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May 4, 2015

ECI Project Number: 0438-06

Mr. Phillip Kirkwood
Twin Lakes Shops, LLC
4304 2nd Avenue Northeast
Seattle, Washington 98105

Re: **Vapor Intrusion Investigation**

VCP Project No.: NW2747
Twin Lakes Shopping Center
2311 SW 336th Street
Federal Way, Washington 98023

Mr. Kirkwood:

Pursuant to your request, EcoCon, Inc. (ECI) completed a Supplemental Vapor Intrusion Investigation (VI Investigation) for the property located at 2311 SW 336th Street, Federal Way, Washington 98023 (the Property). This VI Investigation is being conducted to further evaluate the potential for adverse impacts to indoor air quality on the "Site" due to historical operations on the Property.

As established in WAC 173-340-200, the "Site" is defined by the full lateral and vertical extent of contamination that has resulted from the former operation of a dry cleaner on the Property.

This report details site activities and observations, sampling activities, chemical analysis, and provides conclusions and recommendations.

Included with this report are the following:

- Appendix A: Project Figures;
- Appendix B: Sample Analytical Results.

Scope of Work

The scope of work for this VI Investigation included:

- Development of a site work plan;
- Preparation of site-specific Health and Safety Plan (HASP)
- Collection and laboratory analysis of soil gas and indoor air samples; and
- Preparation of a detailed report.

Site Location & Description

The Property is located on the southwest corner of the intersection of SW 336th Street and 21st Street in commercial and residential area of Federal Way (Twin Lakes) in South King County, Washington. The Property is improved with is a single-story concrete and steel, slab on grade building divided into nine separate operations. These operations are west to east, a dry cleaner, tanning salon, exercise facility, smoke shop, Asian restaurant, Mexican restaurant, hair salon, Domino's Pizza, and a liquor store. The rest of the site is asphalt paved parking to the north and south of the building. The current dry cleaner operation is a drop off facility and does not utilize dry cleaning solvents onsite. The closest body of water is Panther Lake, located approximately one mile east-southeast of the Property. Commencement Bay is approximately 3 miles to the west and Dumas Bay is approximately 3 miles to the north. The elevation of the center of the Property is approximately 340 feet above mean sea level. The location of the Property and topography of the general vicinity are illustrated in the Project Figures found in Appendix A.

Physical Setting

The city of Federal Way lies within the Puget Sound Lowland, an elongate structural and topographic basin between the Cascade Range and Olympic Mountains. The area has been impacted by repeated glaciation and crustal deformation related to the Cascadia subduction zone. The present landscape largely results from those repeated cycles of glacial scouring and deposition and tectonic activity, subsequently modified by land sliding, stream erosion and deposition, and human activity. The most recent glacier to override the area, during the Vashon Stade of the Fraser Glaciation, was marked by the advance and retreat of the Puget Lobe of the Cordilleran Ice Sheet in western Washington, and retreated from the area by approximately 13,650 years ago.

This area sits atop a complex and incomplete succession of glacial and non-glacial deposits that extends below sea level and overlies an irregular bedrock surface. These subsurface materials show spatial lithologic variability, are truncated by many unconformities, and are deformed by gentle folds and faults. Sediments that predate the last glacial–interglacial cycle are exposed where erosion has incised into the upland, notably along the shorelines of Puget Sound and Lake Washington, along the Duwamish River valley, and along Holocene streams.

The city of Federal Way lies to the east of the Tacoma Basin within the Tacoma fault zone, structures that reflect north-south crustal shortening in the Puget Lowland. The Tacoma Fault Zone marks the south end of the Seattle Uplift, of which the similar and related Seattle Fault Zone marks the north end. This uplift is believed to be either a slab of rock about 15 km thick being pushed up a ramp, or a wedge being popped up between these two faults, by tectonic forces from the south or south-west as tectonic plates riding on top of the Juan de Fuca Plate are pushed against the North American craton.

The landforms and near-surface deposits that cover much of this portion of the state record a brief period in the geologic history of the region. Upland till plains in many areas are cut by recessional meltwater channels and modern river channels. Till plains display north-south drumlins with long axes

oriented in the ice-flow direction. Glacially overridden deposits underlie the drumlins and most of the uplands, whereas loosely consolidated postglacial deposits fill deep valleys and recessional meltwater channels. Ice-contact deposits are found in isolated locations across the uplands and along the margins of the uplands, and outwash deposits line upland recessional channels. Soft organic-rich deposits fill former lakes and bogs.

Geological and hydrogeological conditions can often affect, to some extent, the environmental integrity of property. Underlying soil and bedrock formations may facilitate or impede the migration of chemical contaminants in groundwater, and may even be the source of contaminants such as radon and metals.

The primary aquifers in the Puget Sound region are typically overlain by the relatively impermeable glacial till deposits that are present at or near the ground surface. Within these till deposits are localized areas or lenses of water-bearing sands and gravels that may result in a shallow, localized, perched water table. Lateral and vertical migration of shallow groundwater may be impeded by the relatively impermeable nature of the till and by the sometimes-discontinuous nature of the perched water-bearing sands and gravel.

Perched and discontinuous zones of shallow groundwater may be seasonally or perennially present, depending on site-specific conditions. Shallow groundwater flow directions fluctuate and tend to follow topographic gradient but are also affected by seasonal high water tables and variable soil characteristics. Groundwater migration pathways may also follow underground conduits. Groundwater was not contacted during any of the investigations completed at the Site.

Previous Investigations

Previous investigations at the Site have identified an area of concern that is located at the western end of the Property; adjacent to the former dry cleaning operation that previously occupied the Property from the early 1980s to approximately 2007. Tetrachloroethylene (PCE) was found to have impacted soils underneath the building, in the utility corridors along the southern and western sides of the building and along the northern portion of the building at concentrations above the Model Toxics Control Act (MTCA) Method A Cleanup Level (CUL) of 0.05 mg/kg for PCE in soil. Previous activities have included:

- Phase I Environmental Site Assessment (ESA), ECI, June 2012
- Focused Subsurface Investigation (FSI), ECI, July 2012
- Additional Subsurface Investigation (ASI), ECI, August/September, 2012
- Supplemental Subsurface Investigations (SSI), ECI, October 2012
- Interim Remedial Investigation/ Feasibility Study (RI/FS), ECI, February 2013
- Vapor Intrusion Study, ECI, April/May 2013
- Additional Ambient Air Investigation, May/June 2013
- Supplemental Focused Subsurface Investigation, August 2013

The Phase I ESA conducted in June 2012 indicated that a dry cleaner operated on the Property from the early 1980's until sometime in 2007. Additional information indicated that there may have been improper disposal of dry cleaning condensate containing PCE that may have been dumped or spilled near the door at the rear of the building. This information constituted a recognized environmental condition (REC) in the Phase I ESA and further inquiry was recommended.

In order to determine if the historic dry cleaning operation impacted the Site, a total of eighteen borings were advanced on the Site to a maximum depth of 110 feet below ground surface (bgs). In all borings, the soils encountered were brown silty sands with varying amounts of gravel (fill). Groundwater was not encountered to the maximum depth explored.

Four borings were placed in the interior of the building, with three of the borings (B4, B5, and B11) inside the former dry cleaners and adjacent to the former dry cleaning machinery. The fourth boring (B12), was located east of the dry cleaners in a maintenance area.

Borings B4 and B5 (adjacent to the former dry cleaning equipment) were hand drilled after the concrete floor was cored to allow access to the underlying soils. A sample was collected from approximately one foot below the ground surface (bgs) from each boring to determine if soil beneath the building had been impacted.

Borings B11 (north of the former dry cleaning equipment) and B12 (east of the former dry cleaning equipment) were also hand drilled, after the concrete floor was cored, until water trapped in the fill material under the building was encountered at 5.5 feet bgs. Soil samples were collected at 3.5 feet and 5.5 ft in boring B11 and at 5.5 feet in boring B12 to determine depth of contamination below the building foundation. A sample of the water was collected in boring B12 utilizing a stainless-steel screen placed into the boring and extracted with a peristaltic pump and PVC tubing. The water had a strong sewer like odor. After further inquiry with the Property owner's representative (Property Manager) it was determined that this water was trapped "grey/sewer water" from a sewer leak that took place in 2007 at the Property. Water was not encountered at any of the other interior boring locations.

Laboratory analysis of the soil sample collected from B4 (B4-1) was reported containing PCE at 0.17 mg/kg and the sample collected from B5 (B5-1) was reported containing PCE at 0.16 mg/kg. These concentrations exceed the CUL (0.05 mg/kg) for PCE in soil. The soil samples collected from B11 (B11-3.5 and B11-5.5) and B12 (B12-5) did not indicate detectable concentrations of PCE in the soil above the laboratory minimum reporting limit (MRL); however, laboratory analysis of the water sample (B5W) did detect concentration of PCE at 3.0 µg/L. This concentration is below the MTCA Method A CUL for PCE of 5.0 µg/L in groundwater.

Fourteen borings were advanced south, west, and north of the building using a push probe drill rig and a hollow stem auger drill rig for the deeper boring. The boring locations were selected to determine the lateral extent of PCE contamination and to determine the depth and potential impact to groundwater

beneath the Site. Select soil samples were analyzed from each boring after visual and olfactory field screening of the observed boring samples.

- Boring B1 was located approximately 3 feet south of the building, and was advanced to 25 feet bgs. Laboratory analysis of soil sample B1-19 was reported containing PCE at 0.10 mg/kg at 19 feet bgs, exceeding the CUL for PCE in soil.

- Boring B2 was located approximately 3 feet west of the building. This boring was advanced to 30 feet bgs. Laboratory analysis of soil sample B2-12 was reported containing PCE at 0.09 mg/kg at 12' bgs and soil Sample B2-27 was reported containing PCE at 0.07 mg/kg at 27 feet bgs, with both concentrations exceed the CUL for PCE in soil.

- Boring B3 is located approximately 3 feet northwest of the building. This boring was advanced to 30 feet bgs. Laboratory analysis of soil sample B3-15 was reported containing PCE at 0.05 mg/kg and soil sample B3-30 was reported containing PCE at 0.05 mg/kg. These concentrations exceed (or are equal to) the CUL for PCE in soil.

- Boring B6 is located approximately 25 feet southwest of the southwestern corner of the building. This boring was advanced to 45 feet bgs. Laboratory analysis of the soil samples did not reflect concentrations of PCE above laboratory method reporting limit (MRL).

- Boring B7 is located approximately 20 feet west of the western portion of the building (Center). This boring was advanced to 45 feet bgs. Laboratory analysis of the soil samples did not reflect concentrations of PCE above the laboratory MRL.

- Boring B8 is located approximately 25 feet northwest of the northwestern corner of the building. This boring was advanced to 57 feet bgs. Laboratory analysis of the soil samples did not reflect concentrations of PCE above the laboratory MRL.

- Boring B9 is located approximately 25 feet north of the northern portion of the building. This boring was advanced to 45 feet bgs. Laboratory analysis indicated that detected concentrations of PCE were below the CUL for PCE in soil.

- Boring B10 is located approximately 25 feet south of the southern portion of the building. This boring was advanced to 45 feet bgs. Laboratory analysis indicated concentrations of PCE exceeding the CUL for PCE in soil were found in soil samples B10-19 at 0.091 mg/kg and B10-30.5 at 0.077 mg/kg.

- Boring B13 is located approximately 70 feet east of the northwestern corner of the building. This boring was advanced only to 35 feet bgs because of adverse drilling conditions (more gravel than in other borings). Laboratory analysis of the soil samples reflected concentrations of PCE exceeding the CUL for PCE in soil in sample B13-30 at 0.063 mg/kg.

- Boring B14 is located approximately 100 feet east of the northwestern corner of the building. This boring was advanced to 35 feet bgs. Laboratory analysis of the soil samples identified concentrations of PCE above the laboratory MRL, but not exceeding the CUL for PCE in soil.

- Boring B15 was located approximately 60 feet north of the northwestern corner of the building. This boring was advanced to 45 feet bgs. Laboratory analysis of the soil samples did not reflect concentrations of PCE above the laboratory MRL.

- Boring B16 is located approximately 60 feet south of the southwestern corner of the building. This boring was advanced to 45 feet bgs. Laboratory analysis of the soil samples identified concentrations of PCE above the laboratory MRL, but not exceeding the CUL for PCE in soil.

- Boring AB17 is located approximately 75 feet north of the northwestern corner of the building. This boring was advanced 110 feet bgs utilizing hollow-stem auger drilling to potentially find and sample groundwater at depth; however, groundwater was not encountered. Laboratory analysis of the soil samples did not reflect concentrations of PCE above the laboratory MRL

- Boring B18 is located approximately 60 feet south of the southwestern corner of the building. This boring was advanced to 45 feet bgs. Laboratory analysis of the soil samples identified concentrations of PCE exceeding the MTCA CUL in samples B18-20 at 0.17 mg/kg and B18-30 at 0.15 mg/kg. However, this boring was located adjacent to the eastern property line making advancement of another boring further east not feasible.

In August 2013, two deep borings were completed at locations adjacent to the north and south sides of the building, where the highest and/or deepest concentrations in soil (exterior to the building) had previously been detected. Both borings were advanced until groundwater was encountered at a depth of 118 feet bgs. Soil samples were collected from just above the groundwater interface from each boring and grab groundwater samples were also collected. Laboratory analysis indicated the no volatile organic compounds (VOCs) were detected in any of the soil or groundwater samples.

Samples collected from the previous investigations indicate that the soils found under the Site consist of brown sands, gravel, and concrete and other debris (fill) for the first 2 to 4 feet bgs (depending on the location), with the underlying soils consisting of brown/grey silty sands from 4 feet to 118 feet bgs (the deepest advancement of the previous investigations). Groundwater was encountered at a depth of 118 feet bgs.

The results of the previous sampling and analyses indicate that tetrachloroethylene (PCE) impacted soil above the MTCA Cleanup level of 0.05 mg/kg was found in the following areas of the Site:

- The southern portion of the Property along the building and underground utility trench;
- Along the western portion of the Property following the underground utility trench; and

- Along the northern portion of the building near the former dry cleaners.

The depth of impacted soils ranges from the surface (under the building) to approximately 30 feet bgs. While no groundwater was encountered during these investigations it is believed that a sewer leak in 2007 may have mobilized contamination in the soil and allowed it to migrate into the underground utility trenches and to migrate to the depths (12 to 30 feet bgs) observed in the borings.

Initial vapor intrusion (VI) sample collection was conducted at the Site on February 22, 2013, which included the following activities::

- Collection of four (4) shallow/sub-slab air samples using laboratory certified clean 1 liter Summa canisters, with two samples located in the dry cleaners (southern and northern portion), a sample located along the southern wall of the nail salon, and a final sample located along the southern wall of the exercise facility (maintenance closet). The samples were analyzed for volatile organic compounds (VOCs) by EPA Method TO-15 for PCE, and;

- Collection of two (2) ambient air samples using laboratory certified clean 6 liter Summa canisters, with one sample located in the dry cleaning facility, and one located outside south of the structure. The samples were analyzed for volatile organic compounds (VOCs) by EPA Method TO-15 for PCE.

The sub-slab air samples collected from the beneath the building showed concentrations of PCE exceeding the laboratory detection levels. PCE vapors were found under the slab in the dry cleaners (VI-1 2,600 µg/m³, VI-2 69 µg/m³), the nail salon (VI-3 12 µg/m³), and the exercise facility (VI-4 7.9 µg/m³). The results of the sub-slab sample beneath the dry cleaner was above the MTCA Method B screening levels for PCE of 96 µg/m³. Although the conclusions from this investigation would not have changed, it should be noted that as of April 9, 2015, the sub-slab soil gas screening level for PCE was increased to 321 µg/m³.

Concentrations of PCE were found to be above detection levels in the indoor ambient sample collected from the dry cleaners (2.5 µg/m³). The ambient air samples (background) collected from outside the building reflected concentrations of PCE below the laboratory MRL (non-detect).

After review of the analytical results for the initial sub slab vapor and ambient air samples, additional testing of the ambient air was deemed as warranted. This additional testing followed the Ecology's Guidance for Vapor Intrusion Studies (Tier II) and included three additional indoor ambient air samples that were collected in the dry cleaners (ABDC-2), the nail salon (ABNS-3), and the exercise facility (ABCurves-1). These additional ambient air samples were collected on May 1st, 2013, utilizing 6 liter Summa canisters, supplied and certified clean by Air Toxics.

The additional ambient air samples collected from dry cleaners, the nail salon, and the exercise facility all reflected concentrations of PCE exceeding the laboratory detection limit. The sample collected from the dry cleaners (ABDC-2) had concentrations of PCE at 6.8 µg/m³, the nail salon (ABNS-3) at 2.1 µg/m³,

and the exercise facility (ABcurves-1) at 1.2 µg/m³. None of these samples exceeded the Method B CUL for PCE in indoor air (9.62 µg/m³).

A letter from the Department of Ecology Voluntary Cleanup Program, dated October 18, 2014, indicated that the Decision Matrix Guidelines for Tier II Vapor Intrusion Assessment requires repeat sampling of both indoor air and sub-slab soil gas to conclude that PCE concentrations are at levels that are permanently protective of indoor air at the site. In addition, VI Guidance stipulates that buildings within 100 feet of the edge of the contamination should be evaluated for vapor intrusion, with testing to include sub-slab soil gas sampling inside the apartment building or sampling of shallow soil gas outside the apartment building. The current VI assessment was completed to meet these requirements.

Contaminants of Concern (COCs)

The contaminant of concern (COC) for soil vapor and indoor air at the Site have been identified as tetrachloroethylene (PCE). Cleanup levels have been derived from the Model Toxics Control Act's (MTCA) Method-B Cleanup Levels for Air.

Table 1: Contaminant of Concern & Applicable Cleanup Levels – Air

Primary Contaminant of Concern	Analytical Method	Cleanup Levels (CUL) Air - µg/m³
Tetrachloroethylene (PCE)	TO-15	9.62

µg/m³ = microgram per cubic meter

Vapor Intrusion Sampling Activities

Site Work and Sample Collection

On April 26, 2015, Standard Environmental Probe (SEP) under the supervision of an ECI Environmental Professional, advanced one (1) boring through the concrete slab to collect a sub-slab vapor sample from beneath the dry cleaner facility in the shopping center building. The sub-slab vapor sample was located in the vicinity of the former dry cleaning machines. Additionally, one indoor air sample was collected from inside the dry cleaner facility and one soil vapor sample was collected at a location on the adjacent property to the west of the Twin Lakes Shopping Center (Cedardale Apartments), approximately fifteen (15) feet from the easternmost building of the apartment complex.

Sub-Slab Vapor Sampling

SEP advanced one boring through the concrete foundation floor slab at the location noted above. The borings were made by advancing a one-inch diameter drill bit through the concrete floor and underlying soils to a depth of approximately three to four inches below the concrete floor slab. The sub-slab sample was obtained at areas beneath the slab where there were no cracks or nearby openings. The boring was advanced using an electric rotary impact drill equipped with a spline bit. Rigid 3/16-inch Spiral Flex Rilsan PA tubing was cut to length and inserted to the bottom of the boring. Sand was poured into the hole around the tubing. Hydrated granular bentonite chips were then used to seal the top of the hole from the atmosphere. The sample location was allowed to stabilize for approximately 15 to 30 minutes.

Upon completing the boring and allowing the allotted stabilization time to pass, the sub-slab sample was collected utilizing 1-liter SUMMA "mini" canister fitted with a flow regulator (choke) calibrated to a flow rate of between 1.5 to 2.0 milliliters per minute (ml/min). The regulator was attached to the probe tubing to collect the sub-slab soil gas sample.

Following completion of the sampling, the probe tubing was removed from the location and the boring was sealed/grouted flush with the floor using concrete.

Table 2: Collection parameters for the Sub-Slab Vapor Samples

Sample ID	SS1-3-042815
Slab Thickness	6 inches
Depth of Borehole	10 inches
Collection Date	April 28, 2015
Sample Time	5 minutes
Sample Canister Volume	1 Liter
Purge Volume	180 ml
Pre sample Canister Vacuum	28'' of Hg
Post sample Canister Vacuum	0.8" of Hg
Canisters Serial Number	35665

Indoor Air Sample

One indoor air sample was collected during this VI Investigation. The samples was collected from inside the dry cleaner facility, in the rear portion of the building near the location of the former dry cleaning equipment.

The indoor air sample was collected utilizing a 6-liter Summa canister, supplied and certified clean by Eurofins Air Toxics. The canister was fitted with a flow regulator (chokes) calibrated to a flow rate to allow sample collection over an eight (8) hour period. The canister was placed and the regulators opened per laboratory provided guidance at the start of the day and monitored for eight hours.

Table 3: Collection Parameters for the Indoor and Ambient Air Samples

Sample ID	AA1-042815
Collection Date	April 28, 2015
Start Time	8:25
Finish Time	4:31
Sample Canister Volume	6 Liter
Pre sample Canister Vacuum	28" of Hg
Post sample Canister Vacuum	5.1" of Hg
Canister Serial Number	1589

Soil Vapor Sample

SEP advanced one boring in lawn/grass area of the apartment building to the west of the Property. The boring was made by advancing a one-inch diameter drive point attached to a piece of one-inch diameter direct push drill casing using a sledge hammer to a depth of approximately 30 inches below the ground surface. Rigid 3/16-inch Spiral Flex Rilsan PA tubing was cut to length and inserted to the bottom of the boring. Sand was poured into the hole around the tubing. Hydrated granular bentonite chips were then used to seal the top of the hole from the atmosphere. The sample location was allowed to stabilize for approximately 15 to 30 minutes.

Upon completing the boring and allowing the allotted stabilization time to pass, the soil vapor sample was collected utilizing 1-liter SUMMA "mini" canister fitted with a flow regulator (choke) calibrated to a flow rate of between 1.5 to 2.0 milliliters per minute (ml/min). The regulator was attached to the probe tubing to collect the sub-slab soil gas sample.

Following completion of the sampling, the probe tubing was removed from the location and the boring was sealed/grouted flush with the ground surface using hydrated bentonite.

Table 4: Collection Parameters for the Soil Vapor Sample

Sample ID	SV1-3-042815
Collection Date	April 28, 2015
Start Time	9:00
Finish Time	9:05
Sample Canister Volume	1 Liter
Pre sample Canister Vacuum	28" of Hg
Post sample Canister Vacuum	0 " of Hg
Canister Serial Numbers	37831

Analytical Results

One sub-slab air sample, one indoor air sample and one soil vapor sample were submitted to Eurofins Air Toxics of Folsom, California for analysis of tetrachloroethylene (PCE) by EPA Method TO-15.

- Sub-slab air sample collected from beneath the dry cleaner facility (SS1-3-042815) contained concentrations of PCE in excess of the soil gas screening level protective of the vapor intrusion pathway (Soil Vapor Intrusion Guidance).
- The soil vapor sample collected from the adjacent Cedardale Apartments property contained concentrations of PCE below the applicable MTCA Method B cleanup level for indoor air and soil gas screening level protective of the vapor intrusion pathway.

- Indoor air sample (AA1-042815) contained concentrations of PCE below the applicable MTCA Method B cleanup level for indoor air.

Tables 5 and 6 below provide a summary of the sample analytical results and the laboratory report is included with this report as Appendix B.

Table 5: Summary of Sub-slab and Soil Vapor Analytical Results

Sample Type	Sample ID	Perchloroethylene
		Method EPA TO-15
		Sample Results in µg/M³
Soil Gas - Sub-slab	SS1-3-042815	**2,000**
Soil Gas - Adjacent property	SV1-3-042815	4.3
Soil Gas Screening Level*		321

* Current soil gas (sub-slab) screening levels are 30 times greater than the MTCA-B CUL for indoor air

Table 6: Summary of Indoor Air Analytical Results

Sample Type	Sample ID	Perchloroethylene
		Method EPA TO-15
		Sample Results in µg/M³
Indoor Air	AA1-042815	2.0
MTCA-B CULs for Indoor Air		9.62

Summary and Conclusions

On April 28, 2015, sub-slab soil gas, indoor air, and soil vapor samples were collected from beneath, within and to the west of the dry cleaner facility located at the west end of the Twin Lakes Shopping Center located at 2311 SW 336th Street in Federal Way , Washington. The samples were collected to evaluate the potential for adverse impacts to indoor air quality and possible lateral subsurface vapor migration due to historical site uses.

Sample analytical results reported concentrations of PCE above the soil gas screening level in the sub-slab air sample; however, analytical results from the indoor air sample and the soil vapor sample collected from the adjacent property to the west reported concentrations of PCE below the MTCA Method B CUL for Indoor Air. Based on these results, ECI concludes the following:

- Soil-gas beneath the dry cleaner facility continues to be impacted with PCE concentrations above the soil gas screening level protective of indoor air.

- PCE concentrations in indoor air were identified as being below the MTCA Method B CUL. The current slab appears to be an effective engineering control in minimizing the intrusion of soil vapors into the dry cleaner facility.
- PCE vapors have migrated to the west of the dry cleaner facility, but concentrations are not at levels which would pose a vapor intrusion risk to the occupants of the adjacent apartment complex.

The PCE contaminant plume is restricted to soil and soil gas beneath the dry cleaner facility and closely surrounding area. Subsurface investigations have adequately delineated the lateral and vertical extent of the contaminant plume, and shown that water has not been impacted and is greater than 70 feet below the deepest PCE impact in soil. Vapor intrusion investigations have shown that soil gas below the dry cleaner facility is impacted with PCE concentrations above the sub-slab soil gas screening level; however, indoor air samples collected from within the dry cleaner facility indicated PCE concentrations at levels below the MTCA Method B Cleanup Level for PCE in indoor air during both sampling events. In addition, shallow soil vapor testing on the adjacent Cedardale Apartment property indicated that PCE vapor concentration are not at levels that would pose a risk of vapor intrusion into the apartment buildings. As a result of these findings, ECI recommends that no further assessment or remediation be required at the Site and No Further Action status be granted in relation VCP Project No.: NW2747.

These findings are representative of current site conditions, any modifications to the Property improvements such as underground utility work or ventilation alternations could potentially change indoor air quality values. Continued monitoring of indoor air quality should be conducted to verify that concentrations remain below the appropriate regulatory thresholds.

ECI appreciates the opportunity to provide environmental consulting services on this project. Should you have any questions, please contact our office at (253) 238-9270.

Respectfully submitted,

K. Craig Klein
Sr. Environmental Geologist

Missy Leone
Sr. Environmental Geologist

List of Appendices

Appendix A – Project Figures

- Figure 1 - Site Location Map
- Figure 2 - Site Topographic Map
- Figure 3 – Sample Location Map

Appendix B – Project Analytical Results

- Air Sample Analytical Results
- Sample Chain of Custody

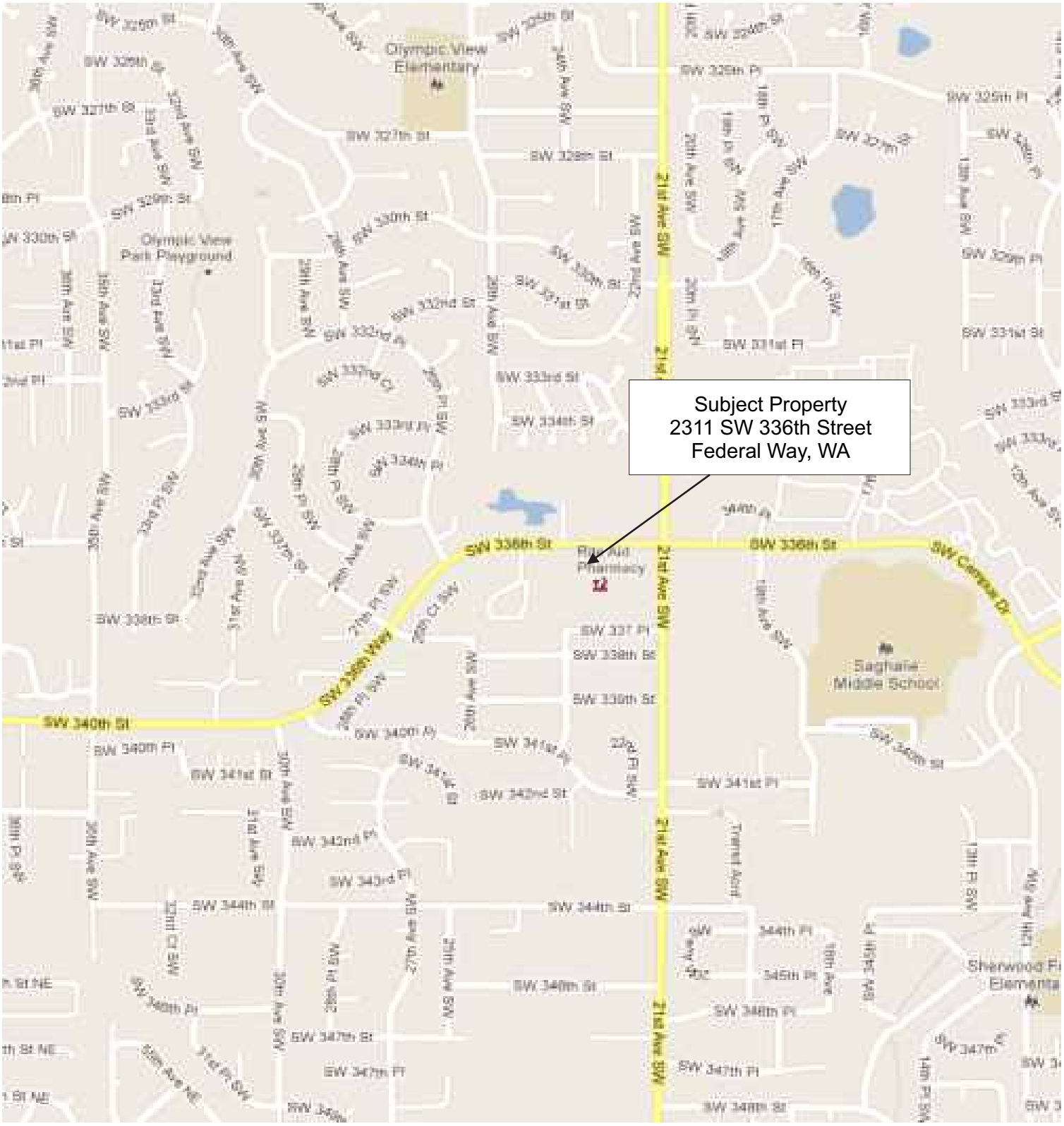
Qualifications of This Report

Although this Vapor Intrusion Investigation has been a reasonably thorough attempt to investigate the potential presence of contamination, there is always the possibility that additional sources of contamination have escaped detection due to the limitations of this Study, the inaccuracy of governmental records, and the presence of undetected and unreported environmental incidents. ECI reserves the right to alter our findings based on our review of any information obtained and reviewed after the date of this report.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar conditions, by reputable environmental consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional information included in this report. Should you have any questions regarding this report, please contact our office at (253) 238-9270.

Appendix A

Project Figures



N
Not To Scale

Site Location Map
VI Mitigation Workplan
2311 SW 336th Street
Federal Way, Washington

Date:	December 3 2013
Completed By:	TWS
Reviewed By.:	S.Spencer
Version:	ECI-001
Project No.:	0438-07

Figure No.: 01
Sheet 01 of 03

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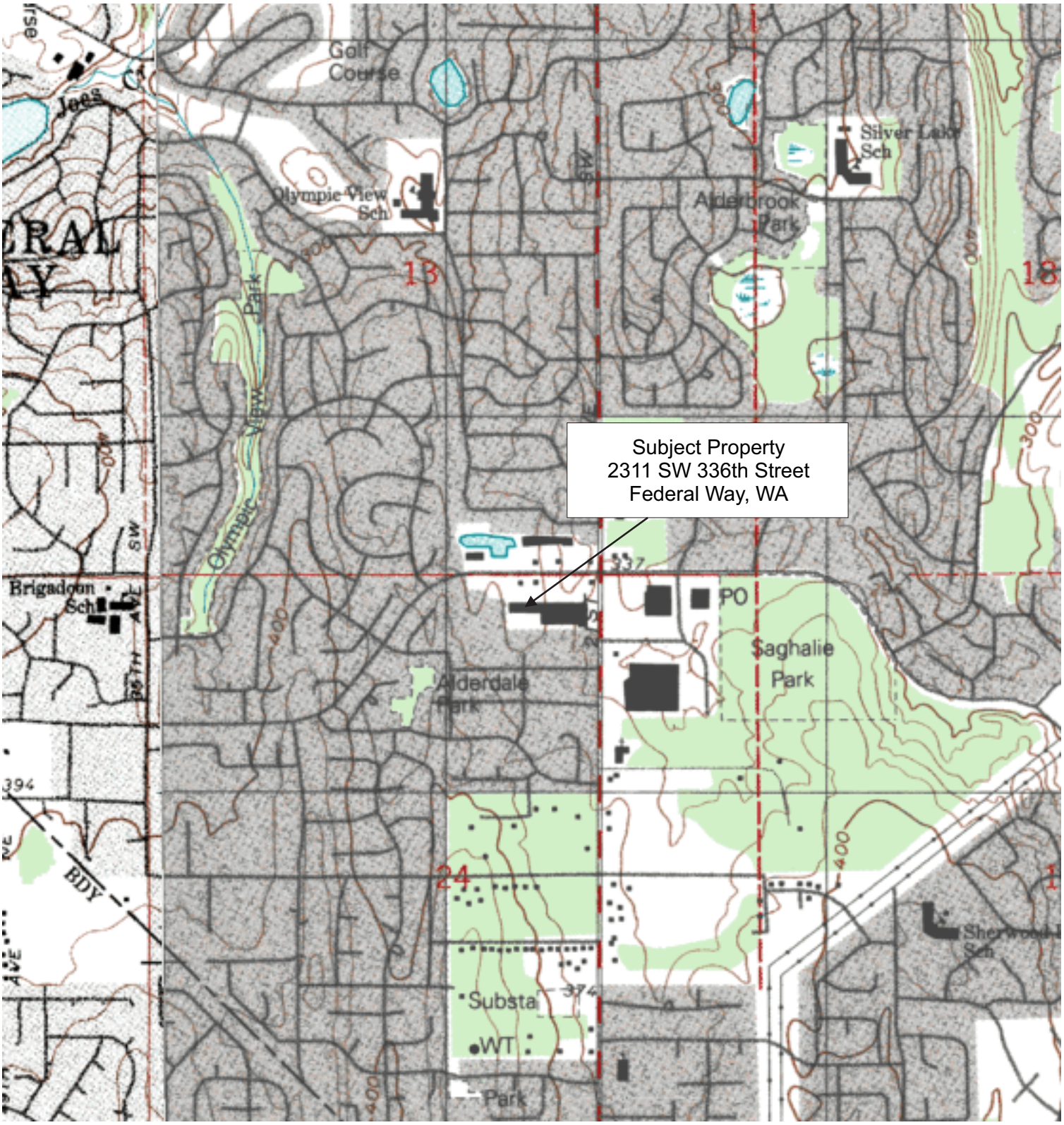

N
Not To Scale

Site Topographic Map
VI Mitigation Workplan
2311 SW 336th Street
Federal Way, Washington

Date:	December 3, 2013
Completed By:	TWS
Reviewed By.:	S.Spencer
Version:	ECI-001
Project No.:	0438-07

Figure No.: 02
Sheet 02 of 03

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~Asphalt Parking~

~Landscape~

Property Boundary

Utility Corridor (Sanitary Sewer, Storm Water Se

Front Door

Curves

Store

Sun Cleaners

Former Dry Cleaning
Equipment Locations

AA1-042815
PCE:(2 ug/m3)

SS1-3-042815
PCE:(2000 ug/m3)

Nail Salon

Building
2311 SW 336th Street
Federal Way, Washington

SV1-3-042815
PCE:(4.3 ug/m3)

Cedardale Apartments

Rear Door

Utility Corridor (Power, Natural Gas)

~Asphalt Parking~

N
Not To Scale

Explanation

△ Ambient Air Sample Location

⊕ Sub Slab Vapor Sample Location

Sample Location Map - PCE Concentration
VI Mitigation Workplan
2311 SW 336th Street
Federal Way, Washington

Date:	May 7, 2015
Completed By:	SMS
Reviewed By.:	SMS
Version:	ECI-001
Project No.:	0438-07

Figure No.: 03

Sheet 03 of 03

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Appendix B

Project Analytical Results

Laboratory Analytical Results
Sample Chain Of Custody

eurofins | Air Toxics

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Page ____ of ____

Project Manager: Craig Klein
Collected by: (Print and Sign) Craig Klein [signature]
Company: ECI Email: cklein@ecconsultinc.com
Address: 1931 Fawcett Ave Ste 200 City: Tacoma State: WA Zip: 98402
Phone: (253) 238-9270 Fax: (253) 369-6228

Project Info:
P.O. # ____
Project # ____
Project Name ____

Turn Around Time:
☐ Normal
☑ Rush: 24 hour (specify)

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	SVI-3-042815	37831	4/28/15	9:00-9:05	PCE	28.0	0.00		
02A	SSI-3-042815	35665	4/28/15	9:32-9:37	PCE	29.0	0.00		
03A	AA1-042815	1589	4/28/15	8:25-9:31	PCE	30.0	6.0		

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	Notes:
[signature] 4/28/2015	[signature] 4/29/15	
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time	

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	[illegible]		NA	Good	Yes No (None)	1504506

Form 1293 rev.11

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4/30/2015
Mr. Stephen Spencer
ECI Environmental Services
PO Box 153

Fox Island WA 98333

Project Name:
Project #:
Workorder #: 1504506B

Dear Mr. Stephen Spencer

The following report includes the data for the above referenced project for sample(s) received on 4/29/2015 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1504506B

Work Order Summary

CLIENT:	Mr. Stephen Spencer ECI Environmental Services PO Box 153 Fox Island, WA 98333	**BILL TO:**	Mr. Stephen Spencer ECI Environmental Services PO Box 153 Fox Island, WA 98333
PHONE:	253-365-7647	**P.O. #**	
FAX:	253-369-6228	**PROJECT #**	
DATE RECEIVED:	04/29/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/30/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
03A	AA1-042815	Modified TO-15 SIM	5.1 "Hg	4.9 psi
04A	Lab Blank	Modified TO-15 SIM	NA	NA
05A	CCV	Modified TO-15 SIM	NA	NA
06A	LCS	Modified TO-15 SIM	NA	NA
06AA	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 04/30/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified TO-15 SIM
ECI Environmental Services
Workorder# 1504506B

One 6 Liter Summa Canister (SIM Certified) sample was received on April 29, 2015. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

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

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

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

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

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

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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

Client Sample ID: AA1-042815

Lab ID#: 1504506B-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.032	0.29	0.22	2.0

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Client Sample ID: AA1-042815

Lab ID#: 1504506B-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**20042918sim**	**Date of Collection: 4/28/15 9:31:00 AM**	
Dil. Factor:	**1.61**	**Date of Analysis: 4/29/15 08:39 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.032	0.29	0.22	2.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1504506B-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**20042906sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 08:49 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	0-130
Toluene-d8	95	0-130
4-Bromofluorobenzene	101	0-130

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Client Sample ID: CCV

Lab ID#: 1504506B-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**20042902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 05:48 AM**	

Compound	%Recovery
Tetrachloroethene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	0-130
Toluene-d8	99	0-130
4-Bromofluorobenzene	106	0-130

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Client Sample ID: LCS

Lab ID#: 1504506B-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**20042903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 06:36 AM**	

Compound	%Recovery	Method Limits
Tetrachloroethene	87	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	0-130
Toluene-d8	100	0-130
4-Bromofluorobenzene	105	0-130

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Client Sample ID: LCSD

Lab ID#: 1504506B-06AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**20042904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 07:16 AM**	

Compound	%Recovery	Method Limits
Tetrachloroethene	89	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	0-130
Toluene-d8	100	0-130
4-Bromofluorobenzene	104	0-130

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Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager CRAIG KLEIN

Collected by: (Print and Sign) CRAIG KLEIN K. Craig Klein

Company ECI Email cklein@ecowestline.com

Address 1931 FAWCETT AVE STE 200 City TACOMA State WA Zip 98402

Phone (253) 238-9270 Fax (253) 369-6228

Project Info:
P.O. #
Project #
Project Name

Turn Around Time:
☐ Normal
☑ Rush
24 Hour
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	SV1-3-042815	37831	4/28/15	9:00-9:05	PCE	28.0	0.00		
02A	SV1-3-042815	35665	4/28/15	9:32-9:37	PCE	29.0	0.00		
03A	AA1-042815	1589	4/28/15	8:25-9:31	PCE	30.0	6.0		

m 1/9/15

Relinquished by: (signature) K. Craig Klein Date/Time 4/28/2015
Received by: (signature) Date/Time FAT 4/28/15 1000

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Relinquished by: (signature) Date/Time
Received by: (signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	FEDEX		4	Good	Yes No (None)	1504506

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4/30/2015
Mr. Stephen Spencer
ECI Environmental Services
PO Box 153

Fox Island WA 98333

Project Name:
Project #:
Workorder #: 1504506A

Dear Mr. Stephen Spencer

The following report includes the data for the above referenced project for sample(s) received on 4/29/2015 at Air Toxics Ltd.

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

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

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1504506A

Work Order Summary

CLIENT:	Mr. Stephen Spencer ECI Environmental Services PO Box 153 Fox Island, WA 98333	**BILL TO:**	Mr. Stephen Spencer ECI Environmental Services PO Box 153 Fox Island, WA 98333
PHONE:	253-365-7647	**P.O. #**	
FAX:	253-369-6228	**PROJECT #**	
DATE RECEIVED:	04/29/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	04/30/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SV1-3-042815	Modified TO-15	0 psi	14.6 psi
02A	SS1-3-042815	Modified TO-15	0.8 "Hg	15.1 psi
03A	Lab Blank	Modified TO-15	NA	NA
04A	CCV	Modified TO-15	NA	NA
05A	LCS	Modified TO-15	NA	NA
05AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 04/30/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
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LABORATORY NARRATIVE
Modified TO-15 Low Level
ECI Environmental Services
Workorder# 1504506A

Two 1 Liter Summa Canister (100% Certified) samples were received on April 29, 2015. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

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

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

Requirement	***TO-15***	***ATL Modifications***
Initial Calibration	</=30% RSD with 2 compounds allowed out to < 40% RSD	</=30% RSD with 4 compounds allowed out to < 40% RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

Despite the use of flow controllers for sample collection, the final canister vacuum for sample SV1-3-042815 was measured at ambient pressure. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

Dilution was performed on sample SS1-3-042815 due to the presence of high level target species.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

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

as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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

Client Sample ID: SV1-3-042815

Lab ID#: 1504506A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.20	0.64	1.3	4.3

Client Sample ID: SS1-3-042815

Lab ID#: 1504506A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.0	290	7.0	2000

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Client Sample ID: SV1-3-042815

Lab ID#: 1504506A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20042919**	**Date of Collection: 4/28/15 9:05:00 AM**	
Dil. Factor:	**1.99**	**Date of Analysis: 4/29/15 09:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.20	0.64	1.3	4.3

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	82	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: SS1-3-042815

Lab ID#: 1504506A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20042920**	**Date of Collection: 4/28/15 9:37:00 AM**	
Dil. Factor:	**10.4**	**Date of Analysis: 4/29/15 09:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.0	290	7.0	2000

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

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	79	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1504506A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20042906**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 08:49 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	83	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: CCV

Lab ID#: 1504506A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20042902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 05:48 AM**	

Compound	%Recovery
Tetrachloroethene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	76	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 1504506A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20042903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 06:36 AM**	

Compound	%Recovery	Method Limits
Tetrachloroethene	101	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	76	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 1504506A-05AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**20042904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/15 07:16 AM**	

Compound	%Recovery	Method Limits
Tetrachloroethene	101	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	78	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130