



IRAM Completion Report
**Former Campbell
Dry Cleaner**
Portland, Oregon

ECSI No. 5680

Prepared for
Oregon Department of
Environmental Quality

July 30, 2015
15818-00/Task 8

IRAM Completion Report

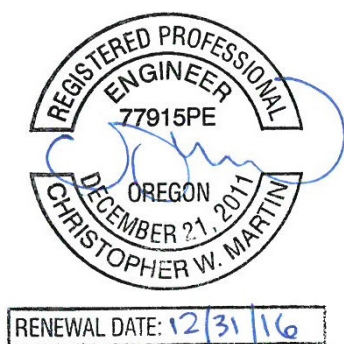
Former Campbell Dry Cleaner Portland, Oregon

ECSI No. 5680

Prepared for
Oregon Department of
Environmental Quality

July 30, 2015
15818-00/Task 8

Prepared by
Hart Crowser, Inc.



Christopher W. Martin, PE
Task Order Manager



Richard D. Ernst, RG
Program Manager

Contents

1.0 INTRODUCTION	1
1.1 Purpose	1
1.2 Scope	1
1.3 Limitations	2
2.0 BACKGROUND	2
2.1 Site Location and Description	2
2.2 Previous Environmental Activities	2
3.0 IRAM ACTIVITIES	3
3.1 Preparatory Activities	3
3.2 Source Area Soil Removal	3
3.3 Soil Gas Ventilation System	4
3.4 Sealing/Weatherizing	5
3.5 Investigative-Derived Waste (IDW) Management	6
4.0 AIR MONITORING	7
5.0 CHEMICAL ANALYSIS AND RESULTS	7
5.1 Soil Excavation	7
5.2 Ambient Air	8
5.3 Exhaust Stack	8
6.0 RISK-BASED SCREENING	9
7.0 CONCLUSIONS	9
8.0 RECOMENDATIONS	11
9.0 REFERENCES	11

TABLES

- 1 Chemical Analytical Results: Soil (Current and Previous Investigations)
- 2 Chemical Analytical Results: Groundwater (Previous Investigations)
- 3 Chemical Analytical Results: Soil Gas (Current and Previous Investigations)
- 4 Chemical Analytical Results: Indoor Ambient air (Current and Previous Investigations)

FIGURES

- 1 Vicinity Map
- 2 As-Built IRAMs Plan View
- 3 As-Built Vapor Exhaust Stack
- 4 As-Built Crawlspace Access Modifications

APPENDIX A

Photograph Log

APPENDIX B

Hazardous Waste Manifest

APPENDIX C

Ventilation Fan Specifications

APPENDIX D

Analytical Laboratory Testing Program and Documentation

Former Campbell Dry Cleaner

Portland, Oregon

1.0 INTRODUCTION

This report presents the interim remedial action measures (IRAMs) completed at the former Campbell Dry Cleaner site (Campbell Cleaner) in Portland, Oregon (Figure 1). This Completion Report was completed at the request of the Oregon Department of Environmental Quality (DEQ) under Environmental Services Task Order No. 22-13-30.

1.1 Purpose

Previous environmental investigations at Campbell Cleaner (ECSI No. 5680) identified soil, groundwater, soil gas, and ambient air impacted with chlorinated volatile organic compounds (cVOCs), specifically tetrachloroethene (PCE). The purpose of the IRAMs are to mitigate the risk posed by this contamination to current and future occupational and urban residential receptors at the site.

1.2 Scope

To accomplish this objective, the scope of work consisted of the following general tasks:

- Remove soil from under the former Campbell Cleaner building in the area of highest contaminant concentration (i.e., the source area);
- Install a soil gas venting system consisting of an active ventilation fan that conveys soil gas vapors from the crawlspace, through a network of perforated pipes and exhausts vapors, above the former Campbell Cleaner building;
- Seal/weatherize the boundary between different levels of the building including between the crawlspace and the remainder of the building and between the first and second floor;
- Construct/install a sealed crawlspace access hatch;
- Complete a round of ambient air sampling within the Campbell Cleaner building following IRAM construction;
- Perform a risk screening of available data; and
- Prepare this IRAM Completion Report.

The findings from our activities are discussed in more detail within this report. Sampling activities and chemical analyses were conducted in accordance with our Work Plan (Hart Crowser 2014) and DEQ's Brownfields Program Quality Assurance Project Plan (QAPP), dated October 2011 (DEQ 2011).

1.3 Limitations

This IRAM Completion Report has been prepared for the DEQ. Work for this project was performed in accordance with generally accepted professional practices relating to the nature of work completed at the same or similar localities. It is intended for the exclusive use of the DEQ for specific application to the site. No other warranty, express or implied, is made.

2.0 BACKGROUND

This section presents a description of the site, its history, physical setting, and previous environmental activities. For additional site information, refer to Hart Crowser's Site Investigation (SI) Report dated February 5, 2015 (Hart Crowser 2015).

2.1 Site Location and Description

The former Campbell Cleaner site is located at 817-819 North Russell Street in Portland, Oregon. The site and adjacent properties are zoned for mixed industrial/commercial use, with allowances for second story residential use. A dry cleaner operated on the property from 1952 to 1995, when the property was purchased by the current owner. Since 1995, the building has been renovated into a ground floor commercial space and a second floor residential space where the property owner resides.

The site is situated at an elevation of about 95 feet above mean sea level with the ground surface in the area sloping to the west. The nearest surface water body is the Willamette River approximately 1,600 feet to the southwest. Previous environmental investigations indicate that groundwater is present at approximately 60 feet below the ground surface (bgs) and flows west to southwest, toward the Willamette River.

2.2 Previous Environmental Activities

Site investigations conducted between 2008 and 2014 identified PCE in soil, groundwater, soil vapor, and ambient air at and near the site. Analytical data were compiled and compared to DEQ's risk-based concentrations (RBCs) for potentially complete exposure pathways (DEQ 2012). A risk screening identified concentrations of PCE in indoor air exceeding DEQ's inhalation RBCs for urban residential and occupational receptors. RBCs for urban residential and occupational receptors were also exceeded in soil and soil gas via the vapor intrusion pathway. Trichloroethene (TCE) concentrations were detected in soil, groundwater, and soil vapor at levels below applicable RBCs.

Based on available information, Hart Crowser evaluated the crawlspace of the former Campbell Cleaner building to determine the constructability and likely effectiveness of a low-permeable (vapor) barrier and active ventilation system. We determined that a network of perforated pipes for an active venting system could be installed, but the pier and beam construction of the building would make installing an effective vapor barrier difficult. Additionally, the space restrictions in the crawlspace would require that nearly all of the commercial space floor panels would need to be removed to provide worker access. Instead of installing a vapor barrier, we suggested a new moisture barrier and ventilation system be installed over the western portion of the crawlspace.

A review of the existing climate control systems determined the furnace installed on the second floor does not provide a positive pressure to the residential space and does not currently supply the space with fresh air. It may be possible to upgrade the unit to provide fresh air, but the residential space would likely need to be weatherized to be effective at mitigating vapors. The first floor commercial space is fitted with a heater unit, but has no additional climate control/air exchange equipment. A new system would need to be installed to supply the commercial space with fresh air. The space would also need to be weatherized to be effective. Therefore, it was determined that vapor mitigation methods would be the most effective remedial option to address cVOCs from the subsurface.

3.0 IRAM ACTIVITIES

The IRAM activities began June 1, 2015, and were completed June 4, 2015. A Hart Crowser field engineer was on the site to document the IRAM activities. Occupants of the building were informed of our construction schedule and care was taken to minimize disturbances to the business space during construction. Figure 2 shows the locations of the IRAMs, Figures 3 and 4 are detailed as-built drawings of the IRAM construction. Representative photographs of the IRAM installation are included as Appendix A.

3.1 Preparatory Activities

Site Health and Safety Plan (HSP). A site-specific HSP was prepared for the SI activities completed in 2014. The HSP was prepared in general accordance with the Occupational Safety and Health Act and the Oregon Administrative Rules. Hart Crowser personnel had a copy of the HASP for their use during the field activities.

Property Access. The DEQ obtained an access agreement with the property owner to accomplish environmental activities on the property, including IRAMs.

Subcontractor Solicitation. The IRAMs activities required an environmental construction subcontractor and chemical analyses. Hart Crowser solicited bids from environmental contractors to implement the IRAMs. Five firms were solicited. Selection was based on unit pricing and the ability to meet the project schedule. Anderson Environmental Contracting (AEC) of Kelso, Washington, was selected to install the IRAMs under subcontract to Hart Crowser. Chemical analyses was conducted by ESC Lab Sciences (ESC) of Mt. Juliet, Tennessee, under their Price Agreement with the State of Oregon.

Waste Profiling. Based on existing data, excavated soil was designated as hazardous waste (spent PCE solvent is a listed hazardous waste [F002]). Hart Crowser worked with AEC, Waste Management, and the DEQ to profile the source area soil. We also obtained a Hazardous Waste Site Identification number for the site to facilitate disposal.

3.2 Source Area Soil Removal

Elevated concentrations of PCE in shallow soil were detected in the southwestern portion of the former Campbell Cleaner building (up to 46 milligrams per kilogram [mg/kg]). The area is believed to be beneath the former dry cleaning machinery, and soils impacted by PCE releases in this area

represent “source soils” posing a continued vapor intrusion risk to occupants of the building. The extent of soil posing an unacceptable risk is delineated on Figure 2. We addressed source soil by excavating up to 3.5 feet below grade in this area. Plastic sheeting was hung from the ceiling to the floor, around the area of excavation, to protect the remainder of the commercial space from dust. Source area soil removal was completed on June 1, 2015, as described below.

Dry Cleaning Equipment Foundation Block. AEC began source area soil removal by removing a floor panel to provide access to the crawlspace. A large concrete block was found directly under the floorboards in the area of the proposed excavation. The block measures approximately 4.5 feet wide by 7.5 feet long and 3 feet deep, including approximately 1.5 feet below the soil. This block was not mentioned in previous site investigations or by the property owner prior to implementing the IRAMs. The location of the block is shown on Figure 2 and is likely the foundation for the former dry cleaning machinery. The block was coated with a latex sealant to mitigate potential off-gassing although no indications of off-gassing were detected using a photoionization detector (PID) at the time of construction. The extent of the source soil excavation was adjusted as described below to accommodate the concrete block.

Excavation. To access the soil, floor panels of the commercial space were removed and the existing visqueen moisture barrier was pulled back. The soil was excavated by hand instead of using a vacuum truck as proposed in the work plan. The small amount of soil and the flexibility required by the work schedule made excavating by hand more feasible.

The original proposed extent of the excavation is shown on Figure 2 and shows where the concrete block covered a large portion of the excavation area. Soil under the block was not excavated, instead approximately 3 cubic yards of soil were removed from the source area adjacent to the concrete block to a depth of 3.5 feet. Building support piers were also located in the area of proposed excavation, limiting the southern extent of the excavation. Upon completion, confirmation soil samples were collected from the excavation extent (see Section 5.1).

Backfill. The excavation was then backfilled on the same day using a controlled density fill to match existing grades.

Soil Disposal. Excavated soil was loaded into a 10-yard drop box that was staged in front of the site. Once excavation was complete, the soil was transported under Manifest 011871423 JJK (Appendix B) to Chemical Waste Management’s Resource Conservation and Recovery Act (RCRA) Subtitle C Landfill in Arlington, Oregon, for disposal.

3.3 Soil Gas Ventilation System

On June 1 and 2, 2015, an active soil gas ventilation system was installed in the crawlspace to provide soil gas mitigation. The system consists of a network of perforated pipes installed underneath the moisture barrier with a ventilation fan that pulls vapors through the collection pipes and exhausts them above the former Campbell Cleaner building. The layout of the gas collection pipes and exhaust stack are presented on Figures 2 and 3, respectively.

Collection Pipes. Approximately 55 linear feet of 4-inch diameter slotted Schedule 40 PVC pipe was installed in the crawlspace. Two parallel stems run in the general north-south direction, positioned to cover most of the area identified to contain soil gas concentrations exceeding of one or more vapor intrusion RBCs (Figure 2). The two stems combine before exiting the crawlspace at the northwest corner of the building where the ventilation fan is located. Solid (not perforated) PVC pipe is used for the final 15 feet of collection pipe leading up to the ventilation fan. The pipe passes through the north end of the building through an existing screen. Blocks of wood were intermittently placed over the pipe to act as spacers to prevent the moisture barrier plastic from covering all of the ventilation pipe slots.

The ventilation pipe layout varied slightly from the proposed layout in the Work Plan. Instead of a straight run of pipe from the ventilation fan to the source area, two 90-degree elbows were required to direct the pipe to a manageable position (i.e., enough crawlspace clearance and even ground surface) and to place the pipe directly against the newly discovered concrete block.

Ventilation Fan. A ventilation fan (Fantech Model HP190SL; owner's manual attached as Appendix C) was installed on the outside of the northwest corner of the building at ground level where the collection pipe transitions through the building's northern perimeter. The fan is an in-line style, corrosion and weather resistant, and designed for continuous operation. The crawlspace collection pipe and exhaust stack are fastened to the ventilation fan housing using rubber flexible couplings designed for this purpose.

The fan was wired by a licensed electrician to an existing electrical outlet approximately 5 feet east of the fan on the northern wall of the building. The fan was fitted with an on/off switch, also secured to the northern wall of the building, and the existing outlet was replaced with a weather-resistant style cover.

Exhaust Stack. Soil gas is exhausted above the building through a 4-inch diameter Schedule 40 PVC stack. The base of the exhaust stack is connected to the in-line fan and runs vertically up the northern face of the building, at the northwestern corner of the building to approximately 10 feet above the roof line. At the end of the stack, a 180-degree fitting with a screen is attached to prevent rain and debris from entering the collection system. The exhaust stack is securely fastened to the building using pipe strut and brackets about every 8 linear feet. The final 10 feet of pipe, extending beyond the roof of the building is secured to the roof in two directions using support brackets. A threaded bung was installed near the base of the exhaust stack convenient for field sampling of exhaust air. Figure 3 shows the layout of the exhaust stack.

3.4 Sealing/Weatherizing

In addition to source area soil removal and installing a soil gas ventilation system, IRAM activities included sealing and weatherizing vapor pathways between the floors of the building. This included sealing the crawlspace, the first floor, the first floor ceiling, and the crawlspace access hatch. Sealing activities were completed from June 2 through 4, 2015, following soil excavation and soil ventilation system installation.

Crawlspace. The existing moisture barrier disturbed during the soil excavation and installation of the soil gas ventilation system was replaced once completed. An additional sheet of visqueen moisture barrier was placed over the existing barrier material. The new sheet consists of 20-foot wide and 10-mil thick sheet covering the entire length of the western portion of the crawlspace and the soil ventilation piping. The new moisture barrier was sealed along it's perimeter to reduce vapors migrating along this pathway. The sheet was cut to accommodate foundational piers within 20 feet of the western wall of the building. At these locations the barrier was taped and glued (using epoxy sealer) to the piers, the perimeter wall, and the concrete block. The cut seams of the visqueen were taped together and the new moisture barrier was taped to the existing moisture barrier including along the eastern edge. This is intended to provide the ventilation system with a greater zone of influence and is not intended to be a vapor-proof barrier.

The moisture barrier did not cover the newly discovered concrete block. The block was sealed using a latex-based sealant designed as a moisture and vapor barrier for concrete surfaces. The moisture barrier was sealed to the block using epoxy sealant and tape as described above.

First Floor. The floor of the first floor commercial space was sealed to mitigate crawlspace vapors from entering the building. The commercial space floor consists of plywood paneling either painted or covered with laminate. In areas that are laminated, as in the bathroom and storage closet, the plastic baseboard trim was removed, the gap in the floor was sealed, and the baseboard trim was glued back in place. Plywood floor panels removed during IRAM activities were replaced with new plywood sheets. A bead of sealant was placed around the perimeter of each panel prior to securing the panel to the floor joists. The new panels were painted by the tenant of the commercial space after hours on June 3, 2015.

First Floor Ceiling. Gaps around utilities that pass through the first floor ceiling were filled using epoxy sealant.

Upgrade Crawlspace Access. The crawlspace access hatch consists of a plywood board resting on an opening cut into the floor. This access point was modified to provide a better seal from the crawlspace to the building. When in-place, the hatch rests on a 1-inch wide wooden lip on all four sides. A continuous, chemical resistant, compressible seal was installed on this lip around the entire perimeter of the access hatch. On the top of the hatch, two flush mounted twist-style locks were installed on the north and south sides. For safety, the locks are not a style that lock automatically once the hatch is shut, rather it will need to be manually locked. An aluminum plate was added to the bottom of the access hatch to provide rigidity and weight to the hatch. This design varied slightly from the one proposed in the work plan. This was due to a non-structural wall partially built over one edge of the hatch making a hinged access hatch harder to install. The modifications to the crawlspace access hatch are presented on Figure 4.

3.5 Investigation-Derived Waste (IDW) Management

During the above activities, IDW was generated consisting of source area soil, personal protective equipment (e.g., gloves, Tyvek suits), and excess barrier material. The 3 cubic yards of source area soil

were disposed of at Chemical Waste Management's RCRA Subtitle C Landfill in Arlington, Oregon. Appendix B includes a copy of the hazardous waste manifest. Personal protective equipment and plastic sheeting were disposed of as solid waste.

4.0 AIR MONITORING

Air samples were collected on July 6, 2015, to determine the effectiveness of the IRAMs. Ambient air samples were collected from the crawlspace (including duplicate), the first floor occupational space, the second floor residential space, and from outside the building (background air).

The Summa® canisters for the crawlspace and duplicate samples were set 5 feet east of the crawlspace access hatch near the south end of the building. The Summa® canister for the first floor sample was set on the counter near the cash register. The Summa® canister for the second floor sample was set on a desk near the south side of the apartment. The background sample was collected from the center of the backyard area north of the building. Ambient air samples were collected over an 8-hour period from approximately 8:00 am to 4:00 pm. In general, barometric pressure was rising over the period from July 5 through July 7, 2015, but during the sampling period, barometric pressure began around 30.0 inches mercury (in. Hg) and dropped slightly to around 29.9 in. Hg when samples were recovered (Weather Underground 2015).

A sample was also collected from the exhaust stack sample port to measure the contaminant concentration of extracted vapors. The sample was collected over a 5-minute period using a 1-liter Summa® canister and 200 milliliter/minute (ml/min) flow controller. Summa® canisters and flow controllers were provided by ESC.

5.0 CHEMICAL ANALYSES AND RESULTS

To assess the effectiveness of IRAMs taken at the site, soil samples were collected from the extent of source area soil excavation, and indoor and exhaust stack air samples were collected one month following IRAM installation. Samples were submitted to ESC for chemical analyses. Based on the site's history as a dry cleaner, chemicals of potential concern (COPCs) at the site include cVOCs, specifically PCE. Sampling activities were conducted in accordance with DEQ's Brownfield QAPP (DEQ 2011). Soil analytical results are presented in Table 1 and include results from previous environmental investigations. Groundwater and soil gas analytical results from previous environmental activities are included in Tables 2 and 3, respectively, and ambient air monitoring results are presented in Table 4. Copies of the laboratory reports are included with a data quality review in Appendix D. A risk screening is provided in Section 6.

5.1 Soil Excavation

Four soil samples, S-1 through S-4, were collected from the extent of the soil excavation and analyzed for VOCs by EPA Method 8260B. As the excavation was limited by structural features in the crawlspace, the soil samples were collected to determine residual cVOC concentrations in the soil.

PCE was detected in all four samples collected. Sample S-1 collected from the bottom of the excavation (3.5 feet bgs) detected PCE at 22 mg/kg. Samples S-2 through S-4, were collected from the sidewalls of the excavation (approximately 1.5 feet bgs) and detected PCE between 0.010 and 0.023 mg/kg.

No other cVOCs, including TCE, *cis*-1,2-dichloroethene (*cis*-DCE), *trans*-1,2-dichloroethene (*trans*-DCE), 1,1-dichloroethene (1,1-DCE), and vinyl chloride were detected above the laboratories method detection limit.

5.2 Ambient Air

Five ambient air samples, AA-1 through AA-5, were analyzed for VOCs by EPA Method TO-15. As part of the TO-15 analysis, low-fraction total petroleum hydrocarbons (TPH) are also reported. Ambient air samples were collected to assess the risk to users of the former Campbell Cleaner building and to measure the effectiveness of site remedies.

- **Crawlspace.** PCE was detected in the crawlspace and duplicate crawlspace samples at 8.1 and 13 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), respectively. TCE, a PCE degradation compound, was detected at 4.1 and 1.4 $\mu\text{g}/\text{m}^3$ in the crawlspace and duplicate crawlspace samples, respectively. Additional VOC detections include acetone, benzene, chloromethane, cyclohexane, ethanol, ethylbenzene, heptane, trichloro-fluoromethane, dichloro-difluoromethane, n-hexane, methylene chloride, 2-propynol, tetrahydrofuran, toluene, 1,2,4-trimethylbenzene, 2,2,4-trimethylpentane, and xylenes.
- **First floor.** PCE was detected at 2.0 $\mu\text{g}/\text{m}^3$ and TCE was detected at 46 $\mu\text{g}/\text{m}^3$ in the first floor sample. Additional VOC detections include acetone, benzene, chloromethane, cyclohexane, ethanol, ethylbenzene, heptane, trichloro-fluoromethane, dichloro-difluoromethane, n-hexane, methylene chloride, 2-propynol, tetrahydrofuran, toluene, 1,2,4-trimethylbenzene, and xylenes.
- **Second floor.** PCE and its degradation compounds were not detected in the second floor sample. Additional VOC detections include acetone, chloromethane, cyclohexane, ethanol, heptane, dichloro-difluoromethane, n-hexane, 2-propynol, toluene, 2,2,4-trimethylpentane, and xylenes.
- **Background.** PCE and its degradation compounds were not detected in the background sample above the laboratory detection limits. Various other VOCs were detected in the background sample including acetone, chloromethane, ethanol, trichloro-fluoromethane, dichloro-difluoromethane, n-hexane, methylene chloride, and toluene.

Ambient air results are presented in Table 4 along with ambient air data collected during previous site investigations. Ambient air concentrations of COPCs had noticeably decreased following IRAM activities, with the exception of TCE in the first floor and one crawlspace sample.

5.3 Exhaust Stack

A Vapor Stack sample was collected from the soil gas ventilation system exhaust stack to measure the effectiveness of the fan at removing vapors. The sample was analyzed for VOCs and low-fraction TPH by EPA Method TO-15. PCE was detected in the Vapor Stack sample at 500 $\mu\text{g}/\text{m}^3$ and TCE was

detected at 3.3 µg/m³. Additional VOC detections include acetone, chloromethane, cyclohexane, ethanol, heptane, dichloro-difluoromethane, n-hexane, methylene chloride, 2-propynol, tetrahydrofuran, toluene, and xylenes.

6.0 RISK-BASED SCREENING

A conceptual site model (CSM) was developed during the SI to identify potentially complete exposure pathways whereby site contamination could potentially pose an unacceptable risk to people (Hart Crowser 2015). This CSM identified the following potentially complete pathways:

- Potential risks from contamination in soil by vapor intrusion to current and future urban residential and occupational receptors;
- Potential risks to current and future on- and off-site urban residential and occupational receptors via vapor intrusion in soil gas; and
- Potential risk to on-site urban residential and occupational receptors through inhalation.

The five ambient air samples collected from within the building and from the backyard area on July 6, 2015, were compared against previously collected data and RBCs for the exposure pathways identified above.

Chemical data from previous investigations and after the IRAMs are compared to DEQ's RBCs (DEQ 2012) for potentially complete pathways in the tables. Bold concentrations in Tables 1 through 4 indicate a detection. Shaded concentrations in Tables 1, 3, and 4 indicate a concentration that exceeded an applicable RBC. The exceeded RBC is also shaded. Post-IRAM data were screened against applicable RBCs as discussed below. Vapor stack exhaust is not screened as VOCs are exhausted into the outside atmosphere for dispersal.

Soil Risk-Based Screening. Chemical data for soil samples were compared against RBCs for each potentially complete pathway considering the possible receptors that might be exposed (Table 1). A soil sample collected from the bottom of the excavation (3.5 feet bgs) exceeded the RBC for vapor intrusion for urban residential receptors. Three soil samples collected from excavation sidewalls also detected PCE but below the applicable RBCs. No other COPCs were detected in soil samples.

Ambient Air Risk-Based Screening. The data from ambient air samples were compared against inhalation RBCs for urban residential and occupational receptors (Table 4). Samples collected from the crawlspace and the first floor of the former Campbell Cleaner building detected TCE exceeding RBCs for both urban residential and occupational receptors. PCE was also detected in the crawlspace and first floor samples, but at concentrations below applicable RBCs. Other detected VOCs were below their respective risk-based criteria.

7.0 CONCLUSIONS

The IRAM field activities were completed from June 1 through 4, 2015, and included:

- Removing source area soil to the extent possible,
- Sealing a concrete support block identified during field activities,
- Installing a soil gas ventilation system, and
- Sealing gaps in the first and second floors of the building.

AEC constructed the IRAMs with oversight provided by Hart Crowser. These IRAMs were followed by one round of indoor air confirmation sampling completed by Hart Crowser on July 6, 2015. Air samples indicate that the soil gas ventilation system and additional IRAMs are effective at removing COPC vapors from the soil gas prior to entering the crawlspace and former Campbell Cleaner building.

COPC Reduction. In November 2014, prior to implementing IRAMs, PCE was detected in indoor air within the crawlspace, first floor, and second floor of the building at concentrations exceeding the inhalation RBCs for urban residential and occupational receptors. Benzene and chloroform also exceeded the inhalation RBCs for urban residential and/or occupational receptors in the second floor sample, and benzene exceeded the urban residential RBC for inhalation in the background sample. These results are similar to indoor air samples collected in 2013 (GeoEngineers 2013).

Following IRAM installation, PCE has been reduced below applicable RBC concentrations on all levels of the former Campbell Cleaner building. PCE in the crawlspace was reduced from 120 to 130 $\mu\text{g}/\text{m}^3$ in November 2014 (prior to IRAM installation) to 8.1 to 13 $\mu\text{g}/\text{m}^3$ following IRAM installation. On the first floor, PCE was reduced from 63 to 2.0 $\mu\text{g}/\text{m}^3$, and on the second floor, PCE was reduced from 81 to less than 1.4 $\mu\text{g}/\text{m}^3$. Benzene and chloroform were also reduced below laboratory detection limits in the second floor and background samples.

TCE Increase. Prior to IRAM installation, TCE was detected at 1.8 $\mu\text{g}/\text{m}^3$ in the first floor sample and below the laboratory detection limit in the crawlspace (1.1 $\mu\text{g}/\text{m}^3$). Following IRAM installation, TCE was detected in one crawlspace sample and the first floor sample at concentrations exceeding inhalation RBCs for urban residential and occupational receptors. The first floor indoor air sample detected TCE at 46 $\mu\text{g}/\text{m}^3$, where TCE was previously detected at 1.8 $\mu\text{g}/\text{m}^3$. The crawlspace samples detected TCE at 1.4 and 4.1 $\mu\text{g}/\text{m}^3$ where no detections were made previously. This spike in TCE concentration is not likely originating from subsurface soil because the crawlspace and vapor stack samples were over ten times less than the first floor sample.

Hart Crowser conducted a site inspection of the first floor space on July 15, 2015, to determine whether TCE-containing solvents were present. Our inspection and discussions with the first floor tenant identified a box of cleaning material left under the counter near the first floor air sample location (approximately five feet apart). One cleaner in particular was a “Dry Cleaner and Spot Remover” which contained specifically TCE and methylene chloride (methylene chloride was also elevated in this sample but below applicable RBCs). Additionally, the first floor tenant sells a variety of international goods, including new clothes. Cleaning supplies, recently cleaned surfaces, and new clothing merchandise were likely source of the TCE concentrations detected on the first floor.

Ventilation System. During our post-IRAM air sampling event, the soil gas ventilation system exhaust was also sampled. PCE and low-fraction TPH were much greater than the indoor air samples collected the same day (each was detected at 500 µg/m³ in the exhaust stack). TCE was detected at 3.3 µg/m³ in this sample (well below 46 µg/m³ detected on the first floor). The elevated PCE concentrations in the exhaust stack and the reductions in the indoor air concentrations indicate that the soil gas ventilation system is effective at removing COPCs emanating from the subsurface.

8.0 RECOMENDATIONS

A potential unacceptable risk to current and future on-site receptors remains from soil and soil gas under the former Campbell Cleaner building. The soil gas ventilation system is effective at mitigating this risk while in continuous operation. The soil gas ventilation system should remain in continuous operation to mitigate this risk.

Based on the post-IRAM sampling data and the risk screening evaluation, we identified a potential unacceptable risk to human receptors from TCE on the first floor, and to a lesser extent, in one sample from the crawlspace. This is not likely originating in the subsurface or related to previous dry cleaning activities at the site, but is rather related to cleaning supplies and merchandise located on the first floor.

A second round of air sampling should be completed in winter months (preferably during a low atmospheric pressure event) to confirm that the IRAMs continue to be effective at mitigating subsurface vapors. These recommendations should be done with consultation with, and approval by, the DEQ.

9.0 REFERENCES

AGI 2008. Phase Two Environmental Site Assessment, 829 N. Russell Street. March 20, 2008.

DEQ 2011. Brownfields Program Quality Assurance Project Plan. October 2011.

DEQ 2012. Excel® Spreadsheet for Risk Based Concentrations for Individual Chemicals. June 7, 2012.

EPA 2015. Regional Screening Levels. June 2015.

GeoDesign 2014. Phase III Environmental Site Assessment, Campbell Dry Cleaner Brownfield Project. May 14, 2014.

GeoEngineers 2013. Phase II Environmental Site Assessment, Former Campbell Dry Cleaners. March 12, 2013.

Hart Crowser 2014. Focused Site Investigation Work Plan, Former Campbell Dry Cleaner. September 24, 2014.

Hart Crowser 2015. Site Investigation Report, Former Campbell Dry Cleaner Site. February 5, 2015.

Partner 2011. Phase II Subsurface Soil Gas Investigation Report. January 20, 2011.

Weather Underground 2015. Historic barometric pressure database from Weather Station ID: MODT10 in Portland, Oregon. Accessed July 2015 at: <http://www.wunderground.com>

F:\Notebooks\1581800_DEQ Campbell Dry Cleaner\Deliverables

Table 1 - Chemical Analytical Results: Soil (Current and Previous Investigations)
Former Campbell Dry Cleaner
Portland, Oregon

Sample Location	Sample Date	Sample Depth (feet)	Chlorinated VOCs					
			PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	VC
			Concentration in mg/kg					
Hart Crowser 2015 IRAM Implementation								
S-1	1-Jun-15	3.5	22	<3.1	<3.1	<3.1	<3.1	<3.1
S-2	1-Jun-15	1.5	0.011	<0.0065	<0.0065	<0.0065	<0.0065	<0.0065
S-3	1-Jun-15	1.5	0.010	<0.0066	<0.0066	<0.0066	<0.0066	<0.0066
S-4	1-Jun-15	1.5	0.023	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
GeoDesign, Phase III Environmental Site Assessment, May 14, 2014.								
DP-1 WOOD	20-Jan-14	NA	0.56	<0.0070	-	-	-	-
DP-1 (5.5-6.5)	20-Jan-14	5.5-6.5	0.004	<0.00028	-	-	-	-
DP-1 (16.5-17.5)	20-Jan-14	16.5-17.5	0.031	<0.00029	-	-	-	-
DP-2 (3-4)	20-Jan-14	3-4	0.068	<0.00029	-	-	-	-
DP-2 (8-9)	20-Jan-14	8-9	0.028	<0.00032	-	-	-	-
DUP-DP-2 (8-9)	20-Jan-14	8-9	0.032	<0.00030	-	-	-	-
DP-3 (2-3)	20-Jan-14	2-3	1.4	<0.00028	-	-	-	-
DP-3 (8-9)	20-Jan-14	8-9	0.032	<0.00028	-	-	-	-
DP-4 (3.5-4.5)	20-Jan-14	3.5-4.5	2.3	0.00063	-	-	-	-
DP-4 (6.5-7.5)	20-Jan-14	6.5-7.5	0.15	<0.00030	-	-	-	-
DP-5 (7-8)	21-Jan-14	7-8	0.046	0.0024	-	-	-	-
DP-5 (18-19)	21-Jan-14	18-19	0.006	<0.00028	-	-	-	-
DP-6 (6-7)	21-Jan-14	6-7	0.20	0.00042	-	-	-	-
DUP-DP-6 (6-7)	21-Jan-14	6-7	0.086	<0.00028	-	-	-	-
DP-6 (18.5-19.5)	21-Jan-14	18.5-19.5	0.023	<0.00029	-	-	-	-
DP-7 (7-8)	22-Jan-14	7-8	0.033	<0.00029	-	-	-	-
DP-7 (13-14)	22-Jan-14	13-14	0.023	<0.00031	-	-	-	-
DP-8 (2-3)	22-Jan-14	2-3	0.039	<0.00028	-	-	-	-
DP-8 (8-9)	22-Jan-14	8-9	0.022	<0.00032	-	-	-	-
DP-8 (18.5-19.5)	22-Jan-14	18.5-19.5	0.028	0.00048	-	-	-	-
DP-9 (6-7)	22-Jan-14	6-7	0.011	<0.00028	-	-	-	-
DP-9 (12-13)	22-Jan-14	12-13	<0.00028	<0.00028	-	-	-	-
DP-9 (19-20)	22-Jan-14	19-20	0.014	<0.00028	-	-	-	-
DP-10 (11-12)	22-Jan-14	11-12	0.016	<0.00028	-	-	-	-
DP-10 (17.5-18.5)	22-Jan-14	17.5-18.5	<0.00028	<0.00028	-	-	-	-
GeoEngineers, Phase II Environmental Site Assessment, March 12, 2013.								
SB1 (2-4')	8-Jan-13	2	7.8	<0.19	<0.19	<0.19	<0.19	<0.95
SB1 (2-4')-Dup	8-Jan-13	2	46	<0.24	<0.24	<0.24	<0.24	<1.2
SB2 (2-4')	8-Jan-13	2	1.4	<0.16	<0.16	<0.16	<0.16	<0.80
SB3 (2-4')	8-Jan-13	2	<0.25	<0.25	<0.25	<0.25	<0.25	<0.81
SB4 (2-4')	8-Jan-13	2	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3
SB5 (3-5')	8-Jan-13	3	<0.22	<0.22	<0.22	<0.22	<0.22	<1.1
SB6 (3-5')	8-Jan-13	3	<0.22	<0.22	<0.22	<0.22	<0.22	<1.1
SB7 (2-4')	8-Jan-13	2	<0.16	<0.16	<0.16	<0.16	<0.16	<0.78
SB8 (2-4')	8-Jan-13	2	<0.14	<0.14	<0.14	<0.14	<0.14	<0.69
Anderson Geological, Inc., Phase II Environmental Site Assessment for 829 N. Russel Street, March 20, 2008.								
SB1-6	6-Mar-08	6	0.109	<0.0259	<0.0259	-	-	-
SB1-12	6-Mar-08	12	0.0883	<0.0274	<0.0274	-	-	-
SB2-6	7-Mar-08	6	<0.0306	<0.0306	<0.0306	-	-	-
SB2-12	7-Mar-08	12	<0.028	<0.028	<0.028	-	-	-
DEQ RBCs								
Direct Contact - Urban Residential			540	17	310	1,200	3,500	0.76
Direct Contact - Occupational Worker			940	46	2,000	9,200	27,000	3.9
Direct Contact - Construction Worker			1,600	120	620	4,500	12,000	30
Direct Contact - Excavation Worker			44,000	3,400	17,000	130,000	340,000	830
Vapor Intrusion - Urban Residential			6.6	0.32	>Max	16	54	0.053
Vapor Intrusion - Occupational			36	2.8	>Max	200	680	2.2

Notes:

PCE = tetrachloroethene; TCE = trichloroethene; DCE = dichloroethene; VC = vinyl chloride.

Only PCE and degradation products are shown on this table.

VOCs = volatile organic compounds.

mg/kg = milligram per kilogram.

- = not analyzed or not available

< = Not detected above the indicated laboratory reported detection limit.

Risk-Based Concentrations (RBCs) from RBCs for Individual Chemicals (DEQ, Rev. June 7, 2012).

Detected concentrations are shown in **bold** type.

Concentrations exceeding one or more RBCs for the air inhalation pathway are shown in highlighted cells.

>Max = The RBC for this constituent and pathway is above 1,000,000 mg/kg.

Table 2 - Chemical Analytical Results: Groundwater (Previous Investigations)
Former Campbell Dry Cleaner
Portland, Oregon

Sample Location	Sample Date	Sample Depth (feet)	Chlorinated VOCs					
			PCE	TCE	<i>cis</i> -1,2- DCE	<i>trans</i> -1,2- DCE	1,1-DCE	VC
			Concentration in µg/L					
GeoDesign, Phase III Environmental Site Assessment, May 14, 2014.								
DP-5-W	21-Jan-14	NA	57	4.1	0.58	<1.0	<1.0	< 1.0
DP-7-W	22-Jan-14	NA	55	8.5	<1.0	<1.0	<1.0	<1.0
DUP-DP-7-W	22-Jan-14	NA	260	14	<1.0	<1.0	<1.0	<1.0
DEQ RBCs								
Vapor Intrusion - Urban Residential			5,900	380	>S	28,000	27,000	22
Vapor Intrusion - Occupational			32,000	3300	>S	350,000	340,000	910
Volatilization to Outdoor Air - Urban Res.			110,000	6600	>S	430,000	550,000	500
Volatilization to Outdoor Air - Occupational			>S	19000	>S	1,800,000	>S	6800

Notes:

PCE = tetrachloroethene; TCE = trichloroethene; DCE = dichloroethene; VC = vinyl chloride.

Only PCE and degradation products are shown on this table.

VOCs = volatile organic compounds.

µg/L = microgram per liter.

< = Not detected above the indicated laboratory reported detection limit.

Risk-Based Concentrations (RBCs) from RBCs for Individual Chemicals (DEQ, Rev. June 7, 2012).

Detected concentrations are shown in **bold** type

>S = The RBC exceeds the solubility limit.

Table 3 - Chemical Analytical Results: Soil Gas (Current and Previous Investigations)
Former Campbell Dry Cleaner
Portland, Oregon

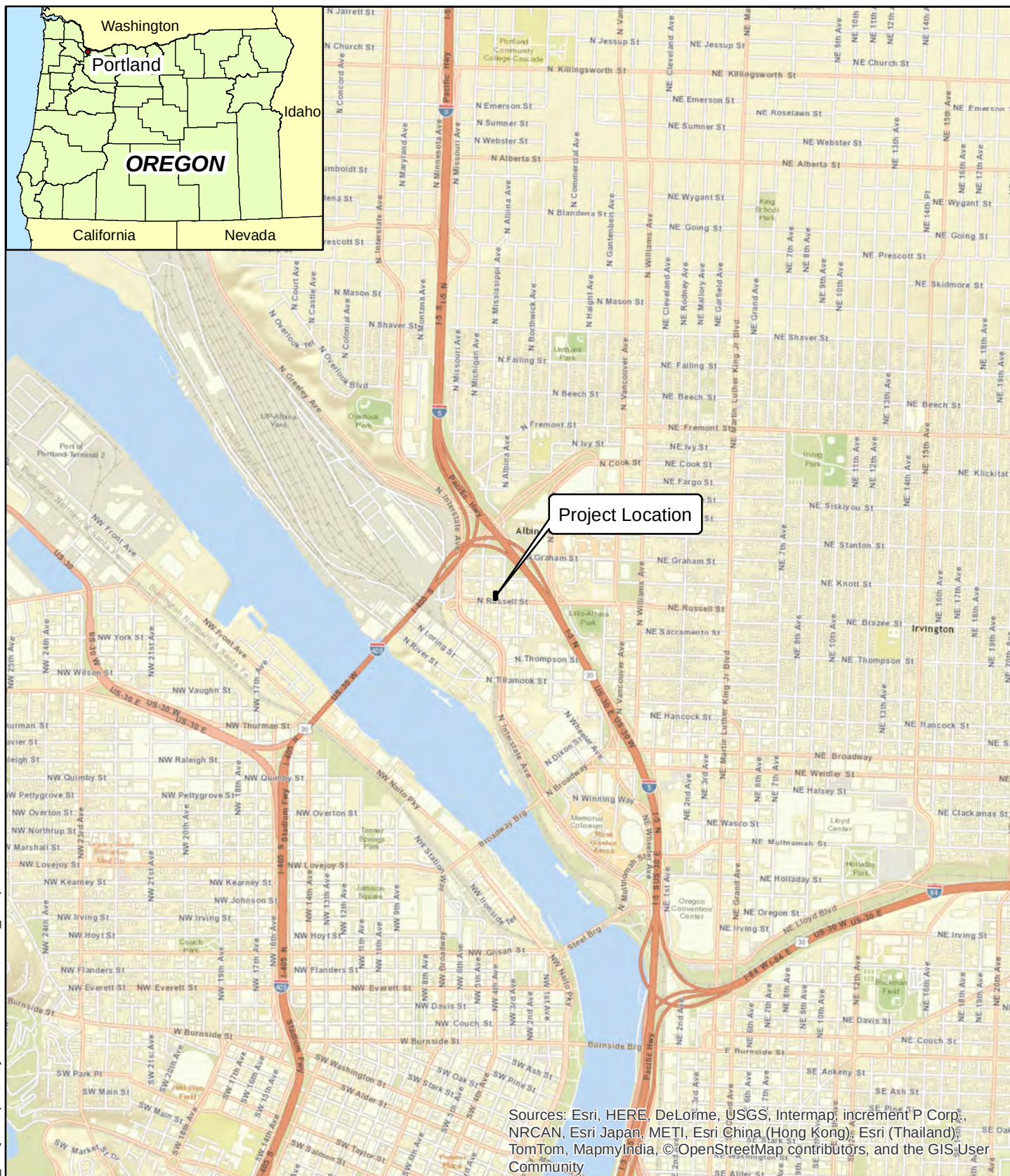
Sample Location	Sample Date	Sample Type	TPH	Chlorinated VOCs						Other detected VOCs																	
			Low Fraction	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride	Acetone	Benzene	Carbon Disulfide	Chloroform	Cyclohexane	Ethanol	Ethylbenzene	Trichloro-fluoromethane	Dichloro-difluoromethane	n-Hexane	Methylene Chloride	2-Propanol	Propene	Toluene	1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	2,2,4-Trimethylpentane	Xylenes
Concentrations in µg/m³										Concentrations in µg/m³																	
Hart Crowser 2014 Site Investigation																											
SG-1	1-Dec-14	Grab	700	660	<2.1	<1.6	<1.6	<1.6	<1.0	86	<1.3	<1.2	<1.9	3.8	51	3.6	<2.2	2.7	35	2.6	8.1	<1.4	11	<2.2	<2.0	<1.9	15
SG-2	1-Dec-14	Grab	1,600	1,900	27	<1.6	<1.6	<1.6	<1.0	40	<1.3	<1.2	4.4	<1.4	34	<1.7	<2.2	2.4	2.3	1.9	<6.1	<1.4	8.7	8.7	2.4	<1.9	9.0
SG-3	1-Dec-14	Grab	1,200	500	15	<1.6	<1.6	<1.6	<1.0	31	<1.3	<1.2	4.6	<1.4	25	<1.7	<2.2	2.6	<1.4	<1.4	<6.1	7.2	9.0	11	2.9	<1.9	8.6
SG-4	1-Dec-14	Grab	<410	88	<2.1	<1.6	<1.6	<1.6	<1.0	36	1.4	2.4	4.1	<1.4	3.6	2.0	2.6	2.4	1.8	<1.4	<6.1	34	9.0	9.2	3.9	3.5	11
SG-5	1-Dec-14	Grab	740 J	18 J	<2.1	<1.6	<1.6	<1.6	<1.0	78 J	<1.3	<1.2	<1.9	6.5 J	150 J	2.5	<2.2	2.7	290 J	3.2 J	39 J	<1.4	11 J	<2.2	<2.0	<1.9	11
SG-6	1-Dec-14	Grab	1400 J	62 J	<2.1	<1.6	<1.6	<1.6	<1.0	26 J	<1.3	<1.2	<1.9	13 J	25 J	<1.7	<2.2	2.6	850 J	<1.4	<6.1	<1.4	7.5 J	<2.2	3.1	<1.9	8.6
GeoDesign, Phase III Environmental Site Assessment, May 14, 2014.																											
DP-7-SG	21-Jan-14	-	-	180,000	<4,300	<3,200	<3,200	<3,200	<2,000	-	<2,600	-	<3,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUP-DP-7-SG	21-Jan-14	-	-	190,000	<4,300	<3,200	<3,200	<3,200	<2,000	-	<2,600	-	<3,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-8-SG	20-Jan-14	-	-	200,000	<4,300	<3,200	<3,200	<3,200	<2,000	-	<2,600	-	<3,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DP-9-SG	22-Jan-14	-	-	81,000	<4,300	<3,200	<3,200	<3,200	<2,000	-	<2,600	-	<3,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Partner Engineering and Science, Inc., Phase II Subsurface Soil Gas Investigation Report, January 20, 2011.																											
SV-1	30-Dec-10	-	-	630,000	<4,800	<4,800	<4,800	<4,800	<4,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SV-2	30-Dec-10	-	-	360,000	<1,900	<1,900	<1,900	<1,900	<1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SV-3	30-Dec-10	-	-	49,000	1,100	<180	<180	<180	<180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SV-4	30-Dec-10	-	-	23,000	560	<140	<140	<140	<140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RBCs - Vapor Intrusion Pathway																											
Urban Residential			79,000	5,100	200	>Pv	13,000	42,000	41	-	170	-	58	-	-	530	150,000	-	-	-	-	-	1,000,000	1,000,000	1,500	-	21,000
Occupational			1,700,000	47,000	2,900	>Pv	260,000	880,000	2,800	-	1,600	-	530	-	-	4,900	3,100,000	-	-	-	-	-	22,000,000	22,000,000	31,000	-	440,000

Notes:
PCE = tetrachloroethene; TCE = trichloroethene; DCE = dichloroethene.
Grab = samples collected over a 5-minute period.
TPH = total petroleum hydrocarbons.
VOCs = volatile organic compounds.
µg/m³ = microgram per cubic meter.
< = Analyte not detected at or above the indicated reporting limit.
- = Not analyzed or not available.
J = Concentrations are estimated due to exceedences in Brownfield QAPP RPD limits for field duplicate samples.
Risk-Based Concentrations (RBCs) from RBCs for Individual Chemicals (DEQ, Rev. June 7, 2012).
>Pv = RBC exceeds the vapor pressure of the pure chemical. This constituent cannot create an unacceptable risk for this pathway.
Detected air concentrations are shown in **bold** type.
Ambient air concentrations exceeding the occupational RBCs for the air inhalation pathway are shown in highlighted cells.

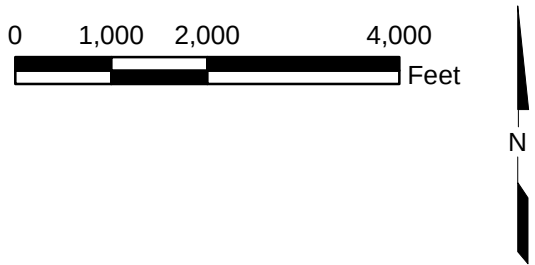
Table 4 - Chemical Analytical Results: Indoor Ambient Air (Current and Previous Investigations)
Former Campbell Dry Cleaner
Portland, Oregon

Sample Location	Sample Date	Sample Type	TPH	Chlorinated VOCs						Other detected VOCs																			
			Low fraction	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	Vinyl Chloride	Acetone	Benzene	Carbon Tetrachloride	Chloroform	Chloromethane	Cyclohexane	Ethanol	Ethylbenzene	Heptane	Trichlorofluoromethane	Dichlorodifluoromethane	n-Hexane	Methylene Chloride	2-Propanol	Styrene	Tetrahydrofuran	Toluene	1,2,4-Trimethylbenzene	2,2,4-Trimethylpentane	Xylenes (m&p + o)
Concentrations in µg/m³										Concentrations in µg/m³																			
Hart Crowser 2015 IRAM Implementation																													
Crawlspace																													
AA-1	6-Jul-15	8-hour	<210	8.1 J	4.1 J	<0.79	<0.79	<0.79	<0.51	40 J	1.1	<1.3	<0.97	1.2	1.9	74	1.3	2.1	1.3	1.3	4.2 J	2.3	86	<0.85	0.77	26 J	1.9	1.5	6.5
AA-2 (duplicate)	6-Jul-15	8-hour	<210	13 J	1.4 J	<0.79	<0.79	<0.79	<0.51	23 J	1.3	<1.3	<0.97	1.2	1.4	75	1.4	1.7	1.5	2.7	2.5 J	1.1	100	<0.85	0.80	11 J	0.98	1.6	8.9
First Floor																													
AA-3	6-Jul-15	8-hour	<210	2.0 J	46 J	<0.79	<0.79	<0.79	<0.51	59 J	0.86	<1.3	<0.97	1.4	1.0	100	1.2	2.3	1.4	1.7	1.9 J	11	9.8	5.1	1.1	8.7 J	3.5	<0.93	5.8
Second Floor																													
AA-4	6-Jul-15	8-hour	<210	<1.4 J	<1.1 J	<0.79	<0.79	<0.79	<0.51	9.3 J	<0.64	<1.3	<0.97	0.76	0.83	55	<0.87	0.90	<1.1	1.0	1.3 J	<0.69	6.1	<0.85	<0.59	3.8 J	<0.98	1.0	2.1
Background																													
AA-5	6-Jul-15	8-hour	<210	<1.4 J	<1.1 J	<0.79	<0.79	<0.79	<0.51	11 J	<0.64	<1.3	<0.97	1.1	<0.69	14	<0.87	<0.82	1.3	1.6	0.95 J	0.76	<3.1	<0.85	<0.59	2.4 J	<0.98	<0.93	<1.7
Ventilation Stack																													
Vapor Stack	6-Jul-15	Grab	500	500	3.3	<1.6	<1.6	<1.6	<1.0	69	<1.3	<2.5	<1.9	1.2	2.7	57	<1.7	2.0	<2.2	2.8	3.2	1.9	66	<1.7	9.1	8.3	<2.0	<1.9	6.1
Hart Crowser 2014 Site Investigation																													
Crawlspace																													
AA-1	10-Nov-14	8-hour	<210	130	<1.1	<0.79	<0.79	<0.79	<0.51	8.1	0.77	<1.3	<0.97	1.2	-	6.4	<0.87	-	1.3	1.8	0.78	<0.69	<3.1	-	-	2.2	-	-	<1.7
AA-2 (duplicate)	10-Nov-14	8-hour	<210	120	<1.1	<0.79	<0.79	<0.79	<0.51	8.6	0.77	<1.3	<0.97	1.3	-	7.2	<0.87	-	1.5	2.0	0.74	0.94	<3.1	-	-	2.0	-	-	<1.7
First Floor																													
AA-3	10-Nov-14	8-hour	<210	61	1.8	<0.79	<0.79	<0.79	<0.51	17	0.80	<1.3	<0.97	1.5	-	28	<0.87	-	1.4	2.1	0.99	2.3	5.4	-	-	2.3	-	-	1.8
Second Floor																													
AA-4	10-Nov-14	8-hour	-	81	0.25	<0.079	<0.079	<0.079	<0.051	-	1.5	0.55	0.88	1.1	-	-	0.74	-	-	-	-	-	-	-	-	-	-	-	-
Background																													
AA-5	10-Nov-14	8-hour	<210	<1.4	<1.1	<0.79	<0.79	<0.79	<0.51	8.8	0.86	<1.3	<0.97	1.3	-	8.3	<0.87	-	1.5	2.2	0.71	1.1	<3.1	-	-	2.1	-	-	<1.7
GeoEngineers, Phase II Environmental Site Assessment, March 12, 2013.																													
First Floor																													
IA-1	7-Jan-13	8-hour	<207	58	<1.07	<0.793	<0.793	<0.793	<0.511	31	0.83	<1.26	<0.973	1.3	-	160	<0.87	-	1.3	2.6	1.0	3.1	34	-	-	3.8	-	-	2.3
IA-1 duplicate	7-Jan-13	8-hour	<207	95	<1.07	<0.793	<0.793	<0.793	<0.511	26	0.70	<1.26	<0.973	1.3	-	89	<0.87	-	1.2	2.6	<0.705	<0.694	18	-	-	3.8	-	-	1.8
Second Floor																													
IA-2	7-Jan-13	8-hour	<207	54	<1.07	<0.793	<0.793	<0.793	<0.511	38	0.89	<1.26	2.0	1.5	-	2,500	<0.87	-	1.3	2.7	0.85	2.4	61	-	-	3.8	-	-	3.5
Background																													
UW-1	7-Jan-13	8-hour	<207	<1.36	<1.07	<0.793	<0.793	<0.793	<0.511	33	0.86	<1.26	<0.973	1.3	-	32	1.0	-	1.4	2.8	<0.705	<0.694	11	-	-	4.5	-	-	5.0
RBCs - Air Inhalation Pathway																													
Urban Residential Receptor			390	26	1.0	>Pv	63	210	0.20	-	0.85	1.1	0.29	94	6,300	-	2.7	-	730	-	730	-	210	1,000	-	5,200	7.3	-	100
Occupational Receptor			1,700	47	3.0	>Pv	260	880	2.8	-	1.6	2.0	0.53	390	26,000	-	4.9	-	3,100	-	3,100	-	880	4,400	-	22,000	31	-	440

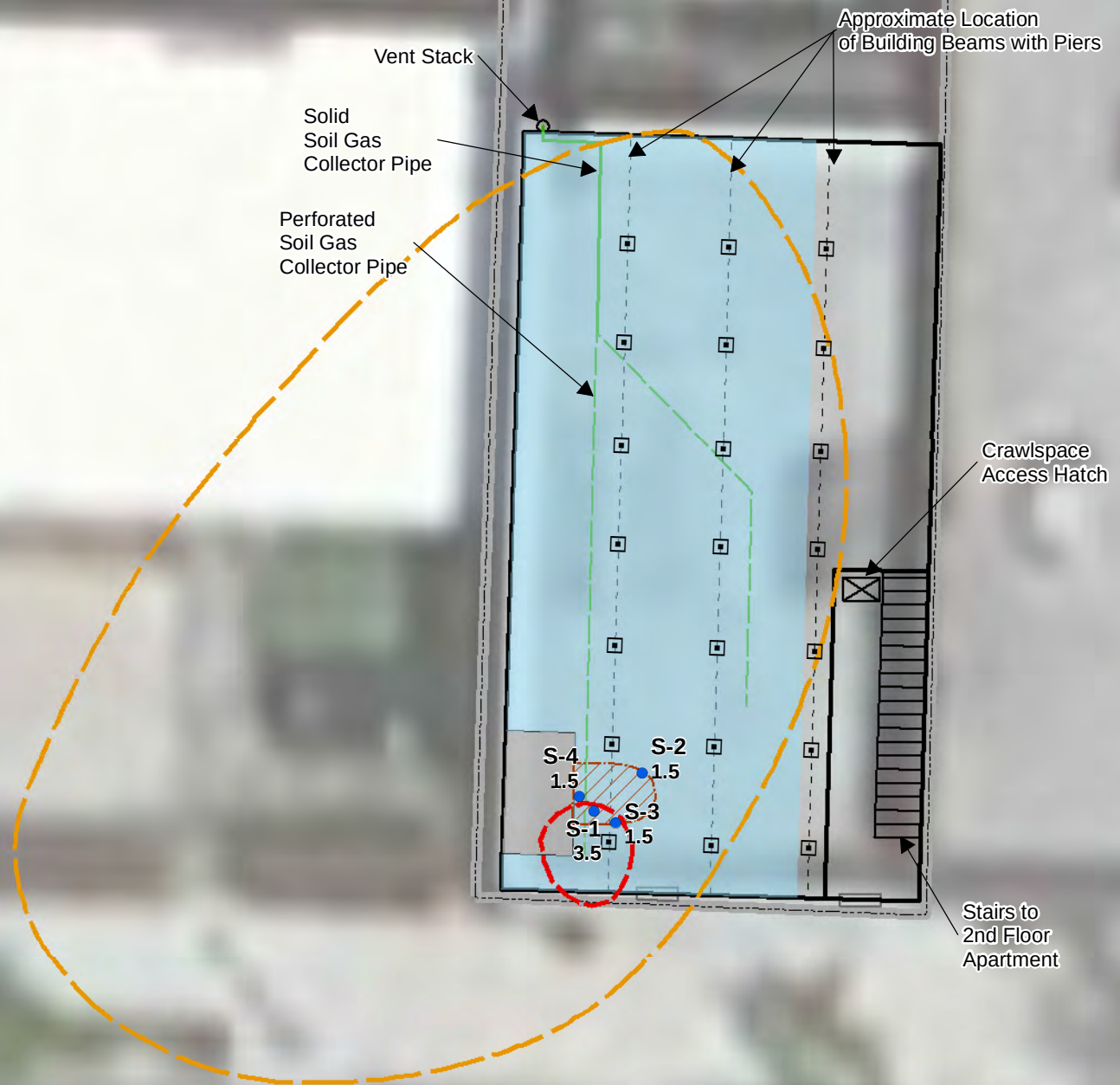
Notes:
PCE = tetrachloroethene; TCE = trichloroethene; DCE = dichloroethene.
8-hour = 8 hour time-weighted average (TWA) sample.
TPH = total petroleum hydrocarbons.
VOCs = volatile organic compounds.
µg/m³ = microgram per cubic meter.
< = Analyte not detected at or above the indicated reporting limit.
- = Not analyzed or not available.
J = Concentrations are estimated based on exceedances in Brownfield QAPP RPD limits for field duplicate samples.
Risk-Based Concentrations (RBCs) from RBCs for Individual Chemicals (DEQ, Rev. June 7, 2012).
Italicized RBCs are Regional Screening Levels for residential and industrial ambient air (EPA, Rev. June 2015).
>Pv = RBC exceeds the vapor pressure of the pure chemical. This constituent cannot create an unacceptable risk for this pathway.
Detected air concentrations are shown in **bold** type.
Ambient air concentrations exceeding the occupational RBCs for the air inhalation pathway are shown in highlighted cells.



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, ©OpenStreetMap contributors, and the GIS User Community

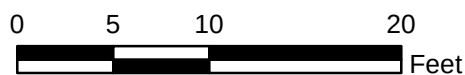


Former Campbell Dry Cleaner Portland, Oregon	
Vicinity Map	
15818-00/Task 8	7/15
	Figure 1

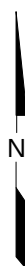


LEGEND

- S-1** • Soil Sample
- 1.5** • Sample Depth in Feet
- Extent of Soil Posing Unacceptable Risk
- Extent of Soil Gas Posing Unacceptable Vapor Intrusion Risk
- Approximate Extent of Soil Excavation
- Concrete Block
- Area Covered and Sealed with New Moisture Barrier
- Project Boundary



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Former Campbell Dry Cleaner
Portland, Oregon

As-Built IRAMs Plan View

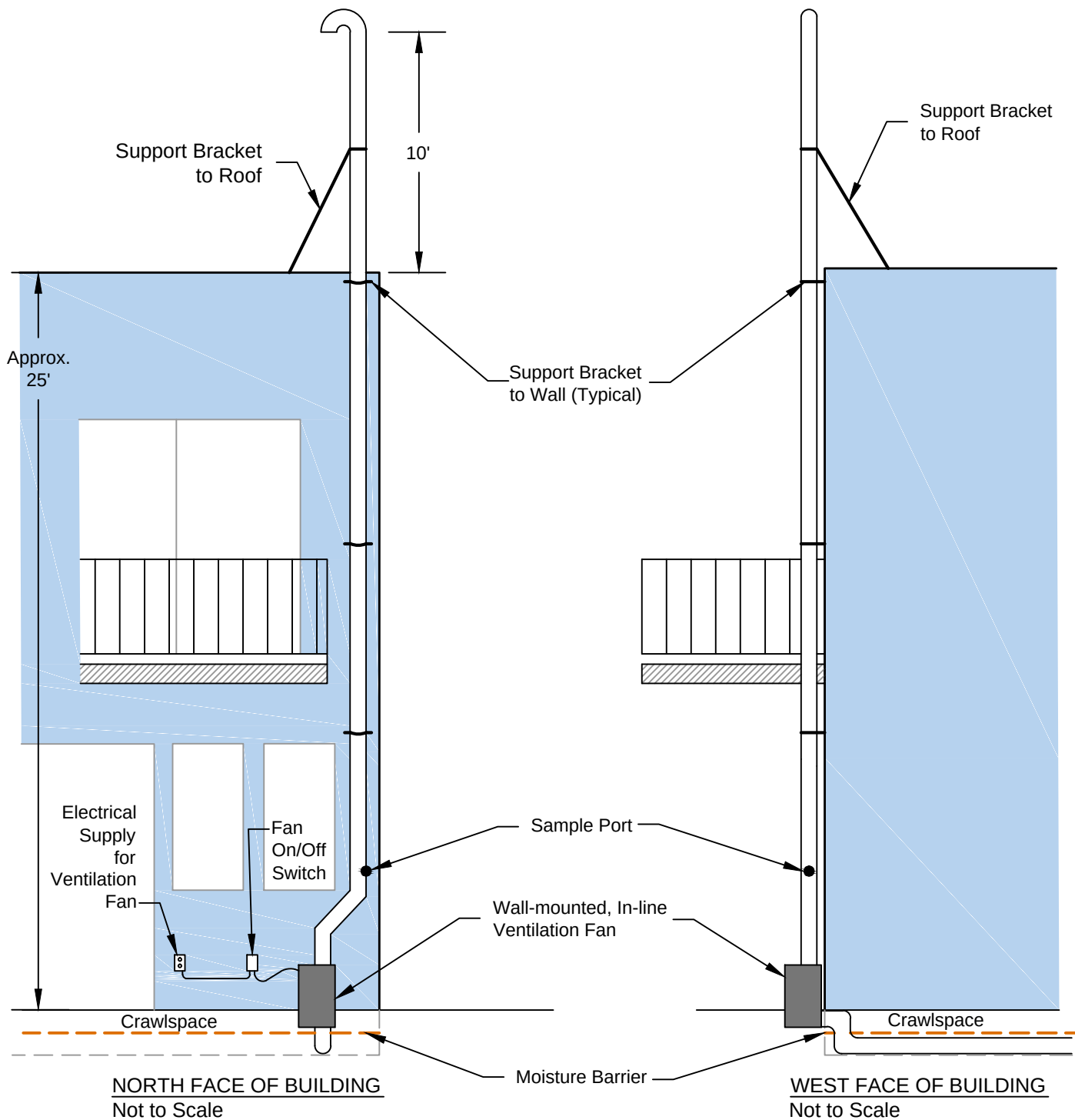
15818-00/Task 8

7/15



Figure

2



Former Campbell Dry Cleaner
Portland, Oregon

**As-Built
Vapor Exhaust Stack**

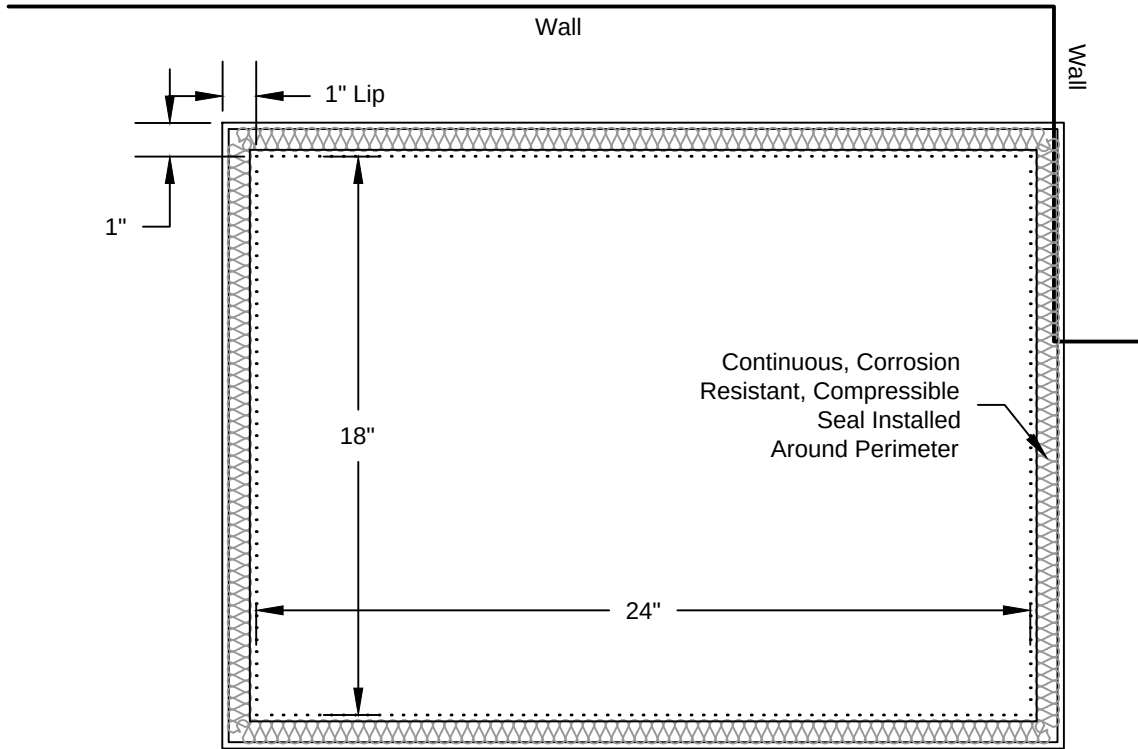
15818-00/Task 8

7/15

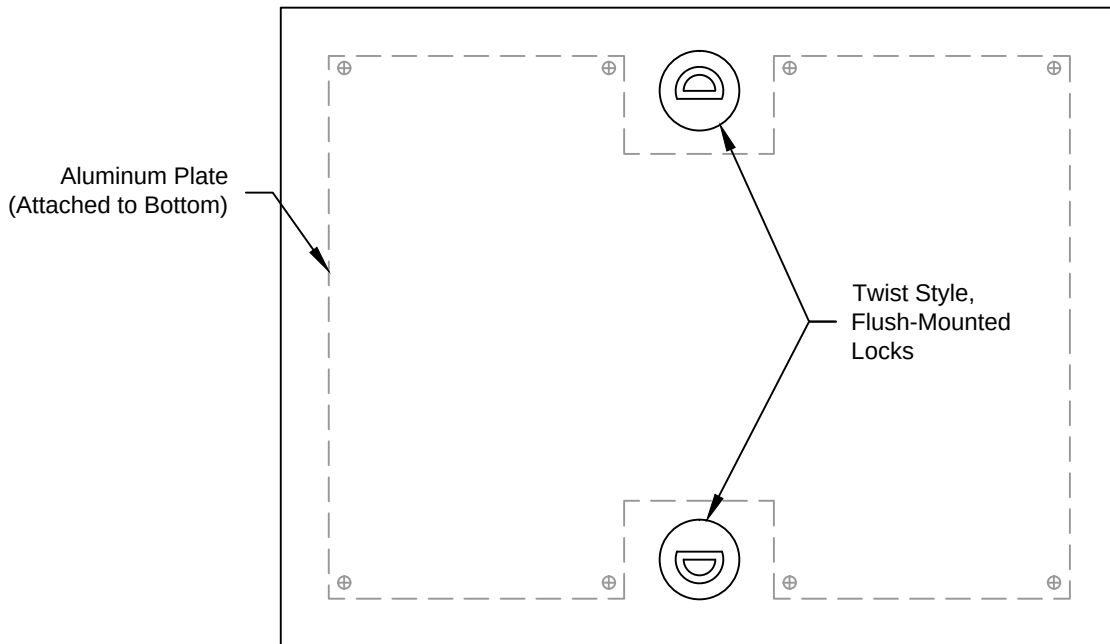


Figure

3



CRAWLSPACE ACCESS
Not to Scale



CRAWLSPACE ACCESS HATCH
Not to Scale



Former Campbell Dry Cleaner
Portland, Oregon

**As-Built
Crawlspace Access Modifications**

15818-00/Task 8

7/15



Figure

4

APPENDIX A Photograph Log



Photograph 1 – Former Campbell Cleaner building. Photograph taken facing north-northeast.



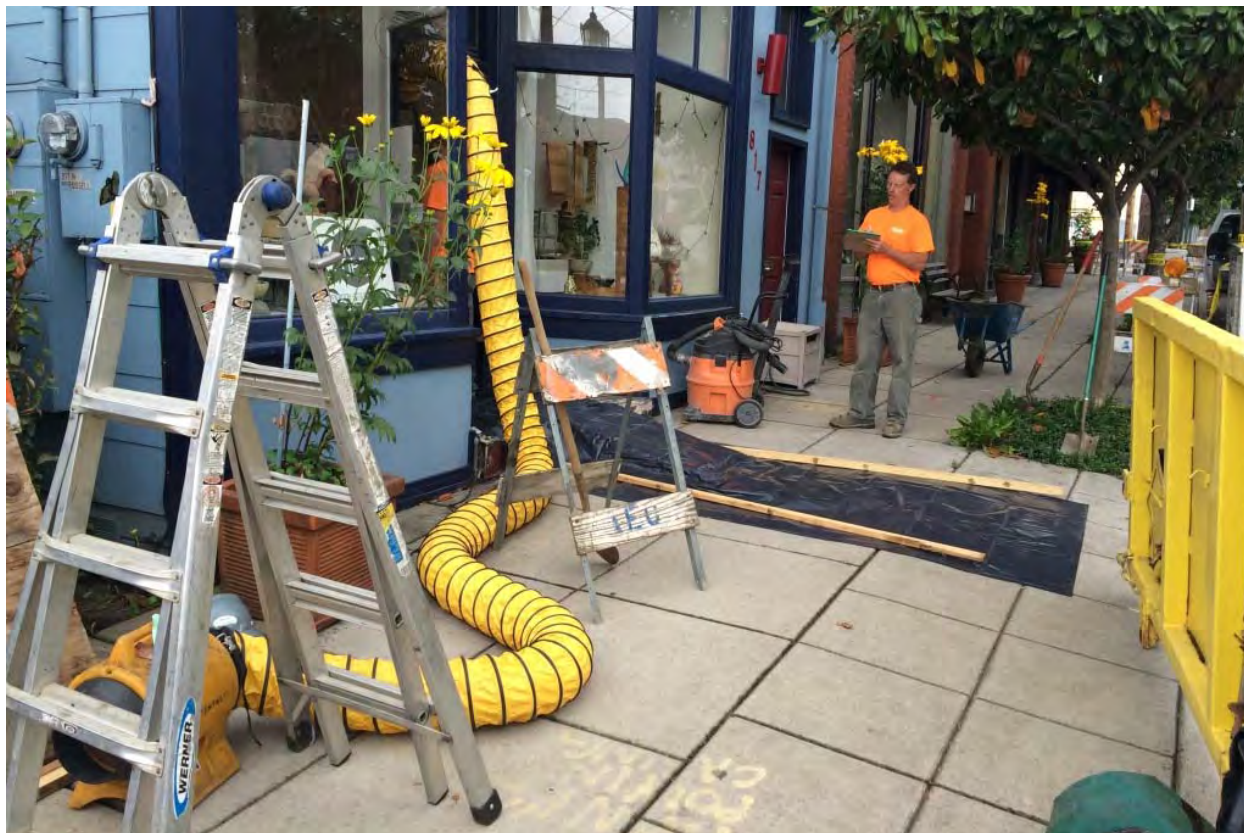
Photograph 2 – Area above the proposed source area excavation. Photograph taken facing south.



Photograph 3 – Portion of the large concrete block uncovered once the floor panels were removed.



Photograph 4 – Large concrete block and the existing moisture barrier. The soil adjacent to the block was excavated as source soil.



Photograph 5 – Preparing the front of the building to excavate source area soil. Fresh air is supplied through yellow conduit. Photograph taken facing east.



Photograph 6 – Drop box used to stage excavated soil. Ultimately 3 cubic yards of soil was excavated and disposed of at Chemical Waste Management's Subtitle C landfill in Arlington, Oregon. Photograph taken facing west.



Photograph 7 – Compact density fill being placed as backfill for the source area soil excavation. Photograph taken facing south.



Photograph 8 – Concrete block on the right covered with latex sealant to mitigate potential off-gassing.



Photograph 9 – Concrete block and floor joist covered in latex sealant showing where the new moisture barrier is sealed to the joist using tape and epoxy sealant. Photograph taken facing southwest.



Photograph 10 –The source area soil excavation can be seen in this photograph with the slotted PVC gas collection pipe placed over it. The excavation was subsequently filled using compact density fill. Note the concrete block to the right and a building support pier to the left limiting excavation.



Photograph 11 – The crawlspace with the slotted PVC soil gas collection pipe to the left. The building support piers can be seen on the right.



Photograph 12 – The in-line ventilation fan secured to the north side of the building on the right. The fan is wired to the outlet on the left and fitted with a power switch (center). The exhaust stack can also be viewed exiting the fan housing vertically. Photograph taken facing south.



Photograph 13 – The backyard area of the site, with the exhaust stack secured to the northwest corner of the building, and venting 10 feet above the roofline. Photograph taken facing south.



Photograph 14 – New moisture barrier secured to a building support pier using tape and epoxy sealant.



Photograph 15 – New moisture barrier installed in the crawlspace. Barrier is sealed to support piers and seams in the moisture barrier are taped together.



Photograph 16 – The new plywood panels installed following IRAM installation. The panels were subsequently painted by the first floor tenant. Photograph taken facing south.



Photograph 17 – Existing rubber trim in the bathroom was removed so that gaps (potential migration pathways) could be sealed. The trim pieces were replaced following caulking.



Photograph 18 – AEC crew sealing gaps in the first floor roof. Photograph taken facing south-southeast.



Photograph 19 – Modifications being made to the underside of the crawlspace access hatch. Including an aluminum plate and dual locking mechanisms.



Photograph 20 – Crawlspace access hatch with flush mounted dual locking mechanisms installed.



Photograph 21 – Box of cleaning supplies identified under the countertop where the first floor ambient air sample was collected. Supplies contain some chemicals of concern.



Photograph 22 – One of the cleaning supplies stored under the countertop in the first floor space. This contains specifically TCE which was detected at a relatively high concentration in July 2015.

APPENDIX B

Hazardous Waste Manifest

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number OR0000035702		2. Page 1 of 1	3. Emergency Response Phone (800) 424-9200		4. Manifest Tracking Number 011871423 JJK				
		5. Generator's Name and Mailing Address OFFICE OF P. G. PATON: KENNETH THIERSEN 700 NE. MULTNOMAH ST. SUITE 600 PORTLAND OR 97232 Generator's Phone: (503) 577-9494									
6. Transporter 1 Company Name							U.S. EPA ID Number				
7. Transporter 2 Company Name							U.S. EPA ID Number				
8. Designated Facility Name and Site Address CUMMINS INC 17629 CEDAR SPRINGS LANE ARLINGTON OR 97012-9709 Facility's Phone: (503) 454-2643							U.S. EPA ID Number OR00089452353				
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
	1	RO UN3077 WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., III (F002)						P	F002		
	2										
	3										
	4										
14. Special Handling Instructions and Additional Information 1: #OR327176; PCE CONTAMINATED SOIL; ERG# 171: (RO=10LBS) "Chemtrec #CCN24117"											
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.											
Generator's/Offeror's Printed/Typed Name					Signature			Month	Day	Year	
TRANSPORTER INT'L	16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____										
	17. Transporter Acknowledgment of Receipt of Materials										
TRANSPORTER	Transporter 1 Printed/Typed Name				Signature			Month	Day	Year	
	Transporter 2 Printed/Typed Name				Signature			Month	Day	Year	
DESIGNATED FACILITY	18. Discrepancy										
	18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection										
	Manifest Reference Number: _____										
	18b. Alternate Facility (or Generator) U.S. EPA ID Number _____										
DESIGNATED FACILITY	Facility's Phone: _____								Month	Day	Year
	18c. Signature of Alternate Facility (or Generator)								Month	Day	Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)											
1.			2.			3.			4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a											
Printed/Typed Name					Signature			Month	Day	Year	

APPENDIX C

Ventilation Fan Specifications

HP190SL

Slimline Radon Fans

Product #: 40564



Fantech has utilized its twenty years of experience as a radon fan manufacturer to develop the new HP190SL. This new fan features a patent-pending design starting from its outward low profile appearance to the high efficiency, continuous duty ebm-papst motor and integrated condensate bypass system.

Radon mitigators will appreciate the ease of its direct wall-mount design that eliminates the need for elbows and reduces labor costs.

Features

- Constructed from durable, UV resistant polycarbonate
- Factory sealed, no leak design
- Integral condensate bypass
- Direct wall-mount with integral vibration isolation
- Cabinet is paintable to match external decor. And include masking seal for non-paintable logo medallion.
- Weighs 12 lbs (5 Kg)

Specifications

- Duct size – 4" (102 mm)
- Voltage/Phase – 120/1
- Power rated – 88 W
- Amp – 0.78 A

The HP190SL is engineered specifically for the demanding environments of radon mitigation applications.

Low profile, wall-mount design minimizes installation time.

Fan and discharge pipe are located on surface of exterior wall eliminating need for elbows.

Fan connects directly to low pressure pipe opening on exterior wall.

Motors

- High efficiency, continuous duty ebm-papst motor.
- Non-overloading motorized impeller.
- Built-in thermal overload protection.

Case

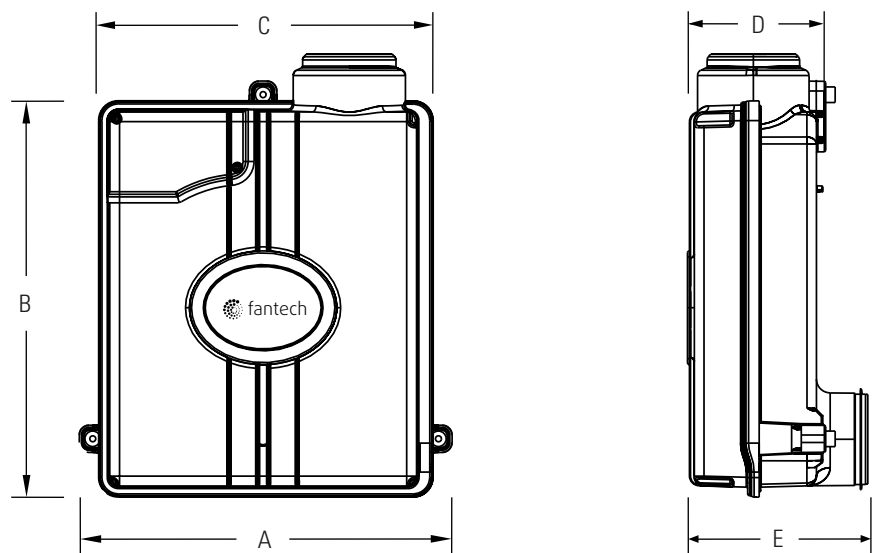
- Constructed from durable, UV resistant polycarbonate.
- Factory sealed, no leak design.
- Integral condensate bypass.
- Direct wall-mount with integral vibration isolation.

Warranty

5 year warranty.



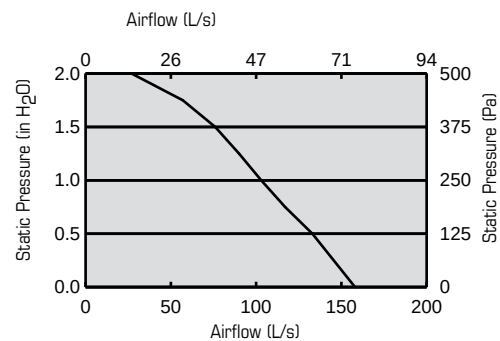
Dimensions & Airflow



Model	A		B		C		D		E	
	in	mm	in	mm	in	mm	in	mm	in	mm
HP 190SL	14 15/16	380	15 7/8	404	13 7/16	341	5 1/16	129	7 3/16	182

Ventilation Performance

in. wg. (Pa)	0.0 (0)	0.5 (125)	1.0 (250)	1.5 (375)	2.0 (500)
	cfm (L/s)	cfm (L/s)	cfm (L/s)	cfm (L/s)	cfm (L/s)
Net airflow	158 (75)	133 (63)	103 (49)	76 (36)	27 (13)



Requirements and standards

- Complies with the UL 507 requirements regulating the construction and installation of Electric Fans

Contacts

Submitted by:		Date:
Quantity:	Model:	Project #:
Comments:		
Location:		
Architect:		
Engineer:		Contractor:

Distributed by:



Installation and Operation Manual

HP190SL Series

Slimline Radon Fans



United States

10048 Industrial Blvd., Lenexa, KS, 66215
Tel.: 800.747.1762 • Fax: 800.487.9915

Canada

50 Kanalfakt Way, Bouctouche, NB, E4S 3M5
Tel.: 800.565.3548 • Fax: 877.747.8116



				
Note	Warning / Important note	Information	Technical information	Practical tip



WARNINGS

DO NOT CONNECT POWER SUPPLY until fan is completely installed. Make sure electrical service to the fan is in the locked “OFF” position.

1. This unit has rotating parts and safety precautions should be exercised during installation, operation and maintenance.
2. WARNING! TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS - OBSERVE THE FOLLOWING:
 - a. Use this unit in the manner intended by the manufacturer. If you have any questions, contact your manufacturer's representative or contact us directly.
 - b. CAUTION: Before servicing or cleaning unit, switch power off at service panel and lock the service disconnection means to prevent power from being switched on accidentally. When the service disconnection means cannot be locked, securely fasten a prominent warning device, such as tag, to the panel.
 - c. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
 - d. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guidelines and safety standards such as those published by the National Fire Protection Association (NFPA) and the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) and the local code authorities.
 - e. When cutting or drilling into wall and ceiling, do not damage electrical wiring and other hidden utilities.
 - f. Ducted fans must always be vented to the outdoors.
3. WARNING! Check voltage at the fan to see if it corresponds to the motor name plate.
4. For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.
5. Do not use this fan with any solid state speed control device.

GUARDS MUST BE INSTALLED WHEN FAN IS WITHIN REACH OF PERSONNEL OR WITHIN SEVEN (7) FEET OF WORKING LEVEL OR WHEN DEEMED ADVISABLE FOR SAFETY.

INSTALLATION

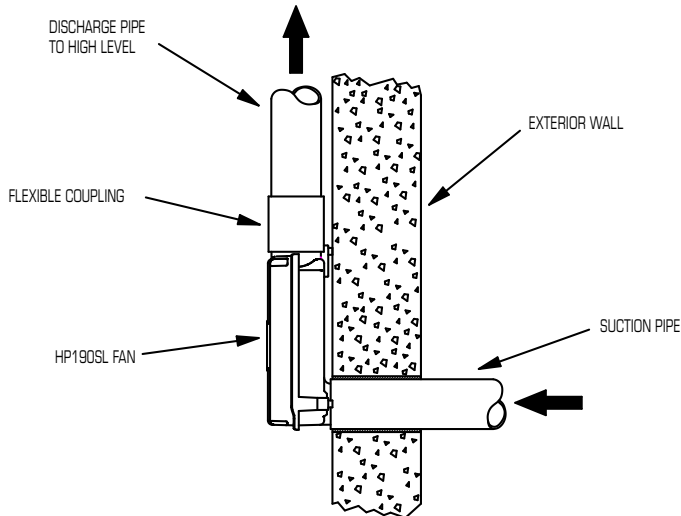
The HP190SL is designed for use with 4" schedule 20 or schedule 40 PVC pipe.

Prior to installation, the suction pipe should be terminated at the exterior wall.

The suction pipe should be installed with a slight incline to drain water away from the fan.

The HP190SL has an integrated condensate bypass. A secondary condensate bypass is not required.

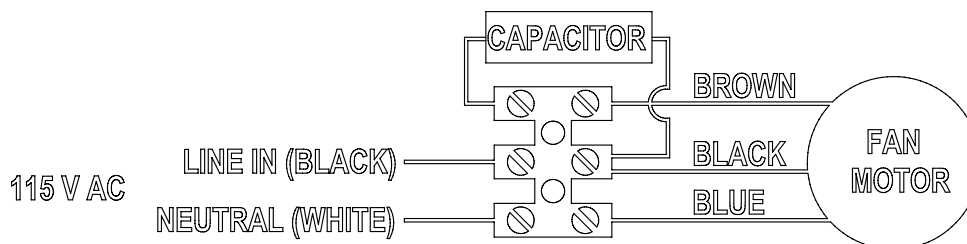
INSTALLING THE HP190SL



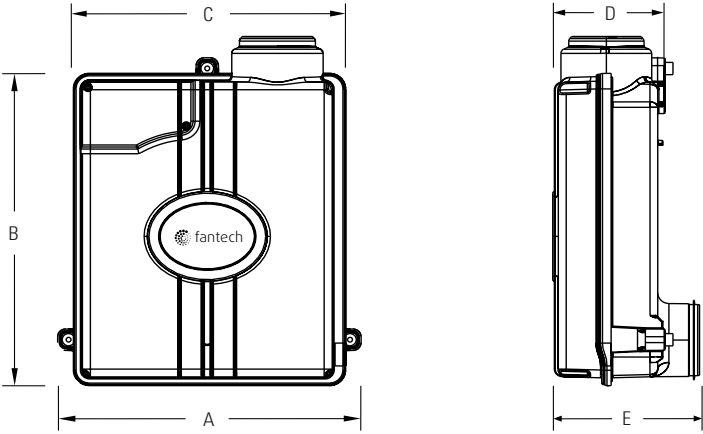
1. Position the fan temporarily by inserting the inlet collar into the open end of the suction pipe on the exterior wall.
2. With the fan upright and level, mark the location of the three mounting holes on the exterior wall.
3. Remove the fan and drill pilot holes or insert wall anchors (not supplied by Fantech) at the three marked hole locations.
4. Insert the fan again into its final position and secure it to the wall at the three mounting points using fasteners (not supplied by Fantech). Do not overtighten fasteners to prevent excessive deformation of the vibration isolators.
5. Connect the discharge pipe to the fan outlet using a flexible coupling 156-44 or similar (not supplied by Fantech). The use of a lubricant such as liquid soap is recommended to fit the coupling to the fan and pipe.

WIRING DIAGRAM

ORDER OF WIRES ON TERMINAL BLOCK
MAY NOT BE AS SHOWN.



DIMENSIONS



Model	A	B	C	D	E
HP 190SL	14 15/16	15 7/8	13 7/8	5 1/8	7 1/8

All dimensions in inches.

WARRANTY

Five (5) Year Warranty

This warranty supersedes all prior warranties

DURING ENTIRE WARRANTY PERIOD:

Fantech will repair or replace any part which has a factory defect in workmanship or material. Product may need to be returned to the Fantech factory, together with a copy of the bill of sale and identified with RMA number.

FOR FACTORY RETURN YOU MUST:

- Have a Return Materials Authorization (RMA) number. This may be obtained by calling Fantech either in the USA at 1.800.747.1762 or in CANADA at 1.800.565.3548. Please have bill of sale available.
- The RMA number must be clearly written on the outside of the carton, or the carton will be refused.
- All parts and/or product will be repaired/replaced and shipped back to buyer; no credit will be issued.

OR

The Distributor may place an order for the warranty part and/or product and is invoiced. The Distributor will receive a credit equal to the invoice only after product is returned prepaid and verified to be defective.

FANTECH WARRANTY TERMS DO NOT PROVIDE FOR REPLACEMENT WITHOUT CHARGE PRIOR TO INSPECTION FOR A DEFECT. REPLACEMENTS ISSUED IN ADVANCE OF DEFECT INSPECTION ARE INVOICED, AND CREDIT IS PENDING INSPECTION OF RETURNED MATERIAL. DEFECTIVE MATERIAL RETURNED BY END USERS SHOULD NOT BE REPLACED BY THE DISTRIBUTOR WITHOUT CHARGE TO THE

END USER, AS CREDIT TO DISTRIBUTOR'S ACCOUNT WILL BE PENDING INSPECTION AND VERIFICATION OF ACTUAL DEFECT BY FANTECH.

THE FOLLOWING WARRANTIES DO NOT APPLY:

- Damages from shipping, either concealed or visible. Claim must be filed with freight company.
- Damages resulting from improper wiring or installation.
- Damages or failure caused by acts of God, or resulting from improper consumer procedures, such as:
 1. Improper maintenance
 2. Misuse, abuse, abnormal use, or accident, and
 3. Incorrect electrical voltage or current.
- Removal or any alteration made on the Fantech label control number or date of manufacture.
- Any other warranty, expressed, implied or written, and to any consequential or incidental damages, loss or property, revenues, or profit, or costs of removal, installation or reinstallation, for any breach of warranty.

WARRANTY VALIDATION

- The user must keep a copy of the bill of sale to verify purchase date.
- These warranties give you specific legal rights, and are subject to an applicable consumer protection legislation. You may have additional rights which vary from state to state.

Limitation of Warranty and Liability

This warranty does not apply to any Fantech product or part which has failed as a result of faulty installation or abuse, incorrect electrical connections or alterations made by others, or use under abnormal operating conditions or misapplication of the product or parts. We will not approve for payment any repair not made by us or our authorized agent without prior written consent. The foregoing shall constitute our sole and exclusive warranty and our sole exclusive liability, and is in lieu of any other warranties, whether written, oral, implied or statutory. There are no warranties which extend beyond the description on the page hereof. In no event, whether as a result of breach of contract, or

warranty or alleged negligence, defect incorrect advice or other causes, shall Fantech be liable for special or consequential damages, including, but not limited to, loss of profits or revenue, loss of use of equipment or any other associated equipment, cost of capital, cost of substitute equipment, facilities or services, downtime costs, or claims of customers of purchase for such damages. Fantech neither assumes or authorizes any person to assume for it any other liability in connection with the sale of product(s) or part(s). Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages so the above limitations and exclusions may not apply to you.

Warning

Fantech products are designed and manufactured to provide reliable performance, but they are not guaranteed to be 100% free from defects. Even reliable products will experience occasional failures and this possibility should be recognized by the user. If these products are

used in a life support ventilation system where failure could result in loss or injury, the user should provide adequate backup ventilation, supplementary natural ventilation, failure alarm system, or acknowledge willingness to accept the risk of such loss or injury.

NOTES

NOTES

Fantech reserves the right to make technical changes.
For updated documentation please refer to www.fantech.net

Fantech®



APPENDIX D

Analytical Laboratory Testing Program and Documentation

APPENDIX D

Analytical Laboratory Testing Program and Documentation

This appendix documents the results of a quality assurance (QA) review of the analytical data for samples collected during IRAM implementation in July 2015 at the former Campbell Cleaner site in Portland, Oregon. ESC Lab Sciences (ESC) of Mt. Juliet, Tennessee, analyzed soil, ambient air, and extracted soil vapors from the Campbell Cleaner site under their Price Agreement with the State of Oregon. Copies of the analytical laboratory reports are included in this appendix.

The QA review included examination and validation of the laboratory's summary reports, including:

- Analytical methods;
- Detection limits;
- Sample holding times;
- Custody records;
- Surrogates, spikes, and blanks; and
- Duplicates.

The QA review did not include a review of raw data.

1.0 ANALYTICAL METHODS AND REPORTING LIMITS

This section describes the analytical methods and detection/reporting limits for the chemical analyses.

1.1 Analytical Methods

Soil Analyses. Chemical analyses on soil samples consisted of volatile organic compounds (VOCs) by EPA Method 8260B.

Air Analyses. Chemical analyses on ambient air and extracted soil vapors consisted of low fraction total petroleum hydrocarbons and VOCs by EPA Method TO-15.

1.2 Method Reporting and Detection Limits

Reporting detection limits (RDLs) are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested RDLs by the Environmental Protection Agency (EPA) or the Oregon Department of Environmental Quality (DEQ). In some cases, the RDL is raised due to high analyte concentrations in the samples, matrix interferences, or percent dry weight calculations (soil samples). RDLs are generally consistent with industry standards and where possible below risk-based concentrations (RBCs) if not raised as discussed above. The minimum detection limits (MDL) represents the lowest concentration that the instrumentation can detect a compound; however, the concentration between the RDL and MDL can be only estimated and is "J" flagged in the report tables, if detected.

2.0 DATA QUALITY ASSURANCE

Data quality is indicated by assessing their completeness, representativeness, accuracy, precision, and comparability. An evaluation of the data follows.

2.1 Completeness

Completeness is defined as the percentage of measurements made that are judged to be valid. The completeness goal is essentially a sufficient amount of valid data that is generated to meet the objectives of the data (i.e., assess indoor air conditions). Two laboratory reports were received and are included in this appendix. No sample results were rejected based on the data validation. The data completeness for the samples is 100 percent for all requested analyses.

2.2 Representativeness

Representativeness is a measure of how closely the results reflect the actual concentration of the parameters in the medium sampled. It is not possible to measure this directly, so representativeness is controlled and ensured by using standard protocols for sample handling and custody, analyzing samples within prescribed holding times, and analyzing blank samples.

Sample Handling and Custody. Samples were collected in general accordance with industry standards. These included requirements for collection, containers, labeling, packaging, shipping, and storage. Compliance with these procedures has been documented on chain of custody forms. Copies of the chain of custody forms are included with the laboratory reports.

Holding Times. Collection dates for all samples submitted are documented on the chain of custody form. Collection and analysis dates are indicated in the laboratory report. Holding times were met for all samples.

Sample Quality. All samples were collected in general accordance with industry standards. Sample containers for VOC analysis in soil were fully filled, leaving as little headspace as possible.

Trip Blank. No trip blanks were submitted or analyzed.

Rinsate Blank. No rinsate blanks were submitted or analyzed.

Method Blanks. Method blanks are prepared by the laboratory and analyzed to check for the possibility that the sample may become contaminated during the analysis process. Blanks were analyzed for all analytical tests requested. No analytes were detected in the method blanks.

2.3 Accuracy

Accuracy or bias measures the closeness of the measured value to the true value. Accuracy is the agreement between a measured value and its true or accepted value. While it is not possible to determine absolute accuracy for environmental samples, the analysis of standards and spiked samples provides an indirect assessment of accuracy.

Surrogates. In a surrogate analysis, a known amount of a compound similar to the constituent of interest is added to a sample and measured. The surrogate analysis assesses the accuracy of a chemical measurement by comparing the measured value to the actual spiked value. Up to four surrogates are added to each sample for organic analysis. Surrogate recoveries were all within acceptable limits except for dibromofluoromethane in soil sample S-1. This surrogate recovery was outside the upper control limit and is flagged “J1.” As all other surrogates were within acceptable ranges, the data were not flagged.

Matrix Spike Samples. Matrix spike (MS) analysis is performed on samples submitted to the laboratory that are of the same matrix as the actual sample. This is spiked with known levels of the constituents of interest. This analysis is used to assess the potential for matrix interference with recovery or detection of the constituents of interest and the accuracy of the determination. The spiked sample results are compared to the expected result (i.e., sample concentration plus spike amount) and are reported as percent recovery. Typically, two matrix spike samples are prepared and analyzed for each set of samples submitted. The percent recoveries from the first matrix spike sample and the second, the duplicate, are subsequently compared to each other for precision as described in Section 2.4. The results of the individual percent recoveries are described here. Matrix spike samples were completed for soil samples with acceptable recoveries for all analytes.

Laboratory Control Samples. Laboratory control samples (LCS) were used by the laboratory to assess the accuracy of the analytical equipment in analyzing all requested analytes. The sample is prepared from the analyte-free matrix, which is then spiked with known levels of the constituents of interest (i.e., a standard). The concentrations are measured, and the results are compared to the known spiked levels. This comparison is expressed as percent recovery. Two LCSs were prepared and analyzed for each of the soil and air samples. The percent recoveries from the first laboratory control sample and the second, the duplicate, are subsequently compared to each other for precision as described in Section 2.4. The results of the individual LCS percent recoveries are all within acceptable limits.

2.4 Precision

Precision is the degree of reproducibility or agreement between independent or repeated measurements. Analytical variability is expressed as the relative percent difference (RPD) between field or laboratory replicates and between the primary and duplicate MS and LCS analyses.

Field Duplicates. A field duplicate is a second field sample collected from a selected sample location and media. The field duplicate sample serves as a check on laboratory quality as well as on potential variability in the sampling method and the sample matrix. The field duplicate is analyzed and compared to the first sample to assess the precision of the sampling and analytical methods. This comparison can be expressed as the RPD between the original and duplicate samples. Duplicate analyses were performed on air (AA-1 and AA-2). Results were within the acceptable criterion of 35 percent or less for all analytes except for:

- Tetrachloroethene, trichloroethene, acetone, n-hexane, and toluene were qualified as estimated “J”. There RPDs exceeded the Quality Assurance Project Plan control limits for detected analytes.

Laboratory Sample Duplicates. A laboratory duplicate is a second analysis of a sample. A second bottle or aliquot of a sample is prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. No laboratory sample duplicates were performed on samples submitted.

Matrix Spike Sample Duplicate. A second MS sample (a.k.a., the MS duplicate [MSD]) is prepared as above and analyzed. This is compared to the initial matrix spike to assess the precision of the analytical method by calculating the RPD. For this method, both a percent recovery and an RPD are reported. An MSD was prepared for soil analysis, all the MSD RPDs were within the acceptability criteria.

Laboratory Control Sample Duplicates. A duplicate is a second analysis of an LCS. The duplicate is then prepared along with the original. It is analyzed and compared to the first to assess the precision of the analytical method. The LCS RPDs were within the acceptability criteria except for acetone in the soil LCS duplicate. Acetone was not detected in soil samples S-1 through S-4, and therefore are not flagged.

2.5 Comparability

Generally, all samples were analyzed in accordance with accepted methods of the EPA or DEQ. Because similar or the same methods were used, the quality of the data collected is consistent for all data sets and is, therefore, comparable.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

Report Summary

Wednesday June 17, 2015

Report Number: L770390

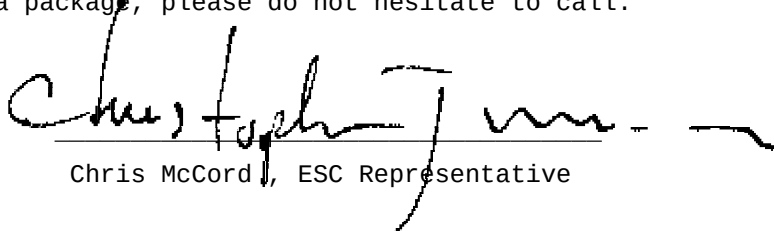
Samples Received: 06/10/15

Client Project: 15818-00/TASK 7

Description: Former Campbell Dry Cleaners

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:



Chris McCord, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/B10041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-01

Sample ID : S-1

Site ID :

Collected By : KS
Collection Date : 06/01/15 15:30

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	80.6	0.0333		%		2540 G-2	06/13/15	1
Volatile Organics								
Acetone	U	25.	160	mg/kg	J3	8260B	06/15/15	2500
Acrylonitrile	U	4.5	31.	mg/kg		8260B	06/15/15	2500
Benzene	U	0.68	3.1	mg/kg		8260B	06/15/15	2500
Bromobenzene	U	0.71	3.1	mg/kg		8260B	06/15/15	2500
Bromodichloromethane	U	0.64	3.1	mg/kg		8260B	06/15/15	2500
Bromoform	U	1.1	3.1	mg/kg		8260B	06/15/15	2500
Bromomethane	U	3.4	16.	mg/kg		8260B	06/15/15	2500
n-Butylbenzene	U	0.64	3.1	mg/kg		8260B	06/15/15	2500
sec-Butylbenzene	U	0.50	3.1	mg/kg		8260B	06/15/15	2500
tert-Butylbenzene	U	0.52	3.1	mg/kg		8260B	06/15/15	2500
Carbon disulfide	U	0.55	3.1	mg/kg		8260B	06/15/15	2500
Carbon tetrachloride	U	0.82	3.1	mg/kg		8260B	06/15/15	2500
Chlorobenzene	U	0.53	3.1	mg/kg		8260B	06/15/15	2500
Chlorodibromomethane	U	0.93	3.1	mg/kg		8260B	06/15/15	2500
Chloroethane	U	2.4	16.	mg/kg		8260B	06/15/15	2500
2-Chloroethyl vinyl ether	U	5.8	160	mg/kg		8260B	06/15/15	2500
Chloroform	U	0.57	16.	mg/kg		8260B	06/15/15	2500
Chloromethane	U	0.94	7.8	mg/kg		8260B	06/15/15	2500
2-Chlorotoluene	U	0.75	3.1	mg/kg		8260B	06/15/15	2500
4-Chlorotoluene	U	0.60	3.1	mg/kg		8260B	06/15/15	2500
1,2-Dibromo-3-Chloropropane	U	2.6	16.	mg/kg		8260B	06/15/15	2500
1,2-Dibromoethane	U	0.86	3.1	mg/kg		8260B	06/15/15	2500
Dibromomethane	U	0.96	3.1	mg/kg		8260B	06/15/15	2500
1,2-Dichlorobenzene	U	0.76	3.1	mg/kg		8260B	06/15/15	2500
1,3-Dichlorobenzene	U	0.60	3.1	mg/kg		8260B	06/15/15	2500
1,4-Dichlorobenzene	U	0.56	3.1	mg/kg		8260B	06/15/15	2500
Dichlorodifluoromethane	U	1.8	16.	mg/kg		8260B	06/15/15	2500
1,1-Dichloroethane	U	0.50	3.1	mg/kg		8260B	06/15/15	2500
1,2-Dichloroethane	U	0.66	3.1	mg/kg		8260B	06/15/15	2500
1,1-Dichloroethene	U	0.76	3.1	mg/kg		8260B	06/15/15	2500
cis-1,2-Dichloroethene	U	0.59	3.1	mg/kg		8260B	06/15/15	2500
trans-1,2-Dichloroethene	U	0.66	3.1	mg/kg		8260B	06/15/15	2500
1,2-Dichloropropane	U	0.90	3.1	mg/kg		8260B	06/15/15	2500
1,1-Dichloropropene	U	0.79	3.1	mg/kg		8260B	06/15/15	2500
1,3-Dichloropropane	U	0.52	3.1	mg/kg		8260B	06/15/15	2500
cis-1,3-Dichloropropene	U	0.66	3.1	mg/kg		8260B	06/15/15	2500
trans-1,3-Dichloropropene	U	0.67	3.1	mg/kg		8260B	06/15/15	2500
2,2-Dichloropropane	U	0.70	3.1	mg/kg		8260B	06/15/15	2500
Di-isopropyl ether	U	0.62	3.1	mg/kg		8260B	06/15/15	2500
Ethylbenzene	U	0.74	3.1	mg/kg		8260B	06/15/15	2500

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04

L770390-01 (V8260) - Lowest possible dilution that is within hold time.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-01

Sample ID : S-1

Site ID :

Collected By : KS
Collection Date : 06/01/15 15:30

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.86	3.1	mg/kg		8260B	06/15/15	2500
Isopropylbenzene	U	0.61	3.1	mg/kg		8260B	06/15/15	2500
p-Isopropyltoluene	U	0.51	3.1	mg/kg		8260B	06/15/15	2500
2-Butanone (MEK)	U	12.	31.	mg/kg		8260B	06/15/15	2500
Methylene Chloride	U	2.5	16.	mg/kg		8260B	06/15/15	2500
4-Methyl-2-pentanone (MIBK)	U	4.7	31.	mg/kg		8260B	06/15/15	2500
Methyl tert-butyl ether	U	0.53	3.1	mg/kg		8260B	06/15/15	2500
Naphthalene	U	2.5	16.	mg/kg		8260B	06/15/15	2500
n-Propylbenzene	U	0.52	3.1	mg/kg		8260B	06/15/15	2500
Styrene	U	0.58	3.1	mg/kg		8260B	06/15/15	2500
1,1,1,2-Tetrachloroethane	U	0.66	3.1	mg/kg		8260B	06/15/15	2500
1,1,2,2-Tetrachloroethane	U	0.91	3.1	mg/kg		8260B	06/15/15	2500
1,1,2-Trichlorotrifluoroethane	U	0.91	3.1	mg/kg		8260B	06/15/15	2500
Tetrachloroethene	22.	0.69	3.1	mg/kg		8260B	06/15/15	2500
Toluene	U	1.1	16.	mg/kg		8260B	06/15/15	2500
1,2,3-Trichlorobenzene	U	0.76	3.1	mg/kg		8260B	06/15/15	2500
1,2,4-Trichlorobenzene	U	0.97	3.1	mg/kg		8260B	06/15/15	2500
1,1,1-Trichloroethane	U	0.72	3.1	mg/kg		8260B	06/15/15	2500
1,1,2-Trichloroethane	U	0.69	3.1	mg/kg		8260B	06/15/15	2500
Trichloroethene	U	0.70	3.1	mg/kg		8260B	06/15/15	2500
Trichlorofluoromethane	U	0.96	16.	mg/kg		8260B	06/15/15	2500
1,2,3-Trichloropropane	U	1.8	7.8	mg/kg		8260B	06/15/15	2500
1,2,4-Trimethylbenzene	U	0.53	3.1	mg/kg		8260B	06/15/15	2500
1,2,3-Trimethylbenzene	U	0.72	3.1	mg/kg		8260B	06/15/15	2500
1,3,5-Trimethylbenzene	U	0.66	3.1	mg/kg		8260B	06/15/15	2500
Vinyl chloride	U	0.73	3.1	mg/kg		8260B	06/15/15	2500
Xylenes, Total	U	1.7	9.3	mg/kg		8260B	06/15/15	2500
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/15/15	1
Dibromofluoromethane	136.			% Rec.	J1	8260B	06/15/15	1
a,a,a-Trifluorotoluene	102.			% Rec.		8260B	06/15/15	1
4-Bromofluorobenzene	99.3			% Rec.		8260B	06/15/15	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04

L770390-01 (V8260) - Lowest possible dilution that is within hold time.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-02

Sample ID : S-2

Site ID :

Collected By : KS
Collection Date : 06/01/15 15:45

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	76.6	0.0333		%		2540 G-2	06/13/15	1
Volatile Organics								
Acetone	U	0.050	0.33	mg/kg	J3	8260B	06/15/15	5
Acrylonitrile	U	0.0090	0.065	mg/kg		8260B	06/15/15	5
Benzene	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Bromobenzene	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Bromodichloromethane	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
Bromoform	U	0.0021	0.0065	mg/kg		8260B	06/15/15	5
Bromomethane	U	0.0067	0.033	mg/kg		8260B	06/15/15	5
n-Butylbenzene	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
sec-Butylbenzene	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
tert-Butylbenzene	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
Carbon disulfide	U	0.0011	0.0065	mg/kg		8260B	06/15/15	5
Carbon tetrachloride	U	0.0016	0.0065	mg/kg		8260B	06/15/15	5
Chlorobenzene	U	0.0011	0.0065	mg/kg		8260B	06/15/15	5
Chlorodibromomethane	U	0.0019	0.0065	mg/kg		8260B	06/15/15	5
Chloroethane	U	0.0047	0.033	mg/kg		8260B	06/15/15	5
2-Chloroethyl vinyl ether	U	0.012	0.33	mg/kg		8260B	06/15/15	5
Chloroform	U	0.0011	0.033	mg/kg		8260B	06/15/15	5
Chloromethane	U	0.0019	0.016	mg/kg		8260B	06/15/15	5
2-Chlorotoluene	U	0.0015	0.0065	mg/kg		8260B	06/15/15	5
4-Chlorotoluene	U	0.0012	0.0065	mg/kg		8260B	06/15/15	5
1,2-Dibromo-3-Chloropropane	U	0.0052	0.033	mg/kg		8260B	06/15/15	5
1,2-Dibromoethane	U	0.0017	0.0065	mg/kg		8260B	06/15/15	5
Dibromomethane	U	0.0019	0.0065	mg/kg		8260B	06/15/15	5
1,2-Dichlorobenzene	U	0.0015	0.0065	mg/kg		8260B	06/15/15	5
1,3-Dichlorobenzene	U	0.0012	0.0065	mg/kg		8260B	06/15/15	5
1,4-Dichlorobenzene	U	0.0011	0.0065	mg/kg		8260B	06/15/15	5
Dichlorodifluoromethane	U	0.0036	0.033	mg/kg		8260B	06/15/15	5
1,1-Dichloroethane	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
1,2-Dichloroethane	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
1,1-Dichloroethene	U	0.0015	0.0065	mg/kg		8260B	06/15/15	5
cis-1,2-Dichloroethene	U	0.0012	0.0065	mg/kg		8260B	06/15/15	5
trans-1,2-Dichloroethene	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
1,2-Dichloropropane	U	0.0018	0.0065	mg/kg		8260B	06/15/15	5
1,1-Dichloropropene	U	0.0016	0.0065	mg/kg		8260B	06/15/15	5
1,3-Dichloropropane	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
cis-1,3-Dichloropropene	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
trans-1,3-Dichloropropene	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
2,2-Dichloropropane	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Di-isopropyl ether	U	0.0012	0.0065	mg/kg		8260B	06/15/15	5
Ethylbenzene	U	0.0015	0.0065	mg/kg		8260B	06/15/15	5

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-02

Sample ID : S-2

Site ID :

Collected By : KS
Collection Date : 06/01/15 15:45

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.0017	0.0065	mg/kg		8260B	06/15/15	5
Isopropylbenzene	U	0.0012	0.0065	mg/kg		8260B	06/15/15	5
p-Isopropyltoluene	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
2-Butanone (MEK)	U	0.023	0.065	mg/kg		8260B	06/15/15	5
Methylene Chloride	U	0.0050	0.033	mg/kg		8260B	06/15/15	5
4-Methyl-2-pentanone (MIBK)	U	0.0094	0.065	mg/kg		8260B	06/15/15	5
Methyl tert-butyl ether	U	0.0011	0.0065	mg/kg		8260B	06/15/15	5
Naphthalene	U	0.0050	0.033	mg/kg		8260B	06/15/15	5
n-Propylbenzene	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
Styrene	U	0.0012	0.0065	mg/kg		8260B	06/15/15	5
1,1,1,2-Tetrachloroethane	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
1,1,2,2-Tetrachloroethane	U	0.0018	0.0065	mg/kg		8260B	06/15/15	5
1,1,2-Trichlorotrifluoroethane	U	0.0018	0.0065	mg/kg		8260B	06/15/15	5
Tetrachloroethene	0.011	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Toluene	U	0.0022	0.033	mg/kg		8260B	06/15/15	5
1,2,3-Trichlorobenzene	U	0.0015	0.0065	mg/kg		8260B	06/15/15	5
1,2,4-Trichlorobenzene	U	0.0019	0.0065	mg/kg		8260B	06/15/15	5
1,1,1-Trichloroethane	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
1,1,2-Trichloroethane	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Trichloroethene	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Trichlorofluoromethane	U	0.0019	0.033	mg/kg		8260B	06/15/15	5
1,2,3-Trichloropropane	U	0.0037	0.016	mg/kg		8260B	06/15/15	5
1,2,4-Trimethylbenzene	U	0.0010	0.0065	mg/kg		8260B	06/15/15	5
1,2,3-Trimethylbenzene	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
1,3,5-Trimethylbenzene	U	0.0013	0.0065	mg/kg		8260B	06/15/15	5
Vinyl chloride	U	0.0014	0.0065	mg/kg		8260B	06/15/15	5
Xylenes, Total	U	0.0035	0.020	mg/kg		8260B	06/15/15	5
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/15/15	1
Dibromofluoromethane	104.			% Rec.		8260B	06/15/15	1
a,a,a-Trifluorotoluene	99.8			% Rec.		8260B	06/15/15	1
4-Bromofluorobenzene	98.9			% Rec.		8260B	06/15/15	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-03

Sample ID : S-3

Site ID :

Collected By : KS
Collection Date : 06/01/15 15:50

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	75.2	0.0333		%		2540 G-2	06/13/15	1
Volatile Organics								
Acetone	U	0.050	0.33	mg/kg	J3	8260B	06/15/15	5
Acrylonitrile	U	0.0090	0.066	mg/kg		8260B	06/15/15	5
Benzene	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Bromobenzene	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Bromodichloromethane	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
Bromoform	U	0.0021	0.0066	mg/kg		8260B	06/15/15	5
Bromomethane	U	0.0067	0.033	mg/kg		8260B	06/15/15	5
n-Butylbenzene	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
sec-Butylbenzene	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
tert-Butylbenzene	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
Carbon disulfide	U	0.0011	0.0066	mg/kg		8260B	06/15/15	5
Carbon tetrachloride	U	0.0016	0.0066	mg/kg		8260B	06/15/15	5
Chlorobenzene	U	0.0011	0.0066	mg/kg		8260B	06/15/15	5
Chlorodibromomethane	U	0.0019	0.0066	mg/kg		8260B	06/15/15	5
Chloroethane	U	0.0047	0.033	mg/kg		8260B	06/15/15	5
2-Chloroethyl vinyl ether	U	0.012	0.33	mg/kg		8260B	06/15/15	5
Chloroform	U	0.0011	0.033	mg/kg		8260B	06/15/15	5
Chloromethane	U	0.0019	0.017	mg/kg		8260B	06/15/15	5
2-Chlorotoluene	U	0.0015	0.0066	mg/kg		8260B	06/15/15	5
4-Chlorotoluene	U	0.0012	0.0066	mg/kg		8260B	06/15/15	5
1,2-Dibromo-3-Chloropropane	U	0.0052	0.033	mg/kg		8260B	06/15/15	5
1,2-Dibromoethane	U	0.0017	0.0066	mg/kg		8260B	06/15/15	5
Dibromomethane	U	0.0019	0.0066	mg/kg		8260B	06/15/15	5
1,2-Dichlorobenzene	U	0.0015	0.0066	mg/kg		8260B	06/15/15	5
1,3-Dichlorobenzene	U	0.0012	0.0066	mg/kg		8260B	06/15/15	5
1,4-Dichlorobenzene	U	0.0011	0.0066	mg/kg		8260B	06/15/15	5
Dichlorodifluoromethane	U	0.0036	0.033	mg/kg		8260B	06/15/15	5
1,1-Dichloroethane	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
1,2-Dichloroethane	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
1,1-Dichloroethene	U	0.0015	0.0066	mg/kg		8260B	06/15/15	5
cis-1,2-Dichloroethene	U	0.0012	0.0066	mg/kg		8260B	06/15/15	5
trans-1,2-Dichloroethene	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
1,2-Dichloropropane	U	0.0018	0.0066	mg/kg		8260B	06/15/15	5
1,1-Dichloropropene	U	0.0016	0.0066	mg/kg		8260B	06/15/15	5
1,3-Dichloropropane	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
cis-1,3-Dichloropropene	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
trans-1,3-Dichloropropene	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
2,2-Dichloropropane	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Di-isopropyl ether	U	0.0012	0.0066	mg/kg		8260B	06/15/15	5
Ethylbenzene	U	0.0015	0.0066	mg/kg		8260B	06/15/15	5

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-03

Sample ID : S-3

Site ID :

Collected By : KS
Collection Date : 06/01/15 15:50

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.0017	0.0066	mg/kg		8260B	06/15/15	5
Isopropylbenzene	U	0.0012	0.0066	mg/kg		8260B	06/15/15	5
p-Isopropyltoluene	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
2-Butanone (MEK)	U	0.023	0.066	mg/kg		8260B	06/15/15	5
Methylene Chloride	U	0.0050	0.033	mg/kg		8260B	06/15/15	5
4-Methyl-2-pentanone (MIBK)	U	0.0094	0.066	mg/kg		8260B	06/15/15	5
Methyl tert-butyl ether	U	0.0011	0.0066	mg/kg		8260B	06/15/15	5
Naphthalene	U	0.0050	0.033	mg/kg		8260B	06/15/15	5
n-Propylbenzene	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
Styrene	U	0.0012	0.0066	mg/kg		8260B	06/15/15	5
1,1,1,2-Tetrachloroethane	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
1,1,2,2-Tetrachloroethane	U	0.0018	0.0066	mg/kg		8260B	06/15/15	5
1,1,2-Trichlorotrifluoroethane	U	0.0018	0.0066	mg/kg		8260B	06/15/15	5
Tetrachloroethene	0.010	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Toluene	U	0.0022	0.033	mg/kg		8260B	06/15/15	5
1,2,3-Trichlorobenzene	U	0.0015	0.0066	mg/kg		8260B	06/15/15	5
1,2,4-Trichlorobenzene	U	0.0019	0.0066	mg/kg		8260B	06/15/15	5
1,1,1-Trichloroethane	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
1,1,2-Trichloroethane	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Trichloroethene	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Trichlorofluoromethane	U	0.0019	0.033	mg/kg		8260B	06/15/15	5
1,2,3-Trichloropropane	U	0.0037	0.017	mg/kg		8260B	06/15/15	5
1,2,4-Trimethylbenzene	U	0.0010	0.0066	mg/kg		8260B	06/15/15	5
1,2,3-Trimethylbenzene	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
1,3,5-Trimethylbenzene	U	0.0013	0.0066	mg/kg		8260B	06/15/15	5
Vinyl chloride	U	0.0014	0.0066	mg/kg		8260B	06/15/15	5
Xylenes, Total	U	0.0035	0.020	mg/kg		8260B	06/15/15	5
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/15/15	1
Dibromofluoromethane	105.			% Rec.		8260B	06/15/15	1
a,a,a-Trifluorotoluene	98.9			% Rec.		8260B	06/15/15	1
4-Bromofluorobenzene	98.7			% Rec.		8260B	06/15/15	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-04

Sample ID : S-4

Site ID :

Collected By : KS
Collection Date : 06/01/15 16:00

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Total Solids	73.3	0.0333		%		2540 G-2	06/13/15	1
Volatile Organics								
Acetone	U	0.050	0.34	mg/kg	J3	8260B	06/15/15	5
Acrylonitrile	U	0.0090	0.068	mg/kg		8260B	06/15/15	5
Benzene	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Bromobenzene	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Bromodichloromethane	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
Bromoform	U	0.0021	0.0068	mg/kg		8260B	06/15/15	5
Bromomethane	U	0.0067	0.034	mg/kg		8260B	06/15/15	5
n-Butylbenzene	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
sec-Butylbenzene	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
tert-Butylbenzene	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
Carbon disulfide	U	0.0011	0.0068	mg/kg		8260B	06/15/15	5
Carbon tetrachloride	U	0.0016	0.0068	mg/kg		8260B	06/15/15	5
Chlorobenzene	U	0.0011	0.0068	mg/kg		8260B	06/15/15	5
Chlorodibromomethane	U	0.0019	0.0068	mg/kg		8260B	06/15/15	5
Chloroethane	U	0.0047	0.034	mg/kg		8260B	06/15/15	5
2-Chloroethyl vinyl ether	U	0.012	0.34	mg/kg		8260B	06/15/15	5
Chloroform	U	0.0011	0.034	mg/kg		8260B	06/15/15	5
Chloromethane	U	0.0019	0.017	mg/kg		8260B	06/15/15	5
2-Chlorotoluene	U	0.0015	0.0068	mg/kg		8260B	06/15/15	5
4-Chlorotoluene	U	0.0012	0.0068	mg/kg		8260B	06/15/15	5
1,2-Dibromo-3-Chloropropane	U	0.0052	0.034	mg/kg		8260B	06/15/15	5
1,2-Dibromoethane	U	0.0017	0.0068	mg/kg		8260B	06/15/15	5
Dibromomethane	U	0.0019	0.0068	mg/kg		8260B	06/15/15	5
1,2-Dichlorobenzene	U	0.0015	0.0068	mg/kg		8260B	06/15/15	5
1,3-Dichlorobenzene	U	0.0012	0.0068	mg/kg		8260B	06/15/15	5
1,4-Dichlorobenzene	U	0.0011	0.0068	mg/kg		8260B	06/15/15	5
Dichlorodifluoromethane	U	0.0036	0.034	mg/kg		8260B	06/15/15	5
1,1-Dichloroethane	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
1,2-Dichloroethane	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
1,1-Dichloroethene	U	0.0015	0.0068	mg/kg		8260B	06/15/15	5
cis-1,2-Dichloroethene	U	0.0012	0.0068	mg/kg		8260B	06/15/15	5
trans-1,2-Dichloroethene	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
1,2-Dichloropropane	U	0.0018	0.0068	mg/kg		8260B	06/15/15	5
1,1-Dichloropropene	U	0.0016	0.0068	mg/kg		8260B	06/15/15	5
1,3-Dichloropropane	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
cis-1,3-Dichloropropene	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
trans-1,3-Dichloropropene	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
2,2-Dichloropropane	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Di-isopropyl ether	U	0.0012	0.0068	mg/kg		8260B	06/15/15	5
Ethylbenzene	U	0.0015	0.0068	mg/kg		8260B	06/15/15	5

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

June 17, 2015

Date Received : June 10, 2015
Description : Campbell Dry Cleaners

ESC Sample # : L770390-04

Sample ID : S-4

Site ID :

Collected By : KS
Collection Date : 06/01/15 16:00

Project # : 15818-00/TASK 7

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
Hexachloro-1,3-butadiene	U	0.0017	0.0068	mg/kg		8260B	06/15/15	5
Isopropylbenzene	U	0.0012	0.0068	mg/kg		8260B	06/15/15	5
p-Isopropyltoluene	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
2-Butanone (MEK)	U	0.023	0.068	mg/kg		8260B	06/15/15	5
Methylene Chloride	U	0.0050	0.034	mg/kg		8260B	06/15/15	5
4-Methyl-2-pentanone (MIBK)	U	0.0094	0.068	mg/kg		8260B	06/15/15	5
Methyl tert-butyl ether	U	0.0011	0.0068	mg/kg		8260B	06/15/15	5
Naphthalene	U	0.0050	0.034	mg/kg		8260B	06/15/15	5
n-Propylbenzene	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
Styrene	U	0.0012	0.0068	mg/kg		8260B	06/15/15	5
1,1,1,2-Tetrachloroethane	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
1,1,2,2-Tetrachloroethane	U	0.0018	0.0068	mg/kg		8260B	06/15/15	5
1,1,2-Trichlorotrifluoroethane	U	0.0018	0.0068	mg/kg		8260B	06/15/15	5
Tetrachloroethene	0.023	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Toluene	U	0.0022	0.034	mg/kg		8260B	06/15/15	5
1,2,3-Trichlorobenzene	U	0.0015	0.0068	mg/kg		8260B	06/15/15	5
1,2,4-Trichlorobenzene	U	0.0019	0.0068	mg/kg		8260B	06/15/15	5
1,1,1-Trichloroethane	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
1,1,2-Trichloroethane	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Trichloroethene	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Trichlorofluoromethane	U	0.0019	0.034	mg/kg		8260B	06/15/15	5
1,2,3-Trichloropropane	U	0.0037	0.017	mg/kg		8260B	06/15/15	5
1,2,4-Trimethylbenzene	U	0.0010	0.0068	mg/kg		8260B	06/15/15	5
1,2,3-Trimethylbenzene	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
1,3,5-Trimethylbenzene	U	0.0013	0.0068	mg/kg		8260B	06/15/15	5
Vinyl chloride	U	0.0014	0.0068	mg/kg		8260B	06/15/15	5
Xylenes, Total	U	0.0035	0.020	mg/kg		8260B	06/15/15	5
Surrogate Recovery								
Toluene-d8	106.			% Rec.		8260B	06/15/15	1
Dibromofluoromethane	104.			% Rec.		8260B	06/15/15	1
a,a,a-Trifluorotoluene	99.8			% Rec.		8260B	06/15/15	1
4-Bromofluorobenzene	98.9			% Rec.		8260B	06/15/15	1

Results listed are dry weight basis.

U = ND (Not Detected)

MDL = Minimum Detection Limit = LOD = TRRP SDL

RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL

Note:

This report shall not be reproduced, except in full, without the written approval from ESC.

The reported analytical results relate only to the sample submitted

Reported: 06/17/15 17:04 Printed: 06/17/15 17:04

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L770390-01	WG794983	SAMP	Acetone	R3043762	J3
	WG794983	SAMP	Dibromofluoromethane	R3043762	J1
L770390-02	WG794983	SAMP	Acetone	R3043762	J3
L770390-03	WG794983	SAMP	Acetone	R3043762	J3
L770390-04	WG794983	SAMP	Acetone	R3043762	J3

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J3	The associated batch QC was outside the established quality control range for precision.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Total Solids	< .1	%			WG795055	06/13/15 07:00
Total Solids	< .1	%			WG795057	06/13/15 07:04
1,1,1,2-Tetrachloroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,1,1-Trichloroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,1,2,2-Tetrachloroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,1,2-Trichloroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,1,2-Trichlorotrifluoroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,1-Dichloroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,1-Dichloroethene	< .001	mg/kg			WG794983	06/15/15 01:57
1,1-Dichloropropene	< .001	mg/kg			WG794983	06/15/15 01:57
1,2,3-Trichlorobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,2,3-Trichloropropane	< .0025	mg/kg			WG794983	06/15/15 01:57
1,2,3-Trimethylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,2,4-Trichlorobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,2,4-Trimethylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,2-Dibromo-3-Chloropropane	< .005	mg/kg			WG794983	06/15/15 01:57
1,2-Dibromoethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,2-Dichlorobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,2-Dichloroethane	< .001	mg/kg			WG794983	06/15/15 01:57
1,2-Dichloropropane	< .001	mg/kg			WG794983	06/15/15 01:57
1,3,5-Trimethylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,3-Dichlorobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
1,3-Dichloropropane	< .001	mg/kg			WG794983	06/15/15 01:57
1,4-Dichlorobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
2,2-Dichloropropane	< .001	mg/kg			WG794983	06/15/15 01:57
2-Butanone (MEK)	< .01	mg/kg			WG794983	06/15/15 01:57
2-Chloroethyl vinyl ether	< .05	mg/kg			WG794983	06/15/15 01:57
2-Chlorotoluene	< .001	mg/kg			WG794983	06/15/15 01:57
4-Chlorotoluene	< .001	mg/kg			WG794983	06/15/15 01:57
4-Methyl-2-pentanone (MIBK)	< .01	mg/kg			WG794983	06/15/15 01:57
Acetone	< .05	mg/kg			WG794983	06/15/15 01:57
Acrylonitrile	< .01	mg/kg			WG794983	06/15/15 01:57
Benzene	< .001	mg/kg			WG794983	06/15/15 01:57
Bromobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Bromodichloromethane	< .001	mg/kg			WG794983	06/15/15 01:57
Bromoform	< .001	mg/kg			WG794983	06/15/15 01:57
Bromomethane	< .005	mg/kg			WG794983	06/15/15 01:57
Carbon disulfide	< .001	mg/kg			WG794983	06/15/15 01:57
Carbon tetrachloride	< .001	mg/kg			WG794983	06/15/15 01:57
Chlorobenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Chlorodibromomethane	< .001	mg/kg			WG794983	06/15/15 01:57
Chloroethane	< .005	mg/kg			WG794983	06/15/15 01:57
Chloroform	< .005	mg/kg			WG794983	06/15/15 01:57
Chloromethane	< .0025	mg/kg			WG794983	06/15/15 01:57
cis-1,2-Dichloroethene	< .001	mg/kg			WG794983	06/15/15 01:57
cis-1,3-Dichloropropene	< .001	mg/kg			WG794983	06/15/15 01:57
Di-isopropyl ether	< .001	mg/kg			WG794983	06/15/15 01:57
Dibromomethane	< .001	mg/kg			WG794983	06/15/15 01:57
Dichlorodifluoromethane	< .005	mg/kg			WG794983	06/15/15 01:57
Ethylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Hexachloro-1,3-butadiene	< .001	mg/kg			WG794983	06/15/15 01:57
Isopropylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Methyl tert-butyl ether	< .001	mg/kg			WG794983	06/15/15 01:57
Methylene Chloride	< .005	mg/kg			WG794983	06/15/15 01:57
n-Butylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
n-Propylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Naphthalene	< .005	mg/kg			WG794983	06/15/15 01:57
p-Isopropyltoluene	< .001	mg/kg			WG794983	06/15/15 01:57
sec-Butylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Styrene	< .001	mg/kg			WG794983	06/15/15 01:57
tert-Butylbenzene	< .001	mg/kg			WG794983	06/15/15 01:57
Tetrachloroethene	< .001	mg/kg			WG794983	06/15/15 01:57
Toluene	< .005	mg/kg			WG794983	06/15/15 01:57
trans-1,2-Dichloroethene	< .001	mg/kg			WG794983	06/15/15 01:57
trans-1,3-Dichloropropene	< .001	mg/kg			WG794983	06/15/15 01:57
Trichloroethene	< .001	mg/kg			WG794983	06/15/15 01:57
Trichlorofluoromethane	< .005	mg/kg			WG794983	06/15/15 01:57
Vinyl chloride	< .001	mg/kg			WG794983	06/15/15 01:57
Xylenes, Total	< .003	mg/kg			WG794983	06/15/15 01:57
4-Bromofluorobenzene		% Rec.	102.0	69.7-129	WG794983	06/15/15 01:57
Dibromofluoromethane		% Rec.	103.0	76.3-123	WG794983	06/15/15 01:57
Toluene-d8		% Rec.	106.0	88.7-115	WG794983	06/15/15 01:57
a,a,a-Trifluorotoluene		% Rec.	103.0	87.2-117	WG794983	06/15/15 01:57

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Total Solids	%	78.7	78.5	0.325	5	L770377-02	WG795055
Total Solids	%	77.7	75.1	3.39	5	L770403-03	WG795057

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Total Solids	%	50	49.9	99.8	85-115	WG795055
Total Solids	%	50	50.0	100.	85-115	WG795057
1,1,1,2-Tetrachloroethane	mg/kg	.025	0.0247	98.7	76.7-127	WG794983
1,1,1-Trichloroethane	mg/kg	.025	0.0225	90.1	69.9-127	WG794983
1,1,2,2-Tetrachloroethane	mg/kg	.025	0.0237	94.9	78.8-124	WG794983
1,1,2-Trichloroethane	mg/kg	.025	0.0243	97.3	81.9-119	WG794983
1,1,2-Trichlorotrifluoroethane	mg/kg	.025	0.0293	117.	62.6-138	WG794983
1,1-Dichloroethane	mg/kg	.025	0.0226	90.3	71.7-125	WG794983
1,1-Dichloroethene	mg/kg	.025	0.0258	103.	60.6-133	WG794983
1,1-Dichloropropene	mg/kg	.025	0.0213	85.2	71.2-126	WG794983
1,2,3-Trichlorobenzene	mg/kg	.025	0.0232	93.0	72.5-137	WG794983
1,2,3-Trichloropropane	mg/kg	.025	0.0251	100.	74-124	WG794983
1,2,3-Trimethylbenzene	mg/kg	.025	0.0239	95.4	79.4-118	WG794983
1,2,4-Trichlorobenzene	mg/kg	.025	0.0226	90.2	74-137	WG794983
1,2,4-Trimethylbenzene	mg/kg	.025	0.0238	95.1	77.1-124	WG794983
1,2-Dibromo-3-Chloropropane	mg/kg	.025	0.0225	90.0	64.9-131	WG794983
1,2-Dibromoethane	mg/kg	.025	0.0250	100.	78.7-123	WG794983
1,2-Dichlorobenzene	mg/kg	.025	0.0244	97.5	83.6-119	WG794983
1,2-Dichloroethane	mg/kg	.025	0.0232	92.8	67.2-121	WG794983
1,2-Dichloropropane	mg/kg	.025	0.0244	97.7	76.9-123	WG794983
1,3,5-Trimethylbenzene	mg/kg	.025	0.0243	97.2	79-125	WG794983
1,3-Dichlorobenzene	mg/kg	.025	0.0246	98.4	75.9-129	WG794983
1,3-Dichloropropane	mg/kg	.025	0.0234	93.7	80.3-114	WG794983
1,4-Dichlorobenzene	mg/kg	.025	0.0240	96.0	81-115	WG794983
2,2-Dichloropropane	mg/kg	.025	0.0233	93.0	61.9-132	WG794983

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Quality Assurance Report
Level II

Portland, OR 97201

June 17, 2015

L770390

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
2-Butanone (MEK)	mg/kg	.125	0.110	87.8	44.5-154	WG794983
2-Chloroethyl vinyl ether	mg/kg	.125	0.139	111.	16.7-162	WG794983
2-Chlorotoluene	mg/kg	.025	0.0249	99.4	74.6-127	WG794983
4-Chlorotoluene	mg/kg	.025	0.0237	94.8	79.5-123	WG794983
4-Methyl-2-pentanone (MIBK)	mg/kg	.125	0.111	88.4	61.1-138	WG794983
Acetone	mg/kg	.125	0.0734	58.7	25.3-178	WG794983
Acrylonitrile	mg/kg	.125	0.106	84.5	57.8-143	WG794983
Benzene	mg/kg	.025	0.0233	93.2	72.6-120	WG794983
Bromobenzene	mg/kg	.025	0.0230	92.0	80.3-115	WG794983
Bromodichloromethane	mg/kg	.025	0.0238	95.2	75.3-119	WG794983
Bromoform	mg/kg	.025	0.0261	104.	69.1-135	WG794983
Bromomethane	mg/kg	.025	0.0209	83.7	23-191	WG794983
Carbon disulfide	mg/kg	.025	0.0263	105.	49.9-136	WG794983
Carbon tetrachloride	mg/kg	.025	0.0242	96.8	69.4-129	WG794983
Chlorobenzene	mg/kg	.025	0.0247	98.9	78.9-122	WG794983
Chlorodibromomethane	mg/kg	.025	0.0264	106.	76.4-126	WG794983
Chloroethane	mg/kg	.025	0.0198	79.4	47.2-147	WG794983
Chloroform	mg/kg	.025	0.0216	86.4	73.3-122	WG794983
Chloromethane	mg/kg	.025	0.0235	93.8	53.1-135	WG794983
cis-1,2-Dichloroethene	mg/kg	.025	0.0231	92.4	76.1-121	WG794983
cis-1,3-Dichloropropene	mg/kg	.025	0.0240	96.0	77.3-123	WG794983
Di-isopropyl ether	mg/kg	.025	0.0221	88.4	67.2-131	WG794983
Dibromomethane	mg/kg	.025	0.0249	99.6	78.5-117	WG794983
Dichlorodifluoromethane	mg/kg	.025	0.0227	90.7	50.9-139	WG794983
Ethylbenzene	mg/kg	.025	0.0239	95.7	78.6-124	WG794983
Hexachloro-1,3-butadiene	mg/kg	.025	0.0211	84.3	69.2-136	WG794983
Isopropylbenzene	mg/kg	.025	0.0242	97.0	79.4-126	WG794983
Methyl tert-butyl ether	mg/kg	.025	0.0217	86.7	70.2-122	WG794983
Methylene Chloride	mg/kg	.025	0.0206	82.6	68.2-119	WG794983
n-Butylbenzene	mg/kg	.025	0.0241	96.3	74.2-134	WG794983
n-Propylbenzene	mg/kg	.025	0.0243	97.1	80.2-124	WG794983
Naphthalene	mg/kg	.025	0.0225	90.0	69.9-132	WG794983
p-Isopropyltoluene	mg/kg	.025	0.0239	95.6	75.4-132	WG794983
sec-Butylbenzene	mg/kg	.025	0.0235	94.1	77.8-129	WG794983
Styrene	mg/kg	.025	0.0257	103.	79.4-124	WG794983
tert-Butylbenzene	mg/kg	.025	0.0239	95.8	77.2-129	WG794983
Tetrachloroethene	mg/kg	.025	0.0237	95.0	71.1-133	WG794983
Toluene	mg/kg	.025	0.0236	94.4	76.7-116	WG794983
trans-1,2-Dichloroethene	mg/kg	.025	0.0224	89.7	70.7-124	WG794983
trans-1,3-Dichloropropene	mg/kg	.025	0.0246	98.2	73-127	WG794983
Trichloroethene	mg/kg	.025	0.0239	95.7	77.2-122	WG794983
Trichlorofluoromethane	mg/kg	.025	0.0242	96.9	51.5-151	WG794983
Vinyl chloride	mg/kg	.025	0.0249	99.5	58.4-134	WG794983
Xylenes, Total	mg/kg	.075	0.0717	95.6	78.1-123	WG794983
4-Bromofluorobenzene				99.20	69.7-129	WG794983
Dibromofluoromethane				98.60	76.3-123	WG794983
Toluene-d8				106.0	88.7-115	WG794983
a,a,a-Trifluorotoluene				100.0	87.2-117	WG794983

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1,1,1,2-Tetrachloroethane	mg/kg	0.0250	0.0247	100.	76.7-127	1.13	20	WG794983
1,1,1-Trichloroethane	mg/kg	0.0227	0.0225	91.0	69.9-127	0.770	20	WG794983
1,1,2,2-Tetrachloroethane	mg/kg	0.0258	0.0237	103.	78.8-124	8.32	20	WG794983
1,1,2-Trichloroethane	mg/kg	0.0245	0.0243	98.0	81.9-119	0.740	20	WG794983
1,1,2-Trichlorotrifluoroethane	mg/kg	0.0256	0.0293	102.	62.6-138	13.7	20	WG794983
1,1-Dichloroethane	mg/kg	0.0232	0.0226	93.0	71.7-125	2.95	20	WG794983
1,1-Dichloroethene	mg/kg	0.0233	0.0258	93.0	60.6-133	10.4	20	WG794983

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1,1-Dichloropropene	mg/kg	0.0214	0.0213	86.0	71.2-126	0.390	20	WG794983
1,2,3-Trichlorobenzene	mg/kg	0.0248	0.0232	99.0	72.5-137	6.29	20	WG794983
1,2,3-Trichloropropene	mg/kg	0.0271	0.0251	108.	74-124	7.53	20	WG794983
1,2,3-Trimethylbenzene	mg/kg	0.0240	0.0239	96.0	79.4-118	0.780	20	WG794983
1,2,4-Trichlorobenzene	mg/kg	0.0244	0.0226	97.0	74-137	7.67	20	WG794983
1,2,4-Trimethylbenzene	mg/kg	0.0259	0.0238	104.	77.1-124	8.64	20	WG794983
1,2-Dibromo-3-Chloropropene	mg/kg	0.0231	0.0225	92.0	64.9-131	2.60	20	WG794983
1,2-Dibromoethane	mg/kg	0.0253	0.0250	101.	78.7-123	1.13	20	WG794983
1,2-Dichlorobenzene	mg/kg	0.0245	0.0244	98.0	83.6-119	0.560	20	WG794983
1,2-Dichloroethane	mg/kg	0.0238	0.0232	95.0	67.2-121	2.49	20	WG794983
1,2-Dichloropropene	mg/kg	0.0248	0.0244	99.0	76.9-123	1.63	20	WG794983
1,3,5-Trimethylbenzene	mg/kg	0.0267	0.0243	107.	79-125	9.38	20	WG794983
1,3-Dichlorobenzene	mg/kg	0.0262	0.0246	105.	75.9-129	6.25	20	WG794983
1,3-Dichloropropene	mg/kg	0.0237	0.0234	95.0	80.3-114	0.930	20	WG794983
1,4-Dichlorobenzene	mg/kg	0.0237	0.0240	95.0	81-115	1.09	20	WG794983
2,2-Dichloropropene	mg/kg	0.0230	0.0233	92.0	61.9-132	1.28	20	WG794983
2-Butanone (MEK)	mg/kg	0.111	0.110	89.0	44.5-154	1.62	21.3	WG794983
2-Chloroethyl vinyl ether	mg/kg	0.138	0.139	111.	16.7-162	0.110	23.7	WG794983
2-Chlorotoluene	mg/kg	0.0260	0.0249	104.	74.6-127	4.62	20	WG794983
4-Chlorotoluene	mg/kg	0.0253	0.0237	101.	79.5-123	6.64	20	WG794983
4-Methyl-2-pentanone (MIBK)	mg/kg	0.124	0.111	100.	61.1-138	11.9	20	WG794983
Acetone	mg/kg	0.110	0.0734	88.0	25.3-178	40.1*	22.9	WG794983
Acrylonitrile	mg/kg	0.120	0.106	96.0	57.8-143	13.0	20	WG794983
Benzene	mg/kg	0.0236	0.0233	94.0	72.6-120	1.39	20	WG794983
Bromobenzene	mg/kg	0.0242	0.0230	97.0	80.3-115	5.18	20	WG794983
Bromodichloromethane	mg/kg	0.0238	0.0238	95.0	75.3-119	0.0800	20	WG794983
Bromoform	mg/kg	0.0280	0.0261	112.	69.1-135	7.10	20	WG794983
Bromomethane	mg/kg	0.0200	0.0209	80.0	23-191	4.74	20	WG794983
Carbon disulfide	mg/kg	0.0215	0.0263	86.0	49.9-136	19.8	20	WG794983
Carbon tetrachloride	mg/kg	0.0245	0.0242	98.0	69.4-129	1.38	20	WG794983
Chlorobenzene	mg/kg	0.0248	0.0247	99.0	78.9-122	0.500	20	WG794983
Chlorodibromomethane	mg/kg	0.0261	0.0264	104.	76.4-126	1.21	20	WG794983
Chloroethane	mg/kg	0.0207	0.0198	83.0	47.2-147	4.00	20	WG794983
Chloroform	mg/kg	0.0223	0.0216	89.0	73.3-122	3.16	20	WG794983
Chloromethane	mg/kg	0.0228	0.0235	91.0	53.1-135	2.70	20	WG794983
cis-1,2-Dichloroethene	mg/kg	0.0239	0.0231	96.0	76.1-121	3.44	20	WG794983
cis-1,3-Dichloropropene	mg/kg	0.0242	0.0240	97.0	77.3-123	0.580	20	WG794983
Di-isopropyl ether	mg/kg	0.0228	0.0221	91.0	67.2-131	2.95	20	WG794983
Dibromomethane	mg/kg	0.0253	0.0249	101.	78.5-117	1.43	20	WG794983
Dichlorodifluoromethane	mg/kg	0.0240	0.0227	96.0	50.9-139	5.83	20	WG794983
Ethylbenzene	mg/kg	0.0243	0.0239	97.0	78.6-124	1.61	20	WG794983
Hexachloro-1,3-butadiene	mg/kg	0.0238	0.0211	95.0	69.2-136	12.2	20	WG794983
Isopropylbenzene	mg/kg	0.0258	0.0242	103.	79.4-126	6.40	20	WG794983
Methyl tert-butyl ether	mg/kg	0.0234	0.0217	94.0	70.2-122	7.84	20	WG794983
Methylene Chloride	mg/kg	0.0216	0.0206	86.0	68.2-119	4.40	20	WG794983
n-Butylbenzene	mg/kg	0.0256	0.0241	102.	74.2-134	6.34	20	WG794983
n-Propylbenzene	mg/kg	0.0263	0.0243	105.	80.2-124	7.98	20	WG794983
Naphthalene	mg/kg	0.0231	0.0225	92.0	69.9-132	2.51	20	WG794983
p-Isopropyltoluene	mg/kg	0.0272	0.0239	109.	75.4-132	12.8	20	WG794983
sec-Butylbenzene	mg/kg	0.0266	0.0235	106.	77.8-129	12.3	20	WG794983
Styrene	mg/kg	0.0268	0.0257	107.	79.4-124	4.36	20	WG794983
tert-Butylbenzene	mg/kg	0.0262	0.0239	105.	77.2-129	8.84	20	WG794983
Tetrachloroethene	mg/kg	0.0237	0.0237	95.0	71.1-133	0.380	20	WG794983
Toluene	mg/kg	0.0236	0.0236	94.0	76.7-116	0.0600	20	WG794983
trans-1,2-Dichloroethene	mg/kg	0.0234	0.0224	94.0	70.7-124	4.24	20	WG794983
trans-1,3-Dichloropropene	mg/kg	0.0249	0.0246	100.	73-127	1.28	20	WG794983
Trichloroethene	mg/kg	0.0245	0.0239	98.0	77.2-122	2.28	20	WG794983
Trichlorofluoromethane	mg/kg	0.0252	0.0242	101.	51.5-151	3.89	20	WG794983
Vinyl chloride	mg/kg	0.0241	0.0249	96.0	58.4-134	3.20	20	WG794983

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Xylenes, Total	mg/kg	0.0731	0.0717	97.0	78.1-123	1.91	20	WG794983
4-Bromofluorobenzene				105.0	69.7-129			WG794983
Dibromofluoromethane				102.0	76.3-123			WG794983
Toluene-d8				107.0	88.7-115			WG794983
a,a,a-Trifluorotoluene				101.0	87.2-117			WG794983

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
1,1,1,2-Tetrachloroethane	mg/kg	0.124	0.0	.025	100.	48.8-136	L770338-01	WG794983
1,1,1-Trichloroethane	mg/kg	0.117	0.0	.025	94.0	49-138	L770338-01	WG794983
1,1,2,2-Tetrachloroethane	mg/kg	0.128	0.0	.025	100.	45.7-140	L770338-01	WG794983
1,1,2-Trichloroethane	mg/kg	0.118	0.0	.025	95.0	52.3-132	L770338-01	WG794983
1,1,2-Trichlorotrifluoroethane	mg/kg	0.128	0.0	.025	100.	35.7-146	L770338-01	WG794983
1,1-Dichloroethane	mg/kg	0.119	0.0	.025	95.0	49.1-136	L770338-01	WG794983
1,1-Dichloroethene	mg/kg	0.120	0.0	.025	96.0	36.1-142	L770338-01	WG794983
1,1-Dichloropropene	mg/kg	0.110	0.0	.025	88.0	43-137	L770338-01	WG794983
1,2,3-Trichlorobenzene	mg/kg	0.0981	0.000923	.025	78.0	10-150	L770338-01	WG794983
1,2,3-Trichloropropane	mg/kg	0.135	0.0	.025	110.	44.4-138	L770338-01	WG794983
1,2,3-Trimethylbenzene	mg/kg	0.114	0.0	.025	91.0	41-133	L770338-01	WG794983
1,2,4-Trichlorobenzene	mg/kg	0.103	0.0	.025	82.0	10-153	L770338-01	WG794983
1,2,4-Trimethylbenzene	mg/kg	0.134	0.000358	.025	110.	32.9-139	L770338-01	WG794983
1,2-Dibromo-3-Chloropropane	mg/kg	0.110	0.0	.025	88.0	40.4-138	L770338-01	WG794983
1,2-Dibromoethane	mg/kg	0.122	0.0	.025	98.0	50.2-133	L770338-01	WG794983
1,2-Dichlorobenzene	mg/kg	0.117	0.0	.025	93.0	34.6-139	L770338-01	WG794983
1,2-Dichloroethane	mg/kg	0.119	0.0	.025	95.0	47.1-129	L770338-01	WG794983
1,2-Dichloropropane	mg/kg	0.120	0.0	.025	96.0	50.3-134	L770338-01	WG794983
1,3,5-Trimethylbenzene	mg/kg	0.131	0.0	.025	100.	37.1-138	L770338-01	WG794983
1,3-Dichlorobenzene	mg/kg	0.137	0.0	.025	110.	28.4-142	L770338-01	WG794983
1,3-Dichloropropane	mg/kg	0.115	0.0	.025	92.0	51.4-127	L770338-01	WG794983
1,4-Dichlorobenzene	mg/kg	0.116	0.0	.025	93.0	35-133	L770338-01	WG794983
2,2-Dichloropropane	mg/kg	0.122	0.0	.025	98.0	45.2-141	L770338-01	WG794983
2-Butanone (MEK)	mg/kg	0.533	0.0	.125	85.0	23.9-170	L770338-01	WG794983
2-Chloroethyl vinyl ether	mg/kg	0.644	0.0	.125	100.	5-159	L770338-01	WG794983
2-Chlorotoluene	mg/kg	0.132	0.0	.025	100.	36.1-137	L770338-01	WG794983
4-Chlorotoluene	mg/kg	0.133	0.0	.025	110.	35.4-137	L770338-01	WG794983
4-Methyl-2-pentanone (MIBK)	mg/kg	0.560	0.0	.125	90.0	42.4-146	L770338-01	WG794983
Acetone	mg/kg	0.382	0.00185	.125	61.0	10-130	L770338-01	WG794983
Acrylonitrile	mg/kg	0.535	0.0	.125	86.0	39.3-152	L770338-01	WG794983
Benzene	mg/kg	0.119	0.0	.025	96.0	47.8-131	L770338-01	WG794983
Bromobenzene	mg/kg	0.120	0.0	.025	96.0	40-130	L770338-01	WG794983
Bromodichloromethane	mg/kg	0.120	0.0	.025	96.0	50.6-128	L770338-01	WG794983
Bromoform	mg/kg	0.131	0.0	.025	100.	43.3-139	L770338-01	WG794983
Bromomethane	mg/kg	0.121	0.0	.025	97.0	5-189	L770338-01	WG794983
Carbon disulfide	mg/kg	0.111	0.000383	.025	88.0	21.2-135	L770338-01	WG794983
Carbon tetrachloride	mg/kg	0.128	0.0	.025	100.	46-140	L770338-01	WG794983
Chlorobenzene	mg/kg	0.123	0.0	.025	98.0	44.1-134	L770338-01	WG794983
Chlorodibromomethane	mg/kg	0.128	0.0	.025	100.	49.7-134	L770338-01	WG794983
Chloroethane	mg/kg	0.123	0.0	.025	99.0	5-164	L770338-01	WG794983
Chloroform	mg/kg	0.114	0.0	.025	91.0	51.2-133	L770338-01	WG794983
Chloromethane	mg/kg	0.132	0.0	.025	110.	31.4-141	L770338-01	WG794983
cis-1,2-Dichloroethene	mg/kg	0.120	0.0	.025	96.0	50.6-133	L770338-01	WG794983
cis-1,3-Dichloropropene	mg/kg	0.121	0.0	.025	97.0	48.4-134	L770338-01	WG794983
Di-isopropyl ether	mg/kg	0.113	0.0	.025	90.0	46.7-140	L770338-01	WG794983
Dibromomethane	mg/kg	0.123	0.0	.025	99.0	52.4-128	L770338-01	WG794983
Dichlorodifluoromethane	mg/kg	0.137	0.0	.025	110.	31.2-144	L770338-01	WG794983
Ethylbenzene	mg/kg	0.119	0.0	.025	95.0	44.8-135	L770338-01	WG794983
Hexachloro-1,3-butadiene	mg/kg	0.102	0.0	.025	81.0	10-149	L770338-01	WG794983
Isopropylbenzene	mg/kg	0.123	0.0	.025	98.0	41.9-139	L770338-01	WG794983

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Methyl tert-butyl ether	mg/kg	0.113	0.0	.025	90.0	50.4-131	L770338-01	WG794983
Methylene Chloride	mg/kg	0.110	0.0	.025	88.0	46.7-125	L770338-01	WG794983
n-Butylbenzene	mg/kg	0.110	0.000341	.025	88.0	23.6-146	L770338-01	WG794983
n-Propylbenzene	mg/kg	0.127	0.0	.025	100.	35.2-139	L770338-01	WG794983
Naphthalene	mg/kg	0.0959	0.00184	.025	75.0	18.4-145	L770338-01	WG794983
p-Isopropyltoluene	mg/kg	0.132	0.0	.025	110.	27.3-146	L770338-01	WG794983
sec-Butylbenzene	mg/kg	0.132	0.0	.025	110.	31-142	L770338-01	WG794983
Styrene	mg/kg	0.128	0.0	.025	100.	39.7-137	L770338-01	WG794983
tert-Butylbenzene	mg/kg	0.136	0.0	.025	110.	36.9-142	L770338-01	WG794983
Tetrachloroethene	mg/kg	0.115	0.0	.025	92.0	37.7-140	L770338-01	WG794983
Toluene	mg/kg	0.117	0.000308	.025	94.0	47.8-127	L770338-01	WG794983
trans-1,2-Dichloroethene	mg/kg	0.120	0.0	.025	96.0	43.8-135	L770338-01	WG794983
trans-1,3-Dichloropropene	mg/kg	0.119	0.0	.025	95.0	46.6-135	L770338-01	WG794983
Trichloroethene	mg/kg	0.119	0.0	.025	96.0	48-132	L770338-01	WG794983
Trichlorofluoromethane	mg/kg	0.137	0.0	.025	110.	12.8-169	L770338-01	WG794983
Vinyl chloride	mg/kg	0.140	0.0	.025	110.	32-146	L770338-01	WG794983
Xylenes, Total	mg/kg	0.358	0.000408	.075	95.0	42.7-135	L770338-01	WG794983
4-Bromofluorobenzene					100.0	69.7-129		WG794983
Dibromofluoromethane					104.0	76.3-123		WG794983
Toluene-d8					106.0	88.7-115		WG794983
a,a,a-Trifluorotoluene					100.0	87.2-117		WG794983

Analyte	Units	MSD	Matrix Spike	Duplicate	Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
1,1,1,2-Tetrachloroethane	mg/kg	0.124	0.124	99.4	48.8-136	0.0600	25.5	L770338-01	WG794983
1,1,1-Trichloroethane	mg/kg	0.121	0.117	96.7	49-138	3.24	25.3	L770338-01	WG794983
1,1,2,2-Tetrachloroethane	mg/kg	0.128	0.128	102.	45.7-140	0.120	26.4	L770338-01	WG794983
1,1,2-Trichloroethane	mg/kg	0.120	0.118	96.2	52.3-132	1.59	23.4	L770338-01	WG794983
1,1,2-Trichlorotrifluoroethane	mg/kg	0.126	0.128	101.	35.7-146	1.06	28.8	L770338-01	WG794983
1,1-Dichloroethane	mg/kg	0.119	0.119	95.4	49.1-136	0.240	22.9	L770338-01	WG794983
1,1-Dichloroethene	mg/kg	0.122	0.120	97.3	36.1-142	1.62	25.6	L770338-01	WG794983
1,1-Dichloropropene	mg/kg	0.109	0.110	87.3	43-137	0.860	26.4	L770338-01	WG794983
1,2,3-Trichlorobenzene	mg/kg	0.114	0.0981	90.5	10-150	15.1	38.5	L770338-01	WG794983
1,2,3-Trichloropropane	mg/kg	0.126	0.135	100.	44.4-138	7.25	26.3	L770338-01	WG794983
1,2,3-Trimethylbenzene	mg/kg	0.118	0.114	94.1	41-133	3.53	27.6	L770338-01	WG794983
1,2,4-Trichlorobenzene	mg/kg	0.111	0.103	88.5	10-153	7.47	39.3	L770338-01	WG794983
1,2,4-Trimethylbenzene	mg/kg	0.122	0.134	97.2	32.9-139	9.66	30.6	L770338-01	WG794983
1,2-Dibromo-3-Chloropropane	mg/kg	0.116	0.110	92.7	40.4-138	5.06	30.8	L770338-01	WG794983
1,2-Dibromoethane	mg/kg	0.122	0.122	97.6	50.2-133	0.120	23.6	L770338-01	WG794983
1,2-Dichlorobenzene	mg/kg	0.124	0.117	99.0	34.6-139	6.01	29.9	L770338-01	WG794983
1,2-Dichloroethane	mg/kg	0.121	0.119	97.2	47.1-129	2.04	22.7	L770338-01	WG794983
1,2-Dichloropropane	mg/kg	0.122	0.120	97.7	50.3-134	2.06	22.7	L770338-01	WG794983
1,3,5-Trimethylbenzene	mg/kg	0.124	0.131	99.1	37.1-138	5.39	30.6	L770338-01	WG794983
1,3-Dichlorobenzene	mg/kg	0.124	0.137	99.4	28.4-142	9.84	31.2	L770338-01	WG794983
1,3-Dichloropropane	mg/kg	0.115	0.115	92.2	51.4-127	0.120	23.1	L770338-01	WG794983
1,4-Dichlorobenzene	mg/kg	0.116	0.116	92.6	35-133	0.0	31.1	L770338-01	WG794983
2,2-Dichloropropane	mg/kg	0.122	0.122	97.7	45.2-141	0.310	26.6	L770338-01	WG794983
2-Butanone (MEK)	mg/kg	0.547	0.533	87.5	23.9-170	2.58	28.3	L770338-01	WG794983
2-Chloroethyl vinyl ether	mg/kg	0.665	0.644	106.	5-159	3.11	40	L770338-01	WG794983
2-Chlorotoluene	mg/kg	0.123	0.132	98.7	36.1-137	6.64	28.9	L770338-01	WG794983
4-Chlorotoluene	mg/kg	0.119	0.133	95.1	35.4-137	11.3	29.8	L770338-01	WG794983
4-Methyl-2-pentanone (MIBK)	mg/kg	0.595	0.560	95.2	42.4-146	6.19	26.7	L770338-01	WG794983
Acetone	mg/kg	0.410	0.382	65.4	10-130	7.30	31.5	L770338-01	WG794983
Acrylonitrile	mg/kg	0.570	0.535	91.3	39.3-152	6.44	27.2	L770338-01	WG794983
Benzene	mg/kg	0.120	0.119	96.0	47.8-131	0.420	22.8	L770338-01	WG794983
Bromobenzene	mg/kg	0.117	0.120	93.7	40-130	2.73	27.4	L770338-01	WG794983
Bromodichloromethane	mg/kg	0.121	0.120	96.8	50.6-128	1.09	22.8	L770338-01	WG794983
Bromoform	mg/kg	0.131	0.131	104.	43.3-139	0.700	25.9	L770338-01	WG794983

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Bromomethane	mg/kg	0.118	0.121	94.2	5-189	2.66	26.7	L770338-01	WG794983
Carbon disulfide	mg/kg	0.112	0.111	89.4	21.2-135	1.18	23.8	L770338-01	WG794983
Carbon tetrachloride	mg/kg	0.128	0.128	102.	46-140	0.100	27.2	L770338-01	WG794983
Chlorobenzene	mg/kg	0.122	0.123	97.7	44.1-134	0.380	25.7	L770338-01	WG794983
Chlorodibromomethane	mg/kg	0.130	0.128	104.	49.7-134	1.50	24	L770338-01	WG794983
Chloroethane	mg/kg	0.115	0.123	92.0	5-164	7.03	28.4	L770338-01	WG794983
Chloroform	mg/kg	0.115	0.114	92.0	51.2-133	1.28	22.8	L770338-01	WG794983
Chloromethane	mg/kg	0.129	0.132	103.	31.4-141	2.79	24.6	L770338-01	WG794983
cis-1,2-Dichloroethene	mg/kg	0.123	0.120	98.8	50.6-133	2.62	23	L770338-01	WG794983
cis-1,3-Dichloropropene	mg/kg	0.120	0.121	96.3	48.4-134	0.400	23.6	L770338-01	WG794983
Di-isopropyl ether	mg/kg	0.116	0.113	93.1	46.7-140	3.07	23.5	L770338-01	WG794983
Dibromomethane	mg/kg	0.125	0.123	99.9	52.4-128	1.08	23	L770338-01	WG794983
Dichlorodifluoromethane	mg/kg	0.137	0.137	110.	31.2-144	0.450	30.2	L770338-01	WG794983
Ethylbenzene	mg/kg	0.119	0.119	95.2	44.8-135	0.0400	26.9	L770338-01	WG794983
Hexachloro-1,3-butadiene	mg/kg	0.105	0.102	83.9	10-149	2.98	40	L770338-01	WG794983
Isopropylbenzene	mg/kg	0.122	0.123	97.9	41.9-139	0.230	29.3	L770338-01	WG794983
Methyl tert-butyl ether	mg/kg	0.117	0.113	93.9	50.4-131	4.22	24.8	L770338-01	WG794983
Methylene Chloride	mg/kg	0.112	0.110	89.9	46.7-125	2.55	22.2	L770338-01	WG794983
n-Butylbenzene	mg/kg	0.121	0.110	96.6	23.6-146	9.18	39.2	L770338-01	WG794983
n-Propylbenzene	mg/kg	0.124	0.127	99.0	35.2-139	2.57	31.9	L770338-01	WG794983
Naphthalene	mg/kg	0.111	0.0959	87.1	18.4-145	14.3	34	L770338-01	WG794983
p-Isopropyltoluene	mg/kg	0.124	0.132	99.1	27.3-146	6.74	35.1	L770338-01	WG794983
sec-Butylbenzene	mg/kg	0.123	0.132	98.7	31-142	6.99	34.7	L770338-01	WG794983
Styrene	mg/kg	0.128	0.128	102.	39.7-137	0.0600	28.2	L770338-01	WG794983
tert-Butylbenzene	mg/kg	0.125	0.136	99.9	36.9-142	8.55	31.7	L770338-01	WG794983
Tetrachloroethene	mg/kg	0.113	0.115	90.3	37.7-140	1.58	29.2	L770338-01	WG794983
Toluene	mg/kg	0.118	0.117	94.1	47.8-127	0.590	24.3	L770338-01	WG794983
trans-1,2-Dichloroethene	mg/kg	0.121	0.120	96.8	43.8-135	0.850	24.8	L770338-01	WG794983
trans-1,3-Dichloropropene	mg/kg	0.124	0.119	99.2	46.6-135	3.97	25.3	L770338-01	WG794983
Trichloroethene	mg/kg	0.120	0.119	95.9	48-132	0.330	24.8	L770338-01	WG794983
Trichlorofluoromethane	mg/kg	0.137	0.137	110.	12.8-169	0.380	29.7	L770338-01	WG794983
Vinyl chloride	mg/kg	0.132	0.140	106.	32-146	5.46	26.3	L770338-01	WG794983
Xylenes, Total	mg/kg	0.361	0.358	96.0	42.7-135	0.740	26.6	L770338-01	WG794983
4-Bromofluorobenzene				100.0	69.7-129				WG794983
Dibromofluoromethane				105.0	76.3-123				WG794983
Toluene-d8				107.0	88.7-115				WG794983
a,a,a-Trifluorotoluene				100.0	87.2-117				WG794983

Batch number /Run number / Sample number cross reference

WG795055: R3043186: L770390-01 02
WG795057: R3043187: L770390-04
WG794983: R3043762: L770390-01 02 03 04

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L770390

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

June 17, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

Agency, Authorized Purchaser or Agent: Oregon DEQ	Contract Laboratory Name: ESC	Lab Selection Criteria: ☐ Proximity (if TAT < 48 hrs) ☐ Prior work on same project ☒ Cost (for anticipated analyses) ☐ Other labs disqualified or unable to perform requested services ☐ Emergency work	Turn Around Time: ☒ 10 days (std.) ☐ 5 days ☐ 72 hours ☐ 48 hours ☐ 24 hours ☐ Other
Send Lab Report To: Ken Thiessen 700 Multnomah St. Suite #600 Portland, Oregon 97232 Tel. #: (503) 229-6015 Email: kthiessen.kenneth@deq.state.or.us	Lab Batch #: Invoice To: ODEQ/Business Office Address: 811 SW 6 th Ave Portland, OR 97204 Tel #: (800) 452-4011		

Agency, Authorized Purchaser or Agent: Oregon DEQ	Contract Laboratory Name: ESC	Lab Selection Criteria: ☐ Proximity (if TAT < 48 hrs) ☐ Prior work on same project ☒ Cost (for anticipated analyses) ☐ Other labs disqualified or unable to perform requested services ☐ Emergency work	Turn Around Time: ☒ 10 days (std.) ☐ 5 days ☐ 72 hours ☐ 48 hours ☐ 24 hours ☐ Other
Send Lab Report To: Ken Thiessen 700 Multnomah St. Suite #600 Portland, Oregon 97232 (503) 229-6015 thiessen.kenneth@deq.state.or.us	Lab Batch #: Invoice To: ODEQ/Business Office Address: 811 SW 6 th Ave Portland, OR 97204 Tel #: (800) 452-4011		

[illegible]

Notes:

Also send lab report to Hart Crowser PM Chris Martin: chris.martin@hartcrowser.com

Relinquished By: <i>Chris Markin</i>	Agency/Agent: <i>Head Crosser</i>	Received By:	Agency/Agent:
Signature: <i>[Signature]</i>	Time & Date: <i>6/9/15 0730</i>	Signature:	Time & Date:
Relinquished By:	Agency/Agent:	Received By: <i>6381 3038 6352</i>	Agency/Agent:
Signature:	Time & Date:	Signature: <i>[Signature]</i>	Time & Date: <i>8/8/8 6-10-15</i>

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #102-1098-07 AND PRICE AGREEMENT #8903. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S & C'S) CONTAINED IN THE PRICE AGREEMENT ARE HEREBY INCORPORATED BY REFERENCE AND SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

8
cont.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

Report Summary

Monday July 13, 2015

Report Number: L775640

Samples Received: 07/08/15

Client Project: 15818-00/TASK 7

Description: Former Campbell Dry Cleaners

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jarred Willis, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/B10041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-01

Sample ID : AA-1

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:20

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	1.25	3.00	17.	40.	T0-15	07/09/15	1
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	T0-15	07/09/15	1
Benzene	71-43-2	78.1	0.200	0.640	0.36	1.1	T0-15	07/09/15	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	T0-15	07/09/15	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	T0-15	07/09/15	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	T0-15	07/09/15	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	< 0.20	< 0.62	T0-15	07/09/15	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	T0-15	07/09/15	1
Chloroform	67-66-3	119	0.200	0.970	< 0.20	< 0.97	T0-15	07/09/15	1
Chloromethane	74-87-3	50.5	0.200	0.410	0.56	1.2	T0-15	07/09/15	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Cyclohexane	110-82-7	84.2	0.200	0.690	0.56	1.9	T0-15	07/09/15	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	T0-15	07/09/15	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	T0-15	07/09/15	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	T0-15	07/09/15	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Ethanol	64-17-5	46.1	0.630	1.20	39.	74.	T0-15	07/09/15	1
Ethylbenzene	100-41-4	106	0.200	0.870	0.30	1.3	T0-15	07/09/15	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	0.24	1.3	T0-15	07/09/15	1
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.990	0.26	1.3	T0-15	07/09/15	1
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Heptane	142-82-5	100	0.200	0.820	0.52	2.1	T0-15	07/09/15	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	T0-15	07/09/15	1
n-Hexane	110-54-3	86.2	0.200	0.710	1.2	4.2	T0-15	07/09/15	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	0.66	2.3	T0-15	07/09/15	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-01

Sample ID : AA-1

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:20

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	1.25	3.70	< 1.3	< 3.7	T0-15	07/09/15	1
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	T0-15	07/09/15	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	T0-15	07/09/15	1
2-Propanol	67-63-0	60.1	1.25	3.10	35.	86.	T0-15	07/09/15	1
Propene	115-07-1	42.1	0.400	0.690	< 0.40	< 0.69	T0-15	07/09/15	1
Styrene	100-42-5	104	0.200	0.850	< 0.20	< 0.85	T0-15	07/09/15	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	1.2	8.1	T0-15	07/09/15	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	0.26	0.77	T0-15	07/09/15	1
Toluene	108-88-3	92.1	0.200	0.750	7.0	26.	T0-15	07/09/15	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	T0-15	07/09/15	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
Trichloroethylene	79-01-6	131	0.200	1.10	0.76	4.1	T0-15	07/09/15	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	0.39	1.9	T0-15	07/09/15	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	0.33	1.5	T0-15	07/09/15	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	T0-15	07/09/15	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	T0-15	07/09/15	1
m&p-Xylene	1330-20-7	106	0.400	1.70	1.1	4.8	T0-15	07/09/15	1
o-Xylene	95-47-6	106	0.200	0.870	0.40	1.7	T0-15	07/09/15	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	< 50.	< 210	T0-15	07/09/15	1
1,4-Bromofluorobenzene	460-00-4				99.1	% Rec.	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-02

Sample ID : AA-2

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:22

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	1.25	3.00	9.6	23.	T0-15	07/09/15	1
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	T0-15	07/09/15	1
Benzene	71-43-2	78.1	0.200	0.640	0.41	1.3	T0-15	07/09/15	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	T0-15	07/09/15	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	T0-15	07/09/15	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	T0-15	07/09/15	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	< 0.20	< 0.62	T0-15	07/09/15	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	T0-15	07/09/15	1
Chloroform	67-66-3	119	0.200	0.970	< 0.20	< 0.97	T0-15	07/09/15	1
Chloromethane	74-87-3	50.5	0.200	0.410	0.59	1.2	T0-15	07/09/15	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Cyclohexane	110-82-7	84.2	0.200	0.690	0.40	1.4	T0-15	07/09/15	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	T0-15	07/09/15	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	T0-15	07/09/15	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	T0-15	07/09/15	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Ethanol	64-17-5	46.1	0.630	1.20	40.	75.	T0-15	07/09/15	1
Ethylbenzene	100-41-4	106	0.200	0.870	0.32	1.4	T0-15	07/09/15	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	0.26	1.5	T0-15	07/09/15	1
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.990	0.54	2.7	T0-15	07/09/15	1
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Heptane	142-82-5	100	0.200	0.820	0.41	1.7	T0-15	07/09/15	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	T0-15	07/09/15	1
n-Hexane	110-54-3	86.2	0.200	0.710	0.70	2.5	T0-15	07/09/15	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	0.31	1.1	T0-15	07/09/15	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-02

Sample ID : AA-2

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:22

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	1.25	3.70	< 1.3	< 3.7	T0-15	07/09/15	1
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	T0-15	07/09/15	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	T0-15	07/09/15	1
2-Propanol	67-63-0	60.1	1.25	3.10	42.	100	T0-15	07/09/15	1
Propene	115-07-1	42.1	0.400	0.690	< 0.40	< 0.69	T0-15	07/09/15	1
Styrene	100-42-5	104	0.200	0.850	< 0.20	< 0.85	T0-15	07/09/15	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	1.9	13.	T0-15	07/09/15	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	0.27	0.80	T0-15	07/09/15	1
Toluene	108-88-3	92.1	0.200	0.750	2.9	11.	T0-15	07/09/15	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	T0-15	07/09/15	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
Trichloroethylene	79-01-6	131	0.200	1.10	0.27	1.4	T0-15	07/09/15	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	0.20	0.98	T0-15	07/09/15	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	0.35	1.6	T0-15	07/09/15	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	T0-15	07/09/15	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	T0-15	07/09/15	1
m&p-Xylene	1330-20-7	106	0.400	1.70	1.5	6.5	T0-15	07/09/15	1
o-Xylene	95-47-6	106	0.200	0.870	0.55	2.4	T0-15	07/09/15	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	< 50.	< 210	T0-15	07/09/15	1
1,4-Bromofluorobenzene	460-00-4				99.2	% Rec.	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-03

Sample ID : AA-3

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:16

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	1.25	3.00	25.	59.	T0-15	07/09/15	1
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	T0-15	07/09/15	1
Benzene	71-43-2	78.1	0.200	0.640	0.27	0.86	T0-15	07/09/15	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	T0-15	07/09/15	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	T0-15	07/09/15	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	T0-15	07/09/15	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	< 0.20	< 0.62	T0-15	07/09/15	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	T0-15	07/09/15	1
Chloroform	67-66-3	119	0.200	0.970	< 0.20	< 0.97	T0-15	07/09/15	1
Chloromethane	74-87-3	50.5	0.200	0.410	0.66	1.4	T0-15	07/09/15	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Cyclohexane	110-82-7	84.2	0.200	0.690	0.30	1.0	T0-15	07/09/15	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	T0-15	07/09/15	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	T0-15	07/09/15	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	T0-15	07/09/15	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Ethanol	64-17-5	46.1	6.30	12.0	54.	100	T0-15	07/10/15	10
Ethylbenzene	100-41-4	106	0.200	0.870	0.28	1.2	T0-15	07/09/15	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	0.25	1.4	T0-15	07/09/15	1
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.990	0.35	1.7	T0-15	07/09/15	1
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Heptane	142-82-5	100	0.200	0.820	0.56	2.3	T0-15	07/09/15	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	T0-15	07/09/15	1
n-Hexane	110-54-3	86.2	0.200	0.710	0.54	1.9	T0-15	07/09/15	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	3.1	11.	T0-15	07/09/15	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-03

Sample ID : AA-3

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:16

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	1.25	3.70	< 1.3	< 3.7	T0-15	07/09/15	1
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	T0-15	07/09/15	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	T0-15	07/09/15	1
2-Propanol	67-63-0	60.1	1.25	3.10	4.0	9.8	T0-15	07/09/15	1
Propene	115-07-1	42.1	0.400	0.690	< 0.40	< 0.69	T0-15	07/09/15	1
Styrene	100-42-5	104	0.200	0.850	1.2	5.1	T0-15	07/09/15	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	0.29	2.0	T0-15	07/09/15	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	0.36	1.1	T0-15	07/09/15	1
Toluene	108-88-3	92.1	0.200	0.750	2.3	8.7	T0-15	07/09/15	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	T0-15	07/09/15	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
Trichloroethylene	79-01-6	131	0.200	1.10	8.5	46.	T0-15	07/09/15	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	0.72	3.5	T0-15	07/09/15	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	< 0.20	< 0.93	T0-15	07/09/15	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	T0-15	07/09/15	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	T0-15	07/09/15	1
m&p-Xylene	1330-20-7	106	0.400	1.70	0.97	4.2	T0-15	07/09/15	1
o-Xylene	95-47-6	106	0.200	0.870	0.36	1.6	T0-15	07/09/15	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	< 50.	< 210	T0-15	07/09/15	1
1,4-Bromofluorobenzene	460-00-4				100	% Rec.	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-04

Sample ID : AA-4

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:24

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	1.25	3.00	3.9	9.3	T0-15	07/09/15	1
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	T0-15	07/09/15	1
Benzene	71-43-2	78.1	0.200	0.640	< 0.20	< 0.64	T0-15	07/09/15	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	T0-15	07/09/15	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	T0-15	07/09/15	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	T0-15	07/09/15	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	< 0.20	< 0.62	T0-15	07/09/15	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	T0-15	07/09/15	1
Chloroform	67-66-3	119	0.200	0.970	< 0.20	< 0.97	T0-15	07/09/15	1
Chloromethane	74-87-3	50.5	0.200	0.410	0.37	0.76	T0-15	07/09/15	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Cyclohexane	110-82-7	84.2	0.200	0.690	0.24	0.83	T0-15	07/09/15	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	T0-15	07/09/15	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	T0-15	07/09/15	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	T0-15	07/09/15	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Ethanol	64-17-5	46.1	0.630	1.20	29.	55.	T0-15	07/09/15	1
Ethylbenzene	100-41-4	106	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.990	0.21	1.0	T0-15	07/09/15	1
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Heptane	142-82-5	100	0.200	0.820	0.22	0.90	T0-15	07/09/15	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	T0-15	07/09/15	1
n-Hexane	110-54-3	86.2	0.200	0.710	0.37	1.3	T0-15	07/09/15	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	< 0.20	< 0.69	T0-15	07/09/15	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-04

Sample ID : AA-4

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:24

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	1.25	3.70	< 1.3	< 3.7	T0-15	07/09/15	1
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	T0-15	07/09/15	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	T0-15	07/09/15	1
2-Propanol	67-63-0	60.1	1.25	3.10	2.5	6.1	T0-15	07/09/15	1
Propene	115-07-1	42.1	0.400	0.690	< 0.40	< 0.69	T0-15	07/09/15	1
Styrene	100-42-5	104	0.200	0.850	< 0.20	< 0.85	T0-15	07/09/15	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	< 0.20	< 0.59	T0-15	07/09/15	1
Toluene	108-88-3	92.1	0.200	0.750	1.0	3.8	T0-15	07/09/15	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	T0-15	07/09/15	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
Trichloroethylene	79-01-6	131	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	0.22	1.0	T0-15	07/09/15	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	T0-15	07/09/15	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	T0-15	07/09/15	1
m&p-Xylene	1330-20-7	106	0.400	1.70	0.49	2.1	T0-15	07/09/15	1
o-Xylene	95-47-6	106	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	< 50.	< 210	T0-15	07/09/15	1
1,4-Bromofluorobenzene	460-00-4				102	% Rec.	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-05

Sample ID : AA-5

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:18

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	1.25	3.00	4.7	11.	T0-15	07/09/15	1
Allyl chloride	107-05-1	76.53	0.200	0.630	< 0.20	< 0.63	T0-15	07/09/15	1
Benzene	71-43-2	78.1	0.200	0.640	< 0.20	< 0.64	T0-15	07/09/15	1
Benzyl Chloride	100-44-7	127	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Bromodichloromethane	75-27-4	164	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Bromoform	75-25-2	253	0.600	6.20	< 0.60	< 6.2	T0-15	07/09/15	1
Bromomethane	74-83-9	94.9	0.200	0.780	< 0.20	< 0.78	T0-15	07/09/15	1
1,3-Butadiene	106-99-0	54.1	2.00	4.40	< 2.0	< 4.4	T0-15	07/09/15	1
Carbon disulfide	75-15-0	76.1	0.200	0.620	< 0.20	< 0.62	T0-15	07/09/15	1
Carbon tetrachloride	56-23-5	154	0.200	1.30	< 0.20	< 1.3	T0-15	07/09/15	1
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
Chloroethane	75-00-3	64.5	0.200	0.530	< 0.20	< 0.53	T0-15	07/09/15	1
Chloroform	67-66-3	119	0.200	0.970	< 0.20	< 0.97	T0-15	07/09/15	1
Chloromethane	74-87-3	50.5	0.200	0.410	0.55	1.1	T0-15	07/09/15	1
2-Chlorotoluene	95-49-8	126	0.200	1.00	< 0.20	< 1.0	T0-15	07/09/15	1
Cyclohexane	110-82-7	84.2	0.200	0.690	< 0.20	< 0.69	T0-15	07/09/15	1
Dibromochloromethane	124-48-1	208	0.200	1.70	< 0.20	< 1.7	T0-15	07/09/15	1
1,2-Dibromoethane	106-93-4	188	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,3-Dichlorobenzene	541-73-1	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,4-Dichlorobenzene	106-46-7	147	0.200	1.20	< 0.20	< 1.2	T0-15	07/09/15	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	T0-15	07/09/15	1
1,1-Dichloroethane	75-34-3	98	0.200	0.800	< 0.20	< 0.80	T0-15	07/09/15	1
1,1-Dichloroethene	75-35-4	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
cis-1,2-Dichloroethene	156-59-2	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
trans-1,2-Dichloroethene	156-60-5	96.9	0.200	0.790	< 0.20	< 0.79	T0-15	07/09/15	1
1,2-Dichloropropane	78-87-5	113	0.200	0.920	< 0.20	< 0.92	T0-15	07/09/15	1
cis-1,3-Dichloropropene	10061-01-5	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
trans-1,3-Dichloropropene	10061-02-6	111	0.200	0.910	< 0.20	< 0.91	T0-15	07/09/15	1
1,4-Dioxane	123-91-1	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Ethanol	64-17-5	46.1	0.630	1.20	7.4	14.	T0-15	07/09/15	1
Ethylbenzene	100-41-4	106	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
4-Ethyltoluene	622-96-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Trichlorofluoromethane	75-69-4	137.4	0.200	1.10	0.24	1.3	T0-15	07/09/15	1
Dichlorodifluoromethane	75-71-8	120.92	0.200	0.990	0.33	1.6	T0-15	07/09/15	1
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.200	1.50	< 0.20	< 1.5	T0-15	07/09/15	1
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Heptane	142-82-5	100	0.200	0.820	< 0.20	< 0.82	T0-15	07/09/15	1
Hexachloro-1,3-butadiene	87-68-3	261	0.630	6.70	< 0.63	< 6.7	T0-15	07/09/15	1
n-Hexane	110-54-3	86.2	0.200	0.710	0.27	0.95	T0-15	07/09/15	1
Isopropylbenzene	98-82-8	120.2	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	0.22	0.76	T0-15	07/09/15	1
Methyl Butyl Ketone	591-78-6	100	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-05

Sample ID : AA-5

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:18

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	1.25	3.70	< 1.3	< 3.7	T0-15	07/09/15	1
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	1.25	5.10	< 1.3	< 5.1	T0-15	07/09/15	1
Methyl methacrylate	80-62-6	100.12	0.200	0.820	< 0.20	< 0.82	T0-15	07/09/15	1
MTBE	1634-04-4	88.1	0.200	0.720	< 0.20	< 0.72	T0-15	07/09/15	1
Naphthalene	91-20-3	128	0.630	3.30	< 0.63	< 3.3	T0-15	07/09/15	1
2-Propanol	67-63-0	60.1	1.25	3.10	< 1.3	< 3.1	T0-15	07/09/15	1
Propene	115-07-1	42.1	0.400	0.690	< 0.40	< 0.69	T0-15	07/09/15	1
Styrene	100-42-5	104	0.200	0.850	< 0.20	< 0.85	T0-15	07/09/15	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrachloroethylene	127-18-4	166	0.200	1.40	< 0.20	< 1.4	T0-15	07/09/15	1
Tetrahydrofuran	109-99-9	72.1	0.200	0.590	< 0.20	< 0.59	T0-15	07/09/15	1
Toluene	108-88-3	92.1	0.200	0.750	0.64	2.4	T0-15	07/09/15	1
1,2,4-Trichlorobenzene	120-82-1	181	0.630	4.70	< 0.63	< 4.7	T0-15	07/09/15	1
1,1,1-Trichloroethane	71-55-6	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,1,2-Trichloroethane	79-00-5	133	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
Trichloroethylene	79-01-6	131	0.200	1.10	< 0.20	< 1.1	T0-15	07/09/15	1
1,2,4-Trimethylbenzene	95-63-6	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
1,3,5-Trimethylbenzene	108-67-8	120	0.200	0.980	< 0.20	< 0.98	T0-15	07/09/15	1
2,2,4-Trimethylpentane	540-84-1	114.22	0.200	0.930	< 0.20	< 0.93	T0-15	07/09/15	1
Vinyl chloride	75-01-4	62.5	0.200	0.510	< 0.20	< 0.51	T0-15	07/09/15	1
Vinyl Bromide	593-60-2	106.95	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
Vinyl acetate	108-05-4	86.1	0.200	0.700	< 0.20	< 0.70	T0-15	07/09/15	1
m&p-Xylene	1330-20-7	106	0.400	1.70	< 0.40	< 1.7	T0-15	07/09/15	1
o-Xylene	95-47-6	106	0.200	0.870	< 0.20	< 0.87	T0-15	07/09/15	1
TPH (GC/MS) Low Fraction	8006-61-9	101	50.0	210.	< 50.	< 210	T0-15	07/09/15	1
1,4-Bromofluorobenzene	460-00-4				100	% Rec.	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

ESC Sample # : L775640-06

Sample ID : VAPOR STACK

Site ID :

Collected By : Chris Martin
Collection Date : 07/06/15 16:53

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Acetone	67-64-1	58.1	2.50	5.90	29.	69.	T0-15	07/09/15	2
Allyl chloride	107-05-1	76.53	0.400	1.30	< 0.40	< 1.3	T0-15	07/09/15	2
Benzene	71-43-2	78.1	0.400	1.30	< 0.40	< 1.3	T0-15	07/09/15	2
Benzyl Chloride	100-44-7	127	0.400	2.10	< 0.40	< 2.1	T0-15	07/09/15	2
Bromodichloromethane	75-27-4	164	0.400	2.70	< 0.40	< 2.7	T0-15	07/09/15	2
Bromoform	75-25-2	253	1.20	12.0	< 1.2	< 12.	T0-15	07/09/15	2
Bromomethane	74-83-9	94.9	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
1,3-Butadiene	106-99-0	54.1	4.00	8.90	< 4.0	< 8.9	T0-15	07/09/15	2
Carbon disulfide	75-15-0	76.1	0.400	1.20	< 0.40	< 1.2	T0-15	07/09/15	2
Carbon tetrachloride	56-23-5	154	0.400	2.50	< 0.40	< 2.5	T0-15	07/09/15	2
Chlorobenzene	108-90-7	113	0.400	1.80	< 0.40	< 1.8	T0-15	07/09/15	2
Chloroethane	75-00-3	64.5	0.400	1.10	< 0.40	< 1.1	T0-15	07/09/15	2
Chloroform	67-66-3	119	0.400	1.90	< 0.40	< 1.9	T0-15	07/09/15	2
Chloromethane	74-87-3	50.5	0.400	0.830	0.59	1.2	T0-15	07/09/15	2
2-Chlorotoluene	95-49-8	126	0.400	2.10	< 0.40	< 2.1	T0-15	07/09/15	2
Cyclohexane	110-82-7	84.2	0.400	1.40	0.78	2.7	T0-15	07/09/15	2
Dibromochloromethane	124-48-1	208	0.400	3.40	< 0.40	< 3.4	T0-15	07/09/15	2
1,2-Dibromoethane	106-93-4	188	0.400	3.10	< 0.40	< 3.1	T0-15	07/09/15	2
1,2-Dichlorobenzene	95-50-1	147	0.400	2.40	< 0.40	< 2.4	T0-15	07/09/15	2
1,3-Dichlorobenzene	541-73-1	147	0.400	2.40	< 0.40	< 2.4	T0-15	07/09/15	2
1,4-Dichlorobenzene	106-46-7	147	0.400	2.40	< 0.40	< 2.4	T0-15	07/09/15	2
1,2-Dichloroethane	107-06-2	99	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
1,1-Dichloroethane	75-34-3	98	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
1,1-Dichloroethene	75-35-4	96.9	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
cis-1,2-Dichloroethene	156-59-2	96.9	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
trans-1,2-Dichloroethene	156-60-5	96.9	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
1,2-Dichloropropane	78-87-5	113	0.400	1.80	< 0.40	< 1.8	T0-15	07/09/15	2
cis-1,3-Dichloropropene	10061-01-5	111	0.400	1.80	< 0.40	< 1.8	T0-15	07/09/15	2
trans-1,3-Dichloropropene	10061-02-6	111	0.400	1.80	< 0.40	< 1.8	T0-15	07/09/15	2
1,4-Dioxane	123-91-1	88.1	0.400	1.40	< 0.40	< 1.4	T0-15	07/09/15	2
Ethanol	64-17-5	46.1	1.26	2.40	30.	57.	T0-15	07/09/15	2
Ethylbenzene	100-41-4	106	0.400	1.70	< 0.40	< 1.7	T0-15	07/09/15	2
4-Ethyltoluene	622-96-8	120	0.400	2.00	< 0.40	< 2.0	T0-15	07/09/15	2
Trichlorofluoromethane	75-69-4	137.4	0.400	2.20	< 0.40	< 2.2	T0-15	07/09/15	2
Dichlorodifluoromethane	75-71-8	120.92	0.400	2.00	0.56	2.8	T0-15	07/09/15	2
1,1,2-Trichlorotrifluoroethane	76-13-1	187.4	0.400	3.10	< 0.40	< 3.1	T0-15	07/09/15	2
1,2-Dichlorotetrafluoroethane	76-14-2	171	0.400	2.80	< 0.40	< 2.8	T0-15	07/09/15	2
Heptane	142-82-5	100	0.400	1.60	0.49	2.0	T0-15	07/09/15	2
Hexachloro-1,3-butadiene	87-68-3	261	1.26	13.0	< 1.3	< 13.	T0-15	07/09/15	2
n-Hexane	110-54-3	86.2	0.400	1.40	0.91	3.2	T0-15	07/09/15	2
Isopropylbenzene	98-82-8	120.2	0.400	2.00	< 0.40	< 2.0	T0-15	07/09/15	2
Methylene Chloride	75-09-2	84.9	0.400	1.40	0.54	1.9	T0-15	07/09/15	2
Methyl Butyl Ketone	591-78-6	100	2.50	10.0	< 2.5	< 10.	T0-15	07/09/15	2

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tag I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Ken Thiessen
Oregon Dept. of Env. Quality - ODEQ
2020 SW 4th Ave, Suite 400
Portland, OR 97201

July 13, 2015

Date Received : July 08, 2015
Description : Former Campbell Dry Cleaners

Sample ID : VAPOR STACK

Collected By : Chris Martin
Collection Date : 07/06/15 16:53

ESC Sample # : L775640-06

Site ID :

Project # : 15818-00/TASK 7

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
2-Butanone (MEK)	78-93-3	72.1	2.50	7.40	2.6	7.7	T0-15	07/09/15	2
4-Methyl-2-pentanone (MIBK)	108-10-1	100.1	2.50	10.0	< 2.5	< 10.	T0-15	07/09/15	2
Methyl methacrylate	80-62-6	100.12	0.400	1.60	< 0.40	< 1.6	T0-15	07/09/15	2
MTBE	1634-04-4	88.1	0.400	1.40	< 0.40	< 1.4	T0-15	07/09/15	2
Naphthalene	91-20-3	128	1.26	6.60	< 1.3	< 6.6	T0-15	07/09/15	2
2-Propanol	67-63-0	60.1	2.50	6.10	27.	66.	T0-15	07/09/15	2
Propene	115-07-1	42.1	0.800	1.40	< 0.80	< 1.4	T0-15	07/09/15	2
Styrene	100-42-5	104	0.400	1.70	< 0.40	< 1.7	T0-15	07/09/15	2
1,1,2,2-Tetrachloroethane	79-34-5	168	0.400	2.70	< 0.40	< 2.7	T0-15	07/09/15	2
Tetrachloroethylene	127-18-4	166	0.400	2.70	74.	500	T0-15	07/09/15	2
Tetrahydrofuran	109-99-9	72.1	0.400	1.20	3.1	9.1	T0-15	07/09/15	2
Toluene	108-88-3	92.1	0.400	1.50	2.2	8.3	T0-15	07/09/15	2
1,2,4-Trichlorobenzene	120-82-1	181	1.26	9.30	< 1.3	< 9.3	T0-15	07/09/15	2
1,1,1-Trichloroethane	71-55-6	133	0.400	2.20	< 0.40	< 2.2	T0-15	07/09/15	2
1,1,2-Trichloroethane	79-00-5	133	0.400	2.20	< 0.40	< 2.2	T0-15	07/09/15	2
Trichloroethylene	79-01-6	131	0.400	2.10	0.62	3.3	T0-15	07/09/15	2
1,2,4-Trimethylbenzene	95-63-6	120	0.400	2.00	< 0.40	< 2.0	T0-15	07/09/15	2
1,3,5-Trimethylbenzene	108-67-8	120	0.400	2.00	< 0.40	< 2.0	T0-15	07/09/15	2
2,2,4-Trimethylpentane	540-84-1	114.22	0.400	1.90	< 0.40	< 1.9	T0-15	07/09/15	2
Vinyl chloride	75-01-4	62.5	0.400	1.00	< 0.40	< 1.0	T0-15	07/09/15	2
Vinyl Bromide	593-60-2	106.95	0.400	1.70	< 0.40	< 1.7	T0-15	07/09/15	2
Vinyl acetate	108-05-4	86.1	0.400	1.40	< 0.40	< 1.4	T0-15	07/09/15	2
m&p-Xylene	1330-20-7	106	0.800	3.50	1.0	4.3	T0-15	07/09/15	2
o-Xylene	95-47-6	106	0.400	1.70	0.41	1.8	T0-15	07/09/15	2
TPH (GC/MS) Low Fraction	8006-61-9	101	100.	410.	120	500	T0-15	07/09/15	2
1,4-Bromofluorobenzene	460-00-4				97.9	% Rec.	T0-15	07/09/15	1

RDL1 = ppbv , RDL2 = ug/m3

Note:

Units are based on (STP) - Standard Temperature and Pressure

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 07/13/15 14:16 Printed: 07/13/15 14:16



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L775640

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 13, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
1,1,1-Trichloroethane	< .2	ppb			WG801253	07/09/15 09:52
1,1,2,2-Tetrachloroethane	< .2	ppb			WG801253	07/09/15 09:52
1,1,2-Trichloroethane	< .2	ppb			WG801253	07/09/15 09:52
1,1,2-Trichlorotrifluoroethane	< .2	ppb			WG801253	07/09/15 09:52
1,1-Dichloroethane	< .2	ppb			WG801253	07/09/15 09:52
1,1-Dichloroethene	< .2	ppb			WG801253	07/09/15 09:52
1,2,4-Trichlorobenzene	< .63	ppb			WG801253	07/09/15 09:52
1,2,4-Trimethylbenzene	< .2	ppb			WG801253	07/09/15 09:52
1,2-Dibromoethane	< .2	ppb			WG801253	07/09/15 09:52
1,2-Dichlorobenzene	< .2	ppb			WG801253	07/09/15 09:52
1,2-Dichloroethane	< .2	ppb			WG801253	07/09/15 09:52
1,2-Dichloropropane	< .2	ppb			WG801253	07/09/15 09:52
1,2-Dichlorotetrafluoroethane	< .2	ppb			WG801253	07/09/15 09:52
1,3,5-Trimethylbenzene	< .2	ppb			WG801253	07/09/15 09:52
1,3-Butadiene	< 2	ppb			WG801253	07/09/15 09:52
1,3-Dichlorobenzene	< .2	ppb			WG801253	07/09/15 09:52
1,4-Dichlorobenzene	< .2	ppb			WG801253	07/09/15 09:52
1,4-Dioxane	< .2	ppb			WG801253	07/09/15 09:52
2,2,4-Trimethylpentane	< .2	ppb			WG801253	07/09/15 09:52
2-Butanone (MEK)	< 1.25	ppb			WG801253	07/09/15 09:52
2-Chlorotoluene	< .2	ppb			WG801253	07/09/15 09:52
2-Propanol	< 1.25	ppb			WG801253	07/09/15 09:52
4-Ethyltoluene	< .2	ppb			WG801253	07/09/15 09:52
4-Methyl-2-pentanone (MIBK)	< 1.25	ppb			WG801253	07/09/15 09:52
Acetone	< 1.25	ppb			WG801253	07/09/15 09:52
Allyl chloride	< .2	ppb			WG801253	07/09/15 09:52
Benzene	< .2	ppb			WG801253	07/09/15 09:52
Benzyl Chloride	< .2	ppb			WG801253	07/09/15 09:52
Bromodichloromethane	< .2	ppb			WG801253	07/09/15 09:52
Bromoform	< .6	ppb			WG801253	07/09/15 09:52
Bromomethane	< .2	ppb			WG801253	07/09/15 09:52
Carbon disulfide	< .2	ppb			WG801253	07/09/15 09:52
Carbon tetrachloride	< .2	ppb			WG801253	07/09/15 09:52
Chlorobenzene	< .2	ppb			WG801253	07/09/15 09:52
Dibromochloromethane	< .2	ppb			WG801253	07/09/15 09:52
Chloroethane	< .2	ppb			WG801253	07/09/15 09:52
Chloroform	< .2	ppb			WG801253	07/09/15 09:52
Chloromethane	< .2	ppb			WG801253	07/09/15 09:52
cis-1,2-Dichloroethene	< .2	ppb			WG801253	07/09/15 09:52
cis-1,3-Dichloropropene	< .2	ppb			WG801253	07/09/15 09:52
Cyclohexane	< .2	ppb			WG801253	07/09/15 09:52
Dichlorodifluoromethane	< .2	ppb			WG801253	07/09/15 09:52
Ethanol	< .63	ppb			WG801253	07/09/15 09:52
Ethylbenzene	< .2	ppb			WG801253	07/09/15 09:52
Heptane	< .2	ppb			WG801253	07/09/15 09:52
Hexachloro-1,3-butadiene	< .63	ppb			WG801253	07/09/15 09:52
Isopropylbenzene	< .2	ppb			WG801253	07/09/15 09:52
m&p-Xylene	< .4	ppb			WG801253	07/09/15 09:52
Methyl Butyl Ketone	< 1.25	ppb			WG801253	07/09/15 09:52
Methyl methacrylate	< .2	ppb			WG801253	07/09/15 09:52
MTBE	< .2	ppb			WG801253	07/09/15 09:52
Methylene Chloride	< .2	ppb			WG801253	07/09/15 09:52
n-Hexane	< .2	ppb			WG801253	07/09/15 09:52
Naphthalene	< .63	ppb			WG801253	07/09/15 09:52
o-Xylene	< .2	ppb			WG801253	07/09/15 09:52
Propene	< .4	ppb			WG801253	07/09/15 09:52
Styrene	< .2	ppb			WG801253	07/09/15 09:52
Tetrachloroethylene	< .2	ppb			WG801253	07/09/15 09:52
Tetrahydrofuran	< .2	ppb			WG801253	07/09/15 09:52

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400
Portland, OR 97201

Quality Assurance Report
Level II

L775640

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 13, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Toluene	< .2	ppb			WG801253	07/09/15 09:52
TPH (GC/MS) Low Fraction	< 50	ppb			WG801253	07/09/15 09:52
trans-1,2-Dichloroethene	< .2	ppb			WG801253	07/09/15 09:52
trans-1,3-Dichloropropene	< .2	ppb			WG801253	07/09/15 09:52
Trichloroethylene	< .2	ppb			WG801253	07/09/15 09:52
Trichlorofluoromethane	< .2	ppb			WG801253	07/09/15 09:52
Vinyl acetate	< .2	ppb			WG801253	07/09/15 09:52
Vinyl Bromide	< .2	ppb			WG801253	07/09/15 09:52
Vinyl chloride	< .2	ppb			WG801253	07/09/15 09:52
1,4-Bromofluorobenzene		% Rec.	93.80	60-140	WG801253	07/09/15 09:52
Ethanol	< .63	ppb			WG801572	07/10/15 09:12
1,4-Bromofluorobenzene		% Rec.	94.20	60-140	WG801572	07/10/15 09:12

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
1,1,1-Trichloroethane	ppb	3.75	3.37	89.8	70-130	WG801253
1,1,2,2-Tetrachloroethane	ppb	3.75	3.65	97.4	70-130	WG801253
1,1,2-Trichloroethane	ppb	3.75	3.53	94.1	70-130	WG801253
1,1,2-Trichlorotrifluoroethane	ppb	3.75	3.35	89.3	70-130	WG801253
1,1-Dichloroethane	ppb	3.75	3.39	90.4	70-130	WG801253
1,1-Dichloroethene	ppb	3.75	3.40	90.7	70-130	WG801253
1,2,4-Trichlorobenzene	ppb	3.75	3.66	97.6	53.6-154	WG801253
1,2,4-Trimethylbenzene	ppb	3.75	3.72	99.1	70-130	WG801253
1,2-Dibromoethane	ppb	3.75	3.61	96.4	70-130	WG801253
1,2-Dichlorobenzene	ppb	3.75	3.61	96.2	70-130	WG801253
1,2-Dichloroethane	ppb	3.75	3.64	97.0	70-130	WG801253
1,2-Dichloropropane	ppb	3.75	3.59	95.7	70-130	WG801253
1,2-Dichlorotetrafluoroethane	ppb	3.75	3.33	88.7	70-130	WG801253
1,3,5-Trimethylbenzene	ppb	3.75	3.69	98.5	70-130	WG801253
1,3-Butadiene	ppb	3.75	3.31	88.2	70-130	WG801253
1,3-Dichlorobenzene	ppb	3.75	3.69	98.4	70-130	WG801253
1,4-Dichlorobenzene	ppb	3.75	3.84	102.	70-130	WG801253
1,4-Dioxane	ppb	3.75	3.81	102.	48-156	WG801253
2,2,4-Trimethylpentane	ppb	3.75	3.47	92.6	70-130	WG801253
2-Butanone (MEK)	ppb	3.75	3.53	94.2	70-130	WG801253
2-Chlorotoluene	ppb	3.75	3.78	101.	70-130	WG801253
2-Propanol	ppb	3.75	3.69	98.3	50.4-152	WG801253
4-Ethyltoluene	ppb	3.75	3.85	103.	70-130	WG801253
4-Methyl-2-pentanone (MIBK)	ppb	3.75	3.69	98.4	55.3-154	WG801253
Acetone	ppb	3.75	3.50	93.2	70-130	WG801253
Allyl chloride	ppb	3.75	3.50	93.4	70-130	WG801253
Benzene	ppb	3.75	3.52	94.0	70-130	WG801253
Benzyl Chloride	ppb	3.75	3.77	101.	55.6-160	WG801253
Bromodichloromethane	ppb	3.75	3.56	95.0	70-130	WG801253
Bromoform	ppb	3.75	3.65	97.3	70-130	WG801253
Bromomethane	ppb	3.75	3.13	83.4	70-130	WG801253
Carbon disulfide	ppb	3.75	3.29	87.8	70-130	WG801253
Carbon tetrachloride	ppb	3.75	3.41	91.0	70-130	WG801253
Chlorobenzene	ppb	3.75	3.55	94.7	70-130	WG801253
Dibromochloromethane	ppb	3.75	3.58	95.4	70-130	WG801253
Chloroethane	ppb	3.75	3.11	83.0	70-130	WG801253
Chloroform	ppb	3.75	3.34	88.9	70-130	WG801253
Chloromethane	ppb	3.75	3.25	86.6	70-130	WG801253
cis-1,2-Dichloroethene	ppb	3.75	3.42	91.3	70-130	WG801253
cis-1,3-Dichloropropene	ppb	3.75	3.70	98.7	70-130	WG801253
Cyclohexane	ppb	3.75	3.40	90.7	70-130	WG801253

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400
Portland, OR 97201

Quality Assurance Report
Level II

L775640

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 13, 2015

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Dichlorodifluoromethane	ppb	3.75	3.76	100.	56.7-140	WG801253
Ethanol	ppb	3.75	3.61	96.2	34.3-167	WG801253
Ethylbenzene	ppb	3.75	3.70	98.6	70-130	WG801253
Heptane	ppb	3.75	3.71	98.8	70-130	WG801253
Hexachloro-1,3-butadiene	ppb	3.75	3.64	97.1	62.1-143	WG801253
Isopropylbenzene	ppb	3.75	3.72	99.3	70-130	WG801253
m&p-Xylene	ppb	7.5	7.39	98.5	70-130	WG801253
Methyl Butyl Ketone	ppb	3.75	3.86	103.	47.9-165	WG801253
Methyl methacrylate	ppb	3.75	3.67	97.8	70-130	WG801253
MTBE	ppb	3.75	3.48	92.8	70-130	WG801253
Methylene Chloride	ppb	3.75	3.11	82.9	70-130	WG801253
n-Hexane	ppb	3.75	3.42	91.1	70-130	WG801253
Naphthalene	ppb	3.75	3.80	101.	52-158	WG801253
o-Xylene	ppb	3.75	3.78	101.	70-130	WG801253
Propene	ppb	3.75	3.17	84.5	53.9-143	WG801253
Styrene	ppb	3.75	3.67	97.7	70-130	WG801253
Tetrachloroethylene	ppb	3.75	3.48	92.8	70-130	WG801253
Tetrahydrofuran	ppb	3.75	3.61	96.3	65-140	WG801253
Toluene	ppb	3.75	3.58	95.4	70-130	WG801253
TPH (GC/MS) Low Fraction	ppb	150	137.	91.6	70-130	WG801253
trans-1,2-Dichloroethene	ppb	3.75	3.47	92.5	70-130	WG801253
trans-1,3-Dichloropropene	ppb	3.75	3.74	99.8	70-130	WG801253
Trichloroethylene	ppb	3.75	3.51	93.7	70-130	WG801253
Trichlorofluoromethane	ppb	3.75	3.18	84.9	70-130	WG801253
Vinyl acetate	ppb	3.75	3.61	96.4	70-130	WG801253
Vinyl Bromide	ppb	3.75	3.07	81.9	70-130	WG801253
Vinyl chloride	ppb	3.75	3.16	84.3	70-130	WG801253
1,4-Bromofluorobenzene				103.0	60-140	WG801253
Ethanol	ppb	3.75	3.70	98.6	34.3-167	WG801572
1,4-Bromofluorobenzene				103.0	60-140	WG801572

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1,1,1-Trichloroethane	ppb	3.49	3.37	93.0	70-130	3.56	25	WG801253
1,1,2,2-Tetrachloroethane	ppb	3.77	3.65	100.	70-130	3.17	25	WG801253
1,1,2-Trichloroethane	ppb	3.70	3.53	99.0	70-130	4.79	25	WG801253
1,1,2-Trichlorotrifluoroethane	ppb	3.46	3.35	92.0	70-130	3.17	25	WG801253
1,1-Dichloroethane	ppb	3.60	3.39	96.0	70-130	6.13	25	WG801253
1,1-Dichloroethene	ppb	3.55	3.40	95.0	70-130	4.32	25	WG801253
1,2,4-Trichlorobenzene	ppb	3.90	3.66	104.	53.6-154	6.28	25	WG801253
1,2,4-Trimethylbenzene	ppb	3.83	3.72	102.	70-130	3.11	25	WG801253
1,2-Dibromoethane	ppb	3.73	3.61	99.0	70-130	3.14	25	WG801253
1,2-Dichlorobenzene	ppb	3.66	3.61	98.0	70-130	1.50	25	WG801253
1,2-Dichloroethane	ppb	3.75	3.64	100.	70-130	3.10	25	WG801253
1,2-Dichloropropane	ppb	3.74	3.59	100.	70-130	4.02	25	WG801253
1,2-Dichlorotetrafluoroethane	ppb	3.58	3.33	95.0	70-130	7.22	25	WG801253
1,3,5-Trimethylbenzene	ppb	3.81	3.69	102.	70-130	3.12	25	WG801253
1,3-Butadiene	ppb	3.54	3.31	94.0	70-130	6.74	25	WG801253
1,3-Dichlorobenzene	ppb	3.71	3.69	99.0	70-130	0.570	25	WG801253
1,4-Dichlorobenzene	ppb	3.84	3.84	102.	70-130	0.190	25	WG801253
1,4-Dioxane	ppb	3.90	3.81	104.	48-156	2.43	25	WG801253
2,2,4-Trimethylpentane	ppb	3.72	3.47	99.0	70-130	6.85	25	WG801253
2-Butanone (MEK)	ppb	3.73	3.53	99.0	70-130	5.31	25	WG801253
2-Chlorotoluene	ppb	3.85	3.78	103.	70-130	1.91	25	WG801253
2-Propanol	ppb	3.80	3.69	101.	50.4-152	3.03	25	WG801253
4-Ethyltoluene	ppb	3.94	3.85	105.	70-130	2.17	25	WG801253

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L775640

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 13, 2015

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
4-Methyl-2-pentanone (MIBK)	ppb	3.93	3.69	105.	55.3-154	6.45	25	WG801253
Acetone	ppb	3.65	3.50	97.0	70-130	4.40	25	WG801253
Allyl chloride	ppb	3.69	3.50	98.0	70-130	5.17	25	WG801253
Benzene	ppb	3.62	3.52	96.0	70-130	2.63	25	WG801253
Benzyl Chloride	ppb	3.85	3.77	103.	55.6-160	2.21	25	WG801253
Bromodichloromethane	ppb	3.72	3.56	99.0	70-130	4.31	25	WG801253
Bromoform	ppb	3.78	3.65	101.	70-130	3.59	25	WG801253
Bromomethane	ppb	3.25	3.13	87.0	70-130	3.91	25	WG801253
Carbon disulfide	ppb	3.47	3.29	92.0	70-130	5.27	25	WG801253
Carbon tetrachloride	ppb	3.54	3.41	94.0	70-130	3.50	25	WG801253
Chlorobenzene	ppb	3.64	3.55	97.0	70-130	2.53	25	WG801253
Dibromochloromethane	ppb	3.73	3.58	99.0	70-130	4.16	25	WG801253
Chloroethane	ppb	3.38	3.11	90.0	70-130	8.14	25	WG801253
Chloroform	ppb	3.49	3.34	93.0	70-130	4.57	25	WG801253
Chloromethane	ppb	3.42	3.25	91.0	70-130	5.27	25	WG801253
cis-1,2-Dichloroethene	ppb	3.60	3.42	96.0	70-130	5.13	25	WG801253
cis-1,3-Dichloropropene	ppb	3.77	3.70	100.	70-130	1.78	25	WG801253
Cyclohexane	ppb	3.63	3.40	97.0	70-130	6.48	25	WG801253
Dichlorodifluoromethane	ppb	3.98	3.76	106.	56.7-140	5.62	25	WG801253
Ethanol	ppb	3.88	3.61	103.	34.3-167	7.17	25	WG801253
Ethylbenzene	ppb	3.79	3.70	101.	70-130	2.44	25	WG801253
Heptane	ppb	3.90	3.71	104.	70-130	5.03	25	WG801253
Hexachloro-1,3-butadiene	ppb	3.76	3.64	100.	62.1-143	3.30	25	WG801253
Isopropylbenzene	ppb	3.83	3.72	102.	70-130	2.98	25	WG801253
m&p-Xylene	ppb	7.62	7.39	102.	70-130	3.12	25	WG801253
Methyl Butyl Ketone	ppb	4.07	3.86	108.	47.9-165	5.38	25	WG801253
Methyl methacrylate	ppb	3.69	3.67	98.0	70-130	0.690	25	WG801253
MTBE	ppb	3.64	3.48	97.0	70-130	4.56	25	WG801253
Methylene Chloride	ppb	3.28	3.11	87.0	70-130	5.35	25	WG801253
n-Hexane	ppb	3.57	3.42	95.0	70-130	4.36	25	WG801253
Naphthalene	ppb	4.01	3.80	107.	52-158	5.20	25	WG801253
o-Xylene	ppb	3.91	3.78	104.	70-130	3.23	25	WG801253
Propene	ppb	3.38	3.17	90.0	53.9-143	6.36	25	WG801253
Styrene	ppb	3.90	3.67	104.	70-130	6.22	25	WG801253
Tetrachloroethylene	ppb	3.63	3.48	97.0	70-130	4.18	25	WG801253
Tetrahydrofuran	ppb	3.75	3.61	100.	65-140	3.84	25	WG801253
Toluene	ppb	3.72	3.58	99.0	70-130	3.76	25	WG801253
TPH (GC/MS) Low Fraction	ppb	142.	137.	94.0	70-130	3.05	25	WG801253
trans-1,2-Dichloroethene	ppb	3.73	3.47	99.0	70-130	7.19	25	WG801253
trans-1,3-Dichloropropene	ppb	3.85	3.74	103.	70-130	3.01	25	WG801253
Trichloroethylene	ppb	3.66	3.51	98.0	70-130	4.05	25	WG801253
Trichlorofluoromethane	ppb	3.30	3.18	88.0	70-130	3.60	25	WG801253
Vinyl acetate	ppb	3.72	3.61	99.0	70-130	3.04	25	WG801253
Vinyl Bromide	ppb	3.20	3.07	85.0	70-130	4.12	25	WG801253
Vinyl chloride	ppb	3.49	3.16	93.0	70-130	10.0	25	WG801253
1,4-Bromofluorobenzene				103.0	60-140			WG801253
Ethanol	ppb	3.84	3.70	102.	34.3-167	3.86	25	WG801572
1,4-Bromofluorobenzene				101.0	60-140			WG801572

Batch number /Run number / Sample number cross reference

WG801253: R3048724: L775640-01 02 03 04 05 06
WG801572: R3048977: L775640-03

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

Oregon Dept. of Env. Quality - ODEQ
Ken Thiessen
2020 SW 4th Ave, Suite 400

Portland, OR 97201

Quality Assurance Report
Level II

L775640

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

July 13, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

State of Oregon Chain of Custody

Agency, Authorized Purchaser or Agent: Oregon DEQ		Contract Laboratory Name: ESC		Lab Selection Criteria: ☐ Proximity (if TAT < 48 hrs) ☐ Prior work on same project ☒ Cost (for anticipated analyses) ☐ Other labs disqualified or unable to perform requested services ☐ Emergency work		Turn Around Time: ☒ 10 days (std.) ☐ 5 days ☐ 72 hours ☐ 48 hours ☐ 24 hours ☐ Other	
Send Lab Report To: Ken Thiessen Address: 700 NE Multnomah St., Suite #600 Portland, Oregon 97232 Tel. #: (503) 229-6015 E-mail: thiessen.kenneth@deq.state.or.us		Lab Batch #: Invoice To: ODEQ/Business Office Address: 811 SW 6th Ave Portland, OR 97204 Tel. #: (800) 452-4011		Sample Preservative None			
Project Name: Former Campbell Dry Cleaner 15818-00/Task 7		Requested Analyses					
Sampler Name: Chris Martin		TO-15					
Sample ID#	Collection Date/Time	Matrix	Number of Containers	Comments			
AA-1	7/6/15 1620	Air	1	Summa Initial Final 968 -29 -9 -01			
AA-2	1622		1	1581 -30 -0.5 -02			
AA-3	1616		1	1166 -29 -3.5 -03			
AA-4	1624		1	1011 -30 -14 -04			
AA-5	1618		1	1705 -30 -7 -05			
Vapor Stack	1653		1	1222 -30 -5 -06			
Notes: Please also send lab correspondence to: Chris Martin (Hart Crowser) Chris.Martin@hartcrowser.com							
Relinquished By: Chris Martin		Agency/Agent: Hart Crowser		Received By:		Agency/Agent:	
Signature: [Signature]		Time & Date: 7/17/15 0800		Signature:		Time & Date: 7/8/15	
Relinquished By:		Agency/Agent:		Received By:		Agency/Agent:	
Signature:		Time & Date:		Signature:		Time & Date:	

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #102-1098-07 AND PRICE AGREEMENT # 8903. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S & C'S) CONTAINED IN THE PRICE AGREEMENT ARE HEREBY INCORPORATED BY REFERENCE AND SHALL APPLY TO THIS PURCHASE AND SHALL TAKE PRECEDENCE OVER ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

Cont. 6-Summa
FLX5