene	0.034	0.31	0.13	1.2

Summary of Detected Compounds MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: IA5

Lab ID#: 1607236-05A

Tetrachloroethene	0.034	0.075	0.23	0.51
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Client Sample ID: IA5-DUP

Lab ID#: 1607236-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.55	0.17	2.7
Chloromethane	0.086	0.57	0.18	1.2
Chloroform	0.034	1.4	0.17	6.7
Carbon Tetrachloride	0.034	0.053	0.22	0.34
Trichloroethene	0.034	0.29	0.18	1.6
Toluene	0.034	0.18	0.13	0.67
Tetrachloroethene	0.034	0.072	0.23	0.49

Client Sample ID: BG2-AMBIENT

Lab ID#: 1607236-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.030	0.58	0.15	2.8
Chloromethane	0.076	0.58	0.16	1.2
Chloroform	0.030	0.036	0.15	0.17
Carbon Tetrachloride	0.030	0.084	0.19	0.53
Benzene	0.076	0.093	0.24	0.30
Toluene	0.030	0.26	0.11	1.0
Ethyl Benzene	0.030	0.033	0.13	0.14
m,p-Xylene	0.061	0.099	0.26	0.43
o-Xylene	0.030	0.034	0.13	0.15



Air Toxics

Client Sample ID: ELEVATOR PIT

Lab ID#: 1607236-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071514sim	Date of Collection:	7/14/16 6:54:00 AM
Dil. Factor:	1.43	Date of Analysis:	7/15/16 04:40 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.029	0.57	0.14	2.8
Freon 114	0.029	Not Detected	0.20	Not Detected
Chloromethane	0.072	0.56	0.15	1.1
Vinyl Chloride	0.014	Not Detected	0.036	Not Detected
Chloroethane	0.072	Not Detected	0.19	Not Detected
1,1-Dichloroethene	0.014	Not Detected	0.057	Not Detected
trans-1,2-Dichloroethene	0.14	Not Detected	0.57	Not Detected
Methyl tert-butyl ether	0.14	Not Detected	0.52	Not Detected
1,1-Dichloroethane	0.029	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.029	Not Detected	0.11	Not Detected
Chloroform	0.029	0.43	0.14	2.1
1,1,1-Trichloroethane	0.029	Not Detected	0.16	Not Detected
Carbon Tetrachloride	0.029	0.080	0.18	0.50
Benzene	0.072	0.098	0.23	0.31
1,2-Dichloroethane	0.029	Not Detected	0.12	Not Detected
Trichloroethene	0.029	0.47	0.15	2.5
Toluene	0.029	0.30	0.11	1.1
1,1,2-Trichloroethane	0.029	Not Detected	0.16	Not Detected
Tetrachloroethene	0.029	0.12	0.19	0.82
1,2-Dibromoethane (EDB)	0.029	Not Detected	0.22	Not Detected
Ethyl Benzene	0.029	0.034	0.12	0.15
m,p-Xylene	0.057	0.10	0.25	0.46
o-Xylene	0.029	0.036	0.12	0.16
1,1,2,2-Tetrachloroethane	0.029	Not Detected	0.20	Not Detected
1,4-Dichlorobenzene	0.029	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	120	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: IA1

Lab ID#: 1607236-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071517sim	Date of Collection: 7/14/16 6:32:00 AM
Dil. Factor:	1.60	Date of Analysis: 7/15/16 06:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.58	0.16	2.9
Freon 114	0.032	Not Detected	0.22	Not Detected
Chloromethane	0.080	0.67	0.16	1.4
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Chloroethane	0.080	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Chloroform	0.032	0.14	0.16	0.66
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.078	0.20	0.49
Benzene	0.080	0.10	0.26	0.32
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.032	0.18	0.17	0.99
Toluene	0.032	0.29	0.12	1.1
1,1,2-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	0.16	0.22	1.1
1,2-Dibromoethane (EDB)	0.032	Not Detected	0.24	Not Detected
Ethyl Benzene	0.032	0.034	0.14	0.15
m,p-Xylene	0.064	0.10	0.28	0.44
o-Xylene	0.032	0.037	0.14	0.16
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.032	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	121	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130



Client Sample ID: IA2

Lab ID#: 1607236-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071516sim	Date of Collection: 7/14/16 6:33:00 AM
Dil. Factor:	1.70	Date of Analysis: 7/15/16 06:14 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.56	0.17	2.8
Freon 114	0.034	Not Detected	0.24	Not Detected
Chloromethane	0.085	0.54	0.18	1.1
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Chloroethane	0.085	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Methyl tert-butyl ether	0.17	Not Detected	0.61	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Chloroform	0.034	0.13	0.17	0.63
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.034	0.080	0.21	0.50
Benzene	0.085	0.10	0.27	0.32
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.034	0.18	0.18	0.97
Toluene	0.034	0.30	0.13	1.1
1,1,2-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Tetrachloroethene	0.034	0.18	0.23	1.3
1,2-Dibromoethane (EDB)	0.034	Not Detected	0.26	Not Detected
Ethyl Benzene	0.034	0.034	0.15	0.15
m,p-Xylene	0.068	0.10	0.30	0.46
o-Xylene	0.034	0.037	0.15	0.16
1,1,2,2-Tetrachloroethane	0.034	Not Detected	0.23	Not Detected
1,4-Dichlorobenzene	0.034	Not Detected	0.20	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130



Client Sample ID: IA4

Lab ID#: 1607236-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071518sim	Date of Collection: 7/14/16 6:35:00 AM
Dil. Factor:	1.68	Date of Analysis: 7/15/16 07:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.56	0.17	2.8
Freon 114	0.034	Not Detected	0.23	Not Detected
Chloromethane	0.084	0.56	0.17	1.2
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Chloroethane	0.084	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Methyl tert-butyl ether	0.17	Not Detected	0.60	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Chloroform	0.034	0.54	0.16	2.6
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.034	0.074	0.21	0.46
Benzene	0.084	Not Detected	0.27	Not Detected
1,2-Dichloroethane	0.034	0.043	0.14	0.17
Trichloroethene	0.034	0.32	0.18	1.7
Toluene	0.034	0.12	0.13	0.44
1,1,2-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Tetrachloroethene	0.034	Not Detected	0.23	Not Detected
1,2-Dibromoethane (EDB)	0.034	Not Detected	0.26	Not Detected
Ethyl Benzene	0.034	Not Detected	0.14	Not Detected
m,p-Xylene	0.067	Not Detected	0.29	Not Detected
o-Xylene	0.034	Not Detected	0.14	Not Detected
1,1,2,2-Tetrachloroethane	0.034	Not Detected	0.23	Not Detected
1,4-Dichlorobenzene	0.034	Not Detected	0.20	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	94	70-130



Client Sample ID: IA5

Lab ID#: 1607236-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071519sim	Date of Collection: 7/14/16 6:38:00 AM
Dil. Factor:	1.69	Date of Analysis: 7/15/16 08:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.58	0.17	2.9
Freon 114	0.034	Not Detected	0.24	Not Detected
Chloromethane	0.084	0.61	0.17	1.2
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Chloroethane	0.084	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Methyl tert-butyl ether	0.17	Not Detected	0.61	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Chloroform	0.034	1.4	0.16	6.9
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Carbon Tetrachloride	0.034	0.045	0.21	0.28
Benzene	0.084	Not Detected	0.27	Not Detected
1,2-Dichloroethane	0.034	0.034	0.14	0.14
Trichloroethene	0.034	0.30	0.18	1.6
Toluene	0.034	0.31	0.13	1.2
1,1,2-Trichloroethane	0.034	Not Detected	0.18	Not Detected
Tetrachloroethene	0.034	0.075	0.23	0.51
1,2-Dibromoethane (EDB)	0.034	Not Detected	0.26	Not Detected
Ethyl Benzene	0.034	Not Detected	0.15	Not Detected
m,p-Xylene	0.068	Not Detected	0.29	Not Detected
o-Xylene	0.034	Not Detected	0.15	Not Detected
1,1,2,2-Tetrachloroethane	0.034	Not Detected	0.23	Not Detected
1,4-Dichlorobenzene	0.034	Not Detected	0.20	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	120	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: IA5-DUP

Lab ID#: 1607236-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071520sim	Date of Collection: 7/14/16 6:38:00 AM
Dil. Factor:	1.71	Date of Analysis: 7/15/16 09:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.034	0.55	0.17	2.7
Freon 114	0.034	Not Detected	0.24	Not Detected
Chloromethane	0.086	0.57	0.18	1.2
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Chloroethane	0.086	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.068	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Methyl tert-butyl ether	0.17	Not Detected	0.62	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
Chloroform	0.034	1.4	0.17	6.7
1,1,1-Trichloroethane	0.034	Not Detected	0.19	Not Detected
Carbon Tetrachloride	0.034	0.053	0.22	0.34
Benzene	0.086	Not Detected	0.27	Not Detected
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.034	0.29	0.18	1.6
Toluene	0.034	0.18	0.13	0.67
1,1,2-Trichloroethane	0.034	Not Detected	0.19	Not Detected
Tetrachloroethene	0.034	0.072	0.23	0.49
1,2-Dibromoethane (EDB)	0.034	Not Detected	0.26	Not Detected
Ethyl Benzene	0.034	Not Detected	0.15	Not Detected
m,p-Xylene	0.068	Not Detected	0.30	Not Detected
o-Xylene	0.034	Not Detected	0.15	Not Detected
1,1,2,2-Tetrachloroethane	0.034	Not Detected	0.23	Not Detected
1,4-Dichlorobenzene	0.034	Not Detected	0.20	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	98	70-130



Client Sample ID: BG2-AMBIENT

Lab ID#: 1607236-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071521sim	Date of Collection:	7/14/16 6:57:00 AM
Dil. Factor:	1.52	Date of Analysis:	7/15/16 09:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.030	0.58	0.15	2.8
Freon 114	0.030	Not Detected	0.21	Not Detected
Chloromethane	0.076	0.58	0.16	1.2
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
Chloroethane	0.076	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.060	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.60	Not Detected
Methyl tert-butyl ether	0.15	Not Detected	0.55	Not Detected
1,1-Dichloroethane	0.030	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Chloroform	0.030	0.036	0.15	0.17
1,1,1-Trichloroethane	0.030	Not Detected	0.16	Not Detected
Carbon Tetrachloride	0.030	0.084	0.19	0.53
Benzene	0.076	0.093	0.24	0.30
1,2-Dichloroethane	0.030	Not Detected	0.12	Not Detected
Trichloroethene	0.030	Not Detected	0.16	Not Detected
Toluene	0.030	0.26	0.11	1.0
1,1,2-Trichloroethane	0.030	Not Detected	0.16	Not Detected
Tetrachloroethene	0.030	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.030	Not Detected	0.23	Not Detected
Ethyl Benzene	0.030	0.033	0.13	0.14
m,p-Xylene	0.061	0.099	0.26	0.43
o-Xylene	0.030	0.034	0.13	0.15
1,1,2,2-Tetrachloroethane	0.030	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.030	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	123	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130



Client Sample ID: Lab Blank

Lab ID#: 1607236-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071508sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	7/15/16 12:10 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.050	Not Detected	0.10	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: CCV

Lab ID#: 1607236-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071504sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 7/15/16 08:36 AM

Compound	%Recovery
Freon 12	104
Freon 114	99
Chloromethane	94
Vinyl Chloride	97
Chloroethane	104
1,1-Dichloroethene	90
trans-1,2-Dichloroethene	94
Methyl tert-butyl ether	100
1,1-Dichloroethane	100
cis-1,2-Dichloroethene	96
Chloroform	101
1,1,1-Trichloroethane	103
Carbon Tetrachloride	136
Benzene	88
1,2-Dichloroethane	110
Trichloroethene	98
Toluene	105
1,1,2-Trichloroethane	105
Tetrachloroethene	96
1,2-Dibromoethane (EDB)	109
Ethyl Benzene	108
m,p-Xylene	108
o-Xylene	108
1,1,2,2-Tetrachloroethane	112
1,4-Dichlorobenzene	88

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	106	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1607236-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071505sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 7/15/16 09:23 AM

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Freon 114	106	70-130
Chloromethane	96	70-130
Vinyl Chloride	103	70-130
Chloroethane	113	70-130
1,1-Dichloroethene	94	70-130
trans-1,2-Dichloroethene	84	70-130
Methyl tert-butyl ether	100	70-130
1,1-Dichloroethane	100	70-130
cis-1,2-Dichloroethene	107	70-130
Chloroform	103	70-130
1,1,1-Trichloroethane	106	70-130
Carbon Tetrachloride	130	60-140
Benzene	90	70-130
1,2-Dichloroethane	109	70-130
Trichloroethene	100	70-130
Toluene	106	70-130
1,1,2-Trichloroethane	108	70-130
Tetrachloroethene	99	70-130
1,2-Dibromoethane (EDB)	111	70-130
Ethyl Benzene	110	70-130
m,p-Xylene	108	70-130
o-Xylene	110	70-130
1,1,2,2-Tetrachloroethane	113	70-130
1,4-Dichlorobenzene	87	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	106	70-130

Client Sample ID: LCSD

Lab ID#: 1607236-10AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	20071506sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 7/15/16 10:09 AM

Compound	%Recovery	Method Limits
Freon 12	108	70-130
Freon 114	105	70-130
Chloromethane	96	70-130
Vinyl Chloride	102	70-130
Chloroethane	113	70-130
1,1-Dichloroethene	94	70-130
trans-1,2-Dichloroethene	100	70-130
Methyl tert-butyl ether	101	70-130
1,1-Dichloroethane	100	70-130
cis-1,2-Dichloroethene	95	70-130
Chloroform	103	70-130
1,1,1-Trichloroethane	106	70-130
Carbon Tetrachloride	131	60-140
Benzene	89	70-130
1,2-Dichloroethane	109	70-130
Trichloroethene	100	70-130
Toluene	107	70-130
1,1,2-Trichloroethane	106	70-130
Tetrachloroethene	98	70-130
1,2-Dibromoethane (EDB)	110	70-130
Ethyl Benzene	110	70-130
m,p-Xylene	109	70-130
o-Xylene	110	70-130
1,1,2,2-Tetrachloroethane	111	70-130
1,4-Dichlorobenzene	88	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	107	70-130

CHAIN OF CUSTODY RECORD

P&D ENVIRONMENTAL, INC. 55 Santa Clara Ave., Suite 240 Oakland, CA 94610 (510) 658-6916				NUMBER OF CONTAINERS	ANALYSIS(ES): TD-15	PRESERVATIVE	REMARKS											
PROJECT NUMBER: 0461		PROJECT NAME: RED HANGER KLEANERS 6239 COLLEGE AVE. OAKLAND, CA																
SAMPLED BY: (PRINTED & SIGNATURE) MICHAEL BASS-DESCHENES <i>Michael Bass-Deschenes</i>																		
SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION <small>INITIALS Final VAC SUMMA #</small>														
01A	ELEVATOR PIT	7/13/16	061122	AIR														
		7/14/16	065442	"	-30 -35 13004	1	X								NONE			1 WEEK TAT
03A	IA1	7/13/16	062534	"														
		7/14/16	063210	"	-30 -8 5666	1	X								"			"
03A	IA2	7/13/16	062621	"														
		7/14/16	063305	"	-30 -6 00316	1	X								"			"
04A	IA4	7/13/16	063505	"														
		7/14/16	063504	"	-30 -6 36004	1	X								"			"
05A	IA5	7/13/16	063705	"														
		7/14/16	063802	"	-30 -6 1602	1	X								"			"
RELINQUISHED BY: (SIGNATURE) <i>Michael Bass-Deschenes</i>		DATE	TIME	RECEIVED BY: (SIGNATURE) <i>[Signature]</i>		Total No. of Samples (This Shipment) 7		LABORATORY: EUROFINS/AIR TOXICS LTD										
RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>		DATE	TIME	RECEIVED BY: (SIGNATURE) <i>[Signature]</i>		Total No. of Containers (This Shipment) 7		LABORATORY CONTACT: KYIE VAGIDEL (916) 605-3339										
RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>		DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>		SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO												
Results and billing to: P&D Environmental, Inc. lab@pdenviro.com		Custody Seal Intact? Y N <u>None</u> Temp <u>NA</u> EATL		REMARKS: 6-LITER SUMMA FLOW CONTROLLER 24-HOUR (UNCERTIFIED)														

Courier

8/18/2016
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: RED HANGER KLEANERS 6239 COLLEGE AVE.
Project #: 0461
Workorder #: 1608198

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 8/11/2016 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) 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

WORK ORDER #: 1608198

Work Order Summary

CLIENT: Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland, CA 94610

BILL TO: Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland, CA 94610

PHONE: 510-658-6916

P.O. #

FAX: 510-834-0772

PROJECT # 0461 RED HANGER KLEANERS 6239

DATE RECEIVED: 08/11/2016

CONTACT: COLLEGE AVE.
Kelly Buettner

DATE COMPLETED: 08/18/2016

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SG1-7	Modified TO-15 (5&20 ppbv	5.1 "Hg	14.9 psi
02A	SG2-7	Modified TO-15 (5&20 ppbv	5.9 "Hg	15.4 psi
03A	SG2-17	Modified TO-15 (5&20 ppbv	5.1 "Hg	14.8 psi
04A	SG3-17	Modified TO-15 (5&20 ppbv	5.7 "Hg	15 psi
05A	SG4-7	Modified TO-15 (5&20 ppbv	5.1 "Hg	14.9 psi
06A	SG4-7-DUP	Modified TO-15 (5&20 ppbv	5.3 "Hg	15.2 psi
07A	SG4-17	Modified TO-15 (5&20 ppbv	4.7 "Hg	15.1 psi
08A	SG5-7	Modified TO-15 (5&20 ppbv	3.7 "Hg	15.1 psi
09A	SG5-17	Modified TO-15 (5&20 ppbv	5.7 "Hg	14.9 psi
10A	SG6-7	Modified TO-15 (5&20 ppbv	6.7 "Hg	14.8 psi
11A	SG6-17	Modified TO-15 (5&20 ppbv	6.7 "Hg	14.8 psi
12A	SG7-7	Modified TO-15 (5&20 ppbv	4.5 "Hg	15.1 psi
13A	SG7-17	Modified TO-15 (5&20 ppbv	5.3 "Hg	14.8 psi
14A	SG8-7	Modified TO-15 (5&20 ppbv	3.3 "Hg	14.7 psi
15A	SG9-17	Modified TO-15 (5&20 ppbv	5.9 "Hg	14.8 psi
16A	SG9-17 DUP	Modified TO-15 (5&20 ppbv	5.9 "Hg	15 psi
17A	SG10-7	Modified TO-15 (5&20 ppbv	7.3 "Hg	14.7 psi
18A	SG11-17	Modified TO-15 (5&20 ppbv	4.1 "Hg	15 psi
19A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
20A	CCV	Modified TO-15 (5&20 ppbv	NA	NA
21A	LCS	Modified TO-15 (5&20 ppbv	NA	NA
21AA	LCSD	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY: 

DATE: 08/18/16

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.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15 Soil Gas
P & D Environmental
Workorder# 1608198

Eighteen 1 Liter Summa Canister samples were received on August 11, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 50 mLs 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 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

The Chain of Custody (COC) information for sample SG4-7-DUP did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

Analytical Notes

Dilution was performed on samples SG5-17 and SG11-17 due to the presence of high level target species.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

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. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been 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

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

Client Sample ID: SG1-7

Lab ID#: 1608198-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	150	82	1000
1,1-Difluoroethane	49	52	130	140

Client Sample ID: SG2-7

Lab ID#: 1608198-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	13	2200	86	15000
1,1-Difluoroethane	51	1600	140	4200

Client Sample ID: SG2-17

Lab ID#: 1608198-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrahydrofuran	12	20	36	59
Chloroform	12	15	59	74
Tetrachloroethene	12	5700	82	39000
1,1-Difluoroethane	48	180	130	480

Client Sample ID: SG3-17

Lab ID#: 1608198-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	1500	84	10000

Client Sample ID: SG4-7

Lab ID#: 1608198-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	49	620	130	1700

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

Client Sample ID: SG4-7-DUP

Lab ID#: 1608198-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	12	84	83
1,1-Difluoroethane	49	16000 E	130	44000 E

Client Sample ID: SG4-17

Lab ID#: 1608198-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	1400	81	9800
1,1-Difluoroethane	48	65	130	180

Client Sample ID: SG5-7

Lab ID#: 1608198-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	820	78	5500
1,1-Difluoroethane	46	1200	120	3200

Client Sample ID: SG5-17

Lab ID#: 1608198-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	310	360	2100	2400
1,1-Difluoroethane	1200	310000 E	3400	840000 E

Client Sample ID: SG6-7

Lab ID#: 1608198-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	13	1200	88	8400
1,1-Difluoroethane	52	240	140	660

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

Client Sample ID: SG6-17

Lab ID#: 1608198-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	13	1300	88	8600
1,1-Difluoroethane	52	110	140	300

Client Sample ID: SG7-7

Lab ID#: 1608198-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrahydrofuran	12	24	35	70
1,1-Difluoroethane	48	96	130	260

Client Sample ID: SG7-17

Lab ID#: 1608198-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	840	83	5700

Client Sample ID: SG8-7

Lab ID#: 1608198-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	11	16	76	110
1,1-Difluoroethane	45	120	120	330

Client Sample ID: SG9-17

Lab ID#: 1608198-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	12	130	85	860
Ethyl Benzene	12	17	54	75
m,p-Xylene	12	86	54	370
o-Xylene	12	26	54	110
1,1-Difluoroethane	50	15000 E	140	41000 E

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

Client Sample ID: SG9-17 DUP

Lab ID#: 1608198-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	13	140	85	930
Ethyl Benzene	13	13	55	56
m,p-Xylene	13	86	55	370
o-Xylene	13	21	55	92
1,1-Difluoroethane	50	3200 E	140	8600 E

Client Sample ID: SG10-7

Lab ID#: 1608198-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	53	120	140	320

Client Sample ID: SG11-17

Lab ID#: 1608198-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	230	5000	1600	34000
1,1-Difluoroethane	940	170000	2500	470000



Air Toxics

Client Sample ID: SG1-7

Lab ID#: 1608198-01A

EPA METHOD TO-15 GC/MS

File Name:	j081607	Date of Collection:	8/10/16 1:01:00 PM
Dil. Factor:	2.43	Date of Analysis:	8/16/16 02:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	60	Not Detected
Freon 114	12	Not Detected	85	Not Detected
Chloromethane	49	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
1,3-Butadiene	12	Not Detected	27	Not Detected
Bromomethane	49	Not Detected	190	Not Detected
Chloroethane	49	Not Detected	130	Not Detected
Freon 11	12	Not Detected	68	Not Detected
Ethanol	49	Not Detected	92	Not Detected
Freon 113	12	Not Detected	93	Not Detected
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	49	Not Detected	120	Not Detected
2-Propanol	49	Not Detected	120	Not Detected
Carbon Disulfide	49	Not Detected	150	Not Detected
3-Chloropropene	49	Not Detected	150	Not Detected
Methylene Chloride	49	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	44	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Hexane	12	Not Detected	43	Not Detected
1,1-Dichloroethane	12	Not Detected	49	Not Detected
2-Butanone (Methyl Ethyl Ketone)	49	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Tetrahydrofuran	12	Not Detected	36	Not Detected
Chloroform	12	Not Detected	59	Not Detected
1,1,1-Trichloroethane	12	Not Detected	66	Not Detected
Cyclohexane	12	Not Detected	42	Not Detected
Carbon Tetrachloride	12	Not Detected	76	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	57	Not Detected
Benzene	12	Not Detected	39	Not Detected
1,2-Dichloroethane	12	Not Detected	49	Not Detected
Heptane	12	Not Detected	50	Not Detected
Trichloroethene	12	Not Detected	65	Not Detected
1,2-Dichloropropane	12	Not Detected	56	Not Detected
1,4-Dioxane	49	Not Detected	180	Not Detected
Bromodichloromethane	12	Not Detected	81	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	55	Not Detected
4-Methyl-2-pentanone	12	Not Detected	50	Not Detected
Toluene	12	Not Detected	46	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	55	Not Detected
1,1,2-Trichloroethane	12	Not Detected	66	Not Detected
Tetrachloroethene	12	150	82	1000
2-Hexanone	49	Not Detected	200	Not Detected



Client Sample ID: SG1-7

Lab ID#: 1608198-01A

EPA METHOD TO-15 GC/MS

File Name:	j081607	Date of Collection:	8/10/16 1:01:00 PM
Dil. Factor:	2.43	Date of Analysis:	8/16/16 02:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	93	Not Detected
Chlorobenzene	12	Not Detected	56	Not Detected
Ethyl Benzene	12	Not Detected	53	Not Detected
m,p-Xylene	12	Not Detected	53	Not Detected
o-Xylene	12	Not Detected	53	Not Detected
Styrene	12	Not Detected	52	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	60	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	83	Not Detected
Propylbenzene	12	Not Detected	60	Not Detected
4-Ethyltoluene	12	Not Detected	60	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	60	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	60	Not Detected
1,3-Dichlorobenzene	12	Not Detected	73	Not Detected
1,4-Dichlorobenzene	12	Not Detected	73	Not Detected
alpha-Chlorotoluene	12	Not Detected	63	Not Detected
1,2-Dichlorobenzene	12	Not Detected	73	Not Detected
1,2,4-Trichlorobenzene	49	Not Detected	360	Not Detected
Hexachlorobutadiene	49	Not Detected	520	Not Detected
1,1-Difluoroethane	49	52	130	140

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	91	70-130



Air Toxics

Client Sample ID: SG2-7

Lab ID#: 1608198-02A

EPA METHOD TO-15 GC/MS

File Name:	j081608	Date of Collection:	8/10/16 8:26:00 AM
Dil. Factor:	2.55	Date of Analysis:	8/16/16 02:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	Not Detected	63	Not Detected
Freon 114	13	Not Detected	89	Not Detected
Chloromethane	51	Not Detected	100	Not Detected
Vinyl Chloride	13	Not Detected	32	Not Detected
1,3-Butadiene	13	Not Detected	28	Not Detected
Bromomethane	51	Not Detected	200	Not Detected
Chloroethane	51	Not Detected	130	Not Detected
Freon 11	13	Not Detected	72	Not Detected
Ethanol	51	Not Detected	96	Not Detected
Freon 113	13	Not Detected	98	Not Detected
1,1-Dichloroethene	13	Not Detected	50	Not Detected
Acetone	51	Not Detected	120	Not Detected
2-Propanol	51	Not Detected	120	Not Detected
Carbon Disulfide	51	Not Detected	160	Not Detected
3-Chloropropene	51	Not Detected	160	Not Detected
Methylene Chloride	51	Not Detected	180	Not Detected
Methyl tert-butyl ether	13	Not Detected	46	Not Detected
trans-1,2-Dichloroethene	13	Not Detected	50	Not Detected
Hexane	13	Not Detected	45	Not Detected
1,1-Dichloroethane	13	Not Detected	52	Not Detected
2-Butanone (Methyl Ethyl Ketone)	51	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	50	Not Detected
Tetrahydrofuran	13	Not Detected	38	Not Detected
Chloroform	13	Not Detected	62	Not Detected
1,1,1-Trichloroethane	13	Not Detected	70	Not Detected
Cyclohexane	13	Not Detected	44	Not Detected
Carbon Tetrachloride	13	Not Detected	80	Not Detected
2,2,4-Trimethylpentane	13	Not Detected	60	Not Detected
Benzene	13	Not Detected	41	Not Detected
1,2-Dichloroethane	13	Not Detected	52	Not Detected
Heptane	13	Not Detected	52	Not Detected
Trichloroethene	13	Not Detected	68	Not Detected
1,2-Dichloropropane	13	Not Detected	59	Not Detected
1,4-Dioxane	51	Not Detected	180	Not Detected
Bromodichloromethane	13	Not Detected	85	Not Detected
cis-1,3-Dichloropropene	13	Not Detected	58	Not Detected
4-Methyl-2-pentanone	13	Not Detected	52	Not Detected
Toluene	13	Not Detected	48	Not Detected
trans-1,3-Dichloropropene	13	Not Detected	58	Not Detected
1,1,2-Trichloroethane	13	Not Detected	70	Not Detected
Tetrachloroethene	13	2200	86	15000
2-Hexanone	51	Not Detected	210	Not Detected



Client Sample ID: SG2-7

Lab ID#: 1608198-02A

EPA METHOD TO-15 GC/MS

File Name:	j081608	Date of Collection:	8/10/16 8:26:00 AM
Dil. Factor:	2.55	Date of Analysis:	8/16/16 02:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	13	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	13	Not Detected	98	Not Detected
Chlorobenzene	13	Not Detected	59	Not Detected
Ethyl Benzene	13	Not Detected	55	Not Detected
m,p-Xylene	13	Not Detected	55	Not Detected
o-Xylene	13	Not Detected	55	Not Detected
Styrene	13	Not Detected	54	Not Detected
Bromoform	13	Not Detected	130	Not Detected
Cumene	13	Not Detected	63	Not Detected
1,1,2,2-Tetrachloroethane	13	Not Detected	88	Not Detected
Propylbenzene	13	Not Detected	63	Not Detected
4-Ethyltoluene	13	Not Detected	63	Not Detected
1,3,5-Trimethylbenzene	13	Not Detected	63	Not Detected
1,2,4-Trimethylbenzene	13	Not Detected	63	Not Detected
1,3-Dichlorobenzene	13	Not Detected	77	Not Detected
1,4-Dichlorobenzene	13	Not Detected	77	Not Detected
alpha-Chlorotoluene	13	Not Detected	66	Not Detected
1,2-Dichlorobenzene	13	Not Detected	77	Not Detected
1,2,4-Trichlorobenzene	51	Not Detected	380	Not Detected
Hexachlorobutadiene	51	Not Detected	540	Not Detected
1,1-Difluoroethane	51	1600	140	4200

Container Type: 1 Liter Summa Canister

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



Air Toxics

Client Sample ID: SG2-17

Lab ID#: 1608198-03A

EPA METHOD TO-15 GC/MS

File Name:	j081609	Date of Collection:	8/10/16 9:03:00 AM
Dil. Factor:	2.42	Date of Analysis:	8/16/16 03:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	60	Not Detected
Freon 114	12	Not Detected	84	Not Detected
Chloromethane	48	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
1,3-Butadiene	12	Not Detected	27	Not Detected
Bromomethane	48	Not Detected	190	Not Detected
Chloroethane	48	Not Detected	130	Not Detected
Freon 11	12	Not Detected	68	Not Detected
Ethanol	48	Not Detected	91	Not Detected
Freon 113	12	Not Detected	93	Not Detected
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	48	Not Detected	110	Not Detected
2-Propanol	48	Not Detected	120	Not Detected
Carbon Disulfide	48	Not Detected	150	Not Detected
3-Chloropropene	48	Not Detected	150	Not Detected
Methylene Chloride	48	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	44	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Hexane	12	Not Detected	43	Not Detected
1,1-Dichloroethane	12	Not Detected	49	Not Detected
2-Butanone (Methyl Ethyl Ketone)	48	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Tetrahydrofuran	12	20	36	59
Chloroform	12	15	59	74
1,1,1-Trichloroethane	12	Not Detected	66	Not Detected
Cyclohexane	12	Not Detected	42	Not Detected
Carbon Tetrachloride	12	Not Detected	76	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	56	Not Detected
Benzene	12	Not Detected	39	Not Detected
1,2-Dichloroethane	12	Not Detected	49	Not Detected
Heptane	12	Not Detected	50	Not Detected
Trichloroethene	12	Not Detected	65	Not Detected
1,2-Dichloropropane	12	Not Detected	56	Not Detected
1,4-Dioxane	48	Not Detected	170	Not Detected
Bromodichloromethane	12	Not Detected	81	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	55	Not Detected
4-Methyl-2-pentanone	12	Not Detected	50	Not Detected
Toluene	12	Not Detected	46	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	55	Not Detected
1,1,2-Trichloroethane	12	Not Detected	66	Not Detected
Tetrachloroethene	12	5700	82	39000
2-Hexanone	48	Not Detected	200	Not Detected

Client Sample ID: SG2-17

Lab ID#: 1608198-03A

EPA METHOD TO-15 GC/MS

File Name:	j081609	Date of Collection:	8/10/16 9:03:00 AM
Dil. Factor:	2.42	Date of Analysis:	8/16/16 03:20 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	93	Not Detected
Chlorobenzene	12	Not Detected	56	Not Detected
Ethyl Benzene	12	Not Detected	52	Not Detected
m,p-Xylene	12	Not Detected	52	Not Detected
o-Xylene	12	Not Detected	52	Not Detected
Styrene	12	Not Detected	52	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	59	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	83	Not Detected
Propylbenzene	12	Not Detected	59	Not Detected
4-Ethyltoluene	12	Not Detected	59	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	59	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	59	Not Detected
1,3-Dichlorobenzene	12	Not Detected	73	Not Detected
1,4-Dichlorobenzene	12	Not Detected	73	Not Detected
alpha-Chlorotoluene	12	Not Detected	63	Not Detected
1,2-Dichlorobenzene	12	Not Detected	73	Not Detected
1,2,4-Trichlorobenzene	48	Not Detected	360	Not Detected
Hexachlorobutadiene	48	Not Detected	520	Not Detected
1,1-Difluoroethane	48	180	130	480

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG3-17

Lab ID#: 1608198-04A

EPA METHOD TO-15 GC/MS

File Name:	j081610	Date of Collection:	8/10/16 10:10:00 AM
Dil. Factor:	2.49	Date of Analysis:	8/16/16 03:45 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	62	Not Detected
Freon 114	12	Not Detected	87	Not Detected
Chloromethane	50	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	32	Not Detected
1,3-Butadiene	12	Not Detected	28	Not Detected
Bromomethane	50	Not Detected	190	Not Detected
Chloroethane	50	Not Detected	130	Not Detected
Freon 11	12	Not Detected	70	Not Detected
Ethanol	50	Not Detected	94	Not Detected
Freon 113	12	Not Detected	95	Not Detected
1,1-Dichloroethene	12	Not Detected	49	Not Detected
Acetone	50	Not Detected	120	Not Detected
2-Propanol	50	Not Detected	120	Not Detected
Carbon Disulfide	50	Not Detected	160	Not Detected
3-Chloropropene	50	Not Detected	160	Not Detected
Methylene Chloride	50	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	45	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	49	Not Detected
Hexane	12	Not Detected	44	Not Detected
1,1-Dichloroethane	12	Not Detected	50	Not Detected
2-Butanone (Methyl Ethyl Ketone)	50	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	49	Not Detected
Tetrahydrofuran	12	Not Detected	37	Not Detected
Chloroform	12	Not Detected	61	Not Detected
1,1,1-Trichloroethane	12	Not Detected	68	Not Detected
Cyclohexane	12	Not Detected	43	Not Detected
Carbon Tetrachloride	12	Not Detected	78	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	58	Not Detected
Benzene	12	Not Detected	40	Not Detected
1,2-Dichloroethane	12	Not Detected	50	Not Detected
Heptane	12	Not Detected	51	Not Detected
Trichloroethene	12	Not Detected	67	Not Detected
1,2-Dichloropropane	12	Not Detected	58	Not Detected
1,4-Dioxane	50	Not Detected	180	Not Detected
Bromodichloromethane	12	Not Detected	83	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	56	Not Detected
4-Methyl-2-pentanone	12	Not Detected	51	Not Detected
Toluene	12	Not Detected	47	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	56	Not Detected
1,1,2-Trichloroethane	12	Not Detected	68	Not Detected
Tetrachloroethene	12	1500	84	10000
2-Hexanone	50	Not Detected	200	Not Detected



Client Sample ID: SG3-17

Lab ID#: 1608198-04A

EPA METHOD TO-15 GC/MS

File Name:	j081610	Date of Collection:	8/10/16 10:10:00 AM
Dil. Factor:	2.49	Date of Analysis:	8/16/16 03:45 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	96	Not Detected
Chlorobenzene	12	Not Detected	57	Not Detected
Ethyl Benzene	12	Not Detected	54	Not Detected
m,p-Xylene	12	Not Detected	54	Not Detected
o-Xylene	12	Not Detected	54	Not Detected
Styrene	12	Not Detected	53	Not Detected
Bromoform	12	Not Detected	130	Not Detected
Cumene	12	Not Detected	61	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	85	Not Detected
Propylbenzene	12	Not Detected	61	Not Detected
4-Ethyltoluene	12	Not Detected	61	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	61	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	61	Not Detected
1,3-Dichlorobenzene	12	Not Detected	75	Not Detected
1,4-Dichlorobenzene	12	Not Detected	75	Not Detected
alpha-Chlorotoluene	12	Not Detected	64	Not Detected
1,2-Dichlorobenzene	12	Not Detected	75	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected	370	Not Detected
Hexachlorobutadiene	50	Not Detected	530	Not Detected
1,1-Difluoroethane	50	Not Detected	130	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	92	70-130



Air Toxics

Client Sample ID: SG4-7

Lab ID#: 1608198-05A

EPA METHOD TO-15 GC/MS

File Name:	j081611	Date of Collection:	8/10/16 11:08:00 AM
Dil. Factor:	2.43	Date of Analysis:	8/16/16 04:09 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	60	Not Detected
Freon 114	12	Not Detected	85	Not Detected
Chloromethane	49	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
1,3-Butadiene	12	Not Detected	27	Not Detected
Bromomethane	49	Not Detected	190	Not Detected
Chloroethane	49	Not Detected	130	Not Detected
Freon 11	12	Not Detected	68	Not Detected
Ethanol	49	Not Detected	92	Not Detected
Freon 113	12	Not Detected	93	Not Detected
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	49	Not Detected	120	Not Detected
2-Propanol	49	Not Detected	120	Not Detected
Carbon Disulfide	49	Not Detected	150	Not Detected
3-Chloropropene	49	Not Detected	150	Not Detected
Methylene Chloride	49	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	44	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Hexane	12	Not Detected	43	Not Detected
1,1-Dichloroethane	12	Not Detected	49	Not Detected
2-Butanone (Methyl Ethyl Ketone)	49	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Tetrahydrofuran	12	Not Detected	36	Not Detected
Chloroform	12	Not Detected	59	Not Detected
1,1,1-Trichloroethane	12	Not Detected	66	Not Detected
Cyclohexane	12	Not Detected	42	Not Detected
Carbon Tetrachloride	12	Not Detected	76	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	57	Not Detected
Benzene	12	Not Detected	39	Not Detected
1,2-Dichloroethane	12	Not Detected	49	Not Detected
Heptane	12	Not Detected	50	Not Detected
Trichloroethene	12	Not Detected	65	Not Detected
1,2-Dichloropropane	12	Not Detected	56	Not Detected
1,4-Dioxane	49	Not Detected	180	Not Detected
Bromodichloromethane	12	Not Detected	81	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	55	Not Detected
4-Methyl-2-pentanone	12	Not Detected	50	Not Detected
Toluene	12	Not Detected	46	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	55	Not Detected
1,1,2-Trichloroethane	12	Not Detected	66	Not Detected
Tetrachloroethene	12	Not Detected	82	Not Detected
2-Hexanone	49	Not Detected	200	Not Detected

Client Sample ID: SG4-7

Lab ID#: 1608198-05A

EPA METHOD TO-15 GC/MS

File Name:	j081611	Date of Collection:	8/10/16 11:08:00 AM
Dil. Factor:	2.43	Date of Analysis:	8/16/16 04:09 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	93	Not Detected
Chlorobenzene	12	Not Detected	56	Not Detected
Ethyl Benzene	12	Not Detected	53	Not Detected
m,p-Xylene	12	Not Detected	53	Not Detected
o-Xylene	12	Not Detected	53	Not Detected
Styrene	12	Not Detected	52	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	60	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	83	Not Detected
Propylbenzene	12	Not Detected	60	Not Detected
4-Ethyltoluene	12	Not Detected	60	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	60	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	60	Not Detected
1,3-Dichlorobenzene	12	Not Detected	73	Not Detected
1,4-Dichlorobenzene	12	Not Detected	73	Not Detected
alpha-Chlorotoluene	12	Not Detected	63	Not Detected
1,2-Dichlorobenzene	12	Not Detected	73	Not Detected
1,2,4-Trichlorobenzene	49	Not Detected	360	Not Detected
Hexachlorobutadiene	49	Not Detected	520	Not Detected
1,1-Difluoroethane	49	620	130	1700

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG4-7-DUP

Lab ID#: 1608198-06A

EPA METHOD TO-15 GC/MS

File Name:	j081612	Date of Collection:	8/10/16 11:08:00 AM
Dil. Factor:	2.47	Date of Analysis:	8/16/16 04:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	61	Not Detected
Freon 114	12	Not Detected	86	Not Detected
Chloromethane	49	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	32	Not Detected
1,3-Butadiene	12	Not Detected	27	Not Detected
Bromomethane	49	Not Detected	190	Not Detected
Chloroethane	49	Not Detected	130	Not Detected
Freon 11	12	Not Detected	69	Not Detected
Ethanol	49	Not Detected	93	Not Detected
Freon 113	12	Not Detected	95	Not Detected
1,1-Dichloroethene	12	Not Detected	49	Not Detected
Acetone	49	Not Detected	120	Not Detected
2-Propanol	49	Not Detected	120	Not Detected
Carbon Disulfide	49	Not Detected	150	Not Detected
3-Chloropropene	49	Not Detected	150	Not Detected
Methylene Chloride	49	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	44	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	49	Not Detected
Hexane	12	Not Detected	44	Not Detected
1,1-Dichloroethane	12	Not Detected	50	Not Detected
2-Butanone (Methyl Ethyl Ketone)	49	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	49	Not Detected
Tetrahydrofuran	12	Not Detected	36	Not Detected
Chloroform	12	Not Detected	60	Not Detected
1,1,1-Trichloroethane	12	Not Detected	67	Not Detected
Cyclohexane	12	Not Detected	42	Not Detected
Carbon Tetrachloride	12	Not Detected	78	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	58	Not Detected
Benzene	12	Not Detected	39	Not Detected
1,2-Dichloroethane	12	Not Detected	50	Not Detected
Heptane	12	Not Detected	51	Not Detected
Trichloroethene	12	Not Detected	66	Not Detected
1,2-Dichloropropane	12	Not Detected	57	Not Detected
1,4-Dioxane	49	Not Detected	180	Not Detected
Bromodichloromethane	12	Not Detected	83	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	56	Not Detected
4-Methyl-2-pentanone	12	Not Detected	50	Not Detected
Toluene	12	Not Detected	46	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	56	Not Detected
1,1,2-Trichloroethane	12	Not Detected	67	Not Detected
Tetrachloroethene	12	12	84	83
2-Hexanone	49	Not Detected	200	Not Detected



Client Sample ID: SG4-7-DUP

Lab ID#: 1608198-06A

EPA METHOD TO-15 GC/MS

File Name:	j081612	Date of Collection:	8/10/16 11:08:00 AM
Dil. Factor:	2.47	Date of Analysis:	8/16/16 04:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	95	Not Detected
Chlorobenzene	12	Not Detected	57	Not Detected
Ethyl Benzene	12	Not Detected	54	Not Detected
m,p-Xylene	12	Not Detected	54	Not Detected
o-Xylene	12	Not Detected	54	Not Detected
Styrene	12	Not Detected	53	Not Detected
Bromoform	12	Not Detected	130	Not Detected
Cumene	12	Not Detected	61	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	85	Not Detected
Propylbenzene	12	Not Detected	61	Not Detected
4-Ethyltoluene	12	Not Detected	61	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	61	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	61	Not Detected
1,3-Dichlorobenzene	12	Not Detected	74	Not Detected
1,4-Dichlorobenzene	12	Not Detected	74	Not Detected
alpha-Chlorotoluene	12	Not Detected	64	Not Detected
1,2-Dichlorobenzene	12	Not Detected	74	Not Detected
1,2,4-Trichlorobenzene	49	Not Detected	370	Not Detected
Hexachlorobutadiene	49	Not Detected	530	Not Detected
1,1-Difluoroethane	49	16000 E	130	44000 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	92	70-130



Air Toxics

Client Sample ID: SG4-17

Lab ID#: 1608198-07A

EPA METHOD TO-15 GC/MS

File Name:	j081613	Date of Collection:	8/10/16 11:45:00 AM
Dil. Factor:	2.40	Date of Analysis:	8/16/16 04:57 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	59	Not Detected
Freon 114	12	Not Detected	84	Not Detected
Chloromethane	48	Not Detected	99	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
1,3-Butadiene	12	Not Detected	26	Not Detected
Bromomethane	48	Not Detected	190	Not Detected
Chloroethane	48	Not Detected	130	Not Detected
Freon 11	12	Not Detected	67	Not Detected
Ethanol	48	Not Detected	90	Not Detected
Freon 113	12	Not Detected	92	Not Detected
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	48	Not Detected	110	Not Detected
2-Propanol	48	Not Detected	120	Not Detected
Carbon Disulfide	48	Not Detected	150	Not Detected
3-Chloropropene	48	Not Detected	150	Not Detected
Methylene Chloride	48	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	43	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Hexane	12	Not Detected	42	Not Detected
1,1-Dichloroethane	12	Not Detected	48	Not Detected
2-Butanone (Methyl Ethyl Ketone)	48	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Tetrahydrofuran	12	Not Detected	35	Not Detected
Chloroform	12	Not Detected	58	Not Detected
1,1,1-Trichloroethane	12	Not Detected	65	Not Detected
Cyclohexane	12	Not Detected	41	Not Detected
Carbon Tetrachloride	12	Not Detected	76	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	56	Not Detected
Benzene	12	Not Detected	38	Not Detected
1,2-Dichloroethane	12	Not Detected	48	Not Detected
Heptane	12	Not Detected	49	Not Detected
Trichloroethene	12	Not Detected	64	Not Detected
1,2-Dichloropropane	12	Not Detected	55	Not Detected
1,4-Dioxane	48	Not Detected	170	Not Detected
Bromodichloromethane	12	Not Detected	80	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	54	Not Detected
4-Methyl-2-pentanone	12	Not Detected	49	Not Detected
Toluene	12	Not Detected	45	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	54	Not Detected
1,1,2-Trichloroethane	12	Not Detected	65	Not Detected
Tetrachloroethene	12	1400	81	9800
2-Hexanone	48	Not Detected	200	Not Detected

Client Sample ID: SG4-17

Lab ID#: 1608198-07A

EPA METHOD TO-15 GC/MS

File Name:	j081613	Date of Collection:	8/10/16 11:45:00 AM
Dil. Factor:	2.40	Date of Analysis:	8/16/16 04:57 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	92	Not Detected
Chlorobenzene	12	Not Detected	55	Not Detected
Ethyl Benzene	12	Not Detected	52	Not Detected
m,p-Xylene	12	Not Detected	52	Not Detected
o-Xylene	12	Not Detected	52	Not Detected
Styrene	12	Not Detected	51	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	59	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	82	Not Detected
Propylbenzene	12	Not Detected	59	Not Detected
4-Ethyltoluene	12	Not Detected	59	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	59	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	59	Not Detected
1,3-Dichlorobenzene	12	Not Detected	72	Not Detected
1,4-Dichlorobenzene	12	Not Detected	72	Not Detected
alpha-Chlorotoluene	12	Not Detected	62	Not Detected
1,2-Dichlorobenzene	12	Not Detected	72	Not Detected
1,2,4-Trichlorobenzene	48	Not Detected	360	Not Detected
Hexachlorobutadiene	48	Not Detected	510	Not Detected
1,1-Difluoroethane	48	65	130	180

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SG5-7

Lab ID#: 1608198-08A

EPA METHOD TO-15 GC/MS

File Name:	j081614	Date of Collection:	8/10/16 2:54:00 PM
Dil. Factor:	2.31	Date of Analysis:	8/16/16 05:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	57	Not Detected
Freon 114	12	Not Detected	81	Not Detected
Chloromethane	46	Not Detected	95	Not Detected
Vinyl Chloride	12	Not Detected	30	Not Detected
1,3-Butadiene	12	Not Detected	26	Not Detected
Bromomethane	46	Not Detected	180	Not Detected
Chloroethane	46	Not Detected	120	Not Detected
Freon 11	12	Not Detected	65	Not Detected
Ethanol	46	Not Detected	87	Not Detected
Freon 113	12	Not Detected	88	Not Detected
1,1-Dichloroethene	12	Not Detected	46	Not Detected
Acetone	46	Not Detected	110	Not Detected
2-Propanol	46	Not Detected	110	Not Detected
Carbon Disulfide	46	Not Detected	140	Not Detected
3-Chloropropene	46	Not Detected	140	Not Detected
Methylene Chloride	46	Not Detected	160	Not Detected
Methyl tert-butyl ether	12	Not Detected	42	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	46	Not Detected
Hexane	12	Not Detected	41	Not Detected
1,1-Dichloroethane	12	Not Detected	47	Not Detected
2-Butanone (Methyl Ethyl Ketone)	46	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	46	Not Detected
Tetrahydrofuran	12	Not Detected	34	Not Detected
Chloroform	12	Not Detected	56	Not Detected
1,1,1-Trichloroethane	12	Not Detected	63	Not Detected
Cyclohexane	12	Not Detected	40	Not Detected
Carbon Tetrachloride	12	Not Detected	73	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	54	Not Detected
Benzene	12	Not Detected	37	Not Detected
1,2-Dichloroethane	12	Not Detected	47	Not Detected
Heptane	12	Not Detected	47	Not Detected
Trichloroethene	12	Not Detected	62	Not Detected
1,2-Dichloropropane	12	Not Detected	53	Not Detected
1,4-Dioxane	46	Not Detected	170	Not Detected
Bromodichloromethane	12	Not Detected	77	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	52	Not Detected
4-Methyl-2-pentanone	12	Not Detected	47	Not Detected
Toluene	12	Not Detected	44	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	52	Not Detected
1,1,2-Trichloroethane	12	Not Detected	63	Not Detected
Tetrachloroethene	12	820	78	5500
2-Hexanone	46	Not Detected	190	Not Detected



Client Sample ID: SG5-7

Lab ID#: 1608198-08A

EPA METHOD TO-15 GC/MS

File Name:	j081614	Date of Collection:	8/10/16 2:54:00 PM
Dil. Factor:	2.31	Date of Analysis:	8/16/16 05:21 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	98	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	89	Not Detected
Chlorobenzene	12	Not Detected	53	Not Detected
Ethyl Benzene	12	Not Detected	50	Not Detected
m,p-Xylene	12	Not Detected	50	Not Detected
o-Xylene	12	Not Detected	50	Not Detected
Styrene	12	Not Detected	49	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	57	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	79	Not Detected
Propylbenzene	12	Not Detected	57	Not Detected
4-Ethyltoluene	12	Not Detected	57	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	57	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	57	Not Detected
1,3-Dichlorobenzene	12	Not Detected	69	Not Detected
1,4-Dichlorobenzene	12	Not Detected	69	Not Detected
alpha-Chlorotoluene	12	Not Detected	60	Not Detected
1,2-Dichlorobenzene	12	Not Detected	69	Not Detected
1,2,4-Trichlorobenzene	46	Not Detected	340	Not Detected
Hexachlorobutadiene	46	Not Detected	490	Not Detected
1,1-Difluoroethane	46	1200	120	3200

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: SG5-17

Lab ID#: 1608198-09A

EPA METHOD TO-15 GC/MS

File Name:	j081624	Date of Collection:	8/10/16 3:54:00 PM
Dil. Factor:	62.1	Date of Analysis:	8/16/16 11:35 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	310	Not Detected	1500	Not Detected
Freon 114	310	Not Detected	2200	Not Detected
Chloromethane	1200	Not Detected	2600	Not Detected
Vinyl Chloride	310	Not Detected	790	Not Detected
1,3-Butadiene	310	Not Detected	690	Not Detected
Bromomethane	1200	Not Detected	4800	Not Detected
Chloroethane	1200	Not Detected	3300	Not Detected
Freon 11	310	Not Detected	1700	Not Detected
Ethanol	1200	Not Detected	2300	Not Detected
Freon 113	310	Not Detected	2400	Not Detected
1,1-Dichloroethene	310	Not Detected	1200	Not Detected
Acetone	1200	Not Detected	3000	Not Detected
2-Propanol	1200	Not Detected	3000	Not Detected
Carbon Disulfide	1200	Not Detected	3900	Not Detected
3-Chloropropene	1200	Not Detected	3900	Not Detected
Methylene Chloride	1200	Not Detected	4300	Not Detected
Methyl tert-butyl ether	310	Not Detected	1100	Not Detected
trans-1,2-Dichloroethene	310	Not Detected	1200	Not Detected
Hexane	310	Not Detected	1100	Not Detected
1,1-Dichloroethane	310	Not Detected	1200	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1200	Not Detected	3700	Not Detected
cis-1,2-Dichloroethene	310	Not Detected	1200	Not Detected
Tetrahydrofuran	310	Not Detected	920	Not Detected
Chloroform	310	Not Detected	1500	Not Detected
1,1,1-Trichloroethane	310	Not Detected	1700	Not Detected
Cyclohexane	310	Not Detected	1100	Not Detected
Carbon Tetrachloride	310	Not Detected	2000	Not Detected
2,2,4-Trimethylpentane	310	Not Detected	1400	Not Detected
Benzene	310	Not Detected	990	Not Detected
1,2-Dichloroethane	310	Not Detected	1200	Not Detected
Heptane	310	Not Detected	1300	Not Detected
Trichloroethene	310	Not Detected	1700	Not Detected
1,2-Dichloropropane	310	Not Detected	1400	Not Detected
1,4-Dioxane	1200	Not Detected	4500	Not Detected
Bromodichloromethane	310	Not Detected	2100	Not Detected
cis-1,3-Dichloropropene	310	Not Detected	1400	Not Detected
4-Methyl-2-pentanone	310	Not Detected	1300	Not Detected
Toluene	310	Not Detected	1200	Not Detected
trans-1,3-Dichloropropene	310	Not Detected	1400	Not Detected
1,1,2-Trichloroethane	310	Not Detected	1700	Not Detected
Tetrachloroethene	310	360	2100	2400
2-Hexanone	1200	Not Detected	5100	Not Detected



Client Sample ID: SG5-17

Lab ID#: 1608198-09A

EPA METHOD TO-15 GC/MS

File Name:	j081624	Date of Collection:	8/10/16 3:54:00 PM
Dil. Factor:	62.1	Date of Analysis:	8/16/16 11:35 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	310	Not Detected	2600	Not Detected
1,2-Dibromoethane (EDB)	310	Not Detected	2400	Not Detected
Chlorobenzene	310	Not Detected	1400	Not Detected
Ethyl Benzene	310	Not Detected	1300	Not Detected
m,p-Xylene	310	Not Detected	1300	Not Detected
o-Xylene	310	Not Detected	1300	Not Detected
Styrene	310	Not Detected	1300	Not Detected
Bromoform	310	Not Detected	3200	Not Detected
Cumene	310	Not Detected	1500	Not Detected
1,1,2,2-Tetrachloroethane	310	Not Detected	2100	Not Detected
Propylbenzene	310	Not Detected	1500	Not Detected
4-Ethyltoluene	310	Not Detected	1500	Not Detected
1,3,5-Trimethylbenzene	310	Not Detected	1500	Not Detected
1,2,4-Trimethylbenzene	310	Not Detected	1500	Not Detected
1,3-Dichlorobenzene	310	Not Detected	1900	Not Detected
1,4-Dichlorobenzene	310	Not Detected	1900	Not Detected
alpha-Chlorotoluene	310	Not Detected	1600	Not Detected
1,2-Dichlorobenzene	310	Not Detected	1900	Not Detected
1,2,4-Trichlorobenzene	1200	Not Detected	9200	Not Detected
Hexachlorobutadiene	1200	Not Detected	13000	Not Detected
1,1-Difluoroethane	1200	310000 E	3400	840000 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SG6-7

Lab ID#: 1608198-10A

EPA METHOD TO-15 GC/MS

File Name:	j081615	Date of Collection:	8/10/16 5:41:00 PM
Dil. Factor:	2.58	Date of Analysis:	8/16/16 07:31 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	Not Detected	64	Not Detected
Freon 114	13	Not Detected	90	Not Detected
Chloromethane	52	Not Detected	110	Not Detected
Vinyl Chloride	13	Not Detected	33	Not Detected
1,3-Butadiene	13	Not Detected	28	Not Detected
Bromomethane	52	Not Detected	200	Not Detected
Chloroethane	52	Not Detected	140	Not Detected
Freon 11	13	Not Detected	72	Not Detected
Ethanol	52	Not Detected	97	Not Detected
Freon 113	13	Not Detected	99	Not Detected
1,1-Dichloroethene	13	Not Detected	51	Not Detected
Acetone	52	Not Detected	120	Not Detected
2-Propanol	52	Not Detected	130	Not Detected
Carbon Disulfide	52	Not Detected	160	Not Detected
3-Chloropropene	52	Not Detected	160	Not Detected
Methylene Chloride	52	Not Detected	180	Not Detected
Methyl tert-butyl ether	13	Not Detected	46	Not Detected
trans-1,2-Dichloroethene	13	Not Detected	51	Not Detected
Hexane	13	Not Detected	45	Not Detected
1,1-Dichloroethane	13	Not Detected	52	Not Detected
2-Butanone (Methyl Ethyl Ketone)	52	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	51	Not Detected
Tetrahydrofuran	13	Not Detected	38	Not Detected
Chloroform	13	Not Detected	63	Not Detected
1,1,1-Trichloroethane	13	Not Detected	70	Not Detected
Cyclohexane	13	Not Detected	44	Not Detected
Carbon Tetrachloride	13	Not Detected	81	Not Detected
2,2,4-Trimethylpentane	13	Not Detected	60	Not Detected
Benzene	13	Not Detected	41	Not Detected
1,2-Dichloroethane	13	Not Detected	52	Not Detected
Heptane	13	Not Detected	53	Not Detected
Trichloroethene	13	Not Detected	69	Not Detected
1,2-Dichloropropane	13	Not Detected	60	Not Detected
1,4-Dioxane	52	Not Detected	180	Not Detected
Bromodichloromethane	13	Not Detected	86	Not Detected
cis-1,3-Dichloropropene	13	Not Detected	58	Not Detected
4-Methyl-2-pentanone	13	Not Detected	53	Not Detected
Toluene	13	Not Detected	49	Not Detected
trans-1,3-Dichloropropene	13	Not Detected	58	Not Detected
1,1,2-Trichloroethane	13	Not Detected	70	Not Detected
Tetrachloroethene	13	1200	88	8400
2-Hexanone	52	Not Detected	210	Not Detected

Client Sample ID: SG6-7

Lab ID#: 1608198-10A

EPA METHOD TO-15 GC/MS

File Name:	j081615	Date of Collection:	8/10/16 5:41:00 PM
Dil. Factor:	2.58	Date of Analysis:	8/16/16 07:31 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	13	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	13	Not Detected	99	Not Detected
Chlorobenzene	13	Not Detected	59	Not Detected
Ethyl Benzene	13	Not Detected	56	Not Detected
m,p-Xylene	13	Not Detected	56	Not Detected
o-Xylene	13	Not Detected	56	Not Detected
Styrene	13	Not Detected	55	Not Detected
Bromoform	13	Not Detected	130	Not Detected
Cumene	13	Not Detected	63	Not Detected
1,1,2,2-Tetrachloroethane	13	Not Detected	88	Not Detected
Propylbenzene	13	Not Detected	63	Not Detected
4-Ethyltoluene	13	Not Detected	63	Not Detected
1,3,5-Trimethylbenzene	13	Not Detected	63	Not Detected
1,2,4-Trimethylbenzene	13	Not Detected	63	Not Detected
1,3-Dichlorobenzene	13	Not Detected	78	Not Detected
1,4-Dichlorobenzene	13	Not Detected	78	Not Detected
alpha-Chlorotoluene	13	Not Detected	67	Not Detected
1,2-Dichlorobenzene	13	Not Detected	78	Not Detected
1,2,4-Trichlorobenzene	52	Not Detected	380	Not Detected
Hexachlorobutadiene	52	Not Detected	550	Not Detected
1,1-Difluoroethane	52	240	140	660

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SG6-17

Lab ID#: 1608198-11A

EPA METHOD TO-15 GC/MS

File Name:	j081616	Date of Collection:	8/10/16 5:09:00 PM
Dil. Factor:	2.58	Date of Analysis:	8/16/16 07:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	Not Detected	64	Not Detected
Freon 114	13	Not Detected	90	Not Detected
Chloromethane	52	Not Detected	110	Not Detected
Vinyl Chloride	13	Not Detected	33	Not Detected
1,3-Butadiene	13	Not Detected	28	Not Detected
Bromomethane	52	Not Detected	200	Not Detected
Chloroethane	52	Not Detected	140	Not Detected
Freon 11	13	Not Detected	72	Not Detected
Ethanol	52	Not Detected	97	Not Detected
Freon 113	13	Not Detected	99	Not Detected
1,1-Dichloroethene	13	Not Detected	51	Not Detected
Acetone	52	Not Detected	120	Not Detected
2-Propanol	52	Not Detected	130	Not Detected
Carbon Disulfide	52	Not Detected	160	Not Detected
3-Chloropropene	52	Not Detected	160	Not Detected
Methylene Chloride	52	Not Detected	180	Not Detected
Methyl tert-butyl ether	13	Not Detected	46	Not Detected
trans-1,2-Dichloroethene	13	Not Detected	51	Not Detected
Hexane	13	Not Detected	45	Not Detected
1,1-Dichloroethane	13	Not Detected	52	Not Detected
2-Butanone (Methyl Ethyl Ketone)	52	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	51	Not Detected
Tetrahydrofuran	13	Not Detected	38	Not Detected
Chloroform	13	Not Detected	63	Not Detected
1,1,1-Trichloroethane	13	Not Detected	70	Not Detected
Cyclohexane	13	Not Detected	44	Not Detected
Carbon Tetrachloride	13	Not Detected	81	Not Detected
2,2,4-Trimethylpentane	13	Not Detected	60	Not Detected
Benzene	13	Not Detected	41	Not Detected
1,2-Dichloroethane	13	Not Detected	52	Not Detected
Heptane	13	Not Detected	53	Not Detected
Trichloroethene	13	Not Detected	69	Not Detected
1,2-Dichloropropane	13	Not Detected	60	Not Detected
1,4-Dioxane	52	Not Detected	180	Not Detected
Bromodichloromethane	13	Not Detected	86	Not Detected
cis-1,3-Dichloropropene	13	Not Detected	58	Not Detected
4-Methyl-2-pentanone	13	Not Detected	53	Not Detected
Toluene	13	Not Detected	49	Not Detected
trans-1,3-Dichloropropene	13	Not Detected	58	Not Detected
1,1,2-Trichloroethane	13	Not Detected	70	Not Detected
Tetrachloroethene	13	1300	88	8600
2-Hexanone	52	Not Detected	210	Not Detected

Client Sample ID: SG6-17

Lab ID#: 1608198-11A

EPA METHOD TO-15 GC/MS

File Name:	j081616	Date of Collection:	8/10/16 5:09:00 PM
Dil. Factor:	2.58	Date of Analysis:	8/16/16 07:54 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	13	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	13	Not Detected	99	Not Detected
Chlorobenzene	13	Not Detected	59	Not Detected
Ethyl Benzene	13	Not Detected	56	Not Detected
m,p-Xylene	13	Not Detected	56	Not Detected
o-Xylene	13	Not Detected	56	Not Detected
Styrene	13	Not Detected	55	Not Detected
Bromoform	13	Not Detected	130	Not Detected
Cumene	13	Not Detected	63	Not Detected
1,1,2,2-Tetrachloroethane	13	Not Detected	88	Not Detected
Propylbenzene	13	Not Detected	63	Not Detected
4-Ethyltoluene	13	Not Detected	63	Not Detected
1,3,5-Trimethylbenzene	13	Not Detected	63	Not Detected
1,2,4-Trimethylbenzene	13	Not Detected	63	Not Detected
1,3-Dichlorobenzene	13	Not Detected	78	Not Detected
1,4-Dichlorobenzene	13	Not Detected	78	Not Detected
alpha-Chlorotoluene	13	Not Detected	67	Not Detected
1,2-Dichlorobenzene	13	Not Detected	78	Not Detected
1,2,4-Trichlorobenzene	52	Not Detected	380	Not Detected
Hexachlorobutadiene	52	Not Detected	550	Not Detected
1,1-Difluoroethane	52	110	140	300

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG7-7

Lab ID#: 1608198-12A

EPA METHOD TO-15 GC/MS

File Name:	j081617	Date of Collection:	8/10/16 6:12:00 PM
Dil. Factor:	2.38	Date of Analysis:	8/16/16 08:19 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	59	Not Detected
Freon 114	12	Not Detected	83	Not Detected
Chloromethane	48	Not Detected	98	Not Detected
Vinyl Chloride	12	Not Detected	30	Not Detected
1,3-Butadiene	12	Not Detected	26	Not Detected
Bromomethane	48	Not Detected	180	Not Detected
Chloroethane	48	Not Detected	120	Not Detected
Freon 11	12	Not Detected	67	Not Detected
Ethanol	48	Not Detected	90	Not Detected
Freon 113	12	Not Detected	91	Not Detected
1,1-Dichloroethene	12	Not Detected	47	Not Detected
Acetone	48	Not Detected	110	Not Detected
2-Propanol	48	Not Detected	120	Not Detected
Carbon Disulfide	48	Not Detected	150	Not Detected
3-Chloropropene	48	Not Detected	150	Not Detected
Methylene Chloride	48	Not Detected	160	Not Detected
Methyl tert-butyl ether	12	Not Detected	43	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	47	Not Detected
Hexane	12	Not Detected	42	Not Detected
1,1-Dichloroethane	12	Not Detected	48	Not Detected
2-Butanone (Methyl Ethyl Ketone)	48	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	47	Not Detected
Tetrahydrofuran	12	24	35	70
Chloroform	12	Not Detected	58	Not Detected
1,1,1-Trichloroethane	12	Not Detected	65	Not Detected
Cyclohexane	12	Not Detected	41	Not Detected
Carbon Tetrachloride	12	Not Detected	75	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	56	Not Detected
Benzene	12	Not Detected	38	Not Detected
1,2-Dichloroethane	12	Not Detected	48	Not Detected
Heptane	12	Not Detected	49	Not Detected
Trichloroethene	12	Not Detected	64	Not Detected
1,2-Dichloropropane	12	Not Detected	55	Not Detected
1,4-Dioxane	48	Not Detected	170	Not Detected
Bromodichloromethane	12	Not Detected	80	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	54	Not Detected
4-Methyl-2-pentanone	12	Not Detected	49	Not Detected
Toluene	12	Not Detected	45	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	54	Not Detected
1,1,2-Trichloroethane	12	Not Detected	65	Not Detected
Tetrachloroethene	12	Not Detected	81	Not Detected
2-Hexanone	48	Not Detected	190	Not Detected



Client Sample ID: SG7-7

Lab ID#: 1608198-12A

EPA METHOD TO-15 GC/MS

File Name:	j081617	Date of Collection:	8/10/16 6:12:00 PM
Dil. Factor:	2.38	Date of Analysis:	8/16/16 08:19 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	91	Not Detected
Chlorobenzene	12	Not Detected	55	Not Detected
Ethyl Benzene	12	Not Detected	52	Not Detected
m,p-Xylene	12	Not Detected	52	Not Detected
o-Xylene	12	Not Detected	52	Not Detected
Styrene	12	Not Detected	51	Not Detected
Bromoform	12	Not Detected	120	Not Detected
Cumene	12	Not Detected	58	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	82	Not Detected
Propylbenzene	12	Not Detected	58	Not Detected
4-Ethyltoluene	12	Not Detected	58	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	58	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	58	Not Detected
1,3-Dichlorobenzene	12	Not Detected	72	Not Detected
1,4-Dichlorobenzene	12	Not Detected	72	Not Detected
alpha-Chlorotoluene	12	Not Detected	62	Not Detected
1,2-Dichlorobenzene	12	Not Detected	72	Not Detected
1,2,4-Trichlorobenzene	48	Not Detected	350	Not Detected
Hexachlorobutadiene	48	Not Detected	510	Not Detected
1,1-Difluoroethane	48	96	130	260

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	90	70-130



Air Toxics

Client Sample ID: SG7-17

Lab ID#: 1608198-13A

EPA METHOD TO-15 GC/MS

File Name:	j081618	Date of Collection:	8/10/16 6:41:00 PM
Dil. Factor:	2.44	Date of Analysis:	8/16/16 08:44 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	60	Not Detected
Freon 114	12	Not Detected	85	Not Detected
Chloromethane	49	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	31	Not Detected
1,3-Butadiene	12	Not Detected	27	Not Detected
Bromomethane	49	Not Detected	190	Not Detected
Chloroethane	49	Not Detected	130	Not Detected
Freon 11	12	Not Detected	68	Not Detected
Ethanol	49	Not Detected	92	Not Detected
Freon 113	12	Not Detected	94	Not Detected
1,1-Dichloroethene	12	Not Detected	48	Not Detected
Acetone	49	Not Detected	120	Not Detected
2-Propanol	49	Not Detected	120	Not Detected
Carbon Disulfide	49	Not Detected	150	Not Detected
3-Chloropropene	49	Not Detected	150	Not Detected
Methylene Chloride	49	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	44	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Hexane	12	Not Detected	43	Not Detected
1,1-Dichloroethane	12	Not Detected	49	Not Detected
2-Butanone (Methyl Ethyl Ketone)	49	Not Detected	140	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	48	Not Detected
Tetrahydrofuran	12	Not Detected	36	Not Detected
Chloroform	12	Not Detected	60	Not Detected
1,1,1-Trichloroethane	12	Not Detected	66	Not Detected
Cyclohexane	12	Not Detected	42	Not Detected
Carbon Tetrachloride	12	Not Detected	77	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	57	Not Detected
Benzene	12	Not Detected	39	Not Detected
1,2-Dichloroethane	12	Not Detected	49	Not Detected
Heptane	12	Not Detected	50	Not Detected
Trichloroethene	12	Not Detected	66	Not Detected
1,2-Dichloropropane	12	Not Detected	56	Not Detected
1,4-Dioxane	49	Not Detected	180	Not Detected
Bromodichloromethane	12	Not Detected	82	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	55	Not Detected
4-Methyl-2-pentanone	12	Not Detected	50	Not Detected
Toluene	12	Not Detected	46	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	55	Not Detected
1,1,2-Trichloroethane	12	Not Detected	66	Not Detected
Tetrachloroethene	12	840	83	5700
2-Hexanone	49	Not Detected	200	Not Detected

Client Sample ID: SG7-17

Lab ID#: 1608198-13A

EPA METHOD TO-15 GC/MS

File Name:	j081618	Date of Collection:	8/10/16 6:41:00 PM
Dil. Factor:	2.44	Date of Analysis:	8/16/16 08:44 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	100	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	94	Not Detected
Chlorobenzene	12	Not Detected	56	Not Detected
Ethyl Benzene	12	Not Detected	53	Not Detected
m,p-Xylene	12	Not Detected	53	Not Detected
o-Xylene	12	Not Detected	53	Not Detected
Styrene	12	Not Detected	52	Not Detected
Bromoform	12	Not Detected	130	Not Detected
Cumene	12	Not Detected	60	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	84	Not Detected
Propylbenzene	12	Not Detected	60	Not Detected
4-Ethyltoluene	12	Not Detected	60	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	60	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	60	Not Detected
1,3-Dichlorobenzene	12	Not Detected	73	Not Detected
1,4-Dichlorobenzene	12	Not Detected	73	Not Detected
alpha-Chlorotoluene	12	Not Detected	63	Not Detected
1,2-Dichlorobenzene	12	Not Detected	73	Not Detected
1,2,4-Trichlorobenzene	49	Not Detected	360	Not Detected
Hexachlorobutadiene	49	Not Detected	520	Not Detected
1,1-Difluoroethane	49	Not Detected	130	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG8-7

Lab ID#: 1608198-14A

EPA METHOD TO-15 GC/MS

File Name:	j081619	Date of Collection:	8/10/16 4:26:00 PM
Dil. Factor:	2.25	Date of Analysis:	8/16/16 09:09 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	11	Not Detected	56	Not Detected
Freon 114	11	Not Detected	79	Not Detected
Chloromethane	45	Not Detected	93	Not Detected
Vinyl Chloride	11	Not Detected	29	Not Detected
1,3-Butadiene	11	Not Detected	25	Not Detected
Bromomethane	45	Not Detected	170	Not Detected
Chloroethane	45	Not Detected	120	Not Detected
Freon 11	11	Not Detected	63	Not Detected
Ethanol	45	Not Detected	85	Not Detected
Freon 113	11	Not Detected	86	Not Detected
1,1-Dichloroethene	11	Not Detected	45	Not Detected
Acetone	45	Not Detected	110	Not Detected
2-Propanol	45	Not Detected	110	Not Detected
Carbon Disulfide	45	Not Detected	140	Not Detected
3-Chloropropene	45	Not Detected	140	Not Detected
Methylene Chloride	45	Not Detected	160	Not Detected
Methyl tert-butyl ether	11	Not Detected	40	Not Detected
trans-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Hexane	11	Not Detected	40	Not Detected
1,1-Dichloroethane	11	Not Detected	46	Not Detected
2-Butanone (Methyl Ethyl Ketone)	45	Not Detected	130	Not Detected
cis-1,2-Dichloroethene	11	Not Detected	45	Not Detected
Tetrahydrofuran	11	Not Detected	33	Not Detected
Chloroform	11	Not Detected	55	Not Detected
1,1,1-Trichloroethane	11	Not Detected	61	Not Detected
Cyclohexane	11	Not Detected	39	Not Detected
Carbon Tetrachloride	11	Not Detected	71	Not Detected
2,2,4-Trimethylpentane	11	Not Detected	52	Not Detected
Benzene	11	Not Detected	36	Not Detected
1,2-Dichloroethane	11	Not Detected	46	Not Detected
Heptane	11	Not Detected	46	Not Detected
Trichloroethene	11	Not Detected	60	Not Detected
1,2-Dichloropropane	11	Not Detected	52	Not Detected
1,4-Dioxane	45	Not Detected	160	Not Detected
Bromodichloromethane	11	Not Detected	75	Not Detected
cis-1,3-Dichloropropene	11	Not Detected	51	Not Detected
4-Methyl-2-pentanone	11	Not Detected	46	Not Detected
Toluene	11	Not Detected	42	Not Detected
trans-1,3-Dichloropropene	11	Not Detected	51	Not Detected
1,1,2-Trichloroethane	11	Not Detected	61	Not Detected
Tetrachloroethene	11	16	76	110
2-Hexanone	45	Not Detected	180	Not Detected



Client Sample ID: SG8-7

Lab ID#: 1608198-14A

EPA METHOD TO-15 GC/MS

File Name:	j081619	Date of Collection:	8/10/16 4:26:00 PM
Dil. Factor:	2.25	Date of Analysis:	8/16/16 09:09 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	11	Not Detected	96	Not Detected
1,2-Dibromoethane (EDB)	11	Not Detected	86	Not Detected
Chlorobenzene	11	Not Detected	52	Not Detected
Ethyl Benzene	11	Not Detected	49	Not Detected
m,p-Xylene	11	Not Detected	49	Not Detected
o-Xylene	11	Not Detected	49	Not Detected
Styrene	11	Not Detected	48	Not Detected
Bromoform	11	Not Detected	120	Not Detected
Cumene	11	Not Detected	55	Not Detected
1,1,2,2-Tetrachloroethane	11	Not Detected	77	Not Detected
Propylbenzene	11	Not Detected	55	Not Detected
4-Ethyltoluene	11	Not Detected	55	Not Detected
1,3,5-Trimethylbenzene	11	Not Detected	55	Not Detected
1,2,4-Trimethylbenzene	11	Not Detected	55	Not Detected
1,3-Dichlorobenzene	11	Not Detected	68	Not Detected
1,4-Dichlorobenzene	11	Not Detected	68	Not Detected
alpha-Chlorotoluene	11	Not Detected	58	Not Detected
1,2-Dichlorobenzene	11	Not Detected	68	Not Detected
1,2,4-Trichlorobenzene	45	Not Detected	330	Not Detected
Hexachlorobutadiene	45	Not Detected	480	Not Detected
1,1-Difluoroethane	45	120	120	330

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	89	70-130



Air Toxics

Client Sample ID: SG9-17

Lab ID#: 1608198-15A

EPA METHOD TO-15 GC/MS

File Name:	j081620	Date of Collection:	8/11/16 11:08:00 AM
Dil. Factor:	2.50	Date of Analysis:	8/16/16 09:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	12	Not Detected	62	Not Detected
Freon 114	12	Not Detected	87	Not Detected
Chloromethane	50	Not Detected	100	Not Detected
Vinyl Chloride	12	Not Detected	32	Not Detected
1,3-Butadiene	12	Not Detected	28	Not Detected
Bromomethane	50	Not Detected	190	Not Detected
Chloroethane	50	Not Detected	130	Not Detected
Freon 11	12	Not Detected	70	Not Detected
Ethanol	50	Not Detected	94	Not Detected
Freon 113	12	Not Detected	96	Not Detected
1,1-Dichloroethene	12	Not Detected	50	Not Detected
Acetone	50	Not Detected	120	Not Detected
2-Propanol	50	Not Detected	120	Not Detected
Carbon Disulfide	50	Not Detected	160	Not Detected
3-Chloropropene	50	Not Detected	160	Not Detected
Methylene Chloride	50	Not Detected	170	Not Detected
Methyl tert-butyl ether	12	Not Detected	45	Not Detected
trans-1,2-Dichloroethene	12	Not Detected	50	Not Detected
Hexane	12	Not Detected	44	Not Detected
1,1-Dichloroethane	12	Not Detected	50	Not Detected
2-Butanone (Methyl Ethyl Ketone)	50	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	12	Not Detected	50	Not Detected
Tetrahydrofuran	12	Not Detected	37	Not Detected
Chloroform	12	Not Detected	61	Not Detected
1,1,1-Trichloroethane	12	Not Detected	68	Not Detected
Cyclohexane	12	Not Detected	43	Not Detected
Carbon Tetrachloride	12	Not Detected	79	Not Detected
2,2,4-Trimethylpentane	12	Not Detected	58	Not Detected
Benzene	12	Not Detected	40	Not Detected
1,2-Dichloroethane	12	Not Detected	50	Not Detected
Heptane	12	Not Detected	51	Not Detected
Trichloroethene	12	Not Detected	67	Not Detected
1,2-Dichloropropane	12	Not Detected	58	Not Detected
1,4-Dioxane	50	Not Detected	180	Not Detected
Bromodichloromethane	12	Not Detected	84	Not Detected
cis-1,3-Dichloropropene	12	Not Detected	57	Not Detected
4-Methyl-2-pentanone	12	Not Detected	51	Not Detected
Toluene	12	Not Detected	47	Not Detected
trans-1,3-Dichloropropene	12	Not Detected	57	Not Detected
1,1,2-Trichloroethane	12	Not Detected	68	Not Detected
Tetrachloroethene	12	130	85	860
2-Hexanone	50	Not Detected	200	Not Detected

Client Sample ID: SG9-17

Lab ID#: 1608198-15A

EPA METHOD TO-15 GC/MS

File Name:	j081620	Date of Collection:	8/11/16 11:08:00 AM
Dil. Factor:	2.50	Date of Analysis:	8/16/16 09:34 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	12	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	12	Not Detected	96	Not Detected
Chlorobenzene	12	Not Detected	58	Not Detected
Ethyl Benzene	12	17	54	75
m,p-Xylene	12	86	54	370
o-Xylene	12	26	54	110
Styrene	12	Not Detected	53	Not Detected
Bromoform	12	Not Detected	130	Not Detected
Cumene	12	Not Detected	61	Not Detected
1,1,2,2-Tetrachloroethane	12	Not Detected	86	Not Detected
Propylbenzene	12	Not Detected	61	Not Detected
4-Ethyltoluene	12	Not Detected	61	Not Detected
1,3,5-Trimethylbenzene	12	Not Detected	61	Not Detected
1,2,4-Trimethylbenzene	12	Not Detected	61	Not Detected
1,3-Dichlorobenzene	12	Not Detected	75	Not Detected
1,4-Dichlorobenzene	12	Not Detected	75	Not Detected
alpha-Chlorotoluene	12	Not Detected	65	Not Detected
1,2-Dichlorobenzene	12	Not Detected	75	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected	370	Not Detected
Hexachlorobutadiene	50	Not Detected	530	Not Detected
1,1-Difluoroethane	50	15000 E	140	41000 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: SG9-17 DUP

Lab ID#: 1608198-16A

EPA METHOD TO-15 GC/MS

File Name:	j081621	Date of Collection:	8/11/16 11:08:00 AM
Dil. Factor:	2.52	Date of Analysis:	8/16/16 09:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	Not Detected	62	Not Detected
Freon 114	13	Not Detected	88	Not Detected
Chloromethane	50	Not Detected	100	Not Detected
Vinyl Chloride	13	Not Detected	32	Not Detected
1,3-Butadiene	13	Not Detected	28	Not Detected
Bromomethane	50	Not Detected	200	Not Detected
Chloroethane	50	Not Detected	130	Not Detected
Freon 11	13	Not Detected	71	Not Detected
Ethanol	50	Not Detected	95	Not Detected
Freon 113	13	Not Detected	96	Not Detected
1,1-Dichloroethene	13	Not Detected	50	Not Detected
Acetone	50	Not Detected	120	Not Detected
2-Propanol	50	Not Detected	120	Not Detected
Carbon Disulfide	50	Not Detected	160	Not Detected
3-Chloropropene	50	Not Detected	160	Not Detected
Methylene Chloride	50	Not Detected	180	Not Detected
Methyl tert-butyl ether	13	Not Detected	45	Not Detected
trans-1,2-Dichloroethene	13	Not Detected	50	Not Detected
Hexane	13	Not Detected	44	Not Detected
1,1-Dichloroethane	13	Not Detected	51	Not Detected
2-Butanone (Methyl Ethyl Ketone)	50	Not Detected	150	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	50	Not Detected
Tetrahydrofuran	13	Not Detected	37	Not Detected
Chloroform	13	Not Detected	62	Not Detected
1,1,1-Trichloroethane	13	Not Detected	69	Not Detected
Cyclohexane	13	Not Detected	43	Not Detected
Carbon Tetrachloride	13	Not Detected	79	Not Detected
2,2,4-Trimethylpentane	13	Not Detected	59	Not Detected
Benzene	13	Not Detected	40	Not Detected
1,2-Dichloroethane	13	Not Detected	51	Not Detected
Heptane	13	Not Detected	52	Not Detected
Trichloroethene	13	Not Detected	68	Not Detected
1,2-Dichloropropane	13	Not Detected	58	Not Detected
1,4-Dioxane	50	Not Detected	180	Not Detected
Bromodichloromethane	13	Not Detected	84	Not Detected
cis-1,3-Dichloropropene	13	Not Detected	57	Not Detected
4-Methyl-2-pentanone	13	Not Detected	52	Not Detected
Toluene	13	Not Detected	47	Not Detected
trans-1,3-Dichloropropene	13	Not Detected	57	Not Detected
1,1,2-Trichloroethane	13	Not Detected	69	Not Detected
Tetrachloroethene	13	140	85	930
2-Hexanone	50	Not Detected	210	Not Detected



Client Sample ID: SG9-17 DUP

Lab ID#: 1608198-16A

EPA METHOD TO-15 GC/MS

File Name:	j081621	Date of Collection:	8/11/16 11:08:00 AM
Dil. Factor:	2.52	Date of Analysis:	8/16/16 09:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	13	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	13	Not Detected	97	Not Detected
Chlorobenzene	13	Not Detected	58	Not Detected
Ethyl Benzene	13	13	55	56
m,p-Xylene	13	86	55	370
o-Xylene	13	21	55	92
Styrene	13	Not Detected	54	Not Detected
Bromoform	13	Not Detected	130	Not Detected
Cumene	13	Not Detected	62	Not Detected
1,1,2,2-Tetrachloroethane	13	Not Detected	86	Not Detected
Propylbenzene	13	Not Detected	62	Not Detected
4-Ethyltoluene	13	Not Detected	62	Not Detected
1,3,5-Trimethylbenzene	13	Not Detected	62	Not Detected
1,2,4-Trimethylbenzene	13	Not Detected	62	Not Detected
1,3-Dichlorobenzene	13	Not Detected	76	Not Detected
1,4-Dichlorobenzene	13	Not Detected	76	Not Detected
alpha-Chlorotoluene	13	Not Detected	65	Not Detected
1,2-Dichlorobenzene	13	Not Detected	76	Not Detected
1,2,4-Trichlorobenzene	50	Not Detected	370	Not Detected
Hexachlorobutadiene	50	Not Detected	540	Not Detected
1,1-Difluoroethane	50	3200 E	140	8600 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG10-7

Lab ID#: 1608198-17A

EPA METHOD TO-15 GC/MS

File Name:	j081622	Date of Collection:	8/11/16 11:29:00 AM
Dil. Factor:	2.64	Date of Analysis:	8/16/16 10:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	13	Not Detected	65	Not Detected
Freon 114	13	Not Detected	92	Not Detected
Chloromethane	53	Not Detected	110	Not Detected
Vinyl Chloride	13	Not Detected	34	Not Detected
1,3-Butadiene	13	Not Detected	29	Not Detected
Bromomethane	53	Not Detected	200	Not Detected
Chloroethane	53	Not Detected	140	Not Detected
Freon 11	13	Not Detected	74	Not Detected
Ethanol	53	Not Detected	99	Not Detected
Freon 113	13	Not Detected	100	Not Detected
1,1-Dichloroethene	13	Not Detected	52	Not Detected
Acetone	53	Not Detected	120	Not Detected
2-Propanol	53	Not Detected	130	Not Detected
Carbon Disulfide	53	Not Detected	160	Not Detected
3-Chloropropene	53	Not Detected	160	Not Detected
Methylene Chloride	53	Not Detected	180	Not Detected
Methyl tert-butyl ether	13	Not Detected	48	Not Detected
trans-1,2-Dichloroethene	13	Not Detected	52	Not Detected
Hexane	13	Not Detected	46	Not Detected
1,1-Dichloroethane	13	Not Detected	53	Not Detected
2-Butanone (Methyl Ethyl Ketone)	53	Not Detected	160	Not Detected
cis-1,2-Dichloroethene	13	Not Detected	52	Not Detected
Tetrahydrofuran	13	Not Detected	39	Not Detected
Chloroform	13	Not Detected	64	Not Detected
1,1,1-Trichloroethane	13	Not Detected	72	Not Detected
Cyclohexane	13	Not Detected	45	Not Detected
Carbon Tetrachloride	13	Not Detected	83	Not Detected
2,2,4-Trimethylpentane	13	Not Detected	62	Not Detected
Benzene	13	Not Detected	42	Not Detected
1,2-Dichloroethane	13	Not Detected	53	Not Detected
Heptane	13	Not Detected	54	Not Detected
Trichloroethene	13	Not Detected	71	Not Detected
1,2-Dichloropropane	13	Not Detected	61	Not Detected
1,4-Dioxane	53	Not Detected	190	Not Detected
Bromodichloromethane	13	Not Detected	88	Not Detected
cis-1,3-Dichloropropene	13	Not Detected	60	Not Detected
4-Methyl-2-pentanone	13	Not Detected	54	Not Detected
Toluene	13	Not Detected	50	Not Detected
trans-1,3-Dichloropropene	13	Not Detected	60	Not Detected
1,1,2-Trichloroethane	13	Not Detected	72	Not Detected
Tetrachloroethene	13	Not Detected	90	Not Detected
2-Hexanone	53	Not Detected	220	Not Detected



Client Sample ID: SG10-7

Lab ID#: 1608198-17A

EPA METHOD TO-15 GC/MS

File Name:	j081622	Date of Collection:	8/11/16 11:29:00 AM
Dil. Factor:	2.64	Date of Analysis:	8/16/16 10:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	13	Not Detected	110	Not Detected
1,2-Dibromoethane (EDB)	13	Not Detected	100	Not Detected
Chlorobenzene	13	Not Detected	61	Not Detected
Ethyl Benzene	13	Not Detected	57	Not Detected
m,p-Xylene	13	Not Detected	57	Not Detected
o-Xylene	13	Not Detected	57	Not Detected
Styrene	13	Not Detected	56	Not Detected
Bromoform	13	Not Detected	140	Not Detected
Cumene	13	Not Detected	65	Not Detected
1,1,2,2-Tetrachloroethane	13	Not Detected	91	Not Detected
Propylbenzene	13	Not Detected	65	Not Detected
4-Ethyltoluene	13	Not Detected	65	Not Detected
1,3,5-Trimethylbenzene	13	Not Detected	65	Not Detected
1,2,4-Trimethylbenzene	13	Not Detected	65	Not Detected
1,3-Dichlorobenzene	13	Not Detected	79	Not Detected
1,4-Dichlorobenzene	13	Not Detected	79	Not Detected
alpha-Chlorotoluene	13	Not Detected	68	Not Detected
1,2-Dichlorobenzene	13	Not Detected	79	Not Detected
1,2,4-Trichlorobenzene	53	Not Detected	390	Not Detected
Hexachlorobutadiene	53	Not Detected	560	Not Detected
1,1-Difluoroethane	53	120	140	320

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	92	70-130



Air Toxics

Client Sample ID: SG11-17
Lab ID#: 1608198-18A
EPA METHOD TO-15 GC/MS

File Name:	j081623	Date of Collection: 8/10/16 12:31:00 PM
Dil. Factor:	46.8	Date of Analysis: 8/16/16 11:00 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	230	Not Detected	1200	Not Detected
Freon 114	230	Not Detected	1600	Not Detected
Chloromethane	940	Not Detected	1900	Not Detected
Vinyl Chloride	230	Not Detected	600	Not Detected
1,3-Butadiene	230	Not Detected	520	Not Detected
Bromomethane	940	Not Detected	3600	Not Detected
Chloroethane	940	Not Detected	2500	Not Detected
Freon 11	230	Not Detected	1300	Not Detected
Ethanol	940	Not Detected	1800	Not Detected
Freon 113	230	Not Detected	1800	Not Detected
1,1-Dichloroethene	230	Not Detected	930	Not Detected
Acetone	940	Not Detected	2200	Not Detected
2-Propanol	940	Not Detected	2300	Not Detected
Carbon Disulfide	940	Not Detected	2900	Not Detected
3-Chloropropene	940	Not Detected	2900	Not Detected
Methylene Chloride	940	Not Detected	3200	Not Detected
Methyl tert-butyl ether	230	Not Detected	840	Not Detected
trans-1,2-Dichloroethene	230	Not Detected	930	Not Detected
Hexane	230	Not Detected	820	Not Detected
1,1-Dichloroethane	230	Not Detected	950	Not Detected
2-Butanone (Methyl Ethyl Ketone)	940	Not Detected	2800	Not Detected
cis-1,2-Dichloroethene	230	Not Detected	930	Not Detected
Tetrahydrofuran	230	Not Detected	690	Not Detected
Chloroform	230	Not Detected	1100	Not Detected
1,1,1-Trichloroethane	230	Not Detected	1300	Not Detected
Cyclohexane	230	Not Detected	800	Not Detected
Carbon Tetrachloride	230	Not Detected	1500	Not Detected
2,2,4-Trimethylpentane	230	Not Detected	1100	Not Detected
Benzene	230	Not Detected	750	Not Detected
1,2-Dichloroethane	230	Not Detected	950	Not Detected
Heptane	230	Not Detected	960	Not Detected
Trichloroethene	230	Not Detected	1200	Not Detected
1,2-Dichloropropane	230	Not Detected	1100	Not Detected
1,4-Dioxane	940	Not Detected	3400	Not Detected
Bromodichloromethane	230	Not Detected	1600	Not Detected
cis-1,3-Dichloropropene	230	Not Detected	1100	Not Detected
4-Methyl-2-pentanone	230	Not Detected	960	Not Detected
Toluene	230	Not Detected	880	Not Detected
trans-1,3-Dichloropropene	230	Not Detected	1100	Not Detected
1,1,2-Trichloroethane	230	Not Detected	1300	Not Detected
Tetrachloroethene	230	5000	1600	34000
2-Hexanone	940	Not Detected	3800	Not Detected



Client Sample ID: SG11-17
 Lab ID#: 1608198-18A
 EPA METHOD TO-15 GC/MS

File Name:	j081623	Date of Collection:	8/10/16 12:31:00 PM
Dil. Factor:	46.8	Date of Analysis:	8/16/16 11:00 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	230	Not Detected	2000	Not Detected
1,2-Dibromoethane (EDB)	230	Not Detected	1800	Not Detected
Chlorobenzene	230	Not Detected	1100	Not Detected
Ethyl Benzene	230	Not Detected	1000	Not Detected
m,p-Xylene	230	Not Detected	1000	Not Detected
o-Xylene	230	Not Detected	1000	Not Detected
Styrene	230	Not Detected	1000	Not Detected
Bromoform	230	Not Detected	2400	Not Detected
Cumene	230	Not Detected	1200	Not Detected
1,1,2,2-Tetrachloroethane	230	Not Detected	1600	Not Detected
Propylbenzene	230	Not Detected	1200	Not Detected
4-Ethyltoluene	230	Not Detected	1200	Not Detected
1,3,5-Trimethylbenzene	230	Not Detected	1200	Not Detected
1,2,4-Trimethylbenzene	230	Not Detected	1200	Not Detected
1,3-Dichlorobenzene	230	Not Detected	1400	Not Detected
1,4-Dichlorobenzene	230	Not Detected	1400	Not Detected
alpha-Chlorotoluene	230	Not Detected	1200	Not Detected
1,2-Dichlorobenzene	230	Not Detected	1400	Not Detected
1,2,4-Trichlorobenzene	940	Not Detected	6900	Not Detected
Hexachlorobutadiene	940	Not Detected	10000	Not Detected
1,1-Difluoroethane	940	170000	2500	470000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	92	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1608198-19A

EPA METHOD TO-15 GC/MS

File Name:	j081606	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/16/16 01:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Freon 114	5.0	Not Detected	35	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	20	Not Detected	78	Not Detected
Chloroethane	20	Not Detected	53	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected	38	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	20	Not Detected	62	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	20	Not Detected	69	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	59	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Tetrahydrofuran	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Cyclohexane	5.0	Not Detected	17	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
2,2,4-Trimethylpentane	5.0	Not Detected	23	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	72	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	82	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1608198-19A

EPA METHOD TO-15 GC/MS

File Name:	j081606	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/16/16 01:58 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	42	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
Styrene	5.0	Not Detected	21	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	Not Detected	24	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
Propylbenzene	5.0	Not Detected	24	Not Detected
4-Ethyltoluene	5.0	Not Detected	24	Not Detected
1,3,5-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,2,4-Trimethylbenzene	5.0	Not Detected	24	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	210	Not Detected
1,1-Difluoroethane	20	Not Detected	54	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1608198-20A

EPA METHOD TO-15 GC/MS

File Name:	j081602	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/16/16 11:38 AM

Compound	%Recovery
Freon 12	108
Freon 114	95
Chloromethane	115
Vinyl Chloride	101
1,3-Butadiene	108
Bromomethane	100
Chloroethane	101
Freon 11	105
Ethanol	117
Freon 113	92
1,1-Dichloroethene	109
Acetone	116
2-Propanol	116
Carbon Disulfide	102
3-Chloropropene	88
Methylene Chloride	138 Q
Methyl tert-butyl ether	103
trans-1,2-Dichloroethene	96
Hexane	98
1,1-Dichloroethane	118
2-Butanone (Methyl Ethyl Ketone)	100
cis-1,2-Dichloroethene	115
Tetrahydrofuran	110
Chloroform	109
1,1,1-Trichloroethane	109
Cyclohexane	103
Carbon Tetrachloride	107
2,2,4-Trimethylpentane	104
Benzene	114
1,2-Dichloroethane	108
Heptane	98
Trichloroethene	111
1,2-Dichloropropane	106
1,4-Dioxane	102
Bromodichloromethane	104
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	92
Toluene	102
trans-1,3-Dichloropropene	97
1,1,2-Trichloroethane	99
Tetrachloroethene	100
2-Hexanone	106



Air Toxics

Client Sample ID: CCV

Lab ID#: 1608198-20A

EPA METHOD TO-15 GC/MS

File Name:	j081602	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/16/16 11:38 AM

Compound	%Recovery
Dibromochloromethane	96
1,2-Dibromoethane (EDB)	99
Chlorobenzene	92
Ethyl Benzene	94
m,p-Xylene	94
o-Xylene	95
Styrene	97
Bromoform	88
Cumene	95
1,1,2,2-Tetrachloroethane	100
Propylbenzene	98
4-Ethyltoluene	93
1,3,5-Trimethylbenzene	98
1,2,4-Trimethylbenzene	92
1,3-Dichlorobenzene	95
1,4-Dichlorobenzene	94
alpha-Chlorotoluene	92
1,2-Dichlorobenzene	94
1,2,4-Trichlorobenzene	79
Hexachlorobutadiene	70
1,1-Difluoroethane	65

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: LCS

Lab ID#: 1608198-21A

EPA METHOD TO-15 GC/MS

File Name:	j081603	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/16/16 12:01 PM

Compound	%Recovery	Method Limits
Freon 12	111	70-130
Freon 114	102	70-130
Chloromethane	114	70-130
Vinyl Chloride	98	70-130
1,3-Butadiene	103	70-130
Bromomethane	100	70-130
Chloroethane	102	70-130
Freon 11	109	70-130
Ethanol	122	70-130
Freon 113	91	70-130
1,1-Dichloroethene	106	70-130
Acetone	113	70-130
2-Propanol	123	70-130
Carbon Disulfide	91	70-130
3-Chloropropene	89	70-130
Methylene Chloride	140 Q	70-130
Methyl tert-butyl ether	101	70-130
trans-1,2-Dichloroethene	97	70-130
Hexane	97	70-130
1,1-Dichloroethane	117	70-130
2-Butanone (Methyl Ethyl Ketone)	98	70-130
cis-1,2-Dichloroethene	113	70-130
Tetrahydrofuran	113	70-130
Chloroform	110	70-130
1,1,1-Trichloroethane	109	70-130
Cyclohexane	104	70-130
Carbon Tetrachloride	106	70-130
2,2,4-Trimethylpentane	103	70-130
Benzene	115	70-130
1,2-Dichloroethane	108	70-130
Heptane	95	70-130
Trichloroethene	109	70-130
1,2-Dichloropropane	108	70-130
1,4-Dioxane	99	70-130
Bromodichloromethane	110	70-130
cis-1,3-Dichloropropene	88	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	101	70-130
trans-1,3-Dichloropropene	99	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	102	70-130
2-Hexanone	109	70-130

Client Sample ID: LCS

Lab ID#: 1608198-21A

EPA METHOD TO-15 GC/MS

File Name:	j081603	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/16/16 12:01 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	98	70-130
1,2-Dibromoethane (EDB)	103	70-130
Chlorobenzene	93	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	93	70-130
o-Xylene	98	70-130
Styrene	101	70-130
Bromoform	91	70-130
Cumene	95	70-130
1,1,2,2-Tetrachloroethane	104	70-130
Propylbenzene	102	70-130
4-Ethyltoluene	95	70-130
1,3,5-Trimethylbenzene	100	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	97	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	100	70-130
1,2-Dichlorobenzene	98	70-130
1,2,4-Trichlorobenzene	84	70-130
Hexachlorobutadiene	73	70-130
1,1-Difluoroethane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: LCSD

Lab ID#: 1608198-21AA

EPA METHOD TO-15 GC/MS

File Name:	j081604	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/16/16 12:24 PM

Compound	%Recovery	Method Limits
Freon 12	116	70-130
Freon 114	106	70-130
Chloromethane	118	70-130
Vinyl Chloride	102	70-130
1,3-Butadiene	111	70-130
Bromomethane	109	70-130
Chloroethane	107	70-130
Freon 11	114	70-130
Ethanol	136 Q	70-130
Freon 113	98	70-130
1,1-Dichloroethene	113	70-130
Acetone	120	70-130
2-Propanol	126	70-130
Carbon Disulfide	94	70-130
3-Chloropropene	92	70-130
Methylene Chloride	146 Q	70-130
Methyl tert-butyl ether	108	70-130
trans-1,2-Dichloroethene	102	70-130
Hexane	102	70-130
1,1-Dichloroethane	120	70-130
2-Butanone (Methyl Ethyl Ketone)	104	70-130
cis-1,2-Dichloroethene	116	70-130
Tetrahydrofuran	120	70-130
Chloroform	113	70-130
1,1,1-Trichloroethane	115	70-130
Cyclohexane	106	70-130
Carbon Tetrachloride	116	70-130
2,2,4-Trimethylpentane	108	70-130
Benzene	110	70-130
1,2-Dichloroethane	109	70-130
Heptane	97	70-130
Trichloroethene	108	70-130
1,2-Dichloropropane	105	70-130
1,4-Dioxane	99	70-130
Bromodichloromethane	109	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	92	70-130
Toluene	104	70-130
trans-1,3-Dichloropropene	97	70-130
1,1,2-Trichloroethane	100	70-130
Tetrachloroethene	103	70-130
2-Hexanone	109	70-130

Client Sample ID: LCSD

Lab ID#: 1608198-21AA

EPA METHOD TO-15 GC/MS

File Name:	j081604	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/16/16 12:24 PM

Compound	%Recovery	Method Limits
Dibromochloromethane	99	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	95	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	95	70-130
o-Xylene	100	70-130
Styrene	100	70-130
Bromoform	90	70-130
Cumene	96	70-130
1,1,2,2-Tetrachloroethane	105	70-130
Propylbenzene	102	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	97	70-130
1,2,4-Trimethylbenzene	96	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	95	70-130
alpha-Chlorotoluene	101	70-130
1,2-Dichlorobenzene	98	70-130
1,2,4-Trichlorobenzene	97	70-130
Hexachlorobutadiene	84	70-130
1,1-Difluoroethane	Not Spiked	

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

CHAIN OF CUSTODY RECORD

P&D ENVIRONMENTAL, INC.
 55 Santa Clara Ave., Suite 240
 Oakland, CA 94610
 (510) 658-6916

PROJECT NUMBER:

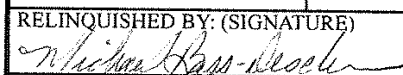

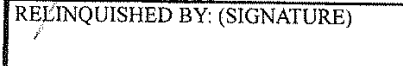
0461

PROJECT NAME:
RED HANGER KLEAVERS
6239 COLLEGE AVE.
OAKLAND, CA

SAMPLED BY: (PRINTED & SIGNATURE)

MICHAEL BASS-DESCHENES 

SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	ANALYSIS(ES):	PRESERVATIVE	REMARKS
<i>01A</i> SG1-7	<i>8-10-16</i>	<i>125400</i> <i>130108</i>	<i>silicas</i>	<i>1L1915 -29 -5 0</i>	<i>1</i>	<i>X</i>	<i>NOISE NORMAL TAT</i>
<i>02A</i> SG2-7	<i>8-10-16</i>	<i>081800</i> <i>082613</i>	<i>silicas</i>	<i>1035 -30 -5 0.9</i>	<i>1</i>	<i>X</i>	<i>" " "</i>
<i>03A</i> SG2-17	<i>8-10-16</i>	<i>085800</i> <i>090355</i>	<i>silicas</i>	<i>3043 -28 -5 3.3</i>	<i>1</i>	<i>X</i>	<i>" " "</i>
<i>04A</i> SG3-17	<i>8-10-16</i>	<i>100200</i> <i>101005</i>	<i>silicas</i>	<i>31796 -29 -5 0.1</i>	<i>1</i>	<i>X</i>	<i>" " "</i>
<i>05A</i> SG4-7	<i>8-10-16</i>	<i>105500</i> <i>110835</i>	<i>silicas</i>	<i>37656 -27.5-5 0</i>	<i>1</i>	<i>X</i>	<i>" " "</i>

RELINQUISHED BY: (SIGNATURE) 	DATE <i>8-11-16</i>	TIME <i>1351</i>	RECEIVED BY: (SIGNATURE) 	Total No. of Samples (This Shipment) <i>18</i>	LABORATORY: <i>EUROFINS/AIR TOXICS, LTD.</i>
RELINQUISHED BY: (SIGNATURE) 	DATE	TIME	RECEIVED BY: (SIGNATURE)	Total No. of Containers (This Shipment) <i>18</i>	LABORATORY PHONE NUMBER: <i>(916) 605-3339</i>
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO	

Results and billing to:
 P&D Environmental, Inc.
 lab@pdenviro.com

REMARKS:
1 - LITER SUMMA

1608198

CHAIN OF CUSTODY RECORD

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER:

0461

PROJECT NAME:

RED HANGER KLEANERS
6239 COLLEGE AVE.
OAKLAND, CA

SAMPLED BY: (PRINTED & SIGNATURE)

Michael Bass-Descheves *Michael Bass-Descheves*

NUMBER OF CONTAINERS

ANALYSIS(ES):
TD-15 AND DHA (TRACER GAS)

PRESERVATIVE

REMARKS

SAMPLE NUMBER

DATE

TIME

TYPE

SAMPLE LOCATION
SUMMA WIT FINE PID
VAC VAC

1

X

None

NORMAL TAT

DA 564-7 DUP

8-10-16

105500
110835

SIL/GAS

33639 -29 -5 0

DA 564-17

8-10-16

113700
114528

SIL/GAS

8003 -29 -5 0

DA 565-7

8-10-16

144600
145446

SIL/GAS

37424 -27.5 -5 0

DA 565-17

8-10-16

152900
155412

SIL/GAS

11430 -29 -5 0

DA 566-7

8-10-16

173300
174112

SIL/GAS

35673 -29.5 -5 0

RELINQUISHED BY: (SIGNATURE)

Michael Bass-Descheves

DATE

8-11-16

TIME

1:31

RECEIVED BY: (SIGNATURE)

[Signature]

Total No. of Samples (This Shipment)

18

Total No. of Containers (This Shipment)

18

LABORATORY:

EUROFINS/AIR TOXICS LTD

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED BY: (SIGNATURE)

LABORATORY CONTACT:

KYLE VAGADRI

LABORATORY PHONE NUMBER:

(916) 605-3339

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)

SAMPLE ANALYSIS REQUEST SHEET

ATTACHED: () YES () NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:

1 - LITER SUMMA

1608198

CHAIN OF CUSTODY RECORD

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER:

0461

PROJECT NAME:

RED HANGER KLEANERS
6239 COLLEGE AVE.
OAKLAND, CA

SAMPLED BY: (PRINTED & SIGNATURE)

MICHAEL BASS-DESCHENES *Michael Bass-Deschenes*

NUMBER OF CONTAINERS

ANALYSIS(S):

10-15 AND 16A (TRUCK GAS)

PRESERVATIVE

REMARKS

	SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(S)										PRESERVATIVE	REMARKS						
							SCHEMATIC	HAZ	FILE	VAC	VAC	PID	1	2	3	4			5	6	7	8	9	10
11A	SG6-17	8-10-16	170200 170922	SIL GAS	37355-29.5 -5 0	1	X																NONE	NORMAL TAT
12A	SG7-7	8-10-16	180400 181200	SIL GAS	30832 -25 -5 0	1	X																"	" "
13A	SG7-17	8-10-16	183200 184146	SIL GAS	37840 -29 -5 0	1	X																"	" "
14A	SG8-7	8-10-16	162100 162635	SIL GAS	37823 -25 -5 0	1	X																"	" "
15A	SG9-17	8-11-16	105200 110853	SIL GAS	37708 -29 -5 0	1	X																"	" "

RELINQUISHED BY: (SIGNATURE)

Michael Bass-Deschenes

DATE

8-11-16

TIME

1351

RECEIVED BY: (SIGNATURE)

Kyle Vagadori

Total No. of Samples (This Shipment)

18

Total No. of Containers (This Shipment)

18

LABORATORY:

EUROFINS/AIR-TOXICS, LTD

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED BY: (SIGNATURE)

LABORATORY CONTACT:

KYLE VAGADORI (916) 605-3339

LABORATORY PHONE NUMBER:

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)

SAMPLE ANALYSIS REQUEST SHEET

ATTACHED: () YES (X) NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:

1 - LITER SUMMA

1608198

CHAIN OF CUSTODY RECORD

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER:

0461

PROJECT NAME:

RED HANGER KLEANERS
6239 COLLEGE AVE.
OAKLAND, CA

SAMPLED BY: (PRINTED & SIGNATURE)

Michael Bass-Deschenes *Michael Bass-Deschenes*

NUMBER OF CONTAINERS

ANALYSIS(ES):
TO-15 AND DHA (KLEAER GAS)

PRESERVATIVE

REMARKS

SAMPLE NUMBER

DATE

TIME

TYPE

SAMPLE LOCATION

SUMMAH ^{INSI} FINAL PID

1 X

NONE

NORMAL TAT

16A
8/12/16
17A
18A

SG9-17 DUP

8-11-16

105200

Soil/Gas

11438 285 -5 0

SG10-7

8-11-16

112400

Soil/Gas

35633 -30 -5 0

SG11-17

8-10-16

122200

Soil/Gas

31767 -29 -5 3.2

RELINQUISHED BY: (SIGNATURE)

Michael Bass-Deschenes

DATE

TIME

8-11-16

1351

RECEIVED BY: (SIGNATURE)

PC [Signature]

Total No. of Samples (This Shipment)

18

Total No. of Containers (This Shipment)

18

LABORATORY:

EUROFINS/AIR TOXICS LTD

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED BY: (SIGNATURE)

LABORATORY CONTACT:

LABORATORY PHONE NUMBER:

KYLE VAGADORI (916) 605-3339

RELINQUISHED BY: (SIGNATURE)

DATE

TIME

RECEIVED FOR LABORATORY BY: (SIGNATURE)

SAMPLE ANALYSIS REQUEST SHEET

ATTACHED: () YES () NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:

1 - LITER SUMMA

1608198

8/16/2016
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Red Hangar Kleaners SVE
Project #: 0461
Workorder #: 1608178

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 8/11/2016 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 (5&20 ppbv) 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

WORK ORDER #: 1608178

Work Order Summary

CLIENT: Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland, CA 94610

BILL TO: Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland, CA 94610

PHONE: 510-658-6916

P.O. #

FAX: 510-834-0772

PROJECT # 0461 Red Hangar Kleaners SVE

DATE RECEIVED: 08/11/2016

CONTACT: Kelly Buettner

DATE COMPLETED: 08/16/2016

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SG1-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
02A	SG2-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
03A	SG2-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
04A	SG3-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
05A	SG4-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
06A	SG4-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
07A	SG5-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
08A	SG5-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
09A	SG6-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
10A	SG6-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
11A	SG7-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
12A	SG7-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
13A	SG8-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
14A	SG9-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
15A	SG10-7	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
16A	SG11-17	Modified TO-15 (5&20 ppbv	Tedlar Bag	Tedlar Bag
17A	Lab Blank	Modified TO-15 (5&20 ppbv	NA	NA
18A	CCV	Modified TO-15 (5&20 ppbv	NA	NA

CERTIFIED BY: 

DATE: 08/16/16

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.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15 Soil Gas
P & D Environmental
Workorder# 1608178

Sixteen 1 Liter Tedlar Bag samples were received on August 11, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 50 mLs 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 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

Dilution was performed on all of the samples due to the presence of high level target species.

Method TO-15 is validated for samples collected in specially treated canisters. As such, the use of Tedlar bags for sample collection is outside the scope of the method and not recommended for ambient or indoor air samples. It is the responsibility of the data user to determine the usability of TO-15 results generated from Tedlar bags.

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

Client Sample ID: SG1-7

Lab ID#: 1608178-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	1000000	3300000	2700000	9000000

Client Sample ID: SG2-7

Lab ID#: 1608178-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	1000000	2400000	2700000	6400000

Client Sample ID: SG2-17

Lab ID#: 1608178-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	1000000	5900000	2700000	16000000

Client Sample ID: SG3-17

Lab ID#: 1608178-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	11000000	1400000	31000000

Client Sample ID: SG4-7

Lab ID#: 1608178-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	6700000	1400000	18000000

Client Sample ID: SG4-17

Lab ID#: 1608178-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	5900000	1400000	16000000

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

Client Sample ID: SG5-7

Lab ID#: 1608178-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	3500000	1400000	9400000

Client Sample ID: SG5-17

Lab ID#: 1608178-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	4800000	1400000	13000000

Client Sample ID: SG6-7

Lab ID#: 1608178-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7700000

Client Sample ID: SG6-17

Lab ID#: 1608178-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	3600000	1400000	9700000

Client Sample ID: SG7-7

Lab ID#: 1608178-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7700000

Client Sample ID: SG7-17

Lab ID#: 1608178-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	4500000	1400000	12000000

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

Client Sample ID: SG8-7

Lab ID#: 1608178-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7600000

Client Sample ID: SG9-17

Lab ID#: 1608178-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2400000	1400000	6500000

Client Sample ID: SG10-7

Lab ID#: 1608178-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7700000

Client Sample ID: SG11-17

Lab ID#: 1608178-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	3600000	1400000	9600000



Air Toxics

Client Sample ID: SG1-7

Lab ID#: 1608178-01A

EPA METHOD TO-15 GC/MS

File Name:	14081212	Date of Collection:	8/10/16 12:55:00 PM	
Dil. Factor:	50000	Date of Analysis:	8/12/16 03:30 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	1000000	3300000	2700000	9000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SG2-7

Lab ID#: 1608178-02A

EPA METHOD TO-15 GC/MS

File Name:	14081213	Date of Collection:	8/10/16 8:19:00 AM	
Dil. Factor:	50000	Date of Analysis:	8/12/16 03:53 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	1000000	2400000	2700000	6400000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SG2-17

Lab ID#: 1608178-03A

EPA METHOD TO-15 GC/MS

File Name:	14081216	Date of Collection:	8/10/16 8:59:00 AM	
Dil. Factor:	50000	Date of Analysis:	8/12/16 05:03 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	1000000	5900000	2700000	16000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG3-17

Lab ID#: 1608178-04A

EPA METHOD TO-15 GC/MS

File Name:	14081217	Date of Collection:	8/10/16 10:03:00 AM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 05:26 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	11000000	1400000	31000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	93	70-130



Air Toxics

Client Sample ID: SG4-7

Lab ID#: 1608178-05A

EPA METHOD TO-15 GC/MS

File Name:	14081218	Date of Collection:	8/10/16 10:56:00 AM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 05:46 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	6700000	1400000	18000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: SG4-17

Lab ID#: 1608178-06A

EPA METHOD TO-15 GC/MS

File Name:	14081219	Date of Collection:	8/10/16 11:38:00 AM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 06:05 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	5900000	1400000	16000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: SG5-7

Lab ID#: 1608178-07A

EPA METHOD TO-15 GC/MS

File Name:	14081220	Date of Collection:	8/10/16 2:47:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 06:24 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	3500000	1400000	9400000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SG5-17

Lab ID#: 1608178-08A

EPA METHOD TO-15 GC/MS

File Name:	14081221	Date of Collection:	8/10/16 3:30:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 06:43 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	4800000	1400000	13000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SG6-7

Lab ID#: 1608178-09A

EPA METHOD TO-15 GC/MS

File Name:	14081222	Date of Collection:	8/10/16 5:34:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 07:03 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7700000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SG6-17

Lab ID#: 1608178-10A

EPA METHOD TO-15 GC/MS

File Name:	14081223	Date of Collection:	8/10/16 5:03:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 07:23 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	3600000	1400000	9700000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: SG7-7

Lab ID#: 1608178-11A

EPA METHOD TO-15 GC/MS

File Name:	14081224	Date of Collection:	8/10/16 6:05:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 07:42 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7700000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130



Air Toxics

Client Sample ID: SG7-17

Lab ID#: 1608178-12A

EPA METHOD TO-15 GC/MS

File Name:	14081225	Date of Collection:	8/10/16 6:33:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 08:01 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	4500000	1400000	12000000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: SG8-7

Lab ID#: 1608178-13A

EPA METHOD TO-15 GC/MS

File Name:	14081226	Date of Collection:	8/10/16 4:22:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 08:20 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7600000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: SG9-17

Lab ID#: 1608178-14A

EPA METHOD TO-15 GC/MS

File Name:	14081227	Date of Collection:	8/11/16 10:53:00 AM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 08:42 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2400000	1400000	6500000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130



Air Toxics

Client Sample ID: SG10-7

Lab ID#: 1608178-15A

EPA METHOD TO-15 GC/MS

File Name:	14081228	Date of Collection:	8/11/16 11:25:00 AM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 09:12 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	2800000	1400000	7700000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	94	70-130



Air Toxics

Client Sample ID: SG11-17

Lab ID#: 1608178-16A

EPA METHOD TO-15 GC/MS

File Name:	14081229	Date of Collection:	8/10/16 12:21:00 PM	
Dil. Factor:	25000	Date of Analysis:	8/12/16 09:33 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	500000	3600000	1400000	9600000

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1608178-17A

EPA METHOD TO-15 GC/MS

File Name:	14081208a	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/12/16 01:11 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Difluoroethane	20	Not Detected	54	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	96	70-130



Air Toxics

Client Sample ID: CCV

Lab ID#: 1608178-18A

EPA METHOD TO-15 GC/MS

File Name:	14081202	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 8/12/16 09:08 AM

Compound	%Recovery
1,1-Difluoroethane	115

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	102	70-130

CHAIN OF CUSTODY RECORD

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER:

0461

PROJECT NAME:

RED HANGER KLEANERS
6239 COLLEGE AVE.
OAKLAND, CA

SAMPLED BY: (PRINTED & SIGNATURE)

Michael Pass-Deschênes *Michael Pass-Deschênes*

NUMBER OF CONTAINERS

ANALYSIS(ES):
DFA (TRUCK GAS)

PRESERVATIVE

REMARKS

SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(ES)	PRESERVATIVE	REMARKS
01A SG1-7	8-10-16	1255	AIR		1	X		NOTE NORMAL TAT
03A SG2-7	8-10-16	0819	"		1	X		"
03A SG2-17	8-10-16	0859	"		1	X		"
04A SG3-17	8-10-16	1003	"		1	X		"
05A SG4-7	8-10-16	1056	"		1	X		"
06A SG4-17	8-10-16	1138	"		1	X		"
07A SG5-7	8-10-16	1447	"		1	X		"
08A SG5-17	8-10-16	1530	"		1	X		"
09A SG6-7	8-10-16	1734	"		1	X		"
10A SG6-17	8-10-16	1703	"		1	X		"
11A SG7-7	8-10-16	1805	"		1	X		"
12A SG7-17	8-10-16	1833	"		1	X		"
13A SG8-7	8-10-16	1622	"		1	X		"
14A SG9-17	8-11-16	1053	"		1	X		"
15A SG10-7	8-11-16	1125	"		1	X		"
16A SG11-17	8-10-16	1221	"		1	X		"

RELINQUISHED BY: (SIGNATURE) <i>Michael Pass-Deschênes</i>	DATE 8-11-16	TIME 1357	RECEIVED BY: (SIGNATURE) <i>Paul K...</i>	Total No. of Samples (This Shipment) 16	LABORATORY: EUFINS AIR TOXICS, LTD
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	Total No. of Containers (This Shipment) 16	LABORATORY PHONE NUMBER: KYLE VAGADRI (916) 605-3339
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	SAMPLE ANALYSIS REQUEST SHEET ATTACHED: () YES (X) NO	

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS: 1 - LITER TENDAR

1608178

APPENDIX F

DTSC December 2014 Vapor Intrusion Risk and Hazard Calculation Work Sheets

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	Chemical
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	
127184	1.00E+03			Tetrachloroethylene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.00E+03	6.3E-04	6.3E-01	1.3E-06	1.7E-02

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s ($^{\circ}\text{C}$)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type (Lookup Soil Parameters)	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time, ET (hrs/day)	Air Exchange Rate, ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.50E+04	6.3E-04	9.5E+00	2.0E-05	2.6E-01

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.50E+04			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24	0.5

NEW=> Residential

70	26	26	350	24 (NEW)	0.5 (NEW)
----	----	----	-----	--------------------	---------------------

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
3.90E+04	2.7E-04	1.1E+01	2.2E-05	2.9E-01

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	3.90E+04			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Chloroform

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
7.40E+01	3.9E-04	2.9E-02	2.4E-07	2.8E-04

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
67663	7.40E+01			Chloroform

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrahydrofuran

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
5.90E+01	4.7E-04	2.7E-02	NA	1.3E-05

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
109999	5.90E+01			Tetrahydrofuran

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.00E+04	2.7E-04	2.7E+00	5.7E-06	7.4E-02

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	Chemical
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	
127184	1.00E+04			Tetrachloroethylene

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_S ($^{\circ}\text{C}$)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential
END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
8.30E+01	6.3E-04	5.3E-02	1.1E-07	1.4E-03

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	8.30E+01			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
9.80E+03	2.7E-04	2.6E+00	5.5E-06	7.2E-02

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	9.80E+03			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24	0.5

NEW=> Residential

70	26	26	350	24 (NEW)	0.5 (NEW)
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END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
5.50E+03	6.3E-04	3.5E+00	7.3E-06	9.5E-02

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	5.50E+03			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential
END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	Chemical
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	
127184	2.40E+03			Tetrachloroethylene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
2.40E+03	2.7E-04	6.5E-01	1.4E-06	1.8E-02

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s ($^{\circ}\text{C}$)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour) ⁻¹
70	26	26	350	24	0.5

NEW=> Residential

END

(NEW) (NEW)

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
8.40E+03	3.2E-04	2.7E+00	1.3E-06	1.7E-02

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	8.40E+03			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
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ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
8.60E+03	1.3E-04	1.2E+00	5.6E-07	7.6E-03

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	8.60E+03			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrahydrofuran

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
7.00E+01	4.9E-04	3.4E-02	NA	3.9E-06

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
109999	7.00E+01			Tetrahydrofuran

MESSAGE: See VLOOKUP table comments on chemical properties and/or toxicity criteria for this chemical.

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
5.70E+03	1.3E-04	7.7E-01	3.7E-07	5.0E-03

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	5.70E+03			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	Chemical
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	
127184	1.10E+02			Tetrachloroethylene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.10E+02	3.2E-04	3.5E-02	1.7E-08	2.3E-04

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s ($^{\circ}\text{C}$)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Ethylbenzene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
7.50E+01	1.8E-04	1.3E-02	2.7E-09	3.0E-06

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
100414	7.50E+01			Ethylbenzene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: p-Xylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
3.70E+02	1.8E-04	6.5E-02	NA	1.5E-04

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	3.70E+02			p-Xylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: o-Xylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.10E+02	1.8E-04	1.9E-02	NA	4.4E-05

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	1.10E+02			o-Xylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
8.60E+02	1.3E-04	1.2E-01	5.6E-08	7.6E-04

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	8.60E+02			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Ethylbenzene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
5.60E+01	1.8E-04	9.9E-03	2.0E-09	2.2E-06

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	Chemical
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	
100414	5.60E+01			Ethylbenzene

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_S ($^{\circ}\text{C}$)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type Lookup Soil Parameters	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time ET (hrs/day)	Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

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Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: p-Xylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
3.70E+02	1.8E-04	6.5E-02	NA	1.5E-04

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	3.70E+02			p-Xylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: o-Xylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
9.20E+01	1.8E-04	1.6E-02	NA	3.7E-05

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	9.20E+01			o-Xylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

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December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
9.30E+02	1.3E-04	1.3E-01	6.0E-08	8.2E-04

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	9.30E+02			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Commercial
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
3.40E+04	1.3E-04	4.6E+00	2.2E-06	3.0E-02

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	3.40E+04			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour) ⁻¹
70	25	25	250	8 (NEW)	1 (NEW)

NEW=> Commercial

END

APPENDIX G

Soil Gas Model Sensitivity Analysis Risk and Hazard Calculation Work Sheets

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December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Soil Gas Concentration Data				
ENTER	ENTER	OR	ENTER	Chemical
Chemical CAS No. (numbers only, no dashes)	Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)		Soil gas conc., C_g (ppmv)	
127184	1.20E+05			Tetrachloroethylene

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	7.3E-04	8.8E+01	1.8E-04	2.4E+00

MORE
↓

ENTER	ENTER	ENTER	ENTER	OR	ENTER
Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	Soil gas sampling depth below grade, L_s (cm)	Average soil temperature, T_s ($^{\circ}\text{C}$)	Vadose zone SCS soil type (used to estimate soil vapor permeability)		User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	SI		

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER
Vadose zone SCS soil type (Lookup Soil Parameters)	Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	Vadose zone soil total porosity, n^V (unitless)	Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor Parameters

ENTER	ENTER	ENTER	ENTER	ENTER	ENTER
Averaging time for carcinogens, AT_C (yrs)	Averaging time for noncarcinogens, AT_{NC} (yrs)	Exposure duration, ED (yrs)	Exposure frequency, EF (days/yr)	Exposure Time, ET (hrs/day)	Air Exchange Rate, ACH (hour^{-1})
70	26	26	350	24	0.5

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	7.3E-04	8.8E+01	1.8E-04	2.4E+00

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	15	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

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Version 2.0, 04/2003
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December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	5.7E-04	6.9E+01	1.4E-04	1.9E+00

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	CL		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
CL	1.48	0.442	0.168	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
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Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	1.0E-03	1.2E+02	2.6E-04	3.4E+00

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	S		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.66	0.375	0.054	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
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Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	3.3E-04	4.0E+01	8.4E-05	1.1E+00

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	1

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	1.0E-03	1.2E+02	2.6E-04	3.4E+00

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	96

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	6.3E-04	7.6E+01	1.6E-04	2.1E+00

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	182.88	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+05	2.7E-04	3.2E+01	6.8E-05	8.9E-01

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+05			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	487.68	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+04	7.3E-04	8.8E+00	1.8E-05	2.4E-01

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+04			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END

USEPA SG-SCREEN
Version 2.0, 04/2003
DTSC Modification
December 2014

Department of Toxic Substances Control Vapor Intrusion Screening Model - Soil Gas

Scenario: Residential
Chemical: Tetrachloroethylene

DATA ENTRY SHEET

Reset to Defaults

Results Summary				
Soil Gas Conc. ($\mu\text{g}/\text{m}^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu\text{g}/\text{m}^3$)	Cancer Risk	Noncancer Hazard
1.20E+07	7.3E-04	8.8E+03	1.8E-02	2.4E+02

Soil Gas Concentration Data				
ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu\text{g}/\text{m}^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.20E+07			Tetrachloroethylene

MORE
↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_S (cm)	ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	SI		

MORE
↓

ENTER Vadose zone SCS soil type Lookup Soil Parameters	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.35	0.489	0.167	5

MORE
↓

Lookup Receptor
Parameters

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH (hour^{-1})
70	26	26	350	24 (NEW)	0.5 (NEW)

NEW=> Residential

END