



Post-Remediation Sub-Slab Vapor Confirmation

Former Union Cleaners II Facility
1220 S Main Street
Lebanon, Oregon

ECSI File No. 1699

December 21, 2022

Prepared for:
HUI Inc.
Attn: William Rauch
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Project No. 724-10001-07

TECHNICAL MEMORANDUM

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1220 S Main Street
Lebanon, Oregon
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This Technical Memorandum has been prepared by EVREN Northwest, Inc. on behalf of:

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Attn: William Rauch
884 Park Street
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EXP. 2/1/2024



By

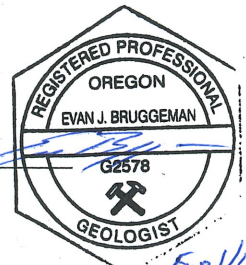
1021

Lynn D. Green, C.E.G., *Principal Engineering Geologist*

and

A large, stylized blue ink signature of Evan Bruggeman, written over a horizontal line.

Evan Bruggeman, R.G., *Principal Field Geologist*



Exp 1/1/23

Project No. 724-10001-07

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Technical Memorandum

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1.0 INTRODUCTION

EVREN Northwest, Inc. (ENW) has prepared this report for confirmation of sub-slab vapor and soil gas concentrations beneath the existing building (former Union Cleaners II) located at 1220 S Main Street in Lebanon, Oregon (subject site, Figures 1 and 2). The scope of work described in this report was submitted as a work plan¹ to Oregon Department of Environmental Quality (ODEQ) and is designed to determine if continued implementation of the vapor intrusion interim remedial action measure (IRAM) is still required following implementation of cleanup measures in the shallow water-bearing unit beneath the subject site. This work plan was approved by ODEQ on November 17, 2022.

1.1 Background

The site is developed with a strip mall consisting of a single-story commercial building containing several commercial businesses including a hair salon, tattoo studio, and pet-supply store. Historically, a dry-cleaning facility operated under a variety of names at the site during the period from 1953 to 1986. In addition, a former building maintenance business that cleaned rugs and carpets operated at the site around 1964. The property's buildings and infrastructure have reportedly not changed substantially since it was originally developed; however, no indications of the former dry-cleaning business remain. Because a dry-cleaning facility formerly operated at the site and impacts from dry-cleaning solvents are found in soil and ground water below the site,² the former Union Cleaners II site is included within the ODEQ-designated Lebanon Area Groundwater Contamination (ODEQ Environmental Cleanup Site Information [ECSI] database site number 1089) as a contributing source to the area-wide ground water contamination. The former Union Cleaners II tenant space is currently a resale shop. Union Cleaners II is listed as individual cleanup Site #1699 in the ECSI database.

Given these impacts, the ODEQ identified expanded assessment of soil vapors and mitigation of risk of intrusion into indoor air as the highest priority for this site. In response, ENW prepared an

¹ ENW, 2022. *Work Plan, 2022 Sub-Slab Vapor Confirmation*, Former Union Cleaners II Facility, 1220 S Main Street, Lebanon, Oregon. September 29, 2022.

² ENW, 2012. *Subsurface Investigation and Interim Remedial Action Plan*, Former Union Cleaners II Property, 1220 S Main Street, Lebanon, Oregon 97355. March 9, 2012.

Interim Remedial Action Measure (IRAM) Work Plan in August 2012,³ to address ODEQ's priorities at the site. The Work Plan included installation and operation of a sub-slab depressurization (SSD) system.

The SSD design consisted of an east-west-trending collector line, two north-south-trending active vent legs connected to the collector line, a vent riser, an in-line exterior fan, and appurtenant fittings, valves, and valve boxes to facilitate assembly and operation. Particularly, the vent leg design consisted of gravel bedding, 4-inch perforated pipe, and gravel covering that are all wrapped in filter fabric and covered with polyethylene sheeting prior to pouring concrete.

System start-up was on March 4, 2013. Testing confirmed both volatile organic constituent (VOC) extraction and appropriate pressure differential between the sub-surface and the ambient interior (greater than the minimum U.S. Environmental Protection Agency-recommended value of 0.2 inches of water). The SSD has been operated and maintained as the site's primary Interim Remedial Action Measure.

Based on the result of a 2017 Vapor Intrusion (VI) Assessment,⁴ trichloroethene (TCE) was present in sub-slab vapor at a concentration exceeding ODEQ's occupational RBCs for *VI into Buildings*. This exceedance was only observed at a single sample location, SUB03, located in the southeast corner of the 1220 suite, which is near monitoring well EMW07, which historically had the highest concentrations of TCE (and tetrachloroethene [PCE]) in ground water.

During November 2020, ENW oversaw the injection of a product consortia to enhance in-situ chemical reduction of PCE and its degradation products to ethene in shallow ground water on- and offsite, as part of an ODEQ-approved scope of work.⁵ Approximately 31,320 gallons of 8% 3-D Microemulsion, 980 gallons of In-situ Chemical Reduction Solution, and 228 liters of Bio-Dechlor Inoculum consortia were injected at 36 temporary probes within an approximately 16,000 square-foot area encompassing the northeastern portion of the site and southeastern off-site areas.

During the last five post-remediation monitoring events primary chlorinated species (PCE and TCE) decreased to below MRLs in the shallow water-bearing unit (three of the five events at EMW07-S), suggesting that reductive dechlorination processes are taking place. Water quality parameters consisting of dissolved and total iron and manganese concentrations and select bio-nutrients and bioindicator concentrations in shallow wells suggest conditions are favorable following November 2020 in-situ treatment of shallow ground water for reductive dechlorination of PCE and TCE.

³ ENW, August 18, 2012. *Interim Remedial Action Measure Work Plan*, Vapor Intrusion Expanded Assessment and Mitigation.

⁴ ENW, November 30, 2017. *Sub-Slab Vapor Re-Assessment*.

⁵ ENW, July 23, 2019. *Remedial Action Work Plan*, Former Union Cleaners II Property, 1220 S Main Street, Lebanon, Oregon, prepared for HUI, Inc.

In response to these reductions of PCE and TCE in shallow ground water, ENW prepared a Work Plan for sub-slab vapor confirmation sampling,⁶ which included collecting two (2) soil gas samples from the SSD vent location (one pre- and one post-fan shutdown), and two (2) sub-slab vapor samples from the former drycleaner space (near SUB03) and south-adjacent tenant space 1240 (near former SUB01). ODEQ approved the work plan in an email dated November 17, 2022.

1.2 Purpose

Sub-slab vapor sampling was conducted to address ODEQ comment regarding the current status of the IRAM and determine if dry-cleaner related VOCs present an unacceptable health risk to current occupants at the site. Sub-slab vapor confirmation sampling results will be used to evaluate the need for continued operation of the SSD system.

1.3 Scope of Work

ENW conducted the following scope of work (SOW) for this project:

- Collected SSD exhaust vent samples prior to and after a one-week shut-down period.
- Collected two (2) sub-slab vapor samples (SUB07 and SUB08) beneath the building floor of the area in and around the SSD system, per established environmental procedures.
- Submitted samples to an approved independent laboratory for analysis of chlorinated VOCs using Environmental Protection Agency (EPA) Method TO-15.
- Evaluated analytical data regarding risk associated with vapor intrusion of VOCs into the commercial building.
- Completed this technical memorandum describing the above work and findings.

2.0 METHODS AND PROCEDURES

The following sections describe the methods and procedures utilized for this assessment. Photographs taken during field work are included in Attachment A.

2.1 Sampling Locations

Sampling locations are summarized in Table 2-1 and shown on Figure 3.

Table 2-1. Summary of Sampling Locations

Sample ID	Date Sampled	Depth Sampled	Sampled By	Location
VENT-221121	11/21/2022	SubSlab	ENW	Vent sampling prior to shutting down the system
VENT-221129	11/29/2022	Subslab	ENW	Vent sampling after system OFF for 1 week.
SUB07-221129	11/29/2022	Subslab	ENW	In tenant space 1240 immediately south of former Union Cleaners II space
SUB08-221129	11/29/2022	Subslab	ENW	In southeast corner of former Union Cleaners II space with subslab system

⁶ ENW, September 29, 2022. *Work Plan, 2022 Sub-Slab Vapor Confirmation*, Former Union Cleaners II Facility, 1220 S Main Street, Lebanon, Oregon, ECSI File No. 1699: Prepared for HUI Inc., Attn: William Rauch.

2.2 SSD Vent Stack Sample Collection

Vent stack samples were collected from the 4-inch PVC exhaust pipe located in the southwest corner of the former Union Cleaners II tenant space (1220 tattoo shop, Figure 3). Samples were collected from a sample port installed approximately five (5) feet off the floor of the building. The initial sample ("VENT-221121") was collected on November 21, 2022, prior to shutting the SSD system down. Sample "VENT-221129" was collected on November 29, 2022, following an 8-day shut-down period. All field measurements were recorded on field sampling data sheets which are included in Attachment B.

2.3 Sub-Slab Vapor Assessment

Two (2) sub-slab vapor samples (SUB07 and SUB08) were collected from the approximate locations shown on Figure 3. Sample SUB08 was sited beneath the concrete slab floor of the former Union Cleaners II tenant space (currently the tattoo shop space 1220) and SUB07 was collected beneath the concrete slab floor of the south-adjacent space (tattoo shop space 1240). Sub-slab vapor samples were collected on November 29, 2022, following the 8-day SSD system shut-down period.

2.4 Vent Stack and Sub-Slab Vapor Sampling Methodology

The vent stack and sub-slab vapor samples were collected in general accordance with the procedures in ENW's work plan. As per the work plan, sub-slab samples were collected from temporary 5/8-inch holes drilled through the concrete floor slab. Vapor Pin® sampling points were installed in the holes with silicon seals to prevent ambient air intrusion. Vent stack samples were collected from a sample port valve installed in the SSD vent pipe.

Vent and sub-slab samples were drawn through one-quarter inch (0.25 inch) Teflon® tubing into a laboratory-certified SUMMA canister pressurized to an initial vacuum of approximately -30 inches of mercury. Prior to sampling, the sample apparatus was leak checked, and appropriate volumes of stagnant air were purged using a dedicated purge canister to draw representative vapor into the sample train. Sampling was initiated by opening the valve on the sample SUMMA canister and the sampling rate was regulated to approximately 167 ml/min using an incorporated flow regulator. When the pressure in the SUMMA canister reached approximately -5 inches Hg, sampling was stopped by closing the valve on the SUMMA canister. The final time and pressure were recorded onto field sampling data sheets included as Attachment B.

Following sample collection, the sampling train was disconnected, and a photoionization detector (PID) and landfill gas meter were attached to the tubing to screen soil gas for VOC and measure gas levels. Table 2-2 summarizes post-sample screening.

Table 2-2. Sampling and Screening Parameters

Sample ID	VENT-221121	VENT-221129	SUB07-221129	SUB08-221129
Date Sampled	11/21/2022	11/29/2022	11/29/2022	11/29/2022
Depth Sampled (ft)	--	--	0.5	0.5
Sampled by	ENW	ENW	ENW	ENW
Location	Vent sampling prior to shutting down the system	Vent sampling after system OFF for 1 week.	In space 1240 immediately south of former Union Cleaners II space	In SE corner of former Union Cleaners II space with SSD system
Parameter of interest	Note:	ppmv	ppmv	ppmv
PID (Total Volatiles)	1	0.0	0.0	0.1
Carbon Dioxide (%)	2	---	0.2	1.1
Oxygen (%)	2	---	20.4	15.6
CO (ppm)	2	---	0.0	0.0

1 = Photoionization detector

2 = GEM Landfill Gas Meter

ppmv = parts per million, volume

Each SUMMA canister was appropriately labeled, boxed, and shipped via FedEx to Environmental Analytical Services (EAS) of San Luis Obispo, California under chain-of-custody protocols.

Following the field readings, the Vapor Pins® were removed and slab penetrations sealed with hydraulic cement.

2.4.1 Leak Detection

Leak detection was incorporated as a check for possible intrusion of ambient air into the samples. Prior to commencement of sampling, rags saturated with aliquots of isopropyl alcohol (2-propanol) were placed around the base of the Vapor Pin and also over threaded junctions in the sample train. Sample integrity (i.e., amount of ambient air intrusion) was measured by analyzing for 2-propanol at the laboratory and comparing to acceptable criteria.

2.5 Analytical Plan

The following analytical program was developed to test for the presence of VOCs in the soil gas and sub-slab vapor samples. The laboratory analytical report is Attachment C.

Table 2-3. Analytical Plan

Analytical Methods	Constituents
TO-15	Select Chlorinated VOCs and 2-propanol (as leak detection)

2.6 Cleanup Standards

The assessment and remediation of hazardous substances in Oregon are conducted according to OAR 340, Division 122, *Hazardous Substance Remedial Action Rules*. The following cleanup standards and numeric criteria may be applied in evaluating site assessment results.

Risk-Based Cleanup. Risk-based cleanup standards are derived in accordance with ODEQ's *Risk-Based Decision Making for the Remediation of Contaminated Sites* (RBDM) guidance document for:

Risk-based concentrations (RBCs) are based on Oregon unacceptable additional risk criteria for cancer occurrence and for non-carcinogenic health impacts. The State of Oregon considers acceptable additional risk of cancer from contact with carcinogenic constituents at less than one in one million incidences, or, for non-carcinogenic constituents, below the constituent threshold concentration at which health impacts would occur. RBCs are generally used to evaluate sampling analytical results as follows:

ODEQ's lowest RBC for all pathways for residential receptors is used as an initial 'conservative' screening of a constituent. If a constituent's concentration exceeds its screening-level RBC (SLRBC), it requires further evaluation. Otherwise, the constituent is considered unlikely to pose unacceptable risk to any human receptor.

Those constituents identified by initial screening as exceeding their SLRBC should be further evaluated through a risk-based assessment, which evaluates site-specific exposure pathways and receptors against generic ODEQ-provided RBCs.

Should constituents be identified that also exceed their generic, but exposure pathway- and receptor-specific RBCs, then the appropriateness of additional site-specific methods allowed under the RBDM guidance document will be evaluated (e.g., the development of site-specific RBCs, sampling of soil gas and/or vapor, etc.).

Because ODEQ Generic RBCs are based on several conservative assumptions (e.g., duration and type of exposure), exceeding an SLRBC does not necessarily indicate that additional investigation or remediation is required. Rather, the exceedance of a SLRBC may indicate that additional investigation and evaluation, including consideration of site-specific information (e.g., current and future land uses), may be necessary to determine if remediation or other actions are necessary. In many cases, it is not possible to determine whether unacceptable risks to human health and the environment are present, and require further action, until a risk assessment, including evaluation of current and reasonably likely land and water uses, is complete. In general, ODEQ considers chemical concentrations less than SLRBCs to be protective of human health.

3.0 FINDINGS

The SSD vent and sub-slab vapor sampling results are presented in Table 1, behind the text, and summarized below. A copy of the full laboratory report is included in Attachment C.

3.1 Vent Sample Results

As provided in Table 1, laboratory results of the pre- and post-shut-down vent samples detected the following constituent concentrations:

- Cis-1,2-Dichloroethene (cis-1,2-DCE) was not detected above the laboratory method reporting limit (MRL) in either the pre- or post-shut down vent samples.
- PCE was detected at 15.30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in the pre-shut down sample and at 18.83 $\mu\text{g}/\text{m}^3$ in the post-shut down sample.
- TCE was detected at an estimated concentration of 2.24 $\mu\text{g}/\text{m}^3$ in the pre-shut down sample and was not reported above the laboratory MRL in the post-shut down sample.
- Vinyl chloride (VC) was not detected above the laboratory MRL in either vent sample.

3.2 Sub-slab Sample Results

As provided in Table 1, laboratory results of sub-slab samples are summarized as follows:

- Cis-1,2-DCE was not detected in SUB07 or SUB08 above the laboratory MRL.
- PCE was detected at concentrations up to 109.23 $\mu\text{g}/\text{m}^3$ (SUB07), which are over two orders of magnitude less than ODEQ's occupational RBC for *VI into Buildings* pathway for occupational worker exposure.
- TCE was detected at estimated concentrations up to 1.62 $\mu\text{g}/\text{m}^3$, which are over two orders of magnitude less than ODEQ's occupational RBC for *VI into Buildings* pathway.
- VC was not detected in either sample above the laboratory MRL.

None of the chlorinated VOCs were detected at concentrations exceeding their applicable occupational RBCs for the *VI into Buildings* pathway.

3.3 Leak Detection Results

Concentrations of 2-propanol were below ENW's conservative target leak check screening level of 5,000 $\mu\text{g}/\text{m}^3$. These results indicate an acceptable level of ambient air intrusion during sampling and that sample integrity was maintained for all samples.

4.0 CONCLUSIONS

Based on the result of this sub-slab vapor confirmation, neither PCE, TCE nor their degradation products were present in soil gas vent or sub-slab vapor samples collected beneath the former Union Cleaners II tenant space or south-adjacent space at concentrations exceeding ODEQ's occupational RBCs for *VI into Buildings*. These and prior data suggest the following:

- Current detections in soil gas of PCE, TCE, and their degradation products are at concentrations well below RBCs for *VI into Buildings* pathway. These data suggest that shallow ground water reductive dechlorination appears to have not only reduced PCE,

TCE and related constituents in ground water but also in soil gas. An 80% reduction in PCE and 99.99% reduction in TCE has been realized beneath the former Union Cleaners II space (SUB03/SUB08) since the last sub-slab vapor sampling event in September 2017 which was prior to ground-water remediation.

These results appear to support the following conclusions and recommendations:

- Since interim remedial actions are no longer necessary, ENW recommends converting the active SSD to operate as a passive sub-slab ventilation (SSV).
- Given the very low concentrations of VOCs detected, no further soil gas vent or sub-slab vapor sampling is recommended at this time.

5.0 LIMITATIONS

The scope of this report is limited to observations made during on-site work; interviews with knowledgeable sources, public agency personnel, and contractors licensed in the state of Washington; and review of readily available published and unpublished reports and literature. These conclusions are based on information supplied by others as well as interpretations by qualified parties.

This report does not extend to the presence of the following conditions, unless they were the express concerns of contacted personnel, previous reports and literature, or the scope of work:

1. Naturally occurring toxic or hazardous substances in subsurface soils, geology, and water,
2. Toxicity of substances that are common in current habitable environments, such as stored chemicals, products, building materials, and consumables,
3. Contaminants or contaminant concentrations that are not a concern now but may be under future regulatory standards, and
4. Unpredictable events that may occur after ENW's site visit, such as illegal dumping or accidental spillage.

There is no practice that is thorough enough to absolutely identify all hazardous substances that may be present at a given site. No sampling program can thoroughly identify all variations in contaminant distribution. ENW's investigation has been focused only on the issue that was specifically identified in the SOW. Therefore, if contamination other than that specifically mentioned is present and not identified as part of a limited SOW, ENW's environmental investigation shall not be construed as a guarantee of the absence of such materials.

ENW performed this study under a limited scope of services, per our agreement. It is possible, despite the use of reasonable care and interpretation, that ENW may have failed to identify regulation violations related to the presence of hazardous substances other than those specifically mentioned in the SOW. ENW assumes no responsibility for conditions that it did not specifically evaluate or conditions that were not generally recognized as environmentally unacceptable at the time this report was prepared.

TABLE

Table 1 - Summary Select Analytical Data, Sub-Slab Vapor and SSD Vent Monitoring																			
Sample ID	P02-AIR	SSD-VENT-130212	VENT-170906	VENT-170926	SUB01-170926	SUB02-170926	SUB03-170926	SUB04-170926	SUB05-170926	SUB06-170926	VENT-221121	VENT-221129	SUB07-221129	SUB08-221129	Maximum Soil-Gas Concentration (pre-remediation)	Maximum Soil-Gas Concentration (post-remediation)	ODEQs RBCs (Soil Gas, Occupational Worker) ¹	Constituent of Concern (COC)	
Date Sampled	7/28/2008	2/12/2013	9/6/2017	9/26/2017	9/26/2017	9/26/2017	9/26/2017	9/26/2017	9/26/2017	9/26/2017	11/21/2022	11/29/2022	11/29/2022	11/29/2022					
Depth Sampled (feet)	?	VENT	VENT	VENT	Subslab	Subslab	Subslab	Subslab	Subslab	Subslab	VENT	VENT	Subslab	Subslab					
Sampled By	BB&A	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW					
Location	West central storefront immediately north of 1240 S Main Street	Sampling port in stack of SSD system at 1220 S Main Street	Vent sampling prior to shutting down the system	Vent sampling after shutting down the system for 2 weeks.	In the Salon, adjacent and south of the subslab system		In former Union Cleaners II space with subslab system.		In PnK, adjacent and north of the subslab system		Vent sampling prior to shutting down the system	Vent sampling after system OFF for 1 week.	In tenant space 1240 immediately south of former Union Cleaners II space	In southeast corner of former Union Cleaners II space with subslab system				TRUE OR Y FALSE OR N	
Constituent of Interest	Note	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³		
Volatile Organic Constituents (Detected)																			
Dichloroethene, cis-1,2-	nc, v	490000	2.1	13.25	23.75	<11.61 (ND)	<11.72 (ND)	845.54	<11.83 (ND)	<11.93 (ND)	<12.68 (ND)	<10.68 (ND)	<10.68 (ND)	<3.56 (ND)	<3.56 (ND)	490000	<10.68 (ND)	>Pv	N
Tetrachloroethene (PCE)	c, v	79000	120	169.47	356.99	304.36	384.36	160.04	<9.16 (ND)	17.75	55.23	15.30	18.83	109.23	32.27	79000	109.23	47,000	N
Trichloroethene	c, v	160000	11	46.06	154.61	38.20	478.97	7489.29	37.90	<14.01 (ND)	65.08	2.24 J	<12.53 (ND)	1.62 J	0.76 J	160000	2.24 J	2,900	N
Vinyl chloride	c, v	140000	<2.1 (ND)	<7.45 (ND)	<7.71 (ND)	<7 (ND)	<7.07 (ND)	<7.78 (ND)	<7.13 (ND)	<7.2 (ND)	<7.65 (ND)	<6.44 (ND)	<6.44 (ND)	<2.15 (ND)	<2.15 (ND)	140000	<6.44 (ND)	2,800	N
Leak Detection																		Leak-check Screening Level	Leak Indicated?
2-Propanol		157	2359.88	<16.36 (ND)	89.02	54.63	79.89	20.41	19.63	<15.79 (ND)	10.90	246.30	4843.86	1305.77	482.54	4843.9	4843.9	5000	N

Notes:

ND = not detected at or above laboratory method reporting limits.

— = not analyzed or not applicable.

< = not detected above method reporting limit shown.

NE = not established.

ug/m³ = micrograms per cubic meter of air .

c = carcinogenic

nc = noncarcinogenic

v = volatile

nv = nonvolatile

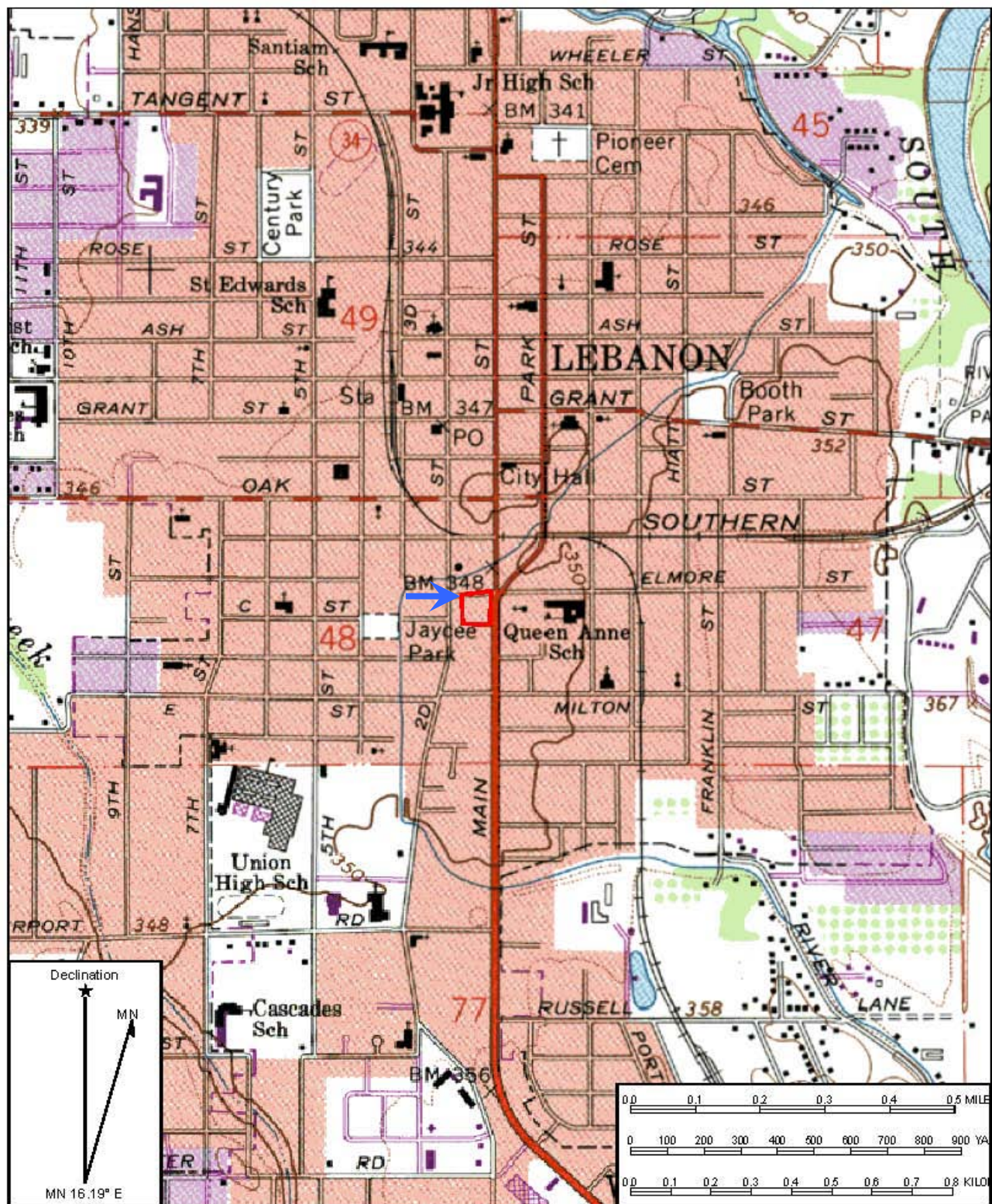
Shaded and bolded concentrations exceed screening level risk-based concentrations and background concentrations, as applicable.

¹ Lowest Applicable Onsite Risk-Based Concentration for (Y) indicates analyte not detected, but detection limit is above screening concentration.

J = the amount reported is estimated because it was below the RL and could be below the lowest calibration point, have higher uncertainty, or could be the result of system background.

>Pv = indicates this constituent cannot present an unacceptable health risk by the vapor intrusion pathway

FIGURES



Source: USGS Topographic Map, 7.5-Minute Lebanon Quadrangle, 1969, photorevised in 1986

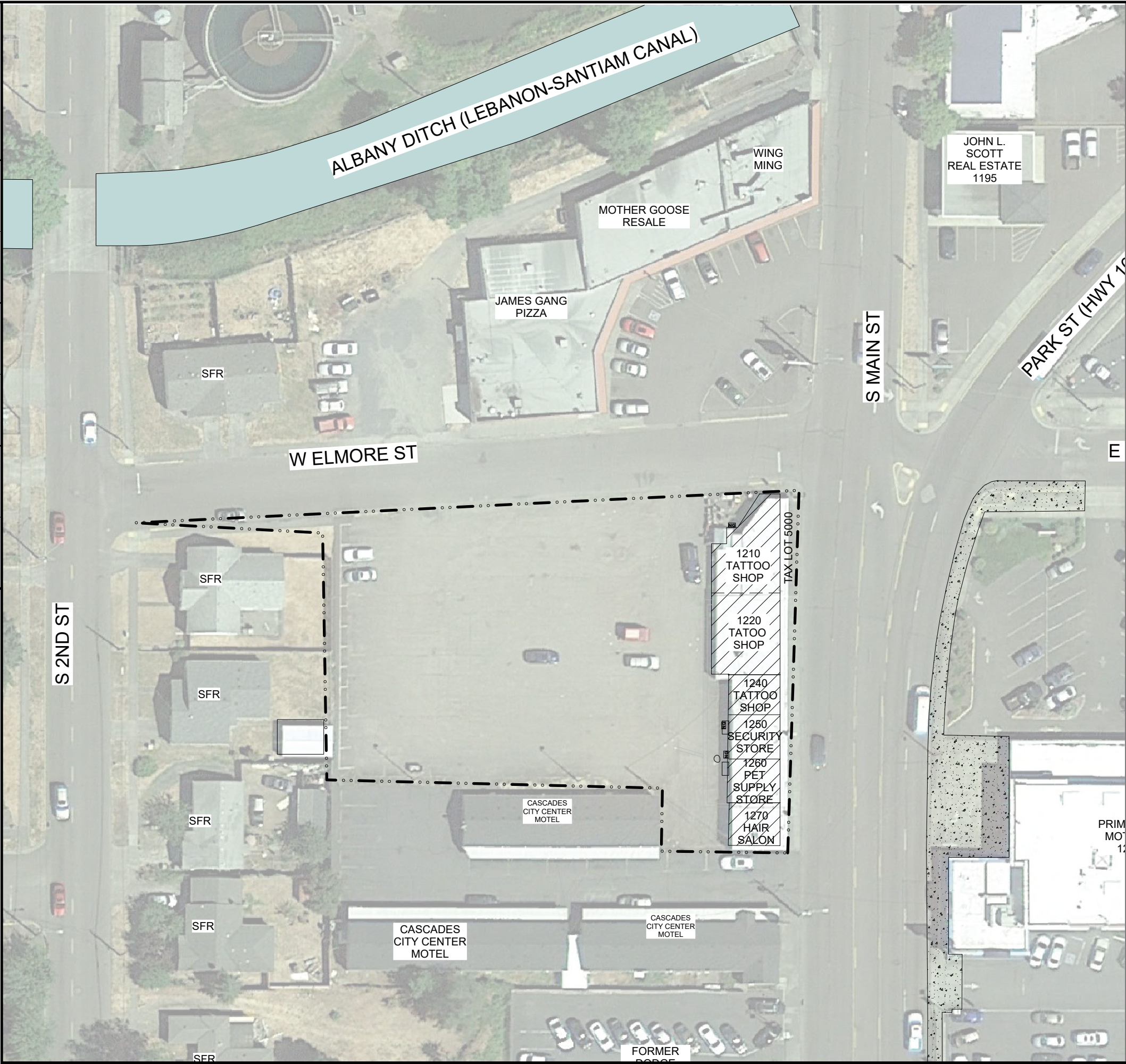


Date Drawn: 3/9/2012
CAD File Name: 724-10001-01svmap
Drawn By: LDG
Approved By: NMW

Union Cleaners II
1220 Main Street
Lebanon, Oregon

Site Vicinity Map

Project No.
724-10001
Figure No.
1



LEGEND:

SUBJECT PROPERTY BOUNDARIES

SUBJECT BUILDINGS

BUILDING LOCATIONS

- NOTES:
1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2019 AND ENW FIELD NOTES.

2. ALL BUILDING, STREET, AND FEATURE LOCATIONS ARE APPROXIMATE.

APPROXIMATE SCALE

0

50

140100

ET

PO BOX 14488, PORTLAND, OREGON 97293
T. (503)452-5561 E.ENW@EVREN-NW.com

FIGURE 2

SITE PLAN

FORMER UNION CLEANERS II SITE
1220 S MAIN STREET
LEBANON, OREGON

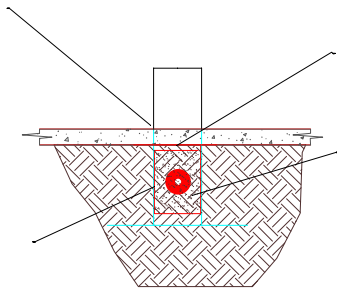
DRAWN BY
N.MORRIS

CHECKED BY
L.GREEN

APPROVED BY
E. BRUGGEMAN

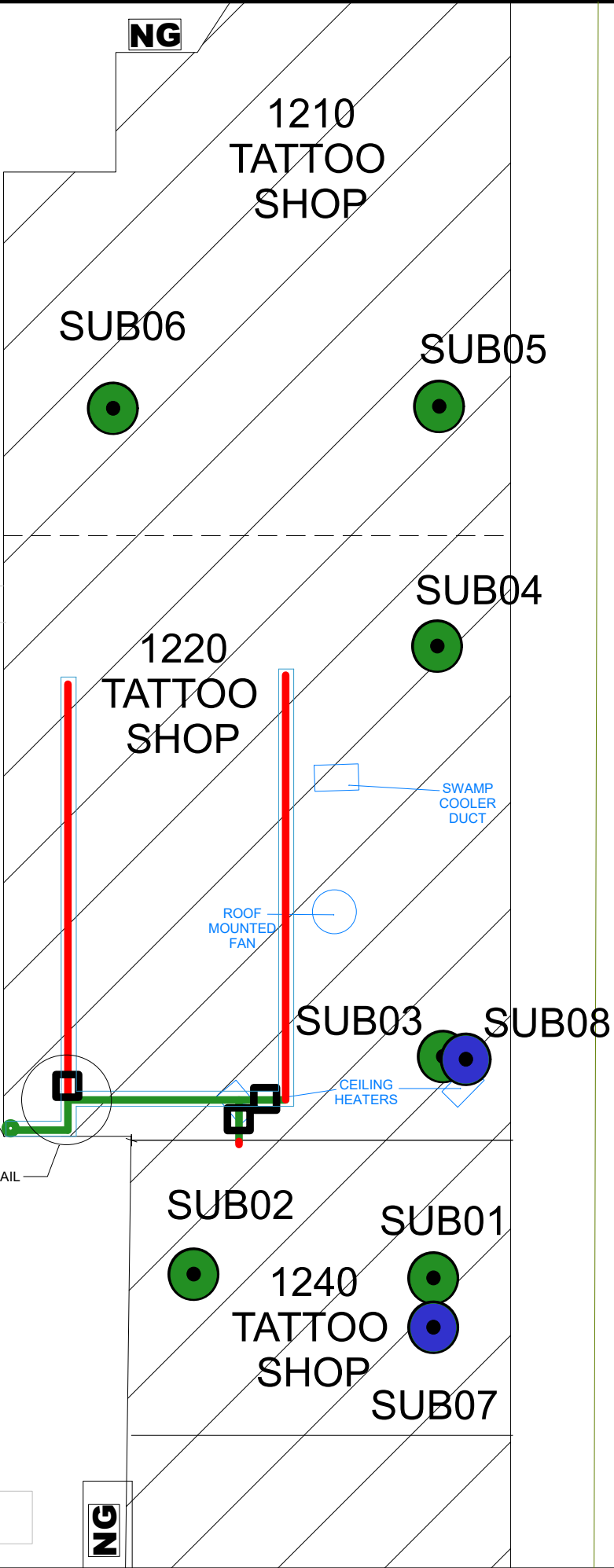
DRAWING NUMBER
724-10001(v01)

SSD SYSTEM CROSS SECTION IN FLOOR



SSD
SAMPLE PORT

SSD SYSTEM VALVE BOX DETAIL



- LEGEND:
- APPROXIMATE SUBJECT BUILDINGS
 - NATURAL GAS METER
 - SOLID PVC PIPE SECTIONS
 - PERFORATED PVC PIPE SECTIONS IN TRENCH
 - FLUSH MOUNTED FLOOR VAULT FOR SSD SYSTEM VALVES
 - SSD SYSTEM PIPE TRENCH, 12" WIDE
 - PREVIOUS SUB-SLAB VAPOR SAMPLE LOCATION (9/26/2017)
 - SUB-SLAB VAPOR SAMPLE LOCATION (11/29/2022)

SSD: SUB-SLAB DEPRESSURIZATION SYSTEM

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2010, ENW FIELD NOTES, BERGESON-BOESE MAPS AND PRC ENVIRONMENTAL MAPS.

APPROXIMATE SCALE



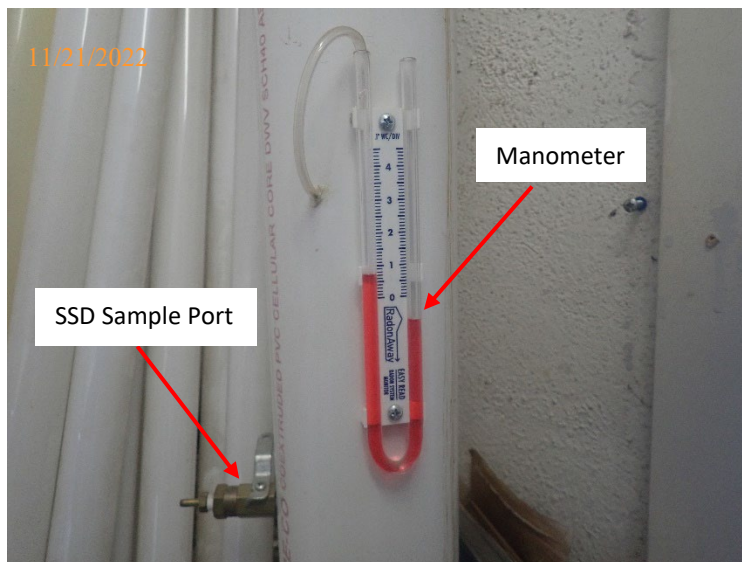
PO BOX 14488, PORTLAND, OREGON 97293
T. (503) 452-5561 E. ENW@EVREN-NW.com

FIGURE 3

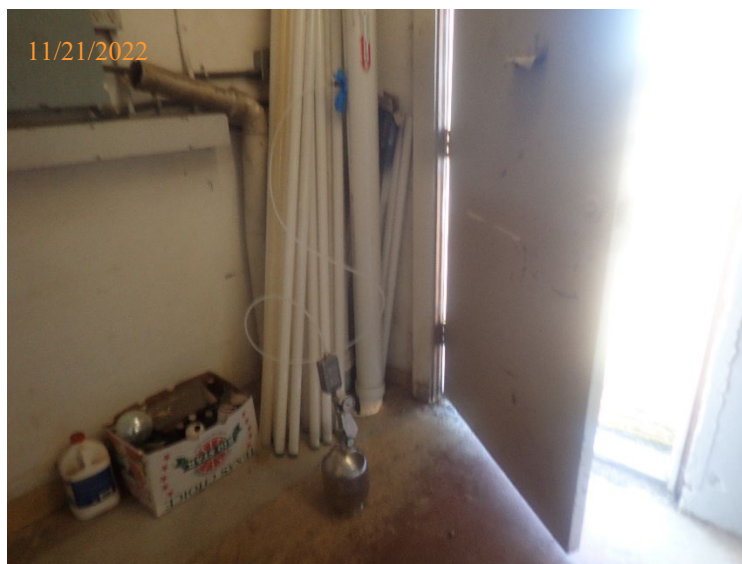
SSD SYSTEM DIAGRAM WITH
SUB-SLAB SAMPLE LOCATIONS

UNION CLEANERS II
1220 S MAIN STREET
LEBANON, OREGON

ATTACHMENT A
SITE PHOTOGRAPHS



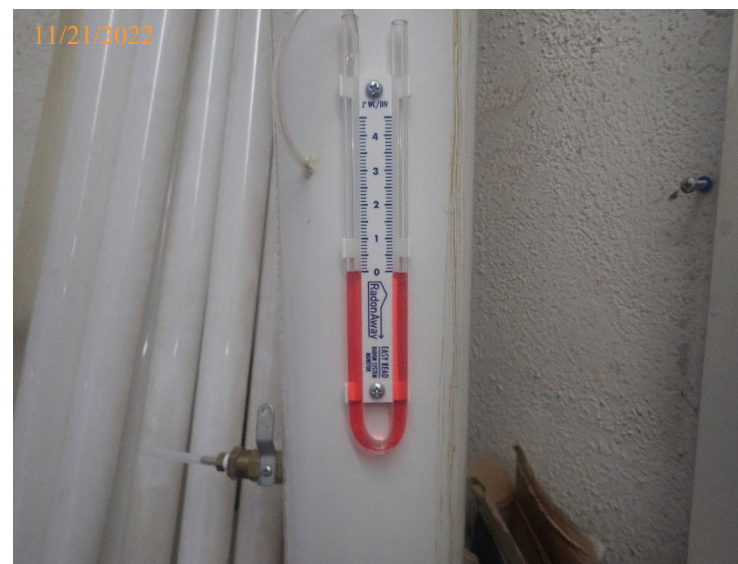
Vacuum on the manometer read 0.7 inches of water with inline fan operating prior to collecting the vent sample.



Collection of vent sample from riser on November 21, 2022, prior to shutting down the Radon Fan.



Setting the SSD in passive mode, i.e., powering off the radon fan, after collecting a vapor sample from the vent riser.



Manometer in the vent riser read zero after shutting down the inline fan.



Former Union Cleaners II
1220 S Main Street
Lebanon, Oregon

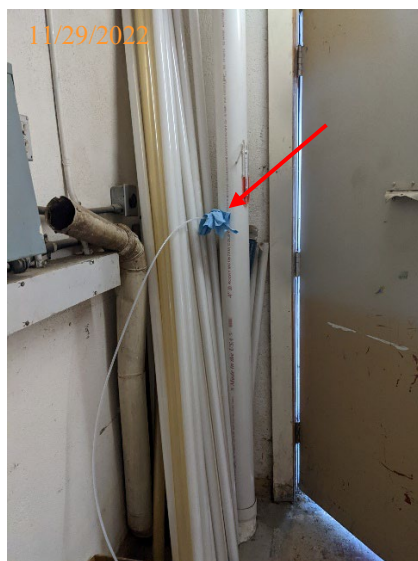
Site Photographs

Project No.
724-10001-07

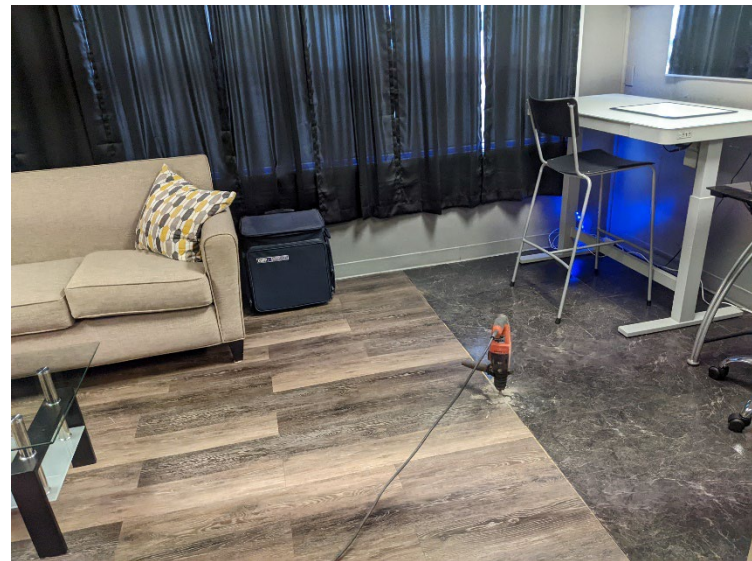
Appendix
A



The inline fan was powered on for 1 minute to purge lines, and then turned off to sample the SSD vent on 11/29/2022.



Collecting a vapor sample from the vent riser on 11/29/2022. Note blue IPA saturated rag for leak detection.



Drilling a hole in concrete slab floor of space 1240 for installation of a Vapor Pin and collection of sub-slab vapor sample SUB07.



Vapor Pin for SUB07 in space 1240.



Former Union Cleaners II
1220 S Main Street
Lebanon, Oregon

Site Photographs

Project No.
724-10001-07

Appendix
A



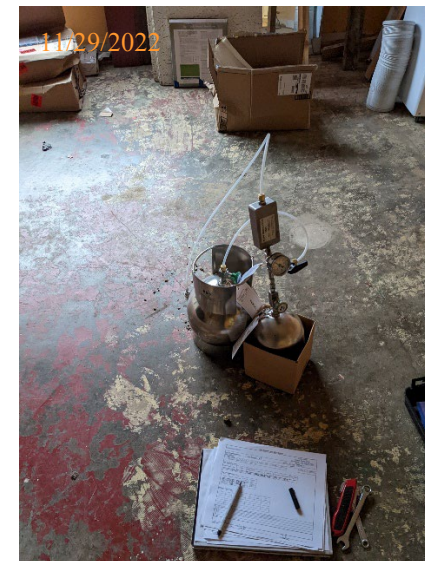
Sampling SUMMA canister (left) and purge canister (right) while purging SUB07.



Sampling SUB07. Note IPA saturated blue cloths for leak detection draped over fittings during sample collection.



Vapor pin installed in concrete slab floor of former drycleaner shop (space 1220) for collection of SUB08.



Purging SUB08.

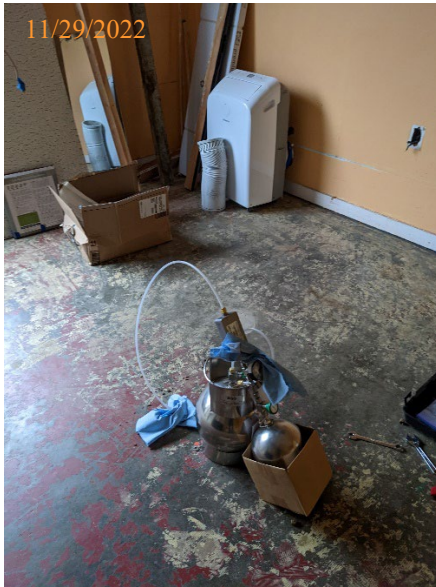


Former Union Cleaners II
1220 S Main Street
Lebanon, Oregon

Site Photographs

Project No.
724-10001-07

Appendix
A



Sampling SUB08.



Following sampling, Vapor pins were removed, and slab penetrations sealed with hydraulic cement.



Sub-slab vapor was screened with a PID and GEM 5000 landfill gas meter following sample collection.



Former Union Cleaners II
1220 S Main Street
Lebanon, Oregon

Site Photographs

Project No.
724-10001-07

Appendix
A

ATTACHMENT B

FIELD SAMPLING DATA SHEETS

FIELD SAMPLING DATA SHEET

EVREN NORTHWEST

PO Box 14488
Portland, Oregon, 97293
503-452-5561 Fax: 503-452-7669

PROJECT NAME/NUMBER: 724-10001-07

SAMPLE LOCATION: Vent

SITE ADDRESS:

DUP ID:

WIND FROM: N NE E SE S SW W NW LIGHT MEDIUM HEAVY
WEATHER: SUNNY CLOUDY RAIN ?

Temp. $^{\circ}$ C Humidity (%)
93 $^{\circ}$ F

SOIL GAS SETUP DATA

Container Type	Date	Volume (L)	Sample Depth (ft.)	Sample ID	Summa ID	Flow Controller	Flow Meter ID	Purge Vessel ID
Tedlar/Summa	11/21/22	0.5L, 1L, 5L, 6L	Vent	Vent-221021	342	YES NO	2558	

SOIL GAS SAMPLING DATA

Action	Start Time	Finish Time	Init Pressue (mmHg)	Final Pressue (mmHg)
Leak-Test	11:14	11:19	730	730
Purge				
Sample	11:41	12:17	730	6

Regulator = 100-150 mL/min

Fluke reads
0.693 $^{\circ}$ H₂O

SOIL GAS SCREENING

Date	Time	Depth (ft)	PID (ppm)	O ₂ (ppm)	CO (ppm)	CO ₂ (ppm)
11-21-22	12:20	Vent	0.1			
	12:21		0.0			
	12:22		0.0			
	12:23		0.0			
	12:24		0.0			

CONTAINER TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	BTEX/TPH (TO-3) PESTICIDE/PCBs (TO-4) ALDEHYDES/KEYTONES (TO-5) PESTICIDES/PCBs (TO-10) ALDEHYDES/KEYTONES (TO-11)
X	NON-METHANE ORGANIC CMPDS (TO-12) PAHs/SVOCs (TO-13) VOCs (TO-15) select vocs = Dichloroethene, cis 1,2 PCE TCE VC and IPA as leak check
	TPH as Diesel (TO-17)
	SPECIFIC CHEMICAL ANALYSIS []

NOTES:

SAMPLER:

Jordan Morris
(PRINTED NAME)

Jordan Morris
(SIGNATURE)

FIELD SAMPLING DATA SHEET

EVREN NORTHWEST

PO Box 14488
Portland, Oregon, 97293
503-452-5561 Fax: 503-452-7669

PROJECT NAME/NUMBER: 724-10001-07

SAMPLE LOCATION: VENT

SITE ADDRESS:

DUP ID:

WIND FROM: N NE E SE S SW W NW LIGHT MEDIUM HEAVY
WEATHER: SUNNY CLOUDY RAIN ?

Temp., C Humidity (%)
10.30 71

SOIL GAS SETUP DATA

Container Type	Date	Volume (L)	Sample Depth (ft.)	Sample ID	Summa ID	Flow Controller	Flow Meter ID	Purge Vessel ID
Tedlar/Summa	11 / /	0.5L, 1L (3L, 5L, 6L)	VENT	VENT-221129	327	YES	NO	2531

SOIL GAS SAMPLING DATA

Action	Start Time	Finish Time	Init Pressue (mmHg)	Final Pressue (mmHg)
Leak-Test	10:44	10:49	>30	>30
Purge	—	—	—	—
Sample	11:40	12:13	>30	5

* A run system for exactly 1 minute before turning off and beginning vent sample

SOIL GAS SCREENING

Date	Time	Depth (ft)	PID (ppm)	O ₂ (%)	CO (ppm)	CO ₂ (%)
11/29/12	12:15	vent	0.0	0%		0%
	12:16		0.0			
	12:17		0.0			
	12:18		0.0			
	12:19		0.0			

12:21 20.4 0 0.2

Analysis Allowed per Bottle Type	CONTAINER TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
		BTEX/TPH (TO-3) PESTICIDE/PCBs (TO-4) ALDEHYDES/KEYTONES (TO-5) PESTICIDES/PCBs (TO-10) ALDEHYDES/KEYTONES (TO-11)
		NON-METHANE ORGANIC CMPDS (TO-12) PAHs/SVOCs (TO-13) VOCs (TO-15) select VOCs TCE PCE VC IPA
		TPH as Diesel (TO-17)
		SPECIFIC CHEMICAL ANALYSIS []

NOTES:

SAMPLER:

(PRINTED NAME)

Dan Salyer

(SIGNATURE)

[Signature]

FIELD SAMPLING DATA SHEET

EVREN NORTHWEST

PO Box 14488
Portland, Oregon, 97293
503-452-5561 Fax: 503-452-7669

PROJECT NAME/NUMBER: 724-10001-07

SAMPLE LOCATION: SUB 07

SITE ADDRESS:

DUP ID:

WIND FROM:	N	NE	E	SE	S	SW	W	NW	LIGHT	MEDIUM	HEAVY
WEATHER:	SUNNY	CLOUDY	RAIN	?							

Temp., C	Humidity (%)
10.4	65

SOIL GAS SETUP DATA

Container Type	Date	Volume (L)	Sample Depth (ft.)	Sample ID	Summa ID	Flow Controller	Flow Meter ID	Purge Vessel ID
Tedlar/Summa	11/29/22	0.5L, 1L (3L, 5L, 6L)	SUB	SUB 07-22/129	304	(YES) NO	2523	

SOIL GAS SAMPLING DATA

Action	Start Time	Finish Time	Init Pressue (mmHg)	Final Pressue (mmHg)
Leak-Test	10:00	10:05	27	27
Purge	10:23	10:25	26	25.5
Sample	10:27	10:57	27	6

SOIL GAS SCREENING

Date	Time	Depth (ft)	PID (ppm)	O ₂ (ppm)	CO (ppm)	CO ₂ (ppm)
11/29-22	11:19	SUB	0.3	0/0	ppm	0/0
	11:20		0.2			
	11:21		0.1			
	11:22		0.1			
	11:23		0.1			

11:25 15.6 0 1.1

CONTAINER TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	BTEX/TPH (TO-3) PESTICIDE/PCBs (TO-4) ALDEHYDES/KEYTONES (TO-5) PESTICIDES/PCBs (TO-10) ALDEHYDES/KEYTONES (TO-11)
X	NON-METHANE ORGANIC CMPDS (TO-12) PAHs/SVOCs (TO-13) VOCs (TO-15) select vocs PCE TCE VC DPA
	TPH as Diesel (TO-17)
	SPECIFIC CHEMICAL ANALYSIS []

NOTES:

SAMPLER:

(PRINTED NAME)

Dan Sayko

(SIGNATURE)

[Signature]

FIELD SAMPLING DATA SHEET

EVREN NORTHWEST

PO Box 14488
Portland, Oregon, 97293
503-452-5561 Fax: 503-452-7669

PROJECT NAME/NUMBER: 724-10001-07

SAMPLE LOCATION: SUBBOB

SITE ADDRESS:

DUP ID:

WIND FROM: N NE E SE S SW W NW LIGHT MEDIUM HEAVY

WEATHER: SUNNY CLOUDY RAIN ?

Temp., C Humidity (%)

10.50 64.5

SOIL GAS SETUP DATA

Container Type	Date	Volume (L)	Sample Depth (ft.)	Sample ID	Summa ID	Flow Controller	Flow Meter ID	Purge Vessel ID
Tedlar/Summa	11-29-27	0.5L, 1L, 3L, 5L, 6L	6113	SUBBOB-21119	358	(YES)	NO	2527

SOIL GAS SAMPLING DATA

Action	Start Time	Finish Time	Init Pressue (inHg)	Final Pressue (inHg)
Leak-Test	9:55	10:00	730	730
Purge	10:30	10:32	730	30
Sample	10:38	11:18	730	6

SOIL GAS SCREENING

Date	Time	Depth (ft)	PID (ppm)	O ₂ (ppm)	CO (ppm)	CO ₂ (ppm)
11-29-27	11:26	SUBB	0.0	0.0		0.0
	11:27		0.0			
	11:28		0.0			
	11:29		0.0			
	11:30		0.0			
	11:31		0.0			

19.4 0 0.2

CONTAINER TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
X	BTEX/TPH (TO-3) PESTICIDE/PCBs (TO-4) ALDEHYDES/KEYTONES (TO-5) PESTICIDES/PCBs (TO-10) ALDEHYDES/KEYTONES (TO-11)
	NON-METHANE ORGANIC CMPDS (TO-12) PAHs/SVOCs (TO-13) VOCs (TO-15) select uses PLE TCE VC IPA
	TPH as Diesel (TO-17)
	SPECIFIC CHEMICAL ANALYSIS []

NOTES:

SAMPLER:

(PRINTED NAME)

Dan Sayko

(SIGNATURE)

[Signature]

FIELD SAMPLING DATA SHEET

EVREN NORTHWEST

PO Box 14488
Portland, Oregon, 97293
503-452-5561 Fax: 503-452-7669

PROJECT NAME/NUMBER: 724-10001-07

SAMPLE LOCATION: VENT

SITE ADDRESS:

DUP ID:

WIND FROM: N NE E SE S SW W NW LIGHT MEDIUM HEAVY
WEATHER: SUNNY CLOUDY RAIN ?

Temp., C Humidity (%)
10.30 71

SOIL GAS SETUP DATA

Container Type	Date	Volume (L)	Sample Depth (ft.)	Sample ID	Summa ID	Flow Controller	Flow Meter ID	Purge Vessel ID
Tedlar/Summa	11 / /	0.5L, 1L (3L, 5L, 6L)	VENT	VENT-221129	327	(YES) NO	2531	—

SOIL GAS SAMPLING DATA

Action	Start Time	Finish Time	Init Pressue (mmHg)	Final Pressue (mmHg)
Leak-Test	1044	1049	>30	>30
Purge	—	—	—	—
Sample	11:40	12:13	>30	5

* A run system for exactly 1 minute before turning off and beginning vent sample

SOIL GAS SCREENING

Date	Time	Depth (ft)	PID (ppm)	O ₂ (ppm)	CO (ppm)	CO ₂ (ppm)
11/29/22	12:15	vent	0.0	0%		0%
	12:16		0.0			
	12:17		0.0			
	12:18		0.0			
	12:19		0.0			
	12:21			20.4	0	0.2

Analysis Allowed per Bottle Type

CONTAINER TYPE	TYPICAL ANALYSIS ALLOWED PER BOTTLE TYPE (Circle applicable or write non-standard analysis below)
	BTEX/TPH (TO-3) PESTICIDE/PCSs (TO-4) ALDEHYDES/KEYTONES (TO-5) PESTICIDES/PCBs (TO-10) ALDEHYDES/KEYTONES (TO-11)
	NON-METHANE ORGANIC CMPDS (TO-12) PAHs/SVOCs (TO-13) VOCs (TO-15) select VOCs TCE PCE VC TBA
	TPH as Diesel (TO-17)
	SPECIFIC CHEMICAL ANALYSIS []

NOTES:

SAMPLER:

(PRINTED NAME) Dan Snyl

(SIGNATURE)

ATTACHMENT C
LABORATORY ANALYTICAL REPORT

Analytical Laboratory Data Validation Check Sheet

Project Name: Union Cleaners IIProject Number: 724-10001-07Date of Review: 12/19/2022Lab. Name: EASLab Batch ID #: 222579Chain of Custody

- 1.) Are all requested analyses reported? ☒ yes ☐ no
- 2.) Were the requested methods used? ☒ yes ☐ no
- 3.) Trip blank submitted? ☐ yes ☒ no
- 4.) Field blank submitted? ☐ yes ☒ no

Timing

- 5.) Samples extracted within holding times? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 6.) Analysis performed within holding times? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA

Quality Assurance/Quality Control

- 7.) Are the required reporting limits reported? (MRLs vs MDLs/PQLs) ☒ yes ☐ no
- 8.) Are all reported values above either MRL or MDL? ☒ yes ☐ no
- 9.) Are all values between the MDL & PQL tagged as trace? ☐ yes ☐ no ☒ NA
- 10a.) Are reporting limits raised for other reason besides high analyte conc.? ☐ yes ☒ no
- 10b.) If so, are they footnoted? ☐ yes ☐ no ☒ NA
- 11.) Lab method blank completed? ☒ yes ☐ no
- 12.) Lab, Field, or Trip Blank(s) report detections? ☐ yes ☒ no

If yes, indicate blank type, chemical(s) and concentration(s): _____

- 13.) For inorganics and metals, is there one method blank for each analyte? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no
- 14.) For VOCs, is there one method blank for each day of analysis? ☒ yes ☐ no ☐ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no
- 15.) For SVOC's, is there one method blank for each extraction batch? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no

Accuracy

- 16.) Is there a surrogate spike recovery for all VOC & SVOC samples? ☒ yes ☐ no ☐ NA
Do all surrogate spike recoveries meet accepted criteria? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 17.) Is there a spike recovery for all Laboratory Control Samples? ☒ yes ☐ no ☐ NA
Do all LCS/LCSD spike recoveries meet accepted criteria? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 18.) Are all LCS/LCSD RPDs within acceptable limits? ☒ yes ☐ no ☐ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA

Precision

- 19.) Are all matrix spike/matrix spike duplicate recoveries within acceptable limits? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 20.) Are all matrix spike/matrix spike duplicate RPDs within acceptable limits? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 21.) Do all RPD calculations for Field Duplicates meet accepted criteria? ☐ yes ☐ no ☒ NA

Comments:

The amount trichloroethene reported in SUB07 and SUB08 is estimated because it was below the RL and could be below the lowest calibration point, have higher uncertainty, or it could be the result of system background (J).

Initial Review By: PT

Final Review By: _____

Analytical Laboratory Data Validation Check Sheet

Project Name: Union Cleaners IIProject Number: 724-10001-07Date of Review: 12/14/2022Lab. Name: EASLab Batch ID #: 222567Chain of Custody

- 1.) Are all requested analyses reported? ☒ yes ☐ no
- 2.) Were the requested methods used? ☒ yes ☐ no
- 3.) Trip blank submitted? ☐ yes ☒ no
- 4.) Field blank submitted? ☐ yes ☒ no

Timing

- 5.) Samples extracted within holding times? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 6.) Analysis performed within holding times? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA

Quality Assurance/Quality Control

- 7.) Are the required reporting limits reported? (MRLs vs MDLs/PQLs) ☒ yes ☐ no
- 8.) Are all reported values above either MRL or MDL? ☒ yes ☐ no
- 9.) Are all values between the MDL & PQL tagged as trace? ☐ yes ☐ no ☒ NA
- 10a.) Are reporting limits raised for other reason besides high analyte conc.? ☐ yes ☒ no
- 10b.) If so, are they footnoted? ☐ yes ☐ no ☒ NA
- 11.) Lab method blank completed? ☒ yes ☐ no
- 12.) Lab, Field, or Trip Blank(s) report detections? ☐ yes ☒ no

If yes, indicate blank type, chemical(s) and concentration(s): _____

- 13.) For inorganics and metals, is there one method blank for each analyte? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no
- 14.) For VOCs, is there one method blank for each day of analysis? ☒ yes ☐ no ☐ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no
- 15.) For SVOC's, is there one method blank for each extraction batch? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no

Accuracy

- 16.) Is there a surrogate spike recovery for all VOC & SVOC samples? ☒ yes ☐ no ☐ NA
Do all surrogate spike recoveries meet accepted criteria? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 17.) Is there a spike recovery for all Laboratory Control Samples? ☒ yes ☐ no ☐ NA
Do all LCS/LCSD spike recoveries meet accepted criteria? ☒ yes ☐ no
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 18.) Are all LCS/LCSD RPDs within acceptable limits? ☒ yes ☐ no ☐ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA

Precision

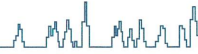
- 19.) Are all matrix spike/matrix spike duplicate recoveries within acceptable limits? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 20.) Are all matrix spike/matrix spike duplicate RPDs within acceptable limits? ☐ yes ☐ no ☒ NA
If not, are all discrepancies footnoted? ☐ yes ☐ no ☒ NA
- 21.) Do all RPD calculations for Field Duplicates meet accepted criteria? ☐ yes ☐ no ☒ NA

Comments:

The amount trichloroethene reported is estimated because it was below the RL and could be below the lowest calibration point, have higher uncertainty, or it could be the result of system background (J).

Initial Review By: LP

Final Review By: _____



Thursday, December 01, 2022

Sample Delivery Group (SDG) 222567
EAS Project Number: 17262

Lynn Green
Evren Northwest Inc.
40 SE 24th Avenue, Suite A
Portland, OR 97214

Lynn,

Enclosed is the analytical report for the samples received and analyzed by Environmental Analytical Service, Inc. for the following Project.

Client Project Name: Former Union Cleaners II
PO Number: 724-10001-07
Client Project Number 724-10001-07
Sample Event Date: 11/21/2022

If you have any questions on the report or the analytical data please contact me at (805) 781-3585.

Sincerely,

Steven D. Hoyt Ph.D.
Laboratory Director

SDH/LIMS

Analytical Report

Project Name:

Former Union Cleaners II

EAS SDG Number: 222567

Client Project Manager: Lynn Green

Prepared For:

Evren Northwest Inc.

40 SE 24th Avenue, Suite A

Portland

OR 97214

Project Number: 17262

Sample Event Date: 11/21/2022

Received Date: 11/22/2022

Report Date: 12/1/2022

Project Number: 724-10001-07

PO Number: 724-10001-07

This is the Laboratory Report for the samples in the indicated Sample Delivery Group (SDG). Each sample received in the group is assigned a Laboratory ID number. The combination of the SDG number and the Lab ID number is a unique identifier for the sample.

This Report Contains:

Laboratory Work Order

Project Sample Media

Laboratory Case Narrative and Chain of Custody

Method Description (when applicable)

Quality Control Reports

Analytical Reports

NELAC Certification: Florida E871125

173 Cross Street, San Luis Obispo, CA 93401 (805) 781-3585

Laboratory Work Order

SDG Number: 222567

Project Number: 17262

Client: Lynn Green

Received: 11/22/2022

Evren Northwest Inc.

SAMPLE DESCRIPTION AND ANALYSIS REQUESTED

Client Sample ID	EAS Lab No.	Analysis Requested	Date Sampled
VENT-221121	222567 1	TO-15 Chlorinated VOC + IPA	11/21/2022

Project Sample Media

SDG Number: 222567

The following sample media was used for this Sample Delivery Group (SDG). The Sample Media column identifies the type of media. For canisters, the Sample Media Batch gives the canister number followed by the cleaning batch number, which is a unique identification. The initial pressure of the canister when it is received is recorded. If the canister is not pressurized, the final pressure will be the same as the initial pressure. If the canister is pressurized the final pressure will be recorded, and the canister dilution factor is calculated as the ratio of the final to initial pressure. The results are adjusted for the can dilution factor.

SDG	Lab ID	Client Sample No.	Sample		Pressure, torr		Can
			Media	Batch	Initial	Final	
222567	1	VENT-221121	342	050922B	736	736	1.00

Laboratory Case Narrative

EAS SDG Number: 222567

Project Number: 17262

Client: Evren Northwest Inc.

The Laboratory Case Narrative for the SDG is below. The Chain of Custody form(s) follow the Laboratory Case Narrative.

Sample Control Narrative

The samples were all received in good condition and with proper preservation.

Analytical Methods

The methods used for sample analysis are listed on the Analytical Report header, and have been modified as described in the EAS Quality Manual.

Case Narrative

QC Narrative

All analyses met EAS method criteria as defined in the Quality Manual, except as noted in the report or QC reports with data qualifiers.

Subcontract Narrative

No sample analysis was subcontracted for this project

Laboratory Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness other than the condition(s) noted above. The Laboratory Report is property of EAS and its client. The entire report has been reviewed and approved.



Date Approved: 12/1/2022

Steven D. Hoyt, Ph.D.
Environmental Analytical Service
Laboratory Director

Analytical Service, Inc.

173 Cross Street
San Luis Obispo, CA 93401
805 781-3585

Analytical Service, Inc.

Page 5 of 12

Quality Control Report

EAS SDG Number 222567

Project Number: 17262

QC Narrative

Samples were analyzed in a daily analytical batch (DAB) designated by a QC batch number, and were analyzed using EAS standard laboratory QC specified in the EAS Quality Manual which may be different than the referenced agency method. Any deviations from the EAS QC criteria are flagged in the Laboratory Control Reports or in the sample Analytical Reports.

Standard Laboratory QC Report

Unless project specific QC was requested, this Section containing the standard laboratory QC (Level 2) supplied with the Analytical Reports. Each sample is analyzed in a Daily Analytical Batch (DAB) which includes the method blank, a laboratory control spike (LCS) and a laboratory control duplicate (LCD). A Daily Analytical Batch QC report is supplied for each method requested.

Method Blank

The method blank is a laboratory generated sample which assesses the degree to which laboratory operations cause a false positive. The target analytes in the analytical reports for a daily analytical batch are "B" flagged if their concentrations are present in the Method Blank above the RL, unless the result is greater than ten times the blank value..

Laboratory Control Spike

A laboratory control spike is a well characterized matrix similar to the sample which is spiked and run in duplicate with each Daily Analytical Batch. The laboratory control spike results are reported as a percent recovery. The QC Criteria for the control spike is listed in the Laboratory Control Report. Any results outside the control limits are flagged with a "Q" on the Laboratory Control Report. The control spike contains an abbreviated list of compounds in the method, and may contain compounds not on the target list for the specified report.

Laboratory Control Duplicate

The laboratory control duplicate is a duplicate analysis of the laboratory control spike, a standard, or a sample depending on the method. The results are reported as a relative percent difference (RPD). The criteria for the duplicate is in the Laboratory Control Report for the Daily Analytical Batch. Any results outside the control limits are flagged with a "Q" on the Laboratory Control Report.

METHOD BLANK REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

SDG: LABQC

Analytical Method: TO-15

Laboratory ID: B11282

File Name: B11282C.D

Date Sampled:

Time:

Description: METHOD BLANK

Date Analyzed: 11/28/22

Time: 11:59

Canister:

Can Dilution Factor: 1.00

QC_Batch: 112822-MA1

Air Volume: 100.00 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.50	2.52	ND	1.28	6.44	ND	
156-59-2	cis-1,2-Dichloroethene	1.00	2.69	ND	3.97	10.68	ND	
79-01-6	Trichloroethene	0.30	2.33	ND	1.61	12.53	ND	
127-18-4	Tetrachloroethene	0.30	1.22	ND	2.04	8.26	ND	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			99	70	130	

METHOD BLANK REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: LABQC

Laboratory ID: B11282

File Name: B11282C.D

Description: METHOD BLANK

Can/Tube#:

QC_Batch: 112822-MA1

Date Sampled:

Date Analyzed: 11/28/22

Can Dilution Factor: 1.00

Air Volume: 100 ml

Time:

Time: 11:59

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
67-63-0	2-propanol (Isopropyl Alcohol)	2.50	7.50	ND	6.15	18.46	ND	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			99	70	130	

QUALITY CONTROL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

Laboratory Control Spike and Spike Duplicate Report

TO15 Volatile Organic Compounds by GC/MS

QC_Batch: 112822-MA1

Date: 11/28/22

CAS#	Compound	LCS		LCD		Spike Limit		Duplicate		Flag
		Recovery	Flag	Recovery	Flag	LCL	UCL	Duplicate	Limit	
		%		%		%	%	%	%	
75-01-4	Vinyl chloride	121		118		70	130	3	25	
75-35-4	1,1-Dichloroethene	123		120		70	130	2	25	
75-09-2	Dichloromethane	128		126		70	130	2	25	
75-34-3	1,1-Dichloroethane	125		123		70	130	2	25	
67-66-3	Chloroform	114		116		70	130	2	25	
71-55-6	1,1,1-Trichloroethane	90		91		70	130	2	25	
107-06-2	1,2-Dichloroethane	95		100		70	130	5	25	
71-43-2	Benzene	101		105		70	130	4	25	
56-23-5	Carbon tetrachloride	81		84		70	130	3	25	
79-01-6	Trichloroethene	88		91		70	130	3	25	
108-88-3	Toluene	95		100		70	130	5	25	
106-93-4	1,2-Dibromoethane	88		97		70	130	9	25	
127-18-4	Tetrachloroethene	73		79		70	130	7	25	
100-41-4	Ethylbenzene	97		99		70	130	2	25	
1330-20-7	m,p-Xylenes	95		99		70	130	4	25	
95-47-6	o-Xylene	95		98		70	130	3	25	
108-67-8	1,3,5-Trimethylbenzene	88		96		70	130	8	25	
95-63-6	1,2,4-Trimethylbenzene	93		100		70	130	7	25	

LCS - Laboratory Control Spike

LCD - Laboratory Control Duplicate

Flag - Q indicated out of Limits

Analytical Reports

EAS SDG Number 222567

Project Number: 17262

The following pages contain the certified Analytical Reports for the samples submitted in the Sample Delivery Group (SDG) and are in order of the EAS Lab ID number. All of the analytical methods used are modifications of the published methods. Procedural method modifications, QC modifications, QC Criteria modifications, target lists, definitions of detection limits, and flags are all explained in detail in the EAS Quality Manual.

The Analytical Report has columns for the method detection limit (MDL), the reporting limit (RL), and the Amount. The Amount is the concentration of the compound in the sample. The report usually has the results reported with two commonly used units. The MDL, RL, and Amount are adjusted for the canister dilution factor and any dilution caused by sample matrix effects.

NELAC CERTIFICATION

EAS is accredited by the National Environmental Laboratory Accreditation (NELAC) with the Florida Department of Health, one of the NELAC certifying states. EAS is certified for the EPA TO-15, EPA TO-11 and EPA TO-4 methods. A list of accredited compounds is available on request.

DETECTION LIMITS

MDL: The MDL is lowest concentration that can be measured to be statistically above the noise level and is determined using the EPA 2016 method which uses the standard deviation of replicate measurements made over time. The method also incorporates systematic instrumentation blank levels. See Quality Manual for detailed explanation.

RL: The reporting limit (RL) is the lowest concentration that can be reliably reported for each compound that meets the QC Criteria for the method, background levels, or project specific considerations. The QC criteria level for the method blank is to be less than the RL. See Quality Manual for more information.

DATA FLAGS

In the standard report, if a compound is not detected above the method detection limit, a "ND" is in the Amount column. The flag column is used for both the not detect flag and for any data flags.

B - This compound was detected in the batch method blank above the reporting limit and is greater than one tenth the amount in the sample.

E - This compound exceeds the calibration range for this sample volume.

J - The amount reported is estimated because it was below the RL and could be below the lowest calibration point, have higher uncertainty, or could be the result of system background

UNITS

PPBV or PPMV: Parts-per-billion (or million) by volume is a mole (volume) ratio of the moles of analyte divided by the moles of air (gas). This is the primary unit used to report air or gas concentrations and is independent of temperature and pressure.

UG/M3 OR MG/M3: The reported result was calculated based on 1 atm pressure and a temperature of 25C. The conversion from PPBV is: $UG/M3 = PPBV \times MW/24.46$ where 24.46 is the gas constant and MW is the Compounds Molecular Weight (sometimes called Formula Weight)

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222567

Laboratory ID: 01

File Name: 2256701A.D
Description: VENT-221121
Canister: 342
QC_Batch: 112822-MA1

Date Sampled: 11/21/22 Time: 11:41
Date Analyzed: 11/28/22 Time: 20:21
Can Dilution Factor: 1.00
Air Volume: 100.00 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.50	2.52	ND	1.28	6.44	ND	
156-59-2	cis-1,2-Dichloroethene	1.00	2.69	ND	3.97	10.68	ND	
79-01-6	Trichloroethene	0.30	2.33	0.42	1.61	12.53	2.24	J
127-18-4	Tetrachloroethene	0.30	1.22	2.25	2.04	8.26	15.30	

Surrogate Recovery				QC	Limits	Flag
			% Rec.	LCL	UCL	
2037-26-5	Toluene-d8		100	70	130	

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222567

Laboratory ID: 01

File Name: 2256701A.D

Date Sampled: 11/21/22

Time: 11:41

Description: VENT-221121

Date Analyzed: 11/28/22

Time: 20:21

Can/Tube#: 342

Can Dilution Factor: 1.00

QC_Batch: 112822-MA1

Air Volume: 100 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
67-63-0	2-propanol (Isopropyl Alcohol)	2.50	7.50	100.07	6.15	18.46	246.30	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			100	70	130	



Friday, December 09, 2022

Sample Delivery Group (SDG) 222579
EAS Project Number: 17262

Lynn Green
Evren Northwest Inc.
40 SE 24th Avenue, Suite A
Portland, OR 97214

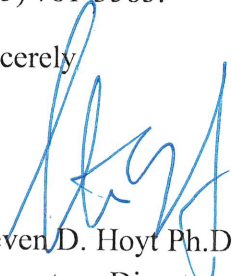
Lynn,

Enclosed is the analytical report for the samples received and analyzed by Environmental Analytical Service, Inc. for the following Project.

Client Project Name: Former Union Cleaners
PO Number: 724-10001-07
Client Project Number 724-10001-07
Sample Event Date: 11/29/22

If you have any questions on the report or the analytical data please contact me at (805) 781-3585.

Sincerely,



Steven D. Hoyt Ph.D.
Laboratory Director

SDH/LIMS

Analytical Report

Project Name:

Former Union Cleaners

EAS SDG Number: 222579

Client Project Manager: Lynn Green

Prepared For:

Evren Northwest Inc.

40 SE 24th Avenue, Suite A

Portland

OR 97214

Project Number: 17262

Sample Event Date: 11/29/22

Received Date: 12/1/2022

Report Date: 12/9/2022

Project Number: 724-10001-07

PO Number: 724-10001-07

This is the Laboratory Report for the samples in the indicated Sample Delivery Group (SDG). Each sample received in the group is assigned a Laboratory ID number. The combination of the SDG number and the Lab ID number is a unique identifier for the sample.

This Report Contains:

Laboratory Work Order

Project Sample Media

Laboratory Case Narrative and Chain of Custody

Method Description (when applicable)

Quality Control Reports

Analytical Reports

NELAC Certification: Florida E871125

173 Cross Street, San Luis Obispo, CA 93401 (805) 781-3585

Laboratory Work Order

SDG Number: 222579

Project Number: 17262

Client: Lynn Green

Received: 12/1/2022

Evren Northwest Inc.

SAMPLE DESCRIPTION AND ANALYSIS REQUESTED

Client Sample ID	EAS Lab No.	Analysis Requested	Date Sampled
VENT-221129	222579 1	TO-15 Chlorinated VOC + IPA	11/29/2022
SUB07-221129	222579 2	TO-15 Chlorinated VOC + IPA	11/29/2022
SUB08-221129	222579 3	TO-15 Chlorinated VOC + IPA	11/29/2022

Project Sample Media

SDG Number: 222579

The following sample media was used for this Sample Delivery Group (SDG). The Sample Media column identifies the type of media. For canisters, the Sample Media Batch gives the canister number followed by the cleaning batch number, which is a unique identification. The initial pressure of the canister when it is received is recorded. If the canister is not pressurized, the final pressure will be the same as the initial pressure. If the canister is pressurized the final pressure will be recorded, and the canister dilution factor is calculated as the ratio of the final to initial pressure. The results are adjusted for the can dilution factor.

SDG	Lab ID	Client Sample No.	Sample Media		Pressure, torr		Can Factor
				Batch	Initial	Final	
222579	1	VENT-221129	327	062922A	726	726	1.00
222579	2	SUB07-221129	384	111022B	630	630	1.00
222579	3	SUB08-221129	358	111022B	749	749	1.00

Laboratory Case Narrative

EAS SDG Number: 222579

Project Number: 17262

Client: Evren Northwest Inc.

The Laboratory Case Narrative for the SDG is below. The Chain of Custody form(s) follow the Laboratory Case Narrative.

Sample Control Narrative

The samples were all received in good condition and with proper preservation.

Analytical Methods

The methods used for sample analysis are listed on the Analytical Report header, and have been modified as described in the EAS Quality Manual..

Case Narrative

QC Narrative

All analyses met EAS method criteria as defined in the Quality Manual, except as noted in the report or QC reports with data qualifiers.

Subcontract Narrative

No sample analysis was subcontracted for this project

Laboratory Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness other than the condition(s) noted above. The Laboratory Report is property of EAS and its client. The entire report has been reviewed and approved.



Date Approved: 12/9/2022

Steven D. Hoyt, Ph.D.
Environmental Analytical Service
Laboratory Director

Analytical Service, Inc.

173 Cross Street
San Luis Obispo, CA 93401
805 781-3585

CHAIN OF CUSTODY RECORD

[illegible]

Quality Control Report

EAS SDG Number 222579

Project Number: 17262

QC Narrative

Samples were analyzed in a daily analytical batch (DAB) designated by a QC batch number, and were analyzed using EAS standard laboratory QC specified in the EAS Quality Manual which may be different than the referenced agency method. Any deviations from the EAS QC criteria are flagged in the Laboratory Control Reports or in the sample Analytical Reports.

Standard Laboratory QC Report

Unless project specific QC was requested, this Section containing the standard laboratory QC (Level 2) supplied with the Analytical Reports. Each sample is analyzed in a Daily Analytical Batch (DAB) which includes the method blank, a laboratory control spike (LCS) and a laboratory control duplicate (LCD). A Daily Analytical Batch QC report is supplied for each method requested.

Method Blank

The method blank is a laboratory generated sample which assesses the degree to which laboratory operations cause a false positive. The target analytes in the analytical reports for a daily analytical batch are "B" flagged if their concentrations are present in the Method Blank above the RL, unless the result is greater than ten times the blank value..

Laboratory Control Spike

A laboratory control spike is a well characterized matrix similar to the sample which is spiked and run in duplicate with each Daily Analytical Batch. The laboratory control spike results are reported as a percent recovery. The QC Criteria for the control spike is listed in the Laboratory Control Report. Any results outside the control limits are flagged with a "Q" on the Laboratory Control Report. The control spike contains an abbreviated list of compounds in the method, and may contain compounds not on the target list for the specified report.

Laboratory Control Duplicate

The laboratory control duplicate is a duplicate analysis of the laboratory control spike, a standard, or a sample depending on the method. The results are reported as a relative percent difference (RPD). The criteria for the duplicate is in the Laboratory Control Report for the Daily Analytical Batch. Any results outside the control limits are flagged with a "Q" on the Laboratory Control Report.

METHOD BLANK REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: LABQC

Laboratory ID: B12052

File Name: B12052C.D

Description: METHOD BLANK

Canister:

QC_Batch: 120522-MA1

Date Sampled:

Date Analyzed: 12/5/22

Can Dilution Factor: 1.00

Air Volume: 100.00 ml

Time:

Time: 11:16

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.50	2.52	ND	1.28	6.44	ND	
156-59-2	cis-1,2-Dichloroethene	1.00	2.69	ND	3.97	10.68	ND	
79-01-6	Trichloroethene	0.30	2.33	ND	1.61	12.53	ND	
127-18-4	Tetrachloroethene	0.30	1.22	ND	2.04	8.26	ND	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			102	70	130	

METHOD BLANK REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: LABQC

Laboratory ID: B12052

File Name: B12052C.D

Description: METHOD BLANK

Can/Tube#:

QC_Batch: 120522-MA1

Date Sampled:

Date Analyzed: 12/5/22

Can Dilution Factor: 1.00

Air Volume: 100 ml

Time:

Time: 11:16

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
67-63-0	2-propanol (Isopropyl Alcohol)	2.50	7.50	ND	6.15	18.46	ND	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			102	70	130	

METHOD BLANK REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: LABQC

Laboratory ID: B12062

File Name: B12062C.D

Description: METHOD BLANK

Canister:

QC_Batch: 120622-MA1

Date Sampled:

Date Analyzed: 12/6/22

Can Dilution Factor: 1.00

Air Volume: 300.00 ml

Time:

Time: 10:48

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.17	0.84	ND	0.43	2.15	ND	
156-59-2	cis-1,2-Dichloroethene	0.33	0.90	ND	1.32	3.56	ND	
79-01-6	Trichloroethene	0.10	0.78	ND	0.54	4.18	ND	
127-18-4	Tetrachloroethene	0.10	0.41	ND	0.68	2.75	ND	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			100	70	130	

METHOD BLANK REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: LABQC

Laboratory ID: B12062

File Name: B12062C.D

Description: METHOD BLANK

Can/Tube#:

QC_Batch: 120622-MA1

Date Sampled:

Time:

Date Analyzed: 12/6/22

Time: 10:48

Can Dilution Factor: 1.00

Air Volume: 300 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
------	----------	-------------	------------	----------------	--------------	-------------	-----------------	------

67-63-0	2-propanol (Isopropyl Alcohol)	0.83	2.50	ND	2.05	6.15	ND	
---------	--------------------------------	------	------	----	------	------	----	--

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			100	70	130	

QUALITY CONTROL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

Laboratory Control Spike and Spike Duplicate Report

TO15 Volatile Organic Compounds by GC/MS

QC_Batch: 120522-MA1

Date: 12/5/22

CAS#	Compound	LCS		LCD		Spike Limit		Duplicate		Flag
		Recovery	Flag	Recovery	Flag	LCL	UCL	Duplicate	Limit	
		%		%		%	%	%	%	
75-01-4	Vinyl chloride	111		96		70	130	14	25	
75-35-4	1,1-Dichloroethene	115		99		70	130	14	25	
75-09-2	Dichloromethane	122		111		70	130	10	25	
75-34-3	1,1-Dichloroethane	118		108		70	130	9	25	
67-66-3	Chloroform	114		105		70	130	8	25	
71-55-6	1,1,1-Trichloroethane	102		99		70	130	3	25	
107-06-2	1,2-Dichloroethane	105		105		70	130	1	25	
71-43-2	Benzene	107		106		70	130	1	25	
56-23-5	Carbon tetrachloride	94		97		70	130	2	25	
79-01-6	Trichloroethene	99		103		70	130	4	25	
108-88-3	Toluene	102		105		70	130	3	25	
106-93-4	1,2-Dibromoethane	95		119		70	130	23	25	
127-18-4	Tetrachloroethene	93		103		70	130	10	25	
100-41-4	Ethylbenzene	105		114		70	130	9	25	
1330-20-7	m,p-Xylenes	105		116		70	130	10	25	
95-47-6	o-Xylene	105		119		70	130	13	25	
108-67-8	1,3,5-Trimethylbenzene	108		128		70	130	17	25	
95-63-6	1,2,4-Trimethylbenzene	112		129		70	130	14	25	

LCS - Laboratory Control Spike

LCD - Laboratory Control Duplicate

Flag - Q indicated out of Limits

QUALITY CONTROL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

Laboratory Control Spike and Spike Duplicate Report

TO15 Volatile Organic Compounds by GC/MS

QC_Batch: 120622-MA1

Date: 12/6/22

CAS#	Compound	LCS		LCD		Spike Limit		Duplicate	
		Recovery	Flag	Recovery	Flag	LCL	UCL	Duplicate	Limit
		%		%		%	%	%	%
75-01-4	Vinyl chloride	116		93		70	130	23	25
75-35-4	1,1-Dichloroethene	102		102		70	130	0	25
75-09-2	Dichloromethane	108		106		70	130	2	25
75-34-3	1,1-Dichloroethane	104		105		70	130	1	25
67-66-3	Chloroform	101		104		70	130	3	25
71-55-6	1,1,1-Trichloroethane	100		101		70	130	1	25
107-06-2	1,2-Dichloroethane	104		106		70	130	3	25
71-43-2	Benzene	103		103		70	130	1	25
56-23-5	Carbon tetrachloride	98		98		70	130	0	25
79-01-6	Trichloroethene	100		100		70	130	0	25
108-88-3	Toluene	98		97		70	130	0	25
106-93-4	1,2-Dibromoethane	93		104		70	130	12	25
127-18-4	Tetrachloroethene	97		98		70	130	1	25
100-41-4	Ethylbenzene	96		102		70	130	6	25
1330-20-7	m,p-Xylenes	96		101		70	130	5	25
95-47-6	o-Xylene	97		101		70	130	4	25
108-67-8	1,3,5-Trimethylbenzene	95		103		70	130	8	25
95-63-6	1,2,4-Trimethylbenzene	99		103		70	130	5	25

LCS - Laboratory Control Spike

LCD - Laboratory Control Duplicate

Flag - Q indicated out of Limits

Analytical Reports

EAS SDG Number 222579

Project Number: 17262

The following pages contain the certified Analytical Reports for the samples submitted in the Sample Delivery Group (SDG) and are in order of the EAS Lab ID number. All of the analytical methods used are modifications of the published methods. Procedural method modifications, QC modifications, QC Criteria modifications, target lists, definitions of detection limits, and flags are all explained in detail in the EAS Quality Manual.

The Analytical Report has columns for the method detection limit (MDL), the reporting limit (RL), and the Amount. The Amount is the concentration of the compound in the sample. The report usually has the results reported with two commonly used units. The MDL, RL, and Amount are adjusted for the canister dilution factor and any dilution caused by sample matrix effects.

NELAC CERTIFICATION

EAS is accredited by the National Environmental Laboratory Accreditation (NELAC) with the Florida Department of Health, one of the NELAC certifying states. EAS is certified for the EPA TO-15, EPA TO-11 and EPA TO-4 methods. A list of accredited compounds is available on request.

DETECTION LIMITS

MDL: The MDL is lowest concentration that can be measured to be statistically above the noise level and is determined using the EPA 2016 method which uses the standard deviation of replicate measurements made over time. The method also incorporates systematic instrumentation blank levels. See Quality Manual for detailed explanation.

RL: The reporting limit (RL) is the lowest concentration that can be reliably reported for each compound that meets the QC Criteria for the method, background levels, or project specific considerations. The QC criteria level for the method blank is to be less than the RL. See Quality Manual for more information.

DATA FLAGS

In the standard report, if a compound is not detected above the method detection limit, a "ND" is in the Amount column. The flag column is used for both the not detect flag and for any data flags.

B - This compound was detected in the batch method blank above the reporting limit and is greater than one tenth the amount in the sample.

E - This compound exceeds the calibration range for this sample volume.

J - The amount reported is estimated because it was below the RL and could be below the lowest calibration point, have higher uncertainty, or could be the result of system background

UNITS

PPBV or PPMV: Parts-per-billion (or million) by volume is a mole (volume) ratio of the moles of analyte divided by the moles of air (gas). This is the primary unit used to report air or gas concentrations and is independent of temperature and pressure.

UG/M3 OR MG/M3: The reported result was calculated based on 1 atm pressure and a temperature of 25C. The conversion from PPBV is: $UG/M3 = PPBV \times MW/24.46$ where 24.46 is the gas constant and MW is the Compounds Molecular Weight (sometimes called Formula Weight)

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222579

Laboratory ID: 01

File Name: 2257901A.D

Date Sampled: 11/29/22

Time: 11:40

Description: VENT-221129

Date Analyzed: 12/5/22

Time: 12:35

Canister: 327

Can Dilution Factor: 1.00

QC_Batch: 120522-MA1

Air Volume: 100.00 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.50	2.52	ND	1.28	6.44	ND	
156-59-2	cis-1,2-Dichloroethene	1.00	2.69	ND	3.97	10.68	ND	
79-01-6	Trichloroethene	0.30	2.33	ND	1.61	12.53	ND	
127-18-4	Tetrachloroethene	0.30	1.22	2.77	2.04	8.26	18.83	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			101	70	130	

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222579

Laboratory ID: 01

File Name: 2257901A.D

Date Sampled: 11/29/22

Time: 11:40

Description: VENT-221129

Date Analyzed: 12/5/22

Time: 12:35

Can/Tube#: 327

Can Dilution Factor: 1.00

QC_Batch: 120522-MA1

Air Volume: 100 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
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67-63-0	2-propanol (Isopropyl Alcohol)	2.50	7.50	1,967.93	6.15	18.46	4,843.86	
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Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			101	70	130	

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222579

Laboratory ID: 02

File Name: 2257902B.D

Date Sampled: 11/29/22

Time: 10:27

Description: SUB07-221129

Date Analyzed: 12/6/22

Time: 11:25

Canister: 384

Can Dilution Factor: 1.00

QC_Batch: 120622-MA1

Air Volume: 300.00 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.17	0.84	ND	0.43	2.15	ND	
156-59-2	cis-1,2-Dichloroethene	0.33	0.90	ND	1.32	3.56	ND	
79-01-6	Trichloroethene	0.10	0.78	0.30	0.54	4.18	1.62	J
127-18-4	Tetrachloroethene	0.10	0.41	16.09	0.68	2.75	109.23	

Surrogate Recovery					QC	Limits	Flag	
					% Rec.	LCL		UCL
2037-26-5	Toluene-d8				101	70	130	

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222579

Laboratory ID: 02

File Name: 2257902A.D

Date Sampled: 11/29/22

Time: 10:27

Description: SUB07-221129

Date Analyzed: 12/5/22

Time: 13:11

Can/Tube#: 384

Can Dilution Factor: 1.00

QC_Batch: 120522-MA1

Air Volume: 100 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
67-63-0	2-propanol (Isopropyl Alcohol)	2.50	7.50	530.50	6.15	18.46	1,305.77	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			101	70	130	

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

SDG: 222579

Analytical Method: TO-15

Laboratory ID: 03

File Name: 2257903B.D

Date Sampled: 11/29/22

Time: 10:38

Description: SUB08-221129

Date Analyzed: 12/6/22

Time: 12:02

Canister: 358

Can Dilution Factor: 1.00

QC_Batch: 120622-MA1

Air Volume: 300.00 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
75-01-4	Vinyl chloride	0.17	0.84	ND	0.43	2.15	ND	
156-59-2	cis-1,2-Dichloroethene	0.33	0.90	ND	1.32	3.56	ND	
79-01-6	Trichloroethene	0.10	0.78	0.14	0.54	4.18	0.76	J
127-18-4	Tetrachloroethene	0.10	0.41	4.75	0.68	2.75	32.27	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			100	70	130	

ANALYTICAL REPORT

ENVIRONMENTAL
Analytical Service, Inc.

EPA Method TO-15 Modified Full Scan GC/MS

Analytical Method: TO-15

SDG: 222579

Laboratory ID: 03

File Name: 2257903A.D

Date Sampled: 11/29/22

Time: 10:38

Description: SUB08-221129

Date Analyzed: 12/5/22

Time: 13:46

Can/Tube#: 358

Can Dilution Factor: 1.00

QC_Batch: 120522-MA1

Air Volume: 100 ml

CAS#	Compound	MDL PPBV	RL PPBV	Amount PPBV	MDL UG/M3	RL UG/M3	Amount UG/M3	Flag
67-63-0	2-propanol (Isopropyl Alcohol)	2.50	7.50	196.05	6.15	18.46	482.54	

Surrogate Recovery				% Rec.	QC LCL	Limits UCL	Flag
2037-26-5	Toluene-d8			102	70	130	