

Vapor Intrusion Assessment and Barrier Inspection #1 February 2025

**Pine Lake Cleaners
2830 228th Ave SE
Sammamish, WA 98075
VCP Project ID: XN0013**

Prepared by:
Urban Environmental Partners llc
2324 First Avenue, Suite 203
Seattle, WA 98121

March 6, 2025

Table of Contents

SECTION 1: INTRODUCTION	1-3
1.1 Site Background and Location	1-3
1.2 Regulatory Status	1-3
1.3 Overview of Compliance Monitoring Program	1-3
SECTION 2: VAPOR INTRUSION MONITORING	2-4
2.1 Subslab Soil Gas and Indoor Air Sampling Techniques.....	2-4
2.1.1 Subslab Soil Gas Sampling Technique	2-5
2.1.2 Indoor and Ambient Air Sampling Technique	2-5
2.2 Subslab Soil Gas and Indoor Air Sampling Events	2-5
2.2.3 Analytical Methods	2-5
2.2.4 Subslab Soil Gas and Indoor Air Sampling Results	2-6
2.3 Physical Barrier (concrete slab floor) Inspection	2-6
SECTION 3: CONCLUSIONS AND RECOMMENDATIONS	3-6
SECTION 4: REFERENCES	4-7

FIGURES

Figure 1: Site Plan

Figure 2: Vapor Intrusion Compliance Monitoring Plan

TABLES

Table 1: Soil Gas and Indoor Air Analytical Results

ATTACHMENTS

Attachment A: Department of Ecology No Further Action opinion (12/28/22)

Attachment B: Vapor Intrusion Building Survey and Sampling Form (2/15/25)

Attachment C: Soil Gas and Indoor Air Analytical Laboratory Reports, Friedman & Bruya, Inc. Event #1 (2/15/25)

SECTION 1: INTRODUCTION

This report presents the results of soil gas and indoor air monitoring following Ecology's issuance of the Site NFA determination at the Pine Lake Cleaners Site (PLC) located at 2830 228th Avenue SE in Sammamish, Washington (Figure 1). This Vapor Intrusion (VI) Event #1 is the first of four events during the 5-year monitoring and reporting period (Ecology NFA Letter, 12/28/22, attached). Historic or pre NFA letter data is only partially included in the data table but not discussed herein. See the Site's RI/FS/CAP report (UEP, 11/14/21) for additional information. The following data are presented in this report:

- Event #1 VI monitoring which includes paired subslab soil gas and indoor and ambient air data.
- Event #1 barrier (e.g., existing concrete slab on grade) inspection findings.

1.1 Site Background and Location

The active dry cleaner operation, named Pine Lake Dry Cleaners, is located at 2830 228th Avenue Southeast in Sammamish, Washington, approximately 2 miles south of downtown Sammamish. The dry cleaner facility is located on the west end of the Pine Lake Plaza retail strip mall as shown on Figure 1. According to the USGS Topographic Map of the Issaquah, Washington Quadrangle, the Property is located at an approximate elevation of 430 to 455 feet above mean sea level (AMSL), with the highest elevations on the eastern portion of the Property. Based on elevation contour information obtained the King County iMap database, the elevation of the PLC Site is 435 feet AMSL.

1.2 Regulatory Status

The Site is listed at the Washington State Department of Ecology (Ecology) as a confirmed contaminated Site (ID: 15257) and is managed in Ecology's Expedited Voluntary Cleanup Program (XN0013). A No Further Action (NFA) determination from Ecology was issued to the property owner on 12/28/22 and is included as Appendix A of this report.

1.3 Overview of Compliance Monitoring Program

The scope and schedule of the VI Sampling Plan and Barrier Inspection Work Plan is a required element of the NFA opinion letter, Environmental Covenant (EC) and it's Exhibit D (Ecology, 2022, Appendix A). The scope of the monitoring plan includes:

- Two paired subslab soil gas and indoor air sampling locations within the dry cleaning shop. The monitoring event also includes ambient air sampling, indoor and outdoor pressure and temperature readings.
- Inspections and, if necessary, repairs to the existing ground-level concrete floor slab (e.g., barrier or cap).
- Reporting annual results of the compliance monitoring events, including a 5-Year review and reporting event. A 5-Year Review Report will be submitted to Ecology summarizing the prior 5-year compliance monitoring results.

- Contingency (Action) Plans: For the VI monitoring program, a contingency action plan has been developed to respond to a significant or unexpected *change* in VI compliance monitoring data or barrier inspection. VI monitoring and barrier inspections will be performed as follows:

The required monitoring schedule is as follows:

- Recording of the Environmental Covenant – 12/8/22. NFA Opinion issued – 12/28/22.
- Year 1 – Event #1 VI monitoring event within 12 months after the recording of the Environmental Covenant. 2/15/25.
- Year 2 – Event #2 follow up monitoring event within 6 to 12 months of Event #1. Planned for winter 2025.
- Year 3 – Event #3 follow up monitoring event within 6 to 12 months of Event #2.
- Year 5 – Event #4 and the final VI monitoring event for the first five-year period. Results for all events will be reported to Ecology in the 5-year Review Report.
- Year 10 – a second VI monitoring event within the second five-year period. Results will be reported to Ecology in the 5-year Review Report.
- Year 15 – the first VI monitoring event within the third five-year period. Results will be reported to Ecology in the 5-year Review Report.
- No additional VI monitoring events will be performed following Year 10 or Year 15 if all prior monitoring events beginning with Year 1 are below the VI screening levels.

SECTION 2: VAPOR INTRUSION MONITORING

This Event #1 is the first compliance monitoring event since the issuance of the NFA opinion and recording of the Site's EC. Each monitoring event includes two paired or collocated subslab soil gas (SSSG) and indoor air (IA) samples and one ambient air sample. Laboratory results of VI sampling are presented in Table 1. Below is a discussion of sampling techniques and the analytical results. Recommendations for next steps is provided in the Conclusions.

2.1 Subslab Soil Gas and Indoor Air Sampling Techniques

The Site VI assessment plan evaluates the VI pathway using multiple lines of evidence approach to confirm that the VI exposure pathway is incomplete and remains that way over time. The paired SSSG and IA samples were combined with differential pressure and temperature gradient measurements to establish the multiple lines of evidence.

Additional details of sampling techniques and quality assurance steps is provided in the VI Monitoring Work Plan (Appendix A). As required, a building survey was performed before VI sampling began, as documented in the Ecology-approved form provided in Attachment B.

2.1.1 Subslab Soil Gas Sampling Technique

Subslab soil gas samples were collected using the vapor pin procedures outlined in the VI Work Plan. Each SSSG vapor sample was collocated and collected concurrently (same day but after IA sampling was completed) as the associated paired IA sample (Figure 2). Each SSSG sample was collected using a 1-L SUMMA® sample container over an approximately 5- to 8-minute period, with the flow rate controlled by the intake regulator provided by the laboratory. The final canister vacuum was recorded on the laboratory supplied chain-of-custody and delivered to Friedman & Bruya, Inc. laboratory in Seattle. No sampling and laboratory quality control issues were reported.

2.1.2 Indoor and Ambient Air Sampling Technique

Each IA sample was collocated and collected concurrently (same day) with the associated paired SSSG sample. IA samples are collected using 6-L SUMMA® containers at breathing height (approximately five feet above ground surface), over an approximately eight-hour period, to assess typical working conditions and a time-weighted average. The sampling period and flow rate are controlled by the intake regulator provided by the laboratory. Sampling was stopped at or near an 8-hour period and was not allowed to fall below -3" Hg.

An ambient air or area background sample was collected upwind of the indoor air sampling location at the same time the paired SSSG and IA samples were collected. The ambient air sample location is shown on Figure 2. The wind direction is determined by observations immediately prior to sample collection or by using a wind rose generated with at least one year of wind data from a nearby meteorological station if there is no obvious wind direction during the day of sampling. Ambient air samples are collected using the same containers and techniques as described for IA samples. The facility does not have a central heating and cooling unit. No sampling and laboratory quality control issues were reported.

2.2 Subslab Soil Gas and Indoor Air Sampling Events

- Event #1 February 22, 2025: Two paired and collocated SSSG and VI samples were collected on this day and labelled VI-1 and VI-2 and IA-1 and IA-2, respectively. The collocated VI-1/IA-1 samples were located in the back of the shop and next to the former location of the solvent cleaner machine. The VI-2/IA-S samples were in the front of the shop next to the customer drop off/pick up counter. The indoor temperature was approximately 70 degrees F and the outside temperature about 40 degrees F, with a temperature difference of approximately 30 degrees F. The subslab pressure was approximately 0.03 kPa higher than the indoor pressure. The overall barometric pressure for this day was stable to slightly increasing.

2.2.3 Analytical Methods

All soil gas and indoor samples were submitted to FBI laboratory for chemical analyses. This included the Site contaminants of concern (COCs) including chlorinated volatile organic compounds or solvents tetrachloroethylene (PCE), trichloroethylene (TCE), dichloroethylene (cis- and trans-1,2, DCE) and vinyl chloride (VC).

The analytical laboratory report and chain-of-custody form for Event #1 are included in Appendix C.

2.2.4 Subslab Soil Gas and Indoor Air Sampling Results

Event #1 results for indoor air and subslab soil gas samples are presented below.

- Indoor air sample results from IA-1 and IA-2 contained non-detect concentrations of the Site COCs. The laboratory detection limits (DLs) were all below the MTCA Method B CULs and Method B commercial SLs.
- Soil gas sample results from VI-1 and VI-2 contained detectable concentrations of PCE at 4,500 and 5,600 ug/m³, respectively, below the MTCA Method B commercial screening level for soil gas of 15,000 ug/m³. Sample results for the other COCs – TCE, DCE and VC – were all non-detect at the laboratory DLs.
- Ambient air sample Amb-1 contained non-detect concentrations of the Site COCs.

2.3 Physical Barrier (concrete slab floor) Inspection

This section presents the barrier inspection and reporting results for the existing, continuous concrete floor slab in the cleaners' space. This floor slab acts as a barrier to prevent vapor intrusion of subslab soil gas to indoor air. Along with soil gas and indoor air sampling, barrier inspections ensure that the barrier remains intact, in good condition, and continues to provide a physical barrier for the VI pathway.

Event #1 February 22, 2025: A barrier inspection was performed during the first VI monitoring event. No penetrations of the concrete floor slab and two minor cracks in the slab approximately 2- to 4-feet long were observed. Two vapor pins installed by UEP were present; these openings were sealed with Vapor Pin® plugs and were deemed appropriately sealed. The findings of the inspection were documented in the Ecology-approved form included as Attachment C.

SECTION 3: CONCLUSIONS AND RECOMMENDATIONS

Event #1 VI Assessment and Ecology Reporting. The Year 1 VI assessment monitoring round indicated that during SSSG sampling, elevated PCE concentrations were detected in soil gas below the concrete floor slab, however these concentrations were below the PCE MTCA Commercial SL of 15,000 ug/m³. The SSSG concentrations have reduced by about 2 to 3 times the concentrations measured during the 2020/2021 characterization efforts. No detectable concentrations of TCE, DCE and VC in SSSG samples were reported above the laboratory DLs. The laboratory DLs for all soil gas results were below the soil gas SLs.

All indoor air samples contained no detectable concentrations of PCE, TCE, DCE and VC. All laboratory DLs were below the MTCA Method B CULs and Commercial SLs.

Based on our review of this data and the requirements of the VI assessment work plan, no additional mitigation steps or contingency measures are needed nor recommended at this time. The next VI

monitoring and barrier inspection event should be performed in winter of 2025/26. Although not required by the EC, we recommend transmitting this report to Ecology for their files.

5-Year Review Report. The first 5-year review report will be transmitted to Ecology around January 2028.

SECTION 4: REFERENCES

Ecology 2018. Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Review Draft October 2009, Revised February 2016 and April 2018.

Ecology 2025. Toxics Cleanup Program's Cleanup Levels and Risk Calculations (CLARC) database, <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>, accessed January.

Urban Environmental Partners llc, 2021, Remedial Investigation/Feasibility Study & Cleanup Action Plan, Pine Lake Cleaners Site, 2830 228th Avenue SE, Sammamish, WA, November 14, 2021.

Pioneer Technologies Corporation, 2021, Vapor Intrusion Investigation Report, Pine Lake Cleaners Site, 2830 228th Avenue SE, Sammamish, WA, May, 2021.



Table 1
Indoor Air (IA) and Soil Gas Sample Analytical Results for
Chlorinated VOCs
Pine Lake Cleaners XN0013

Indoor Air Sampling Results (pre and post remedy)

Sample Location	Sample Date	Sample Type	Analytical Results ¹ - micrograms per cubic meter (µg/m ³)				
			PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
AA-01	8/5/2020	Ambient Air	7.3	<0.27	<0.4	<0.4	<0.26
	1/12/2021		<6.8	<0.11	<0.4	<0.4	<0.26
	2/24/2021		<6.8	<0.11	<0.4	<0.4	<0.26
IA-01	8/5/2020	Indoor Air machine	<6.8	0.41	<0.4	<0.4	<0.26
	1/12/2021		7.4	<0.11	<0.4	<0.4	<0.26
	2/24/2021		7.9	<0.11	<0.4	<0.4	<0.26
IA-02	8/5/2020	Indoor Air counter	<6.8	<0.27	<0.4	<0.4	<0.26
	1/12/2021		<6.8	<0.11	<0.4	<0.4	<0.26
	2/24/2021		7.5	<0.11	<0.4	<0.4	<0.26
IA-03	8/5/2020	Indoor Air jeweler	<6.8	<0.27	<0.4	<0.4	<0.26
	1/12/2021		<6.8	<0.11	<0.4	<0.4	<0.26
	2/24/2021		<6.8	<0.11	<0.4	<0.4	<0.26
IA-04	8/5/2020	Indoor Air jeweler	<6.8	<0.27	<0.4	<0.4	<0.26
	1/12/2021		<6.8	<0.11	<0.4	<0.4	<0.26
	2/24/2021		<6.8	<0.11	<0.4	<0.4	<0.26
NFA Issued by Ecology on 12/28/2022 (below are Compliance Monitoring results)							
IA-1	2/15/2025	Indoor Air machine	<14	<0.21	<0.79	<0.79	<0.26
IA-2	2/15/2025	Indoor Air counter	<13	<0.2	<0.75	<0.75	<0.24
Amb-1	2/15/2025	Ambient Air	<9.5	<0.15	<0.56	<0.56	<0.18
MTCA Method B² CULs for Indoor Air and Commercial SLs			18 44.9	0.33 ³ 2.85	18 n/a	18 n/a	0.28 ³ 1.33

Soil Gas Sampling Results (pre and post remedy)

Sample Location	Sample Date	Sample Type	Analytical Results - micrograms per cubic meter (µg/m ³)				
			PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride
SV-17	8/5/2020	Soil Gas machine	30,000 ^{ve}	46	<17.0	<17.0	<11.0
	2/24/2021		20,000 ^{ve}	18	<6.7	<6.7	<4.3
SV-18	8/5/2020	Soil Gas counter	15,000 ^{ve}	<13	<19.0	<19.0	<12.0
	2/24/2021		7,800 ^{ve}	<0.88	<3.3	<3.3	<0.21
SV-20	8/5/2020	Soil Gas jeweler	33	<0.94	<1.4	<1.4	<0.89
	2/24/2021		45	<0.64	<2.4	<2.4	<1.50
SV-21	2/24/2021	Soil Gas sidewalk	<37	<0.59	<2.2	<2.2	<1.40
NFA Issued by Ecology on 12/28/2022 (below are Compliance Monitoring results)							
VI-1	2/15/2025	Soil Gas machine	4,500	<25	<91	<91	<29
VI-2	2/15/2025	Soil Gas counter	5,600	<21	<79	<79	<26
MTCA Method B² SLs for Soil Gas			15,000	95	52,000	52,000	44

NOTES:

Bold denotes concentration detected greater than the laboratory reporting limit.

Red denotes concentration exceeds MTCA Screening or Cleanup Level

(1) Samples analyzed by EPA Method TO-15

(2) Most Conservative MTCA Method B SL or CUL for Commercial Workspace, CLARC 2025

(3) MTCA Method B early life exposure, unrestricted land use

(4) MTCA Method B Cancer Screening Levels for Soil Gas, Ecology CLARC 2025

-- = not analyzed/not applicable

< = not detected at a concentration exceeding the laboratory reporting limit (shown)

PCE = Perchloroethylene

TCE = Trichloroethylene

DCE = Dichloroethylene

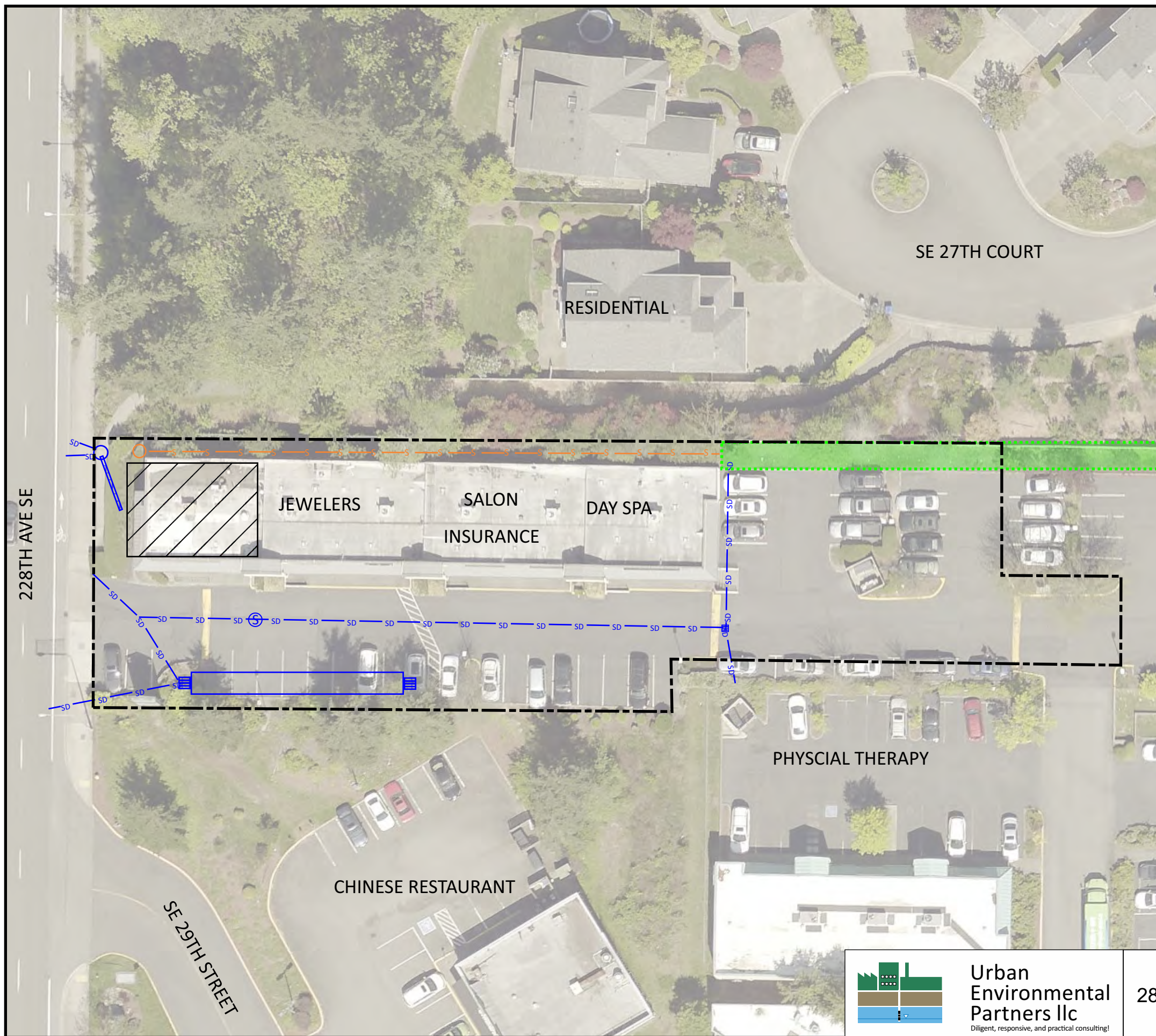
VC = Vinyl Chloride

VOCs = Volatile Organic Compounds


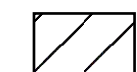


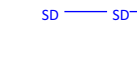



UEP = Urban Environmental Partners

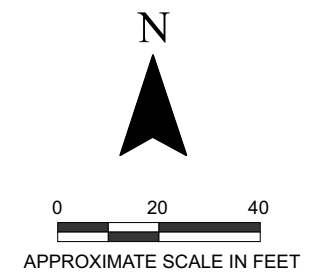
CUL and SLs = Cleanup and Screening Levels

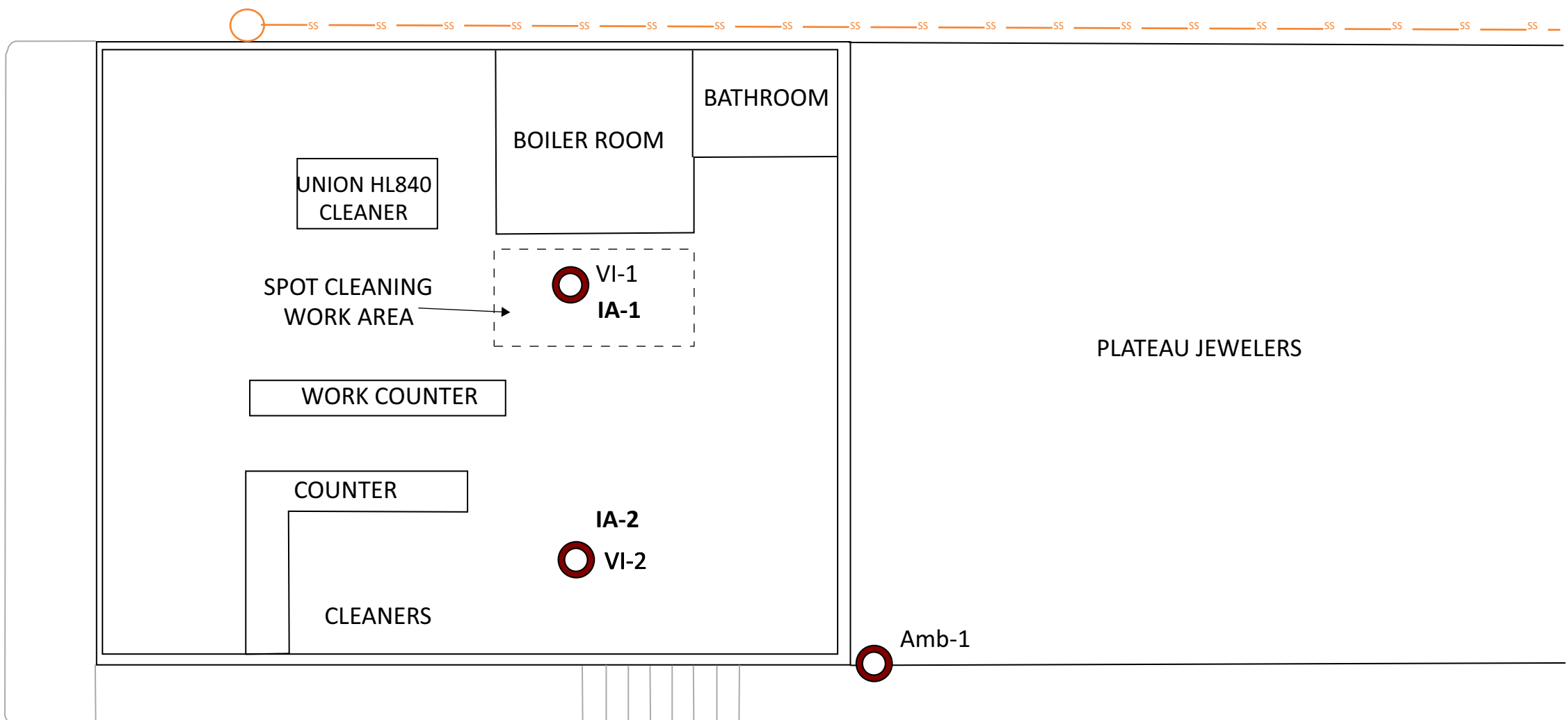
ve = the analyte response exceeded instrument calibration range. The value reported is an estimate.





LEGEND

-  PROPERTY BOUNDARY
-  PINE LAKE CLEANERS
-  CATCH BASIN
-  STORMWATER LINE
-  STORMWATER ACCESS
-  VEGETATED SWALE
-  SANITARY SEWER LINE
-  SANITARY SEWER PUMP



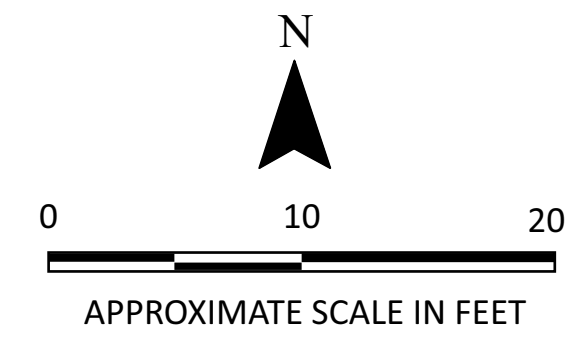


LEGEND

-  INDOOR AIR SAMPLE LOCATION (UEP 2020)
- VI-1
-  SANITARY SEWER LINE

PCE: TETRACHLOROETHYLENE
 TCE: TRICHLOROETHYLENE
 ND: NON-DETECT (ALL LABORATORY NON-DETECT REPORTING LIMITS ARE LESS THAN APPLICABLE SCREENING OR CLEANUP LEVELS.)
 NA: NOT ANALYZED
RED DENOTES COMPOUND EXCEEDS APPLICABLE CLEANUP LEVELS FOR UNRESTRICTED LAND USE. SAMPLE CONCENTRATIONS PRESENTED IN MICROGRAMS PER CUBIC METER (UG/M³)

MTCIA INDOOR AIR CLEANUP LEVELS	PCE	TCE
METHOD B UNRESTRICTED LAND USE	9.6	0.33
METHOD C COMMERCIAL/INDUSTRIAL	40	2.0



**Attachment A: No Further Action Determination Letter
(December 28, 2022)**

Department of Ecology



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

December 28, 2022

Bryan Syrdal
Pine Lake Cleaners
2001 Western Avenue, Suite 330
Seattle, WA 98121

Re: No Further Action opinion for the following contaminated Site

Site name: Pine Lake Cleaners
Site address: 2830 228th Ave SE Sammamish WA 98075
Facility/Site ID: 43185526
Cleanup Site ID: 15257
VCP Project ID: XN0013

Dear Bryan Syrdal:

The Washington State Department of Ecology (Ecology) received your recorded environmental covenant and request for opinion on December 12, 2022, regarding the sufficiency of your independent cleanup of the Pine Lake Cleaners facility (Site) under the expedited Voluntary Cleanup Program (VCP). This letter provides our opinion and analysis. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter [70A.305](#) RCW.¹

Opinion

Ecology has determined that no further remedial action is necessary to clean up contamination at the Site.

This opinion depends on the continued performance and effectiveness of the post-cleanup controls and monitoring specified in this letter and in the environmental covenant (EC) in **Enclosure B**.

¹ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305>

Ecology bases this opinion on an analysis of whether the remedial action meets the substantive requirements of MTCA and its implementing regulations, which are specified in Chapter 70A.305 RCW and Chapter [173-340](#) WAC² (collectively called “MTCA”).

Site Description

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release(s):

- Tetrachloroethene (PCE) and trichloroethene (TCE) into the soil and potentially air.

Enclosure A includes Site description, history, and diagrams.

Please note a parcel of real property can be affected by multiple sites. At this time, Ecology has no information suggesting that the parcel associated with this Site may be affected by another site.

Basis for the Opinion

Ecology bases this opinion on the information contained in the following documents:

- Ecology. Letter re Opinion on Proposed Cleanup of the following Site: 1305 Tacoma Avenue South. March 11, 2022.
- Urban Environmental Partners. *Focused Phase II Assessment Report, Pine Lake Dry Cleaners Facility*. October 30, 2018.
- Urban Environmental Partners. *Remedial Investigation/Feasibility Study and Cleanup Action Plan, Pine Lake Cleaners*. November 14, 2021.

You can request these documents by filing a [records request](#).³ For help making a request, contact the Public Records Officer at recordsofficer@ecy.wa.gov or call (360) 407-6040. Before making a request, check whether the documents are available at <https://apps.ecology.wa.gov/cleanupsearch/site/15257>.

This opinion is void if any of the information contained in the documents is materially false or misleading.

² <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340>

³ <https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests>

Analysis of the Cleanup

Ecology has concluded that no further remedial action is necessary to clean up contamination at the Site. Ecology bases its conclusion on the following analysis:

Characterizing the Site

Ecology has determined your completed Site characterization is sufficient for setting cleanup standards and selecting a cleanup action. Enclosure A describes the Site.

Site Contaminants

PCE and TCE were found in soil at concentrations above MTCA cleanup levels in soil. Potential vapor intrusion into indoor air is also a concern at the Site.

Soil Characterization

The extent of soil contamination appears to be sufficiently defined for the selection of cleanup levels and cleanup actions at the Site. A total of 17 soil samples were collected from nine (9) locations, at depths ranging from one (1) to 20 feet below ground surface (ft bgs) in 2018 and 2021. The deepest detection of Site contaminants was at three (3) ft bgs. Deeper soil sampling via angle drilling beneath the existing structure at depths of 16 and 20 ft bgs did not indicate the presence of site contaminants above detection limits.

Groundwater Characterization

Groundwater was estimated within the RI/FS/CAP Report to be at a depth of at least 110 ft bgs, based on the occurrence of groundwater in eight (8) water well/boring locations in the area. At Ecology's request, a temporary monitoring point was installed to the west and downslope of the dry cleaners. No groundwater was found in the temporary monitoring point to a depth of 65 ft bgs. A two (2) inch thick seam of wet soil was found at 12 ft bgs. A soil sample was collected from this potentially saturated interval and no contaminants were detected. The soil data from beneath the dry cleaners coupled with the lack of groundwater encountered to a depth of 65 ft bgs indicated that impacts to groundwater from the release at this dry cleaners site is highly unlikely.

Soil Vapor Characterization

Soil vapor was characterized first through a passive soil gas survey in 2018, followed by collection of 27 soil vapor samples from 22 locations between 2018 and 2021. PCE and TCE were detected in sub-slab soil vapor samples at concentrations exceeding MTCA screening levels, with a maximum PCE concentration of 30,000 micrograms per cubic-meter ($\mu\text{g}/\text{m}^3$) and a maximum TCE concentration of 192 $\mu\text{g}/\text{m}^3$. The TCE in sub-slab vapors was attributed within

the RI Report to the use of a TCE-based spot cleaner as opposed to dehalogenation of the PCE that was used for dry cleaning.

Indoor Air Characterization

Indoor air was characterized by collection of 15 indoor air samples from five (5) locations in 2020 and 2021. One detection of TCE at 0.41 µg/m³ at location IA-1 was slightly above the unrestricted indoor air cleanup level of 0.33 µg/m³, but was not detected in samples from two subsequent sampling rounds at IA-1. This TCE detection was attributed within the RI Report to residual TCE within the structure from the spot cleaning activities rather than from the dry-cleaning system release impacting soils beneath the facility. This conclusion was supported by PCE to TCE concentration ratio data (the ratio of PCE/TCE in sub-slab vapor to indoor air was much higher than the ratio of PCE/TCE in sub-slab vapor to indoor air). The residual TCE inside the structure was expected to attenuate.

The maximum indoor air PCE concentration of 7.9 µg/m³ was slightly below the unrestricted land use-based cleanup level of 9.6 µg/m³, but well below the commercial land use-based cleanup level of 34 µg/m³. Continued indoor air monitoring is warranted to ensure that PCE concentrations in indoor air are still below cleanup levels to further verify that the one TCE detection in indoor air was unrelated to sub-slab soil vapors (no continued detections of TCE in indoor air should occur).

Setting Cleanup Standards

Ecology has determined the cleanup levels and points of compliance presented below meet the substantive requirements of MTCA. The following cleanup levels and screening levels have been selected for the Site:

Table 1 – Cleanup Levels and Screening Levels

Contaminant	Method A Soil Cleanup Level (mg/kg)	Method A Groundwater Cleanup Level (µg/L)	Indoor Air Cleanup Level (µg/m ³)
PCE	0.05 ¹	5 ¹	9.6 ² , 34 ⁴
TCE	0.03 ¹	5 ¹	0.33 ⁵

- 1 – Method A cleanup level.
- 2 – Method B cleanup level, cancer, unrestricted land use.
- 3 – Method B cleanup level, non-cancer, unrestricted land use.
- 4 – Method B cleanup level, cancer, commercial land use.
- 5 – Method B early life exposure, unrestricted land use.

The selected cleanup levels are all for unrestricted land use except for the cleanup level for PCE in indoor air of 34 µg/m³, which is based on a commercial scenario.

Points of Compliance

As discussed above, the points of compliance are throughout the Site. The Method A cleanup levels for soil are based on the soil-to-groundwater pathway and thus apply without consideration to depth.

Terrestrial Ecological Evaluation (TEE)

The Site has significant forested open space to the north; therefore, TEE process cannot be ended based on completion of MTCA Table 749-1. However, exposure by ecological receptors to contaminated soil is not viable since contamination is all located beneath the concrete slab of the shopping center structure. Should the structure be removed in the future, then the TEE pathway could apply; however, cleanup of all soil contamination will be expected once the structure is no longer present.

Selecting the cleanup action

Ecology has determined the cleanup action you selected for the Site meets the substantive requirements of MTCA. Cleanup of the contaminated soil beneath the structures is not practicable at this time because of these structures preventing access to the contamination. Hence, recording of an Ecology-signed EC and continued indoor air monitoring was considered by Ecology within our NFA Likely letter dated March 11, 2022, to be an appropriate approach to prevent exposure to contaminated soils until they can be cleaned up in the future. Contingency plans in case of indoor air monitoring resulting in contaminant concentrations above MTCA cleanup levels were also discussed within that letter.

Implementing the cleanup action

Ecology has determined your cleanup meets the standards set for the Site. This determination depends on the continued performance and effectiveness of the post-cleanup controls and monitoring specified in this letter. A copy of the signed and recorded EC is provided in Enclosure B.

The EC includes (but is not limited to) the following provisions:

Containment of Soil and Soil Gas below the Dry Cleaners Facility. The final remedial action for the Property is based on containing contaminated soil and soil gas under a cap consisting of an existing continuous (no expansion joints) 6-inch thick concrete floor and underlying plastic moisture barrier located across the entire dry cleaner facility, as illustrated in Exhibit C. The concrete floor and moisture barrier are referred to collectively as the "cap." The primary

purpose of the cap is to prevent direct contact and vapor intrusion. As such, the following restrictions shall apply within the area illustrated in Exhibit C.

- *Any activity on the Property that will compromise the integrity of the cap (including drilling; digging; piercing the cap with sampling device, post, stake or similar device; grading; excavation; installation of underground utilities; removal of the cap; or application of loads in excess of the cap load bearing capacity) is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.*
- *The Grantor shall not alter or remove the existing structures on the Property in any manner that would expose contaminated soil, result in a release to the environment of contaminants, or create a new exposure pathway, without prior written approval of Ecology. Should the Grantor propose to remove all or a portion of the existing structures illustrated in Exhibit C so that access to the underlying contamination is feasible, Ecology may require treatment or removal of the underlying contaminated soil.*
- *The Grantor covenants and agrees that it shall perform vapor intrusion monitoring and barrier inspections in accordance with the protocols and schedule in the Vapor Intrusion Sampling Plan and Barrier Inspection Work Plan attached as Exhibit D.*
- *Subslab vapor probes and indoor locations are located on the Property to monitor the performance of the remedial action. The Grantor shall maintain clear access to these devices and protect them from damage. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to any monitoring device. Unless Ecology approves of an alternative plan in writing, the Grantor shall promptly repair the damage and submit a report documenting this repair work to Ecology within thirty (30) days of completing the repairs.*

The EC attaches a Vapor Intrusion (VI) Sampling Plan and Barrier Inspection Work Plan dated May 12, 2022 which stipulates the required continued indoor air monitoring and also includes contingency plans in case of indoor air cleanup level exceedances. The contingency measures following any indoor air cleanup level exceedances would include:

- Reinspect the concrete floor surfaces and inventory the space.
- Design and install a sub-slab depressurization system (SSDS) in the former cleaner space.

- Perform 2 rounds (separate events) of indoor air sampling in accordance with the plan.

Periodic review of post-cleanup conditions

Ecology will conduct periodic reviews of post-cleanup conditions at the Site to evaluate whether they remain protective of human health and the environment. Based on a periodic review, if Ecology determines the Site needs further remedial action, Ecology will rescind this opinion. The first periodic review is anticipated to take place five (5) years from this letter (in 2027).

Listing of the Site

Based on this opinion, Ecology will initiate the process of removing the Site from its lists of contaminated sites, including the:

- Confirmed and Suspected Contaminated Sites List

Limitations of the Opinion

Opinion does not settle liability with the state

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW [70A.305.040](#)(4).⁴

Opinion does not constitute a determination of substantial equivalence

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. See RCW [70A.305.080](#)⁵ and WAC [173-340-545](#).⁶

⁴ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.040>

⁵ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.080>

⁶ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-545>

Bryan Syrdal
December 28, 2022
Page 8

State is immune from liability

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. See RCW [70A.305.170](#)(6).⁷

Questions

If you have any questions about this opinion, please contact me by phone at (509) 424-0543 or email at frank.winslow@ecy.wa.gov.

Sincerely,



Frank P. Winslow, LHG
Cleanup Site Manager
Headquarters Section

fpw:af

Enclosures: A – Site Description and Diagrams
 B – Recorded Environmental Covenant

cc: John Funderburk, Urban Environmental Partners LLC
 Roy Kuroiwa, Urban Environmental Partners LLC

⁷ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.170>

Enclosure A

Site Description and Diagrams

Site Description

Site: The Site is defined by PCE and TCE in soil and potentially air. The Site is associated with releases from a former dry cleaners located at 2830 228th Avenue SE Sammamish, Washington.

Area and Property Description: The dry cleaners facility was located at 2830 228th Avenue SE in Sammamish, Washington. The facility is on King County parcel #1024069111, a 0.70-acre rectangular commercial property. The Property has a one-story shopping center structure which includes five other commercial operations. The Property is surrounded by other commercial properties to the east and south, a single-family residential area to the northeast, an apartment complex to the west across 228th Avenue SE, and a forested area to the north.

Site History: The dry-cleaning business has operated from 1990, when the shopping center structure was constructed to present. The use of PCE as a dry-cleaning solvent and TCE for spot cleaning was reportedly discontinued in 2019.

Other commercial tenants are present within the shopping center; however, no indications of contamination concerns at these other facilities have been identified by Ecology during our review of the Site.

Sources of Contamination: Releases of the dry-cleaning solvent PCE to soil occurred from the former dry-cleaning operation and releases of TCE reportedly likely occurred due to the former use of a TCE-containing spot remover. As discussed above, the use of PCE and TCE at the Site was reportedly discontinued in 2019.

Physiographic Setting: The Site is located in Sammamish, Washington, approximately 1,360 feet east of Pine Lake, an approximately 75-acre lake. The Site is in an area of undulating glacial terrain within the Puget Lowland Physiographic Province. The Site is at an elevation of approximately 435 feet above mean sea level (ft amsl). The area surrounding the Site slopes to the west and north, with 228th Avenue SE located at an elevation approximately ten (10) feet lower than the dry cleaners.

Surface/Storm Water: Pine Lake is the nearest mapped surface water body to the Site. Stormwater at the Site is expected to generally flow to the north and west. Approximately 300 feet north of the Site a drainage feature flows to the northeast to a low area, mapped as a wetland, located approximately 1,300 Feet northeast of the Site.

Ecological Setting: The Site has significant forested open space to the north; therefore, TEE process cannot be ended based on completion of MTCA Table 749-1. However, exposure by ecological receptors to contaminated soil is not viable since contamination is all located beneath the concrete slab of the shopping center structure. Should the structure be removed in the future, then the TEE pathway could apply; however, cleanup of all soil contamination will be expected once the structure is no longer present.

Geology: The following geological description is from the RI/FS/CAP report:

The Geologic Map of King County (Booth et al. 2007) indicates that the Property is underlain by approximately 120 feet of Vashon till. These glacially compacted deposits consist of a very dense mixture of silt, sand, gravel, and clay, which typically are characterized by relatively low vertical hydraulic conductivity. The Property is in the Sammamish glacial plateau, which is also characterized by glacial deposits of silts and sands and Vashon drift deposits including compacted sand, silt, and gravel (Vashon glacial till).

Underlying the Vashon glacial till is the Vashon advance outwash characterized by well sorted, well-stratified sandy pebble to cobble gravel. The building and concrete slab were constructed with a sandy silt subbase (reworked local till) that is approximately 2 to 3 feet thick.

Groundwater: Groundwater at the Site was estimated within the RI/FS/CAP report at a depth of greater than 110 feet, based on water levels reported in eight (8) water supply well/boring logs in the area. Other than 2-inch seam of apparent saturation, no potential groundwater conditions were encountered to a depth of 65 ft bgs at the Site. Ecology notes that Pine Lake (located 1,200 feet west of the Site) is at an elevation approximately 54 feet below the elevation of the Site. However, the thick and highly compacted nature of the Vashon till in this area may mean that there is a lack of regional interconnectivity between groundwater and Pine Lake.

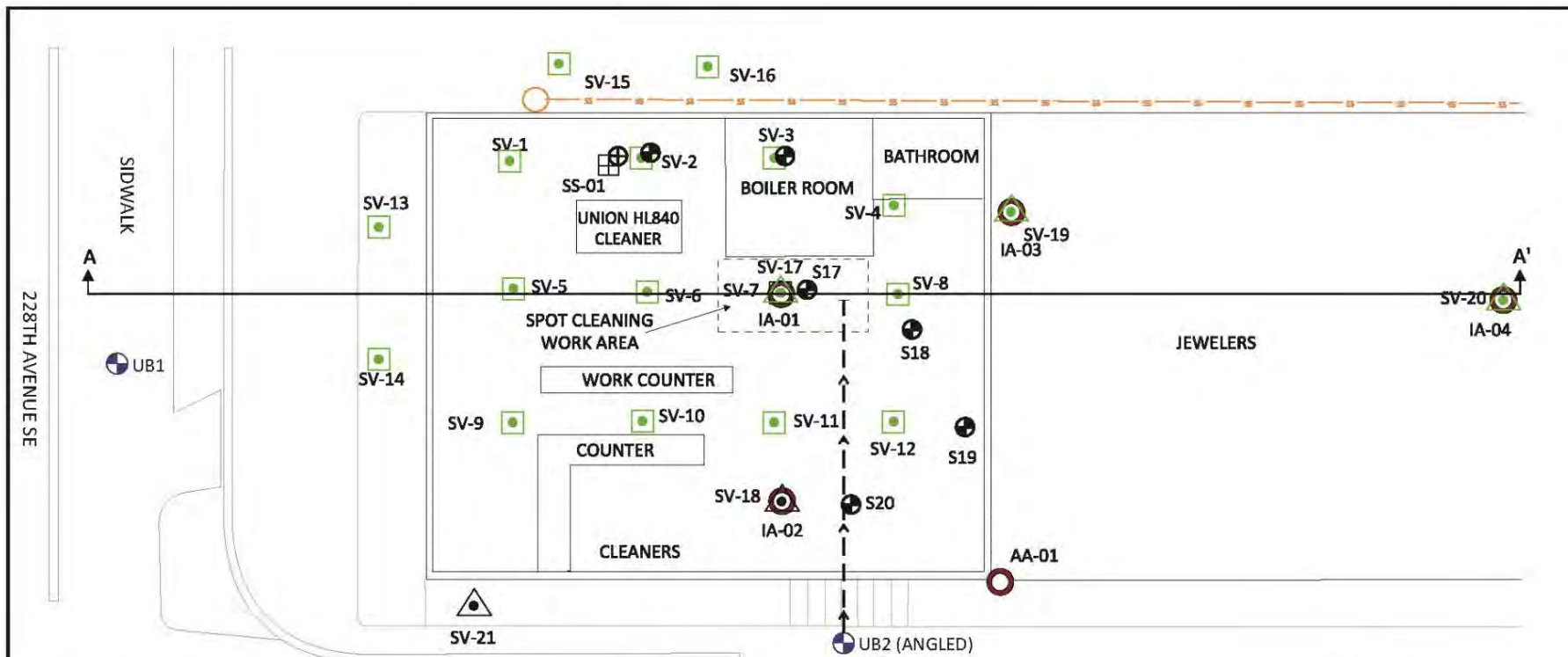
Water Supply: Potable water is provided to the Property by the City of Sammamish. The nearest Group A/B wells are located approximately 1,000 feet to the northwest and southwest of the Site. The nearest wellhead protection zone is located approximately 3,600 feet east-southeast of the Site. Risks to water supply wells from the Site are unlikely.

Extent of Contamination: The extent of soil and soil vapor contamination has been generally defined through investigations conducted at the Site between 2018 and 2021. The extent of soil and soil vapor contamination has been sufficiently defined to identify cleanup levels and proposed cleanup actions discussed herein.










The maximum vertical extent of soil contamination appears to be between three (3) and 16 ft bgs (the upper depth determined via hand auguring and the lower depth determined via angle drilling). A more refined vertical depth of contamination does not appear to be achievable at this time due to the hard nature of the till materials and the inability of drilling equipment to access the area of contamination.

The lateral extent of soil and soil vapor contamination appears to be largely confined to within the building footprint. In the future, when the structure is no longer present and the soil contamination can be cleaned up, both the vertical and lateral extent of contamination will need to be confirmed. This could be done via confirmation removal of contaminated soil.

Site Diagrams



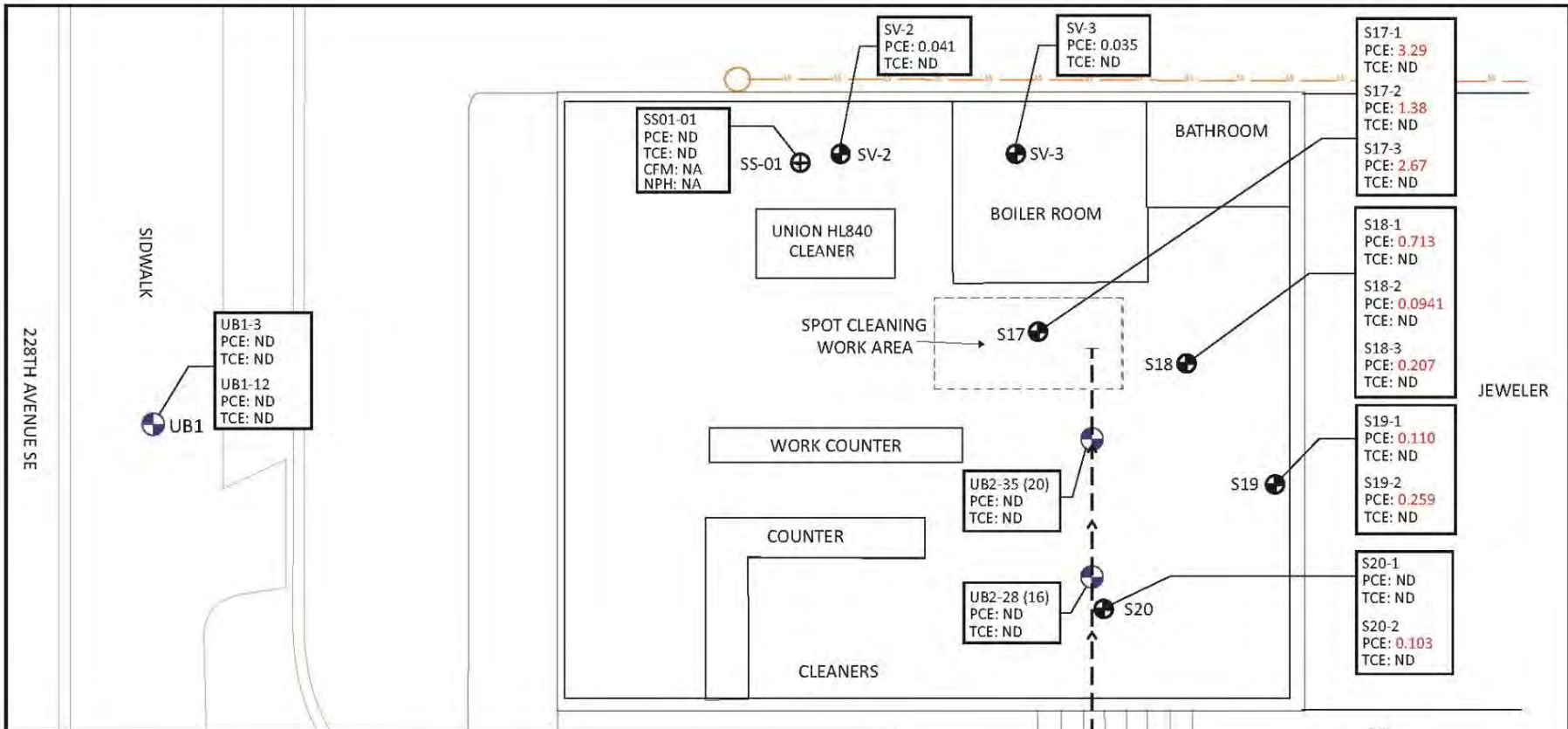
LEGEND

- | | | | |
|---|--|---|--|
|  | SOIL SAMPLE (UEP 2021) |  | SOIL SAMPLE LOCATION (SOUNDEARTH 2018) |
|  | SUB-SLAB VAPOR SAMPLE LOCATION (SOUNDEARTH 2018) |  | SOIL SAMPLE LOCATION (UEP 2018) |
|  | GORE-SORBER SUB-SLAB SAMPLE LOCATION (UEP 2018) |  | SANITARY SEWER LINE |
|  | SUB-SLAB VAPOR SAMPLE LOCATION (UEP/PTC 2020/2021) |  | CROSS SECTION |
|  | INDOOR AIR SAMPLE LOCATION (UEP/PTC 2020/2021) | | |

Urban Environmental Partners IIc
 Diligent, responsive, and practical consulting

Pine Lake Cleaners
 2830 228th Avenue Southeast
 Sammamish, Washington

Figure 5
 Site Plan - Sample Locations



LEGEND

- UB1 SOIL SAMPLE (UEP 2021)
 - SS-01 SOIL SAMPLE LOCATION (SOUNDEARTH 2018)
 - SV-3 SOIL SAMPLE LOCATION (UEP 2018)
 - SANITARY SEWER LINE
- PCE: TETRACHLOROETHYLENE
TCE: TRICHLOROETHYLENE
ND: NON-DETECT (ALL LABORATORY NON-DETECT REPORTING LIMITS ARE LESS THAN APPLICABLE SCREENING OR CLEANUP LEVELS.)
NA: NOT ANALYZED
RED DENOTES COMPOUND EXCEEDS APPLICABLE CLEANUP LEVELS FOR UNRESTRICTED LAND USE. SAMPLE CONCENTRATIONS PRESENTED IN MILLIGRAMS PER KILOGRAM (MG/KG)

	PCE	TCE
MTCA METHOD A CLEANUP LEVELS (MG/KG)	0.05	0.03
MTCA METHOD B CLEANUP LEVELS (MG/KG)	480	12



Pine Lake Cleaners
2830 228th Avenue Southeast
Sammamish, Washington

Figure 9
Soil Sampling Results

228TH AVENUE SE

SIDWALK

UB1-3
PCE: ND
TCE: ND
UB1-12
PCE: ND
TCE: ND
UB1

SS01-01
PCE: ND
TCE: ND
CFM: NA
NPH: NA
SS-01

UNION HL840
CLEANER

SV-2
PCE: 0.041
TCE: ND

SV-3
PCE: 0.035
TCE: ND

BATHROOM

BOILER ROOM

S17-1
PCE: 3.29
TCE: ND
S17-2
PCE: 1.38
TCE: ND
S17-3
PCE: 2.67
TCE: ND

SPOT CLEANING
WORK AREA

S18

S18-1
PCE: 0.713
TCE: ND
S18-2
PCE: 0.0941
TCE: ND
S18-3
PCE: 0.207
TCE: ND

WORK COUNTER

S19

S19-1
PCE: 0.110
TCE: ND
S19-2
PCE: 0.259
TCE: ND

COUNTER

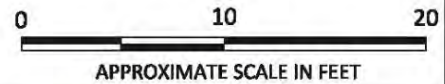
UB2-35 (20)
PCE: ND
TCE: ND
UB2-28 (16)
PCE: ND
TCE: ND

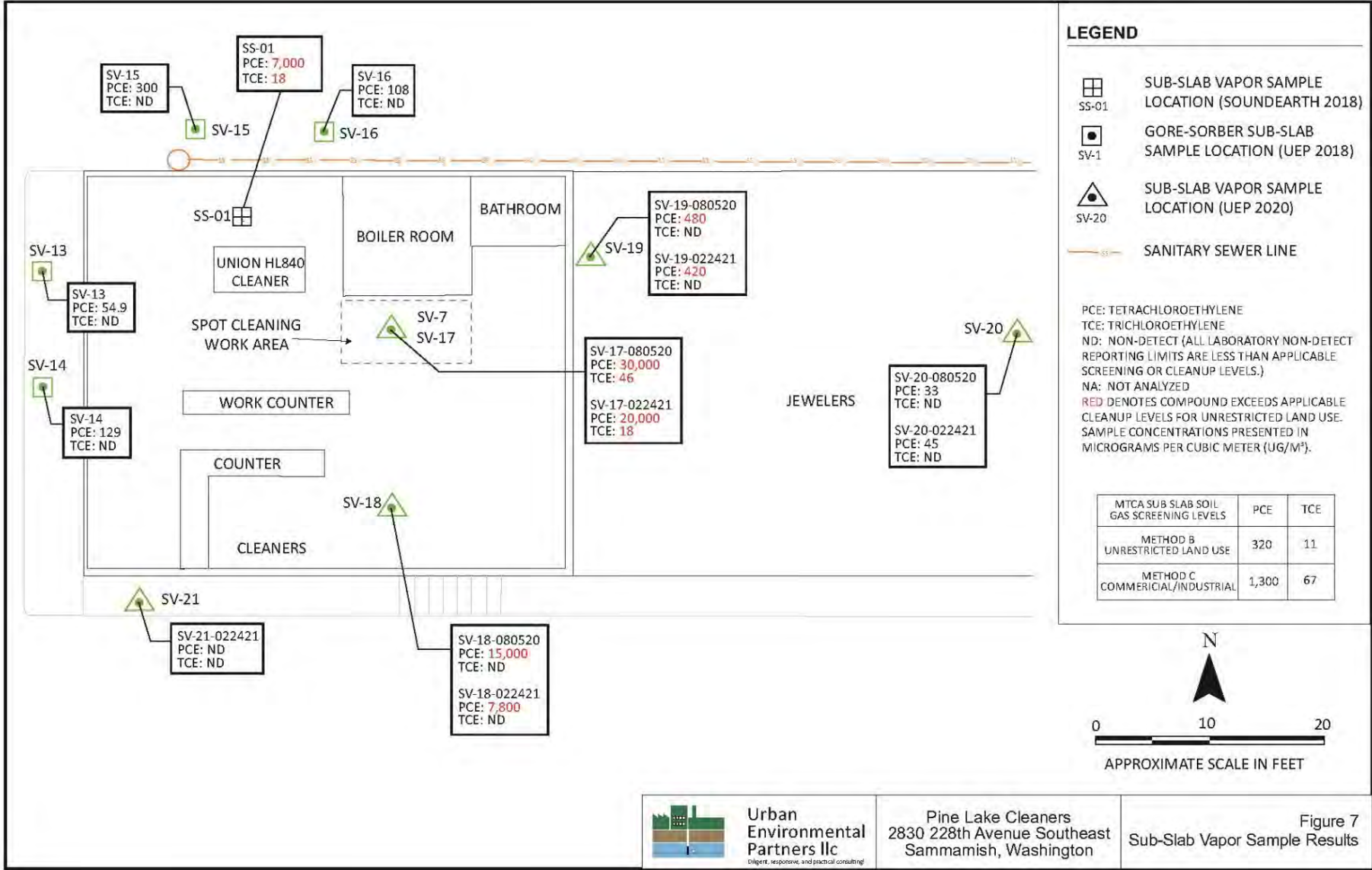
UB2 (ANGLED)

S20-1
PCE: ND
TCE: ND
S20-2
PCE: 0.103
TCE: ND

CLEANERS

JEWELER





SV-15
PCE: 300
TCE: ND

SS-01
PCE: 7,000
TCE: 18

SV-16
PCE: 108
TCE: ND

SV-19-080520
PCE: 480
TCE: ND

SV-19-022421
PCE: 420
TCE: ND

SV-17-080520
PCE: 30,000
TCE: 46

SV-17-022421
PCE: 20,000
TCE: 18

SV-20-080520
PCE: 33
TCE: ND

SV-20-022421
PCE: 45
TCE: ND

SV-18-080520
PCE: 15,000
TCE: ND

SV-18-022421
PCE: 7,800
TCE: ND

SV-21-022421
PCE: ND
TCE: ND

SV-13
PCE: 54.9
TCE: ND

SV-14
PCE: 129
TCE: ND

BATHROOM

BOILER ROOM

UNION HL840 CLEANER

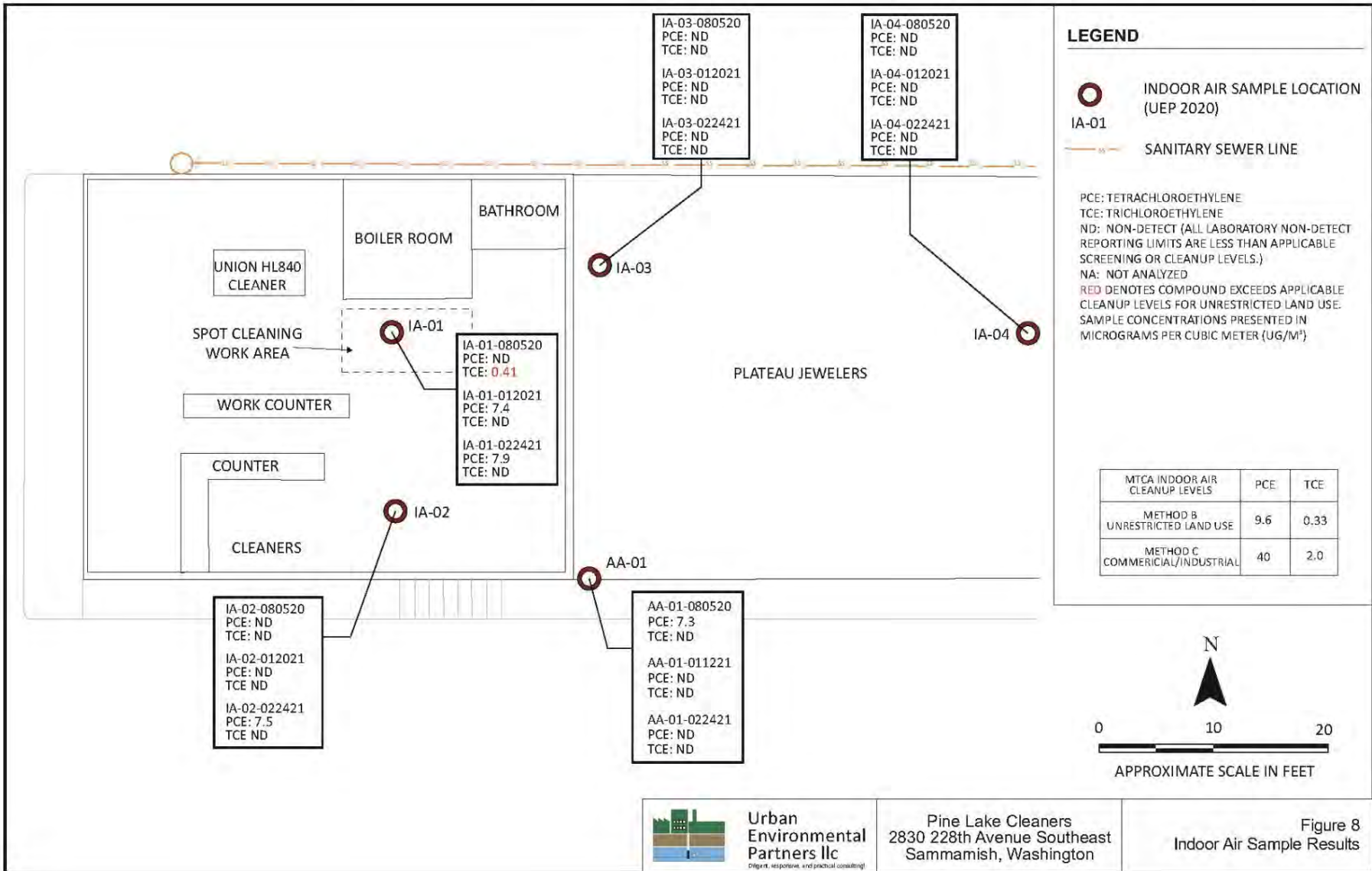
SPOT CLEANING WORK AREA

WORK COUNTER

COUNTER

CLEANERS

JEWELERS



IA-03-080520
PCE: ND
TCE: ND

IA-03-012021
PCE: ND
TCE: ND

IA-03-022421
PCE: ND
TCE: ND

IA-04-080520
PCE: ND
TCE: ND

IA-04-012021
PCE: ND
TCE: ND

IA-04-022421
PCE: ND
TCE: ND

IA-01-080520
PCE: ND
TCE: 0.41

IA-01-012021
PCE: 7.4
TCE: ND

IA-01-022421
PCE: 7.9
TCE: ND

IA-02-080520
PCE: ND
TCE: ND

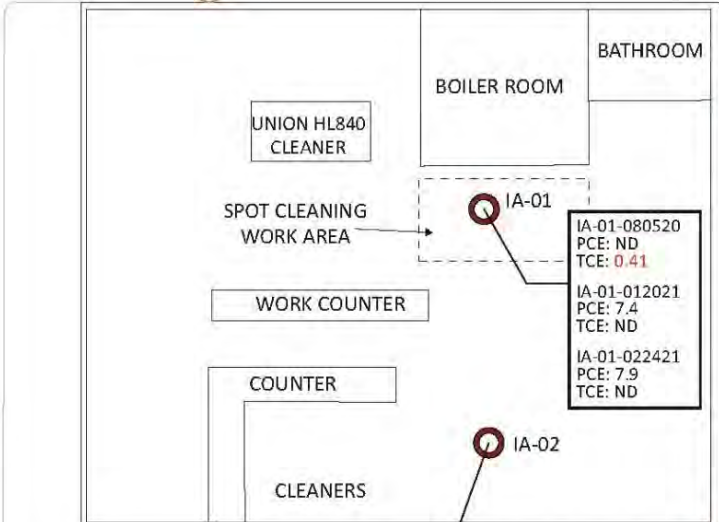
IA-02-012021
PCE: ND
TCE: ND

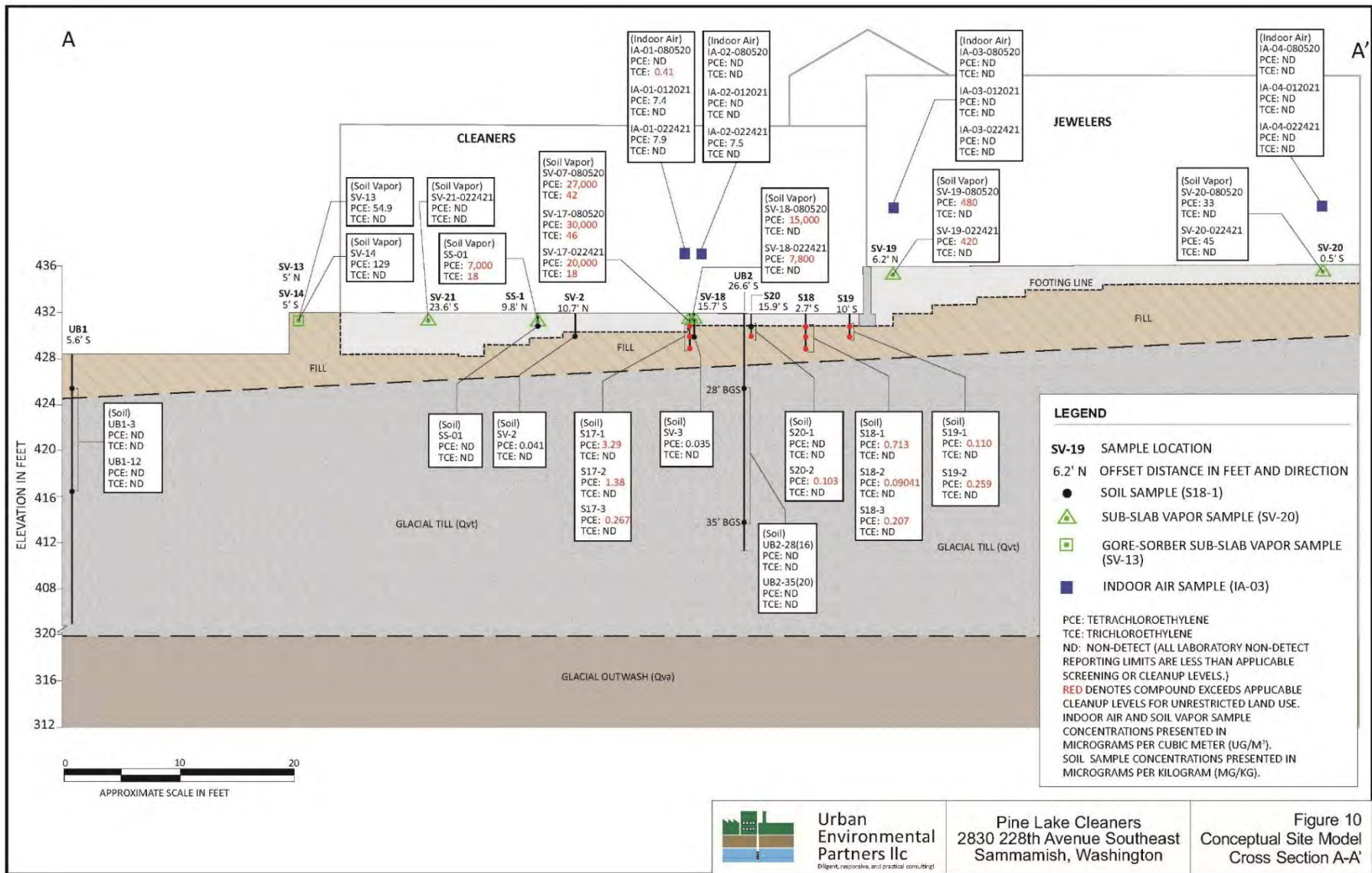
IA-02-022421
PCE: 7.5
TCE: ND

AA-01-080520
PCE: 7.3
TCE: ND

AA-01-011221
PCE: ND
TCE: ND

AA-01-022421
PCE: ND
TCE: ND





Enclosure B

Recorded Environmental Covenant

CONFORMED COPY
20221208000482

COVENANT Rec: \$267.50
12/8/2022 1:44 PM
KING COUNTY, WA

Return Address:

Nicholas Acklam
ToxicSC Cleanup Program
Department of Ecology
300 Desmond DR, SE
Lacey, WA 98503

Please print or type information WASHINGTON STATE RECORDER'S Cover Sheet (RCW 65.04)

Document Title(s) (or transactions contained therein): (all areas applicable to your document must be filled in)

- 1. Environmental Covenant
- 2.
- 3.
- 4.

Reference Number(s) of Documents assigned or released:

Additional reference #'s on page _____ of document

Grantor(s) Exactly as name(s) appear on document

- 1. PL Platezu, LLC a Washington limited liability company
- 2.

Additional names on page _____ of document.

Grantee(s) Exactly as name(s) appear on document

- 1. State of Washington Department of Ecology
- 2.

Additional names on page _____ of document.

Legal description (abbreviated: i.e. lot, block, plat or section, township, range)

Parcel 1 of KC SP #58150330 REC #8912019002 TGW POR OF LOT 4 OF REV
KC SP #674172 REC #802251081 DAF BEG AT NE COR OF SD LOT 4

Additional legal is on page 1 of document.

Assessor's Property Tax Parcel/Account Number assigned

102406-9111

Assessor Tax # not yet

The Auditor/Recorder will rely on the information provided on this form. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

"I am signing below and paying an additional \$50 recording fee (as provided in RCW 36.18.010 and referred to as an emergency nonstandard document), because this document does not meet margin and formatting requirements. Furthermore, I hereby understand that the recording process may cover up or otherwise obscure some part of the text of the original document as a result of this request."

Barry O Zeln

Signature of Requesting Party

Note to submitter: Do not sign above nor pay additional \$50 fee if the document meets margin/formatting requirements

After Recording Return
Original Signed Covenant to:
Nicholas Acklam
Toxics Cleanup Program
Department of Ecology
300 Desmond Dr SE,
Lacey, WA 98503

Environmental Covenant

Grantor: PL Plateau, LLC, a Washington limited liability company

Grantee: State of Washington, Department of Ecology (hereafter "Ecology")

Brief Legal Description: PARCEL 1 OF KC SP #S89S0330 REC #8912019002 TGW POR OF LOT 4 OF REV KC SP #674172 REC # 8602251081 DAF - BEG AT NE COR OF SD LOT 4 TH N 88-10-06 W ALG N LN THOF 85 FT TH S 01-31-46 W 15 FT TH S 88-10-06 E 85 FT TO E LN OF SD LOT 4 TH N 01-31-46 E ALG SD E LN 15 FT TO POB - SD SHORT PLATS BEING LOCATED IN NW 1/4 OF SW 1/4 OF NW 1/4 OF SEC 10-24-6 - AKA LOT A OF KC LLA #S90M0091 REC #9101250623 LESS POR DEEDED TO KING COUNTY PER 20000315001003

Tax Parcel Nos.: 102406-9111

RECITALS

- a. This document is an environmental (restrictive) covenant (hereafter "Covenant") executed pursuant to the Model Toxics Control Act ("MTCA"), chapter 70.105D RCW, and Uniform Environmental Covenants Act ("UECA"), chapter 64.70 RCW.
- b. The Property that is the subject of this Covenant is part or all of a site commonly known as Pine Lake Cleaners (Facility/Site ID: 43185526; Cleanup Site ID: 15257; VCP Project ID: XN0013. The Property is legally described in Exhibit A, and illustrated in Exhibit B, both of which are attached (hereafter "Property"). If there are differences between these two Exhibits, the legal description in Exhibit A shall prevail.
- c. The Property is the subject of remedial action under MTCA. This Covenant is required because residual contamination remains on the Property after completion of remedial actions. Specifically, the following principal contaminants remain on the Property:

Medium	Principal Contaminants Present
Soil	Perchloroethylene (PCE) and trichloroethylene (TCE)
Soil Gas	Perchloroethylene (PCE) and trichloroethylene (TCE)
Groundwater	Not applicable
Surface Water/Sediment	Not applicable

- d. It is the purpose of this Covenant to restrict certain activities and uses of the Property to protect human health and the environment and the integrity of remedial actions conducted at the site. Records describing the extent of residual contamination and remedial actions conducted are available through Ecology. These include the following documents:

- Remedial Investigation/Feasibility Study & Cleanup Action Plan, Pine Lake Cleaners, UEP, November 14, 2021

- Vapor Intrusion (VI) Sampling Plan and Barrier Inspection Work Plan, Pine Lake Cleaners, UEP, May 12, 2022
- e. This Covenant grants Ecology, as holder of this Covenant, certain rights under UECA and as specified in this Covenant, and is not intended to be an ownership interest which equates to liability under MTCA or the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 *et seq.*

COVENANT

PL Plateau, LLC, a Washington limited liability company, as Grantor and fee simple owner of the Property hereby grants to the Washington State Department of Ecology, and its successors and assignees, (hereafter “Ecology”) the following covenants. Furthermore, it is the intent of the Grantor that such covenants shall supersede any prior interests the GRANTOR has in the property and run with the land and be binding on all current and future owners of any portion of, or interest in, the Property.

Section 1. General Restrictions and Requirements.

The following general restrictions and requirements shall apply to the Property:

- a. **Interference with Remedial Action.** The Grantor shall not engage in any activity on the Property that may impact or interfere with the remedial action and any operation, maintenance, inspection or monitoring of that remedial action without prior written approval from Ecology.
- b. **Protection of Human Health and the Environment.** The Grantor shall not engage in any activity on the Property that may threaten continued protection of human health or the environment without prior written approval from Ecology. This includes, but is not limited to, any activity that results in the release of residual contamination that was contained as a part of the remedial action or that exacerbates or creates a new exposure to residual contamination remaining on the Property.
- c. **Continued Compliance Required.** Grantor shall not convey any interest in any portion of the Property without providing for the continued adequate and complete operation, maintenance and monitoring of remedial actions and continued compliance with this Covenant.
- d. **Leases.** Grantor shall restrict any lease for any portion of the Property to uses and activities consistent with this Covenant and notify all lessees of the restrictions on the use of the Property.
- e. **Amendment to the Covenant.** Grantor must provide written notice and obtain approval from Ecology at least sixty (60) days in advance of any proposed activity or use of the Property in a manner that is inconsistent with this Covenant. Before approving any proposal, Ecology must issue a public notice and provide an opportunity for the public to comment on the proposal. If Ecology approves the proposal, the Covenant will be amended to reflect the change.

Section 2. Specific Prohibitions and Requirements.

In addition to the general restrictions in Section 1 of this Covenant, the following additional specific restrictions and requirements shall apply to the Property.

Containment of Soil and Soil Gas below the Dry Cleaners Facility. The final remedial action for the Property is based on containing contaminated soil and soil gas under a cap consisting of an existing continuous (no expansion joints) 6-inch thick concrete floor and underlying plastic

moisture barrier located across the entire dry cleaner facility, as illustrated in Exhibit C. The concrete floor and moisture barrier are referred to collectively as the “cap.” The primary purpose of the cap is to prevent direct contact and vapor intrusion. As such, the following restrictions shall apply within the area illustrated in Exhibit C.

- Any activity on the Property that will compromise the integrity of the cap (including drilling; digging; piercing the cap with sampling device, post, stake or similar device; grading; excavation; installation of underground utilities; removal of the cap; or application of loads in excess of the cap load bearing capacity) is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.
- The Grantor shall not alter or remove the existing structures on the Property in any manner that would expose contaminated soil, result in a release to the environment of contaminants, or create a new exposure pathway, without prior written approval of Ecology. Should the Grantor propose to remove all or a portion of the existing structures illustrated in Exhibit C so that access to the underlying contamination is feasible, Ecology may require treatment or removal of the underlying contaminated soil.
- The Grantor covenants and agrees that it shall perform vapor intrusion monitoring and barrier inspections in accordance with the protocols and schedule in the Vapor Intrusion Sampling Plan and Barrier Inspection Work Plan attached as Exhibit D.
- Subslab vapor probes and indoor locations are located on the Property to monitor the performance of the remedial action. The Grantor shall maintain clear access to these devices and protect them from damage. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to any monitoring device. Unless Ecology approves of an alternative plan in writing, the Grantor shall promptly repair the damage and submit a report documenting this repair work to Ecology within thirty (30) days of completing the repairs.

Section 3. Access.

- a. The Grantor shall maintain clear access to all remedial action components necessary to construct, operate, inspect, monitor and maintain the remedial action.
- b. The Grantor freely and voluntarily grants Ecology and its authorized representatives, upon reasonable notice, the right to enter the Property at reasonable times to evaluate the effectiveness of this Covenant and associated remedial actions, and enforce compliance with this Covenant and those actions, including the right to take samples, inspect any remedial actions conducted on the Property, and to inspect related records.
- c. No right of access or use by a third party to any portion of the Property is conveyed by this instrument.

Section 4. Notice Requirements.

- a. **Conveyance of Any Interest.** The Grantor, when conveying any interest within the area of the Property described and illustrated in Exhibits B and C, including but not limited to title, easement, leases, and security or other interests, must:

Provide written notice to Ecology of the intended conveyance at least thirty (30) days in advance of the conveyance.

- ii. Include in the conveying document a notice in substantially the following form, as well as a complete copy of this Covenant:

NOTICE: THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT GRANTED TO THE WASHINGTON STATE DEPARTMENT OF ECOLOGY ON [DATE] AND RECORDED WITH THE KING COUNTY AUDITOR UNDER RECORDING NUMBER [RECORDING NUMBER]. USES AND ACTIVITIES ON THIS PROPERTY MUST COMPLY WITH THAT COVENANT, A COMPLETE COPY OF WHICH IS ATTACHED TO THIS DOCUMENT.

- iii. Unless otherwise agreed to in writing by Ecology, provide Ecology with a complete copy of the executed document within thirty (30) days of the date of execution of such document.

b. Reporting Violations. Should the Grantor become aware of any violation of this Covenant, Grantor shall promptly report such violation in writing to Ecology.

c. Emergencies. For any emergency or significant change in site conditions due to Acts of Nature (for example, flood, fire) resulting in a violation of this Covenant, the Grantor is authorized to respond to such an event in accordance with state and federal law. The Grantor must notify Ecology in writing of the event and response actions planned or taken as soon as practical but no later than within 24 hours of the discovery of the event.

d. Any required written notice, approval, reporting or other communication shall be personally delivered or sent by first class mail to the following persons. Any change in this contact information shall be submitted in writing to all parties to this Covenant. As an alternative to providing written notice and change in contact information by mail, these documents may be provided electronically in an agreed upon format at the time of submittal.

PL Plateau, LLC 115 Dorffel Dr. East Seattle, WA 98112 Attn: P. Bryan Syrdal, Manager	Environmental Covenants Coordinator Washington State Department of Ecology Toxics Cleanup Program P.O. Box 47600 Olympia, WA 98504 – 7600 (360) 407-6000 ToxicsCleanupProgramHQ@ecy.wa.gov
--	---

Section 5. Modification or Termination.

a. If the conditions at the site requiring a Covenant have changed or no longer exist, then the Grantor may submit a request to Ecology that this Covenant be amended or terminated. Any amendment or termination of this Covenant must follow the procedures in MTCA and UECA and any rules promulgated under these chapters.

Section 6. Enforcement and Construction.

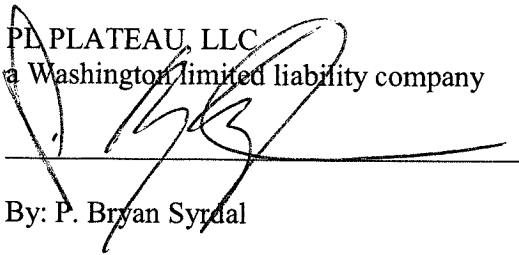
a. This Covenant is being freely and voluntarily granted by the Grantor.

- b.** Grantor shall provide Ecology with an original signed Covenant and proof of recording within ten (10) days of execution of this Covenant.
- c.** Ecology shall be entitled to enforce the terms of this Covenant by resort to specific performance or legal process. All remedies available in this Covenant shall be in addition to any and all remedies at law or in equity, including MTCA and UECA. Enforcement of the terms of this Covenant shall be at the discretion of Ecology, and any forbearance, delay or omission to exercise its rights under this Covenant in the event of a breach of any term of this Covenant is not a waiver by Ecology of that term or of any subsequent breach of that term, or any other term in this Covenant, or of any rights of Ecology under this Covenant.
- d.** The Grantor, upon request by Ecology, shall be obligated to pay for Ecology's costs to process a request for any modification or termination of this Covenant and any approval required by this Covenant.
- e.** This Covenant shall be liberally construed to meet the intent of MTCA and UECA.
- f.** The provisions of this Covenant shall be severable. If any provision in this Covenant or its application to any person or circumstance is held invalid, the remainder of this Covenant or its application to any person or circumstance is not affected and shall continue in full force and effect as though such void provision had not been contained herein.
- g.** A heading used at the beginning of any section or paragraph or exhibit of this Covenant may be used to aid in the interpretation of that section or paragraph or exhibit but does not override the specific requirements in that section or paragraph.

The undersigned Grantor warrants it holds the title to the Property and has authority to execute this Covenant.

EXECUTED this 29th day of September, 2022

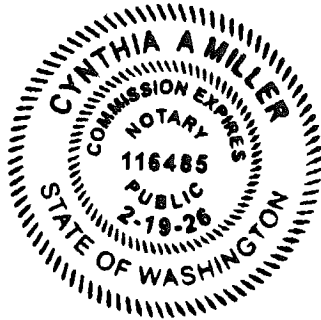
PL PLATEAU, LLC
a Washington limited liability company

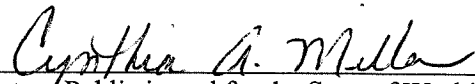

By: P. Bryan Syrdal

Title: Manager

STATE OF WASHINGTON
COUNTY OF KING

On this 29th day of September, 2022 I certify that P. Bryan Syrdal personally appeared before me, acknowledged that he is the Manager of PL Plateau, LLC, the limited liability company that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said limited liability company, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument for said corporation.




Notary Public in and for the State of Washington
Residing at Seattle, WA
My appointment expires 2/19/2026

The Department of Ecology, hereby accepts the status as GRANTEE and HOLDER of the above Environmental Covenant.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

NICHOLAS M. ACKLAM

by: [Signature]

Title: TCP SECTION MANAGER-HQ

Dated: 10/12/2022

STATE ACKNOWLEDGMENT

STATE OF Washington

COUNTY OF King

On this 12th day of October, 2022, I certify that Nicholas Acklam personally appeared before me, acknowledged that he is the Section Manager, TCP of the state agency that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument for said corporation.

[Signature]
Notary Public in and for the State of Washington

Residing at Olympia, WA

My appointment expires September 17, 2023

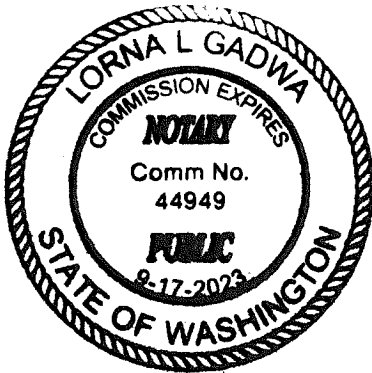


Exhibit A

LEGAL DESCRIPTION

PARCEL 1, KING COUNTY SHORT PLAT NO S89S0330, RECORDED UNDER RECORDING NUMBER 8912019002, AND THAT PORTION OF LOT 4, KING COUNTY SHORT PLAT NO 674172 (REVISED), RECORDED UNDER RECORDING NUMBER 8602251081, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID LOT 4,
THENCE NORTH 88°10'06" WEST ALONG THE NORTH LINE OF SAID LOT 4 A
DISTANCE OF
85.00 FEET;
THENCE SOUTH 0°31'46" WEST PARALLEL WITH THE WEST LINE OF SECTION 10,
TOWNSHIP 24
NORTH, RANGE 6 EAST, W.M., IN KING COUNTY, WASHINGTON, A DISTANCE OF
15.00 FEET,
THENCE SOUTH 88°10'06" EAST 85.00 FEET TO THE EAST LINE OF SAID LOT 4,
THENCE NORTH 01°31'46" EAST ALONG THE EAST LINE OF SAID LOT 4 A
DISTANCE OF 15.00
FEET TO BEGINNING;

(ALSO KNOWN AS LOT A OF KING COUNTY LOT LINE ADJUSTMENT NO. S90M0091,
RECORDED
UNDER RECORDING NUMBER 9101250623);

EXCEPT THE WEST 8 FEET THEREOF, AS CONVEYED TO KING COUNTY BY DEED
RECORDED UNDER
RECORDING NUMBER 20000315001003;

SITUATE IN THE CITY OF SAMMAMISH, COUNTY OF KING, STATE OF
WASHINGTON.

Exhibit B

PROPERTY MAP

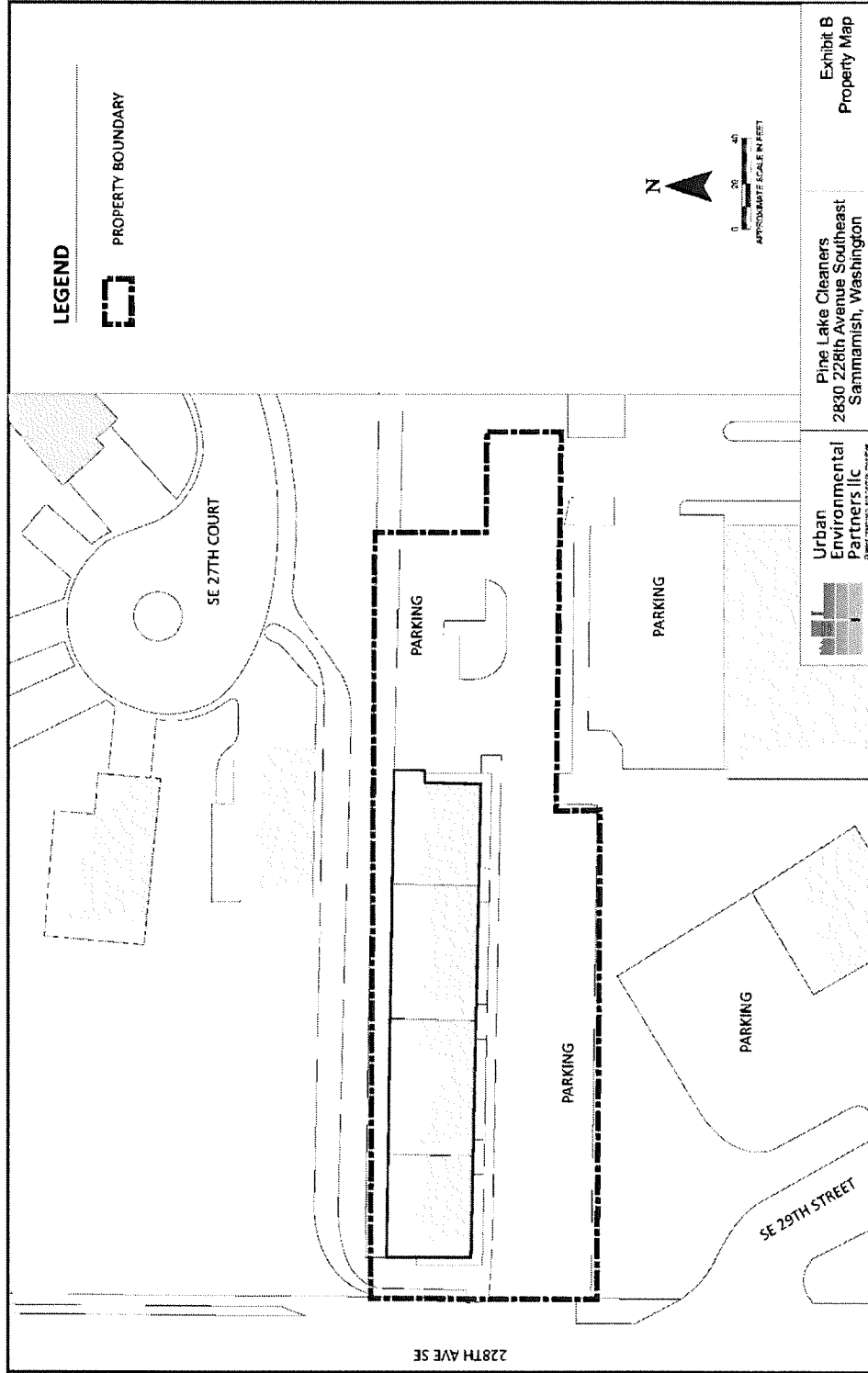


Exhibit C

MAP ILLUSTRATING LOCATION OF RESTRICTIONS

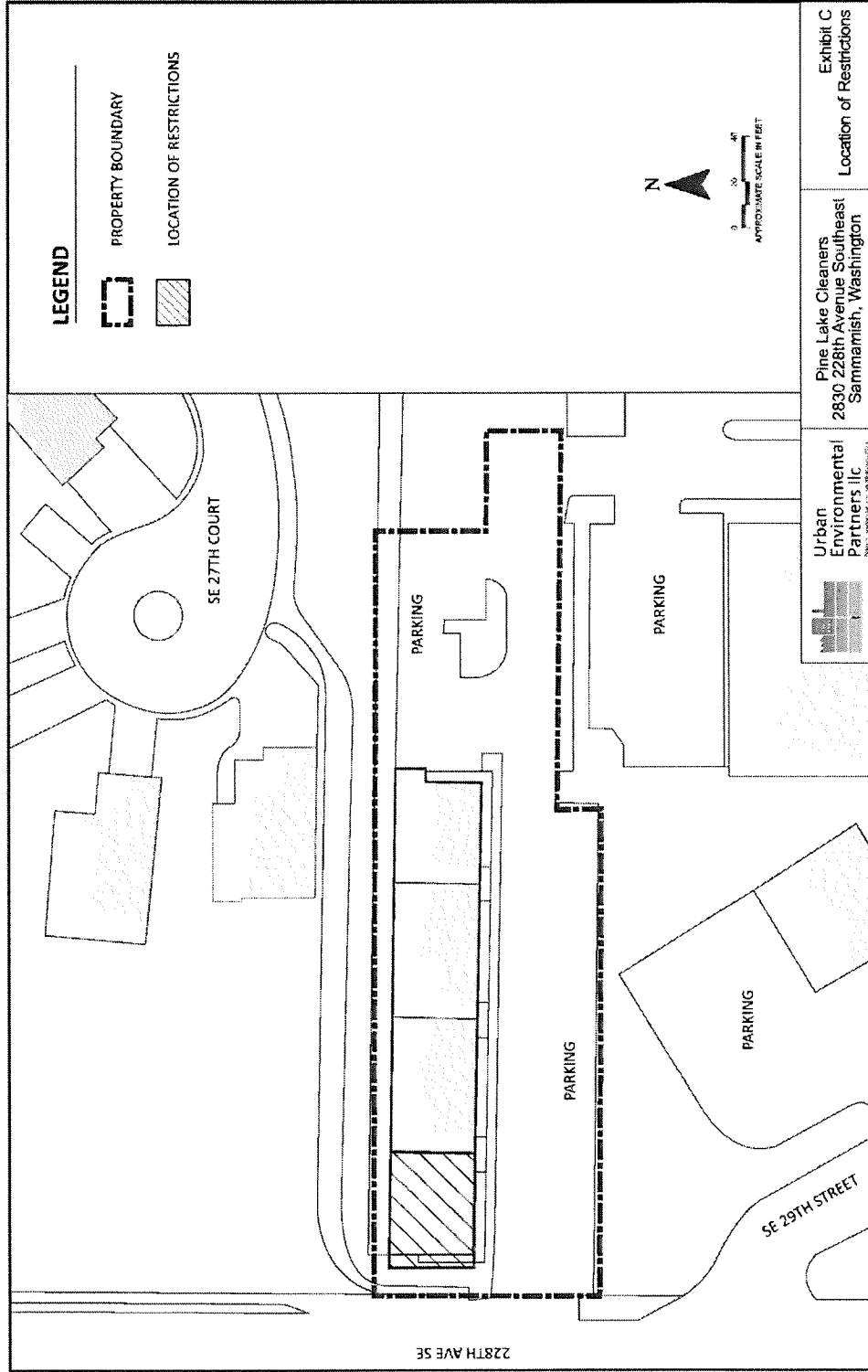
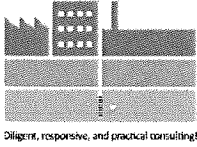


Exhibit D

VAPOR INTRUSION SAMPLING PLAN AND BARRIER INSPECTION WORK PLAN



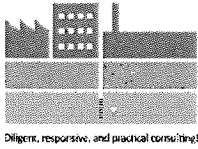
Urban Environmental Partners llc

Vapor Intrusion (VI) Sampling Plan and Barrier Inspection Work Plan

**Pine Lake Cleaners
2830 228th Avenue Southeast
Sammamish, WA 98075
VCP Project ID: XN0013**

**Prepared By:
Urban Environmental Partners llc
2324 First Avenue, Suite 203
Seattle, WA 98121**

**Report Date:
May 12, 2022**



Urban Environmental Partners llc

Professional Certification

This document was prepared under my direction. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that I was in responsible charge of the work performed for this document.



Roy Kuroiwa
Environmental Engineer
Washington P.E. Registration No. 32174

May 12, 2022

Date

Table of Contents

LIST OF ACRONYMS & ABBREVIATIONS..... III

1.0 INTRODUCTION 1

1.1. PURPOSE AND INTRODUCTION..... 1

1.2. SITE BACKGROUND AND LOCATION 2

1.3. REGULATORY CONTEXT 3

1.4. WORK PLAN ORGANIZATION..... 3

2.0 SUMMARY OF EXISTING RESULTS 4

2.1. VAPOR INTRUSION PATHWAY..... 4

2.1.1. *Current COPCs for the VI Pathway*..... 4

2.1.2. *SLs for the VI Pathway*..... 4

2.1.3. *Historic Subslab Soil Gas Sampling Results*..... 4

2.1.4. *Historic Indoor Air Sampling Results*..... 5

3.0 VAPOR INTRUSION SAMPLING AND ANALYSIS PLAN..... 6

3.1. SAMPLING DESIGN AND SCHEDULE 6

3.2. SAMPLING ROLES AND RESPONSIBILITIES..... 8

3.3. FIELD SAMPLING PROCEDURES 8

3.3.1. *Preparation Activities Prior to Sample Collection*..... 8

3.3.2. *Sub-Slab Soil Gas Sampling*..... 9

3.3.3. *Indoor Air Sampling* 9

3.3.4. *Ambient Air Sampling*..... 9

3.3.5. *Pressure Gradient Measurements* 10

3.3.6. *Physical Barrier Inspection* 11

3.4. RECORDKEEPING 11

3.5. VI MONITORING CONTINGENCY PLAN 12

3.6. LABORATORY ANALYSES AND SAMPLE CONTAINERS 12

3.6.1. *Sample Labelling and Shipment*..... 12

3.6.2. *Chain-of-Custody Documentation* 13

4.0 QUALITY ASSURANCE PROJECT PLAN..... 14

4.1. FIELD QUALITY CONTROL SAMPLES 14

4.2. LABORATORY QUALITY CONTROL SAMPLES..... 14

4.3. LABORATORY TARGET REPORTING LIMITS..... 14

4.4. DATA QUALITY REVIEW AND VALIDATION 14

4.5. CORRECTIVE ACTION..... 15

5.0 REPORTING..... 16

6.0 REFERENCES 17

ATTACHMENTS

ATTACHMENT A: INDOOR AIR SAMPLING FLOW DIAGRAM (PROVIDED BY ECOLOGY)

ATTACHMENT B: VI MONITORING AND BARRIER INSPECTION FIELD FORMS

ATTACHMENT C: VAPOR PIN™ INSTALLATION AND SAMPLING SOPs

ATTACHMENT D: SUBSLAB SOIL GAS SAMPLING TRAIN INSTRUCTIONS

List of Acronyms & Abbreviations

Acronym	Explanation
APH	Air-phase Petroleum Hydrocarbons
bgs	Below ground surface
DCE	Dichloroethene
CFR	Code of Federal Regulations
CLARC	Cleanup Level and Risk Calculation
COPC	Constituent or Contaminant of Potential Concern
DRPH	Diesel Range Petroleum Hydrocarbons
EC	Environmental Covenant
Ecology	Washington State Department of Ecology
HVAC	Heating, Ventilation, and Air Conditioning
IA	Indoor Air
MTCA	Model Toxics Control Act
PCE	Tetrachloroethene
PID	Photoionization Detector
QAPP	Quality Assurance Project Plan
QC	Quality Control
SAP	Sampling and Analysis Plan
SL	Screening Level
SSSG	Subslab Soil Gas
TCE	Trichloroethene
UEP	Urban Environmental Partners llc
USEPA	United States Environmental Protection Agency
VCP	Voluntary Cleanup Program
VI	Vapor Intrusion
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

1.0 Introduction

1.1. PURPOSE AND INTRODUCTION

The purpose of this vapor intrusion (VI) Sampling Plan and Barrier Inspection Work Plan (Work Plan) is to present the plan for VI monitoring and associated laboratory testing and for existing barrier inspection that will provide data and information (e.g., multiple lines of evidence) to assess and document the Site's VI pathway. This Work Plan was prepared in general accordance with WAC 173-340-820 (Sampling and Analysis Plans) and Ecology guidance. The Site has no relevant (e.g., very deep) or impacted groundwater (RI/FS/CAP Pine Lake Cleaners, 11/14/21) therefore there is no Groundwater Compliance Monitoring Plan associated with this Site. As presented in the Site's Cleanup Action Plan, proposed monitoring elements for the continued protection from the VI pathway includes:

- Paired subslab soil gas and indoor air samples
- Concurrent ambient air samples
- Subslab, indoor and outdoor pressure and temperature readings, including barometric pressure
- Inspection and repairs, as necessary, to the existing ground-level concrete floor (barrier)
- Property specific Environmental Covenant (EC)

This Work Plan is focused on potential indoor air and human health exposures associated with the VI pathway since that is the primary pathway of potential concern for the site at this time. The data and information collected as part of this Work Plan will be used to determine: a) if the VI pathway presents an unacceptable risk for retailers and commercial workers at the Site; and b) contribute to the data needed to make a No Further Action (NFA) determination per the Site's Focused FS and Cleanup Action Plan.

This Work Plan also presents inspection and reporting details of the building's existing concrete floor slab, considered a critical physical barrier to the VI pathway. These barrier inspection measures are typical to ensure compliance with the VI pathway.

An inspection and monitoring schedule for both barrier and VI monitoring are provided below. This schedule includes the sampling and inspection events, how and when the data will be evaluated and, if appropriate, events terminated (or continued) from future monitoring tasks as justified/appropriate. Also included is the 5-year review period/event with Ecology.

Environmental Covenant. This plan will be incorporated into a property-specific environmental covenant, which will include the following conditions and requirements:

- The elements detailed in this VI Sampling and Barrier Inspection plan.

- Maintain the presence and good condition of the subgrade barrier, which consists of the concrete floor slab.
- Recognition of the CVOC-impacted shallow soil below the Pine Lake Cleaners building and commitment to maintain the presence and good condition of the building.
- Should the building be removed, a commitment to cleanup CVOC-impacted soil to meet applicable CULs.
- And, standard Ecology Access, Notice and Reporting requirements.

1.2. SITE BACKGROUND AND LOCATION

The Property is located at 2830 – 228th Avenue Southeast in Sammamish, Washington, approximately 2 miles south of downtown Sammamish, Washington, as shown in Figure 1. Figure 2 depicts a plan view/layout of the Property. The Property consists of an irregularly shaped tax parcel (King County Parcel No. 1024069111) that covers approximately 30,501 square feet (0.70 acres).

The Property's one-story commercial building is heated by electricity. The Property building is constructed in four separate sections, with each section to the east approximately four feet higher in elevation than the last. Pine Lake Cleaners occupies the lowest elevation and Plateau Jewelers occupying the second lowest elevation. Each section of the building is built with a 6-inch thick, continuous (e.g., no expansion joints) concrete floor slab separated by an 8-inch thick, 4-foot-high concrete footing between each flooring elevation. The building has a continuous plastic sheet below the slab that functions as a moisture barrier. Additional improvements include parking areas to the south and east of the building as shown on Figure 2.

Cleaners' Operations. The cleaner first opened when the building was newly developed in 1990. Its location at the far west end of the building has not changed since then. During its operations, the cleaner has operated initially as a chemical-based dry machine (cleaner) and recently as a water-based, detergent machine (laundry machine).

In 2000, PLC replaced the cleaner with a new, solvent-based machine (SuperStar machine) and installed it in a new location, about 5 feet west of the boiler room. The machine was set on a commercial grade, steel-floor pan, separating and protecting the floor of the premises. Solvent spot cleaning then resumed in a space south of the boiler room (former location of the 1990 cleaner). It was reported by PLC that they used a spot cleaner called Picrin®, which contained 75%-by-weight the solvent trichloroethylene (TCE).

In 2019, PLC replaced the solvent-based cleaner with a hydrocarbon-based (i.e., solvent free) cleaner (Union HL840) in the same location (Figure 3). The cleaner removal and replacement were observed by an Ecology representative. Spot cleaning was continued in the same location, south of the boiler room using a solvent-free spot cleaner (Picrin® discontinued).

1.3. REGULATORY CONTEXT

The requirements of the Model Toxics Control Act (MTCA) will be addressed through the supervision of the Department of Ecology's Toxics Cleanup Program under their Expedited Voluntary Cleanup Program (Exp-VCP). The Exp-VCP Project ID is XN0013 and the Site Name is Pine Lake Cleaners.

1.4. WORK PLAN ORGANIZATION

This Work Plan is organized as follows:

- Section 1: Introduction
- Section 2: Summary of Existing Results
- Section 3: Vapor Intrusion Sampling Plan
- Section 4: Quality Assurance and Project Plan
- Section 5: Reporting

2.0 SUMMARY OF EXISTING RESULTS

Since the VI pathway is the primary exposure pathway of potential concern at this time and the subject of this Work Plan, a summary of existing soil gas and indoor air results is presented in this section to support the design of VI monitoring activities. A detailed presentation of the Site's conceptual model, including soil, soil gas and indoor air quality is provided in the Site's Remedial Investigation, Feasibility Study and Cleanup Action Plan (RI/FS/CAP) Report (UEP, November 2021).

Section 3 provides the details of the subslab soil gas (SSSG) and indoor air (IA) sampling plan to demonstrate and confirm that the VI pathway is incomplete for occupants of the retail space.

2.1. VAPOR INTRUSION PATHWAY

2.1.1. Current COPCs for the VI Pathway

For the purposes of this Work Plan, a constituent was identified as a contaminant of potential concern (COPC) for the VI pathway if the maximum detected concentration in any previous SSSG or IA sample exceeded the SSSG or IA screening level (SL) for unrestricted land use. The identified COPCs for the VI pathway at this time are:

- PCE or perchloroethene (also known as tetrachloroethylene)
- TCE or trichloroethene

Additional COPCs may be identified based on the results obtained pursuant to implementing the Work Plan. For future data presentation, all analytes detected during future monitoring events will be presented and evaluated against their appropriate screening levels or cleanup levels.

2.1.2. SLs for the VI Pathway

Subslab soil gas screening levels (SLs) and indoor air cleanup levels (CULs) were determined using the MTCA Method B cancer values, modified per Equation 750-2 for commercial activity exposure for each COPC.

- PCE: Screening Level for SSSG = 320 ug/m³ and IA CUL = 9.6 ug/m³
- TCE: Screening Level for SSSG = 11 ug/m³ and IA CUL = 0.33 ug/m³ (early life adjustment) and 2.1 ug/m³ (commercial activity)

2.1.3. Historic Subslab Soil Gas Sampling Results

As a result of the subsurface soil impacts at the Site, SSSG was sampled as a Tier 1 (outside the building) evaluation for potential, future indoor air exposure scenarios and related to a potential vapor intrusion pathway. This data is also used to estimate the 'strength' of the

pathway potential for VI. Throughout this work, SSSG samples from the cleaners will be co-located with IA samples to collect and evaluate multiple lines of evidence with regards to the VI pathway.

Three rounds of SSSG sampling were conducted – 10/5/2018, 11/18/2018, and paired SSSG and IA samples on 8/5/2020, 1/20/2021 and 2/24/2021. There were multiple incidents when SSSG sample results for PCE exceeded its respective SL by a factor of 10 or close to 100 times and three incidences when sample results for TCE exceeded its SL 2 to 10 times, indicating a ‘strong’ potential for a future VI pathway (Table 1, UEP RI/FS/CAP, November 2021).

2.1.4. Historic Indoor Air Sampling Results

Co-located indoor air sampling events on 8/5/2020, 1/20/2021 and 2/24/2021 confirmed low detections of PCE and TCE in the cleaners’ shop. Early samples (2020, prior to the solvent-based cleaner replacement) contained both PCE and TCE just below or slightly above their respective SLs. However, by the 2021 IA sampling, all PCE and TCE results were considerably below the respective IA CULs or below their laboratory detection limits. Vinyl chloride was never detected above the reporting limit in IA samples. See Table 2 of the RI/FS/CAP Report for a summary of these data (UEP, November 14, 2021).

3.0 VAPOR INTRUSION SAMPLING AND ANALYSIS PLAN

The purpose of this VI sampling and analysis plan (SAP) is to present methodology for collecting and analyzing soil gas and indoor air samples in general accordance with WAC 173-340-820 and Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State (Ecology, March 2022).

3.1. SAMPLING DESIGN AND SCHEDULE

Several vapor intrusion investigations consisting of soil gas and indoor air sampling have been completed at the Site beginning in 2018 through 2021. Based on the last two rounds of IA monitoring and comparison to MTCA Method B commercial CULs, the data indicate there is currently not a VI risk to building occupants, specifically in the cleaners' space but also in the adjacent jeweler space. Subslab soil gas monitoring indicates a continued presence of elevated PCE and TCE soil gas concentrations below the concrete slab floor.

This VI monitoring plan continues the evaluation of the VI pathway using multiple lines of evidence approach to confirm that the VI exposure pathway is incomplete and remains that way over time. The paired SSSG and IA samples in the cleaners' space will be combined with differential pressure and temperature gradient measurements to establish the multiple lines of evidence. Other conditions required for effective VI monitoring include a thorough inspection of and inventory of chemicals present in the cleaners' space and one ambient air sample upgradient of the sampled indoor space. The paired SSSG and IA quality sampling includes the following sampling locations and functions shown in Figure 4 and described in the below. Note that 'VI' Monitoring locations are paired SSSG and VI samples.

Paired Sampling Locations and Functions:

VI Monitoring ID	Location - Function	Comments
VI-1	Dry cleaner space, at former solvent cleaner location and spot cleaning station – confirm no VI pathway	Paired SSSG and IA samples at historic (2018) elevated SSSG and IA sample results. Data will establish basis for NFA determination/reopener, as appropriate.
VI-2	Dry cleaner space, adjacent to public access, counter for pickup and drop off – confirm no VI pathway	Paired SSSG and IA samples in immediately adjacent to public counter. Data will establish basis for NFA determination/reopener, as appropriate.

Amb-1	Approx. 25-feet from cleaner front door and predominate upwind direction – evaluate potential background contribution	Ambient Air - Outside at an (measured) upwind location. Background un-related to site activities. Location determined at time of sampling based on wind vector.
-------	---	---

‘VI’ in this table indicates a paired SSSG and IA sample location.

To support the NFA (with institutional controls) determination for the site, VI monitoring events at the Site will be conducted as outlined below, and begin with Year 1 monitoring, which should be performed within 12 months after recording the Environmental Covenant for the Site, as detailed in the RI/FS/CAP (UEP, November 14, 2021).

VI monitoring and barrier inspections will be performed as follows:

- Year 1 – initial VI monitoring event within 12 months after the recording of the Environmental Covenant.
- Year 2 – follow up monitoring event within 6 to 12 months of the initial event.
- Year 3 – follow up monitoring event within 6 to 12 months of the initial event.
- Year 5 – the final VI monitoring event for the first five-year period. Results for all events will be reported to Ecology in the 5-year review report.
- Year 10 – a second VI monitoring event within the second five-year period. Results will be reported to Ecology in the 5-year review report.
- Year 15 – the first VI monitoring event within the third five-year period. Results will be reported to Ecology in the 5-year review report.

No additional VI monitoring events will be performed following Year 10 or Year 15 if all prior monitoring events beginning with Year 1 are below the VI screening levels. Should building or barrier demolition occur during the required VI monitoring period, cleanup of the residual CVOC-impacted soil and groundwater below the building will be performed soon following demolition and the confirmation results reported to Ecology. VI monitoring will no longer be required.

A flow diagram detailing the step-by-step decision making involved with indoor air sampling for Years 1 through 5 then Years 5 through 15 are provided in Appendix A. These diagrams were provided by Ecology and are included as shown.

Reporting Indoor Air Results. Indoor air results below the screening levels will be reported at the first five-year review event. At any time during this monitoring schedule, Ecology shall be notified within 48-hours of receipt of laboratory results if an IA sample result exceeds a screening level.

3.2. SAMPLING ROLES AND RESPONSIBILITIES

The project team for implementing this plan will consist of experienced field technicians and the PMs from UEP and Friedman & Bruya, Inc. laboratory.

3.3. FIELD SAMPLING PROCEDURES

The following steps will be performed for all VI sampling events. Field inspection forms are attached as Appendix A to guide in collecting the appropriate data during the sampling event.

3.3.1. Preparation Activities Prior to Sample Collection

In order for field sampling to begin, the following activities will be completed:

- Notify the building owner and tenants of all commercial spaces of the date and time of sampling, and provide explanation of method of sample collection.
- Coordinate with and ensure that the tenants have removed all chemicals from their tenant spaces at least 36 hours prior to sampling (to the extent practicable).
- Complete health and safety preparation tasks. Obtain all necessary equipment and supplies, including sampling containers.
- Coordinate with the laboratory regarding key elements of the SAP / Quality Assurance Project Plan (QAPP). Verify initial Summa® Canister vacuums measured by Friedman & Bruya, Inc. A canister with an initial vacuum of less than -27 inches of mercury will be returned to Friedman & Bruya, Inc. in exchange for a replacement canister.
- Document the temperature difference between outdoor and indoor sampling spaces upon arrival and departure. Use readily available devices (space heating thermostat) and a weather App to obtain measurements. Schedule sampling events when outdoor temperatures are falling and at least 30 degrees F lower than indoor temperatures, if feasible. Also document any precipitation events within the past 48 hours – avoid sampling events during or immediately after a heavy rain (for soil gas sampling outside the building footprint).
- Document the pressure difference between outdoor, indoor and subslab conditions upon arrival and departure (see below for additional details). A VI monitoring event will only proceed when indoor air pressure is equal to or less than the measured subslab pressure. More than one visit to obtain the ideal pressure readings may be necessary.
- Conduct a pre-sampling reconnaissance of each sampling space/shop and fill out the Indoor Air Sampling – Building Survey Checklist (Appendix A). Pay special attention to potential preferential pathways (e.g., utilities that penetrate the surface, significant cracks in the concrete slab); inventory and catalog the name/type of any chemical

products stored or used in the sampling spaces. Record any new evidence of changes or observed modifications to the space floor, such as penetrations or cracks.

- All windows and doors in the sampling spaces will be closed prior to sampling and will remain closed for the duration of the sampling (doors will only be opened to allow individuals to pass through as necessary to conduct business or sampling activities).
- The HVAC systems will be operated in a manner similar to normal workday conditions (e.g., the heat will be on during the winter sampling event). To comply with pressure gradient requirements, the central heating system may be reduced or turned off during the sampling event (to lower the internal pressures).

3.3.2. Sub-Slab Soil Gas Sampling

Subslab soil gas samples will be collected using the vapor pin procedures outlined in Appendix B. Each SSSG vapor sample will be collected as co-located and concurrently (same day) as practicable with the associated paired IA sample. Each SSSG sample will be collected using a 1-L SUMMA[®] sample container indicated in Table 1 over an approximately 5- to 8-minute period, with the flow rate controlled by the intake regulator provided by the laboratory. Sampling will stop when the remaining canister vacuum is approximately -3" to -5" of Hg or after eight hours of sampling, whichever occurs first. The final canister vacuum will be recorded on the laboratory supplied chain-of-custody. See Appendix C for the SSSG sampling instructions. To minimize concerns regarding cross-contamination, the SSSG samples will be collected just after all co-located IA samples have been retrieved.

3.3.3. Indoor Air Sampling

Each IA sample will be collected as co-located and concurrently (same day) as practicable with the associated paired SSSG sample. Indoor air samples will be collected using 6-L SUMMA[®] containers indicated in Table 1 at breathing height (approximately five feet above ground surface), over an approximately eight-hour period to assess typical working conditions or to provide a time-weighted average. The sampling period and flow rate are controlled by the intake regulator provided by the laboratory. Sampling will stop at or near an 8-hour period; cannisters should not fall below -3" Hg. Cannisters reaching -5" Hg prior to 8 hours will be closed. (Note, final cannister vacuums of 8" – 10" Hg are typical). The final canister vacuum will be recorded on the chain-of-custody.

3.3.4. Ambient Air Sampling

In order to estimate ambient air background concentrations during the sampling period, an upwind ambient air sample will be collected at the general location shown on Figure 4 each day that paired SSSG and IA samples are collected. The wind direction will be determined by observations immediately prior to sample collection or by using a wind rose generated with at least one year of wind data from a nearby meteorological station if there is no obvious

wind direction during the day of sampling. Ambient air samples will be collected using the containers indicated in Table 1 at breathing height (approximately five feet above ground surface), over an approximately eight-hour period. Sampling will stop when the remaining canister vacuum contains approximately three to five inches of mercury or after eight hours of sampling, whichever occurs first. The final canister vacuum will be recorded on the chain-of-custody.

If a central heating and cooling unit is located and operating, an alternative or additional ambient air background sample should be located at the intake of the unit.

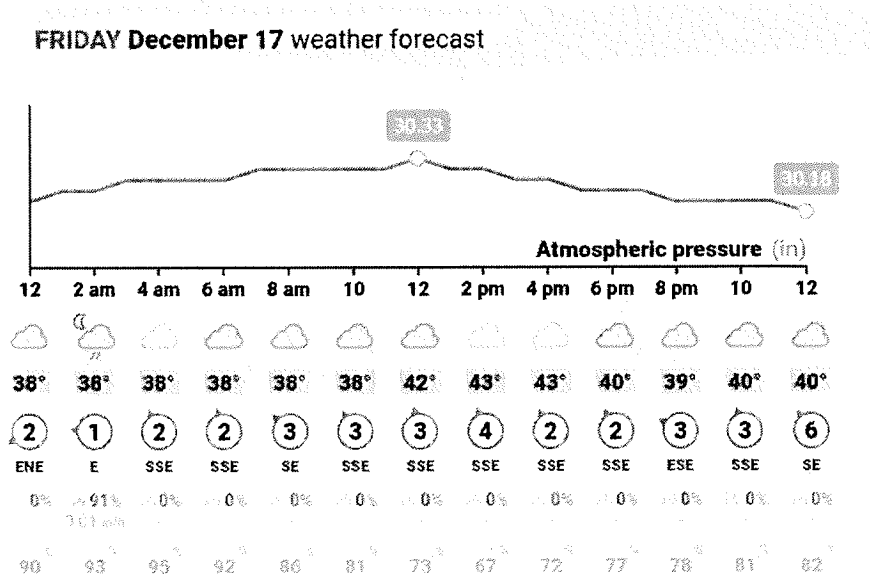
3.3.5. Pressure Gradient Measurements

The VI monitoring event will consider pressure differential (inside and outside) measurements and daily barometric pressure trends. The preferred conditions for the VI monitoring event include:

- The inside pressure should be equal to or less than the subslab pressure during the entire monitoring period (8 hours). Since the existing vapor pins will be used for subslab soil gas collection, differential pressure readings will be made upon arrival with a manometer hooked to the sub-slab vapor pin and also the inside air of the tenant space, and again at conclusion of sampling, before departure from the site. The outside ambient pressure will also be measured using the same pressure reading device.
- Stable or falling barometric pressure, which tends to lead to soil gas flowing out of the ground as the above and below ground pressures seek to equalize. See the figure below as an acceptable sampling period.

Pressure readings will be made with handheld equipment, such as a manometer. Minimize the tubing length and select measurement locations and elevations that can be easily repeated. At vapor pin locations, seal around the floor pin per the standard protocol (Appendix B).

Example of stable or gently falling, predicted barometric pressure in Seattle, WA



3.3.6. Physical Barrier Inspection

This section of the plan presents an inspection and reporting plan for the existing, continuous concrete floor slab in the cleaners’ space, which acts as a barrier to prevent vapor intrusion of SSSG to IA. Performed at the same time as soil gas and indoor air sampling, barrier inspection ensures that the barrier remains intact, in good condition, and continues to provide a physical barrier for the VI pathway. We recommend continued annual barrier inspections and documentation past the Year 10 or 15 IA monitoring events, to ensure that the floor remains an effective barrier.

The buildings concrete floor slab is continuous throughout the commercial building and supports no obvious penetrations or openings, other than an occasional floor drain, which are hard piped to the sanitary side sewer. Visual inspection will occur on all slabs where indoor air sampling occurs. Photos will record inspection conditions and observed cracks/repairs or changes in the floor slab as appropriate. A record of the inspection will be provided in the attached form (Appendix B) along with photos during each inspection.

3.4. RECORDKEEPING

Field staff will complete the following forms for each monitoring event (Appendix B). The field checklist and documentation form incorporate the multiple lines of evidence data points and observations as discussed in this plan. These include a site reconnaissance and inventory, temperature and pressure measurements, and details on the paired SSSG and IA samples. In addition, representative photos will be taken to support documentation of the field conditions and sampling procedures.

3.5. VI MONITORING CONTINGENCY PLAN

In accordance with the Site's Cleanup Action Plan, a VI monitoring contingency plan will be implemented when IA sampling results exceed the IA cleanup levels. The contingency plan involves a progressive use of action steps that are generally followed by an IA sampling event. These steps will continue until two rounds of IA results are collected that comply with the IA CULs, or other steps are required by Ecology. If there's an IA exceedance, the monitoring schedule begins again at Year 1. In all cases, any exceedances of the IA cleanup levels will be reported to Ecology immediately.

1. Reinspect the concrete floor surfaces and inventory the space. Note any changes during this inspection. Check sewer and drainage pipes and culverts for conditions. Repair or replace any noted concerns, such as a crack in the floor, deteriorated drainage/pipes, or walls, or storage of new chemicals in the space. Consider applying a 2-part epoxy coating (10-mil dry film thickness) on the concrete floors or walls.

After suitable correction, repeat a round of IA sampling in accordance with this plan. If the IA results are still above the cleanup levels, then repeat this step. If the IA results are above the cleanup level, discuss these results with Ecology and consider continuing with:

2. Design and install a sub-slab depressurization system (SSDS) in the former cleaner space. These SSDS units are typically 'off-the-shelf' and can be provided by local vendors with a 3- to 6-month turnaround.
3. Perform 2 rounds (separate events) of IA sampling in accordance with this plan. If the IA results are both above the CULs, then meet with Ecology to develop a plan for additional site characterization (identify what has changed) and additional IA mitigation measures.

3.6. LABORATORY ANALYSES AND SAMPLE CONTAINERS

The laboratory analyses that are relevant to each media are shown in Table 1. For this site (an active dry cleaner with a non-solvent machine), the project laboratory will be directed to report only the analytical results for the following specific list of chlorinated solvents – PCE and TCE. The analytical method (EPA Method TO-15), sample container expectations, preservation requirements, and holding times for these laboratory analyses are presented in Table 1. Sample containers will be provided by the laboratory.

3.6.1. Sample Labelling and Shipment

Sample labels will clearly indicate the Site location, sample number identification, date, time, sampler's initials, and testing method. Each sample number identification will be unique and will adhere to the sample identification in Figure 4+ to the extent practicable. The sample canister and flow controller serial numbers will be recorded on the chain of custody.

Canisters for SSSG and IA samples will be packed in cardboard boxes (e.g., the containers the laboratory used to ship the canisters) without preservation (i.e., no ice). Samples will be shipped or returned (likely by car with the field technician) to the laboratory on the same day.

3.6.2. Chain-of-Custody Documentation

Chain-of-custody procedures will be followed to maintain and document sample possession. A sample is considered under a person's custody if it is in that person's physical possession, within visual sight of that person after taking physical possession, secured by that person so that the sample cannot be tampered with, or secured by that person in an area that is restricted to unauthorized personnel.

The originator (the sampler) will complete requested information on the custody record, including signature and date. Original signed custody records listing the samples in the sample shipping container will accompany sample shipments. The originator of the custody record will retain a copy of the custody record.

4.0 QUALITY ASSURANCE PROJECT PLAN

The purpose of this QAPP is to summarize the methodology for ensuring usable sampling and analysis data of acceptable quality are generated.

4.1. FIELD QUALITY CONTROL SAMPLES

Field quality control (QC) samples are optional and include field duplicates. If performed, one indoor air duplicate will be collected during a sampling event at random locations selected by the field sampling team. Field duplicates will be collected simultaneously with the primary air sample using a T-splitter at the point of sample collection. The duplicate will be identified with the same Site ID and analyzed for the same analytes as the primary sample. Blind duplicates will not be collected

4.2. LABORATORY QUALITY CONTROL SAMPLES

Friedman & Bruya, Inc. (FBI) will be responsible for conducting laboratory QC procedures and reporting laboratory QC results in accordance with the analytical methods and their standard operating procedures. Laboratory QC samples provide important qualitative results used to evaluate the laboratory QC procedures. Laboratory samples for TO-15 QC includes method blank, laboratory control sample (also known as blank spikes) and sample duplicates (randomly selected) once per batch of analyses. In addition, it is also expected that FBI will perform, and report results of surrogate recovery for every sample. Expectations for laboratory control limits for laboratory control samples and surrogate recoveries are shown in Table 2.

4.3. LABORATORY TARGET REPORTING LIMITS

Analytical methods and the laboratory have been selected to achieve low target reporting limits. For EPA Method TO-15, the VOC analyte list and a comparison of target reporting limits along with the subslab soil gas and indoor air SLs for unrestricted use are presented in Table 3. Almost all of the target reporting limits are less than the corresponding SLs for unrestricted land use. More importantly, all of the COPCs for the VI pathway have target reporting limits that are less than the SLs for unrestricted land use. Although the target reporting limits for some non-COPCs exceed a SL for unrestricted land use, the target reporting limits are reasonably sensitive. Therefore, the target reporting limits are considered appropriate for the purposes of this investigation.

4.4. DATA QUALITY REVIEW AND VALIDATION

An evaluation of data quality will be performed for all field and lab data. Specifically, field records will be reviewed by UEP or an independent, qualified firm for completeness, accuracy, and legibility. The laboratory will review their results relative to method criteria and laboratory QC procedures as the data

are generated. The laboratory will report their QC results and qualify data as necessary in a report suitable for a Level II data validation. An independent data quality validator may be selected to evaluate precision, accuracy, representativeness, comparability, completeness, and sensitivity by reviewing the following items relative to analytical method criteria, laboratory control limits, and national functional guidelines (USEPA 2016) as necessary:

- Comparison of actual analyses versus requested analyses
- Comparison of consistency between laboratory reports and associated electronic data deliverables
- Holding times
- Field QC sample results
- Lab QC sample results
- Actual reporting limits

The data quality validator may reject data or add other qualifications in addition to the laboratory qualifications. The data quality validation documentation will be included with the applicable laboratory reports for reporting purposes.

4.5. CORRECTIVE ACTION

The need for corrective action will be evaluated as appropriate for deviations from the SAP/QAPP and other potential data quality issues that arise in the field or the laboratory. Relatively minor field issues will be discussed, resolved, and documented by the UEP Project Manager, field personnel, and/or the laboratory. Potential corrective action decisions may include one or more of the following:

- Revising the sampling and analysis methodology
- Collecting a new sample
- Reanalyzing an existing sample
- Accepting the data with a recognized level of uncertainty
- Revising the sampling design

5.0 REPORTING

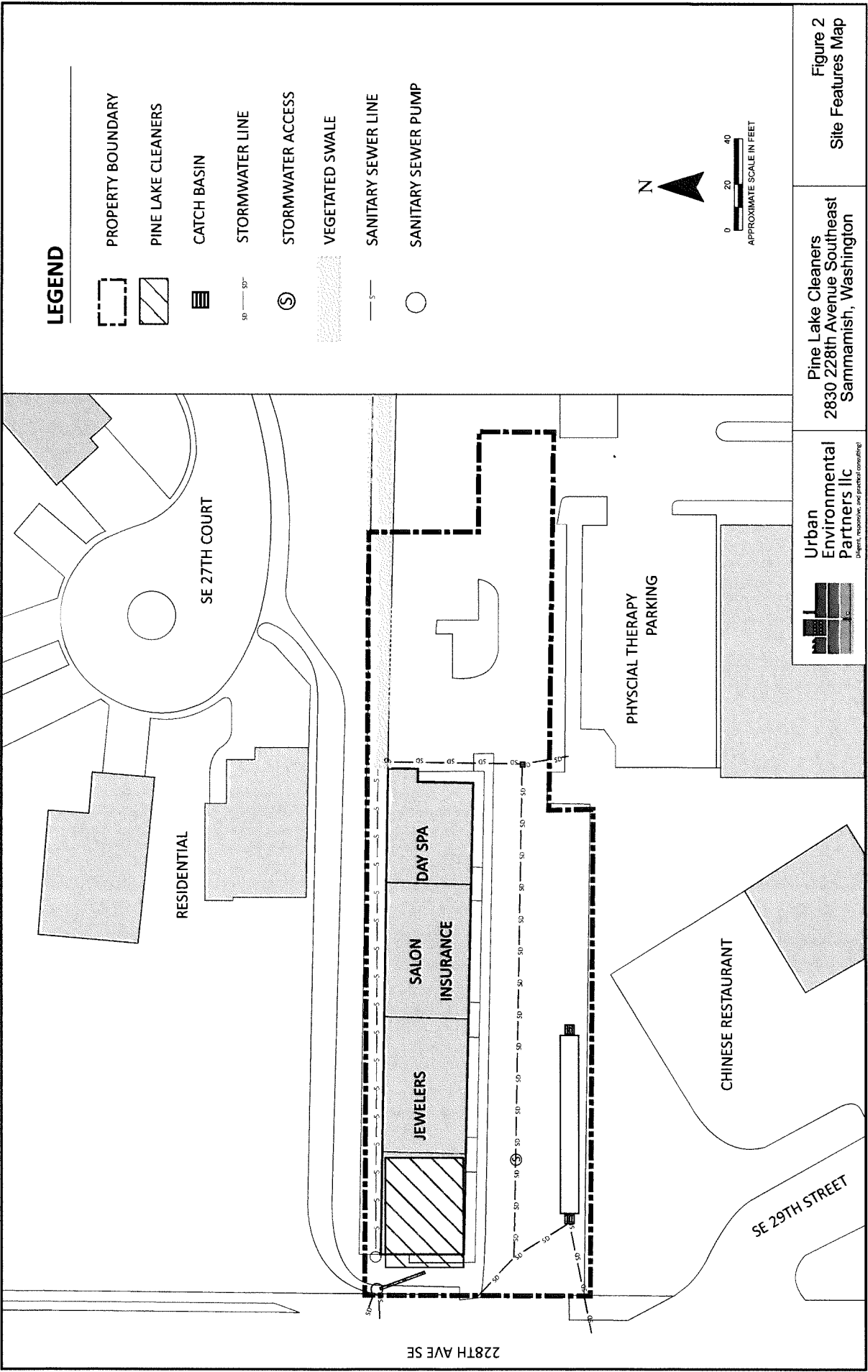
All records associated with this monitoring plan will be provided to Ecology at the 5-year reporting period(s). When an exceedance of a screening level is discovered, validated data will be provided to Ecology within 30 days followed by an in-person meeting to review the results and discuss next steps.

Periodic or five-year review reports will include, at a minimum, the following materials:









- Summary of analytical results for SSSG and IA sampling
- Figures depicting the location of samples
- If needed, a discussion of the sampling event and unique or significant findings
- A copy of the reconnaissance report and a discussion of any unique or significant findings
- A summary of the temperature, pressure and meteorological conditions during the monitoring event
- A copy of the laboratory analytical report.

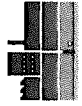
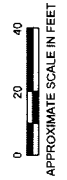
6.0 REFERENCES

- Ecology 2016. Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies, December.
- Ecology 2022. Guidance for Evaluating Vapor Intrusion in Washington State: Investigation and Remedial Action, Final: March 2022.
- Ecology 2021. Toxics Cleanup Program's Cleanup Levels and Risk Calculations database, <https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>, accessed January.
- Urban Environmental Partners llc, 2021, Remedial Investigation/Feasibility Study & Cleanup Action Plan, Pine Lake Cleaners Site, 2830 228th Avenue SE, Sammamish, WA, November 14, 2021.
- Pioneer Technologies Corporation, 2021, Vapor Intrusion Investigation Report, Pine Lake Cleaners Site, 2830 228th Avenue SE, Sammamish, WA, May, 2021.
- USEPA 1989. Risk Assessment Guidance for Superfund (RAGS): Volume I. Human Health Evaluation Manual (Part A. Office of Emergency and Remedial Response, Washington, DC. EPA/540/1-89/002. December.
- USEPA. 2011. Background Indoor Air Concentrations of Volatile Organic Compounds in North American Residences (1990-2005): A Compilation of Statistics for Assessing Vapor Intrusion, June.
- USEPA 2016. National Functional Guidelines for Superfund Organic Methods Data Review. EPA-540-R-2016-002. September.



LEGEND

-  PROPERTY BOUNDARY
-  PINE LAKE CLEANERS
-  CATCH BASIN
-  STORMWATER LINE
-  STORMWATER ACCESS
-  VEGETATED SWALE
-  SANITARY SEWER LINE
-  SANITARY SEWER PUMP



**Urban
Environmental
Partners LLC**
Diligent, responsive, and practical consulting

Pine Lake Cleaners
2830 228th Avenue Southeast
Sammamish, Washington

Figure 2
Site Features Map

228TH AVE SE

RESIDENTIAL

SE 27TH COURT

DAY SPA

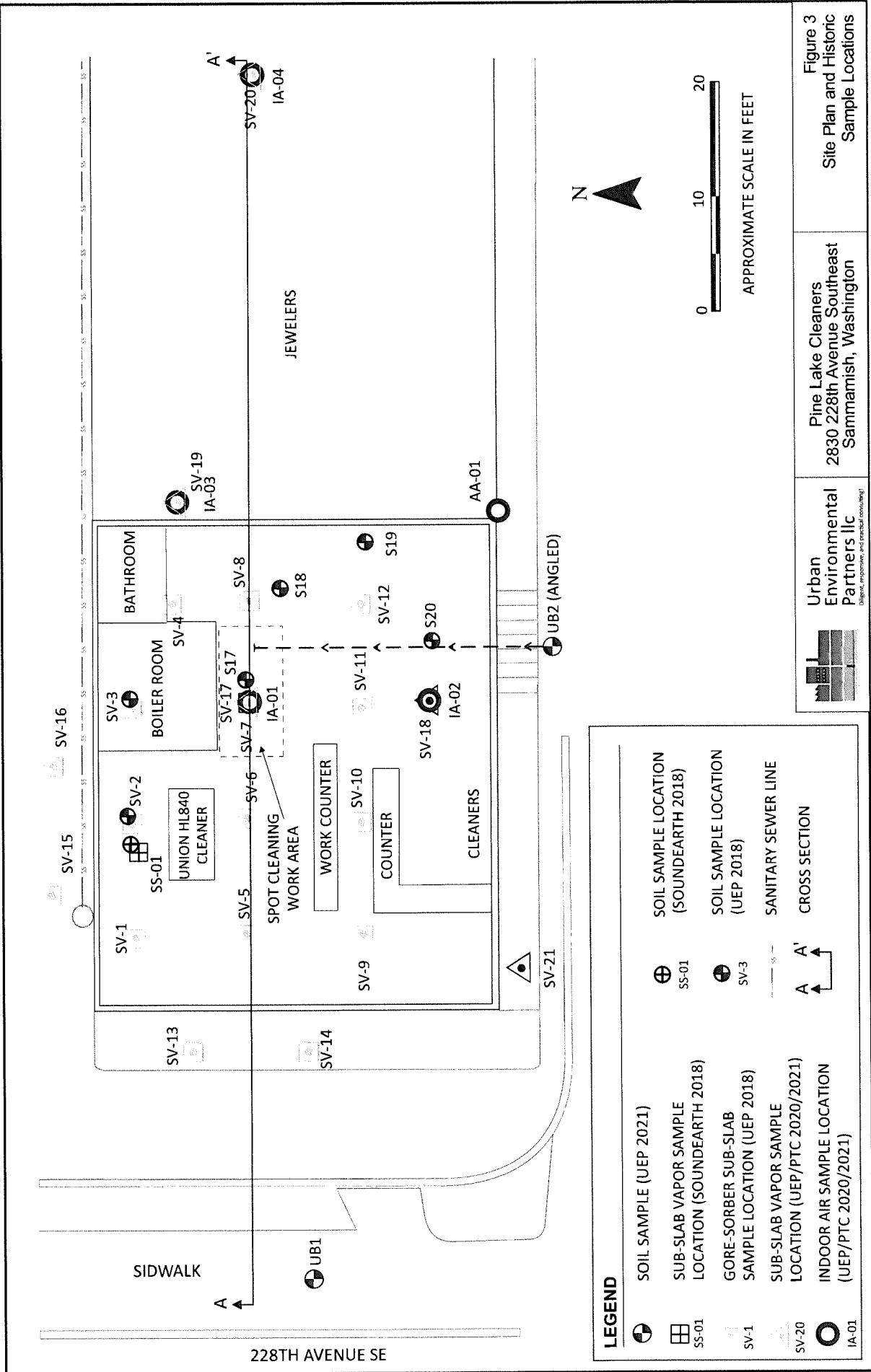
SALON
INSURANCE

JEWELERS

PHYSICAL THERAPY
PARKING

CHINESE RESTAURANT

SE 29TH STREET



LEGEND

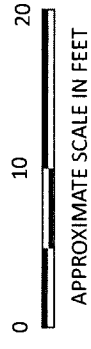
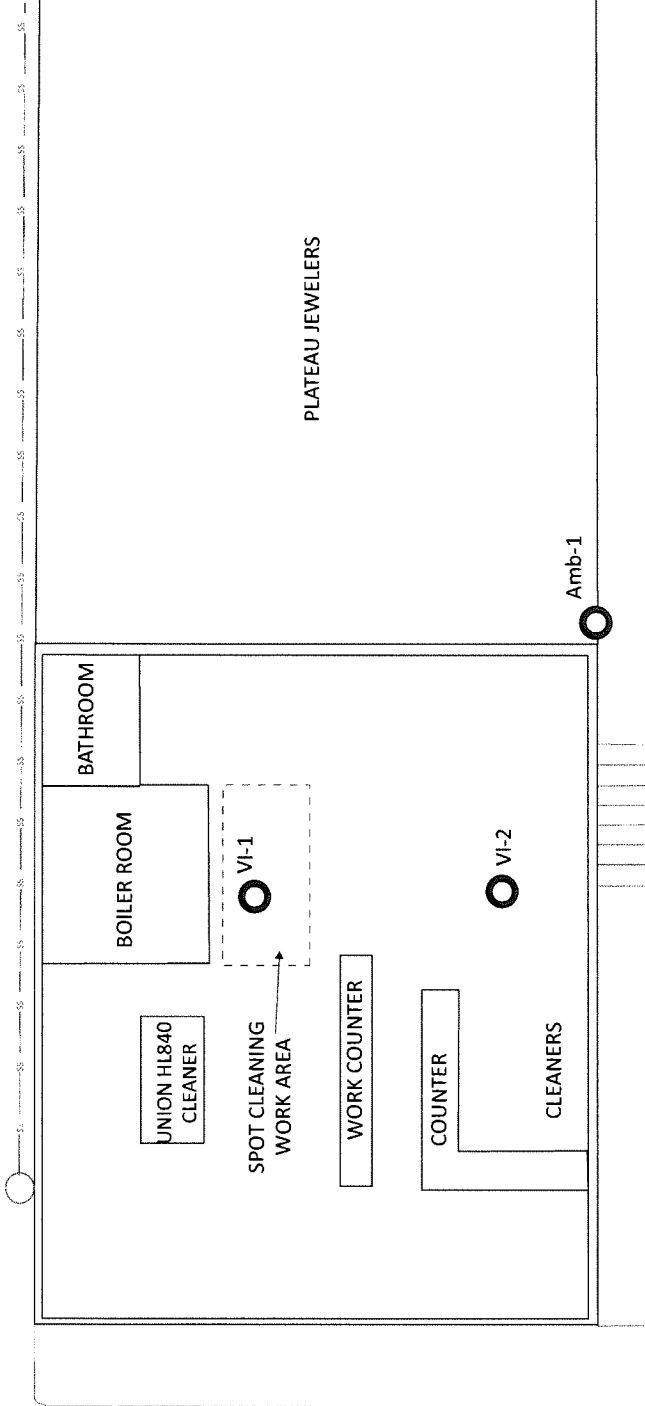
○ INDOOR AIR SAMPLE LOCATION
(UEP 2020)

VI-1

— SANITARY SEWER LINE

PCE: TETRACHLOROETHYLENE
 TCE: TRICHLOROETHYLENE
 ND: NON-DETECT (ALL LABORATORY NON-DETECT
 REPORTING LIMITS ARE LESS THAN APPLICABLE
 SCREENING OR CLEANUP LEVELS.)
 NA: NOT ANALYZED
 RED DENOTES COMPOUND EXCEEDS APPLICABLE
 CLEANUP LEVELS FOR UNRESTRICTED LAND USE.
 SAMPLE CONCENTRATIONS PRESENTED IN
 MICROGRAMS PER CUBIC METER (UG/M³)

MTCA INDOOR AIR CLEANUP LEVELS	PCE	TCE
METHOD B UNRESTRICTED LAND USE	9.6	0.33
METHOD C COMMERCIAL/INDUSTRIAL	40	2.0



**Urban
Environmental
Partners LLC**
Design, response, and practical consulting

Pine Lake Cleaners
 2830 228th Avenue Southeast
 Sammamish, Washington

Figure 4
 VI Sample Location Plan

TABLES

Table 1 - Analytical Methods, Sample Containers, Preservation and Holding
Times Friedman & Bruya, Inc., Seattle, WA

Constituents	Media	Analytical Method	Sample Containers Preservation	Extraction Hold Time Analysis Hold Time
VOCs	Sub-Slab Soil Gas (SSSG) Indoor and Ambient Air	USEPA Method TO-15 select ion monitoring (SIM)	1-liter evacuated SUMMA® Canister, set for 5-8 min grab 6-liter evacuated SUMMA® Canister, set for 8-hour duration Individually certified clean by the lab, equipped with valves and other piping, vac gauge and regulator set for duration. No preservation required	N/A 30 days

**Table 2 – Laboratory Control Limits
Friedman & Bruya, Inc., Seattle, WA**

Constituents	Media	Analytical Method	LCS		MS/MSD		Surrogates % Recovery
			% Recovery		% Recovery	RPD	
VOCs	Sub-Slab Soil Gas Indoor and Ambient Air	USEPA Method TO-15	70 – 130		N/A	N/A	70 - 130

Notes: LCS: Laboratory Control Sample; MS/MSD: Matrix spike/matrix spike duplicate; N/A: Not applicable; RPD: Relative percent difference

Table 3: Target Reporting Limits – EPA Method TO-15

Constituent	Sub-Slab Soil Gas Samples		Indoor Air and Ambient Air Samples	
	Target Reporting Limit ^(1,2) (ug/m ³)	Sub-Slab Soil Gas SL for Unrestricted Land Use ^(3,4) (ug/m ³)	Target Reporting Limit ⁽¹⁾ (ug/m ³)	Indoor Air SL for Unrestricted Land Use ^(3,4) (ug/m ³)
1,1,1-Trichloroethane	3.1	76,000	0.55	2,300
1,1,2,2-Tetrachloroethane	0.78	1.4	0.14	0.043
1,1,2-Trichloroethane	0.31	3	0.11	0.091
1,1-Dichloroethane	2.2	52	0.40	1.6
1,1-Dichloroethene	2.2	3,000	0.40	91
1,2,4-Trichlorobenzene	4.1	30	0.74	0.91
1,2,4-Trimethylbenzene	14	910	2.5	27
1,2-Dibromoethane (EDB)	0.43	0.14	0.077	0.0042
1,2-Dichlorobenzene	3.4	3,000	0.60	91
1,2-Dichloroethane (EDC)	0.22	3.2	0.040	0.096
1,2-Dichloropropane	1.3	23	0.23	0.68
1,3,5-Trimethylbenzene	14	No Value	2.5	27
1,3-Butadiene	0.25	2.8	0.022	0.083
1,3-Dichlorobenzene	3.4	No Value	0.60	No Value
1,4-Dichlorobenzene	1.3	7.6	0.24	0.23
1,4-Dioxane	2	No Value	0.36	0.5
2,2,4-Trimethylpentane	26	No Value	4.7	No Value
2-Butanone (MEK)	16	No Value	2.9	No Value
2-Chlorotoluene	29	No Value	5.2	No Value
2-Hexanone	23	No Value	4.1	14
2-Propanol	48	No Value	8.6	No Value
3-Chloropropene	9.0	No Value	1.6	0.42
4-Ethyltoluene	14	No Value	2.5	No Value
4-Methyl-2-pentanone	23	46,000	4.1	No Value
Acetone	27	No Value	4.8	14,000
Acrolein	0.62	0.3	2.1	0.0091
Benzene	1.8	11	0.32	0.32
Benzyl chloride	0.29	1.7	0.052	0.051
Bromodichloromethane	0.38	2.3	0.067	0.068
Bromoform	12	76	2.1	2.3
Bromomethane	13	76	1.6	2.3
Butane	27	No Value	2.4	No Value
Carbon disulfide	35	11,000	6.2	320
Carbon tetrachloride	1.7	14	0.63	0.42
CFC-113	4.3	76,000	0.77	2,300
Chlorobenzene	2.6	760	0.46	23
Chloroethane	15	150,000	2.6	4,600
Chloroform	0.27	3.6	0.049	0.11
Chloromethane	15	1,400	3.7	41
cis-1,2-Dichloroethene	2.2	No Value	0.40	No Value
cis-1,3-Dichloropropene	2.5	No Value	0.45	0.63
Cyclohexane	39	No Value	6.9	2,700
Dibromochloromethane	0.48	No Value	0.085	No Value
Dichlorodifluoromethane	2.7	1,500	0.49	46
Ethanol	42	No Value	7.5	No Value
Ethyl acetate	40	No Value	7.2	32
Ethylbenzene	2.4	15,000	0.43	460
F-114	3.9	No Value	0.70	No Value
Heptane	23	No Value	4.1	180
Hexachlorobutadiene	1.2	3.8	0.21	0.11
Hexane	20	11,000	3.5	320
Isopropylbenzene	14	6,100	2.5	180
m,p-Xylene	4.9	1,500	0.87	46

Table 3: Target Reporting Limits – EPA Method TO-15

Constituent	Sub-Slab Soil Vapor Samples		Indoor Air and Ambient Air Samples	
	Target Reporting Limit ^(1,2) (ug/m ³)	Sub-Slab Soil Gas SL for Unrestricted Land Use ^(3,4) (ug/m ³)	Target Reporting Limit ⁽¹⁾ (ug/m ³)	Indoor Air SL for Unrestricted Land Use ^(3,4) (ug/m ³)
Methyl ethyl ketone	8.7	76,000	2.9	2,300
Methyl methacrylate	12.3	11,000	4.1	320
Methyl t-butyl ether (MTBE)	10	320	1.8	9.6
Methylene chloride	200	2,200	87	66
Naphthalene	1.5	2.5	0.01 ⁽⁶⁾	0.074
Nonane	29	No Value	5.2	No Value
o-Xylene	2.4	1,500	0.43	46
Pentane	17	No Value	3.0	No Value
Propene	6.7	No Value	1.2	No Value
Propylbenzene	14	No Value	2.5	460
Styrene	4.8	15,000	0.85	460
t-Butyl alcohol (TBA)	67	No Value	12	No Value
Tetrachloroethene	38	320	6.8	9.6⁽⁶⁾
Tetrahydrofuran	3.3	No Value	0.59	910
Toluene	110	76,000	19	2,300
trans-1,2-Dichloroethene	2.2	No Value	0.4	No Value
trans-1,3-Dichloropropene	2.5	No Value	0.45	No Value
Trichloroethene	0.62	11	0.11	0.33⁽⁶⁾
Trichlorofluoromethane	12	11,000	2.2	320
Vinyl acetate	39	3,000	7.0	91
Vinyl bromide	2.5	No Value	0.44	No Value
Vinyl chloride	1.5	9.5	0.26	0.28

Notes:

No Value: No value exists for this constituent in the CLARC database (Ecology 2020)

Only constituents in **bold font** are identified as COPCs for the purpose of this Work Plan and will be reported by the laboratory.

Target reporting limits in bold font exceed a corresponding SL.

⁽¹⁾ It may not be possible to achieve these reporting limits in all samples (e.g., samples requiring extra dilution to achieve laboratory control limits, interferences).

⁽²⁾ Sub-slab soil vapor samples are analyzed by the laboratory with a three fold dilution resulting in reporting limits that are three times higher than the indoor air and ambient air sample reporting limits, which are not diluted.

⁽³⁾ Some SLs may need to be adjusted up to the practical quantitation limit or background per WAC 173-340-740(5)(c) or WAC 173-340-750(5)(c) if used as the basis for a cleanup level.

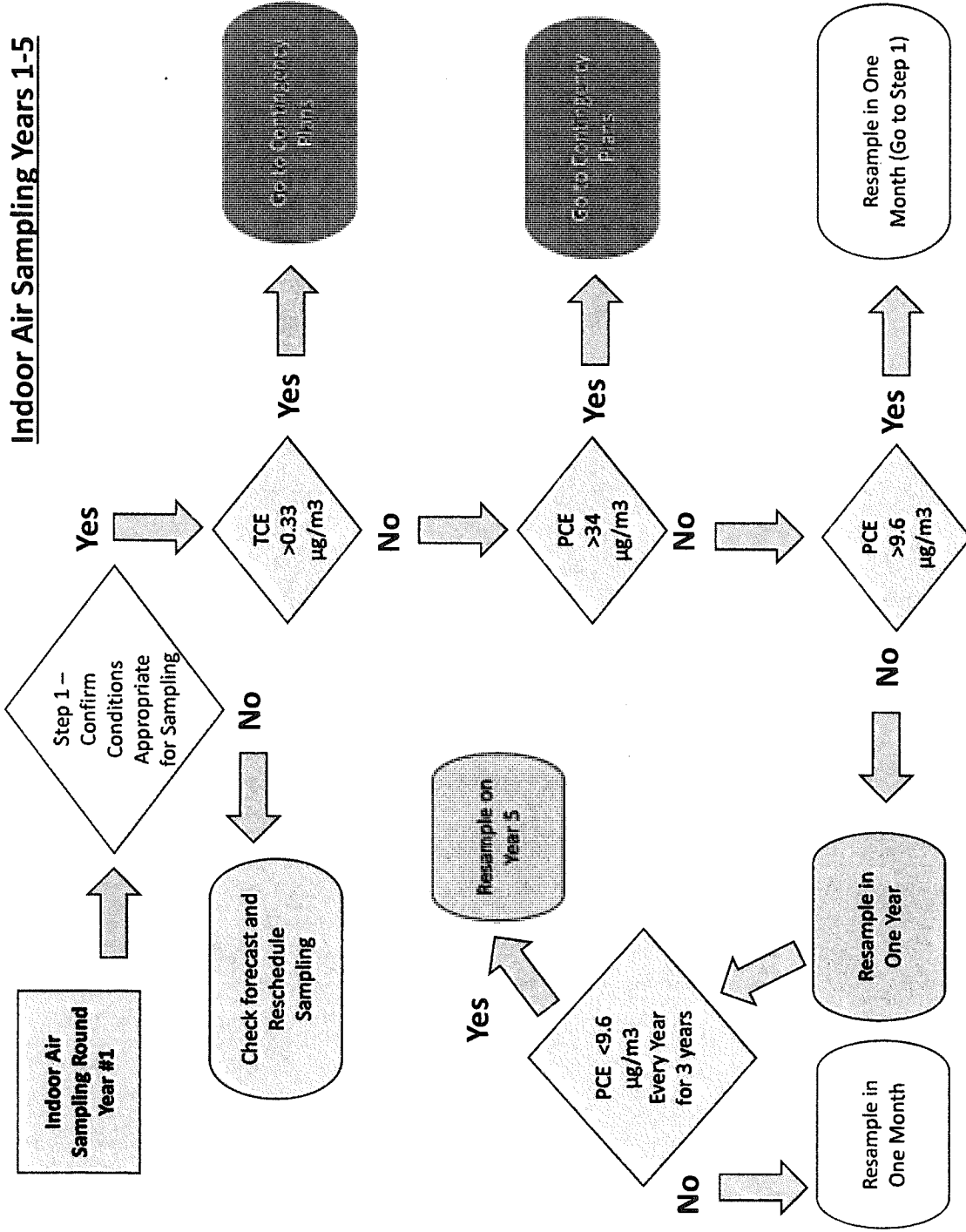
⁽⁴⁾ Indoor air and sub-slab soil vapor SLs for unrestricted land use are used in this table for the sole purpose of evaluating target reporting limits. The SLs are the most stringent of the Method B carcinogenic and non-carcinogenic values from the CLARC database (Ecology 2020).

⁽⁵⁾ To achieve the indoor air SL for unrestricted land use for naphthalene in indoor air and ambient air samples, naphthalene will be reported at the method detection limit of 0.01 ug/m³, below the laboratory reporting limit of 0.26 ug/m³.

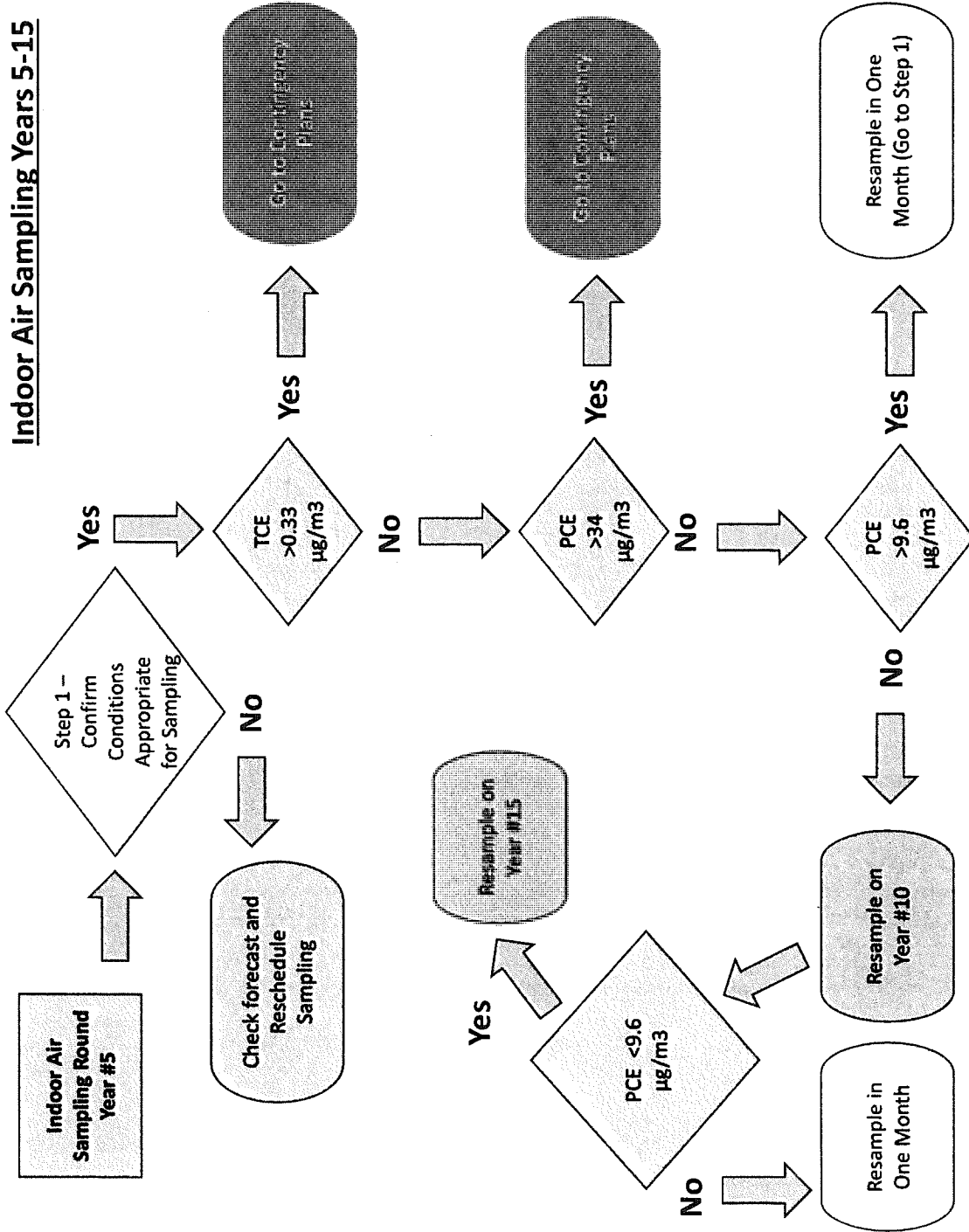
⁽⁶⁾ Indoor Air SLs for commercial/industrial land use for tetrachloroethene and trichloroethene are 40 and 2 ug/m³, respectively.

Attachment A: Indoor Air Sampling Flow Diagram (provided by Ecology)

Indoor Air Sampling Years 1-5



Indoor Air Sampling Years 5-15



Attachment B: VI Monitoring and Barrier Inspection Field Forms

**VAPOR INTRUSTION BUILDING SURVEY
and SAMPLING FORM (including Barrier Inspection)**

Preparer's name: _____ Date: _____

Preparer's affiliation: _____ Phone #: _____

Site Name: _____ Project #: _____

Part I - Occupants

Building Address: _____

Property Contact: _____ Owner / Renter / other: _____

Contact's Phone: home () _____ work () _____ cell () _____

of Building occupants: Children under age 13 _____ Children age 13-18 _____ Adults _____

Occupation and Hours in Space: _____

Part II – Building Characteristics

Building type: residential / multi-family residential / office / strip mall / commercial / industrial

Describe building: _____ Year constructed: _____

Sensitive population: day care / nursing home / hospital / school / other (specify): _____

Number of floors below grade: _____ (full basement / crawl space / slab on grade)

Number of floors at or above grade: _____

Depth of basement below grade surface: _____ ft. Basement size: _____ ft²

Basement floor construction: concrete / dirt / floating / stone / other (specify): _____

Foundation walls: poured concrete / cinder blocks / stone / other (specify) _____

Basement sump present? *Yes / No* Sump pump? *Yes / No* Water in sump? *Yes / No*

Type of heating system (circle all that apply):

hot air circulation	hot air radiation	wood	steam radiation
heat pump	hot water radiation	kerosene heater	electric baseboard
describe: _____			

Type of ventilation system (circle all that apply):

central air conditioning	mechanical fans	bathroom ventilation fans	individual air
conditioning units	kitchen range hood fan	outside air intake	
describe: _____			

Type of fuel utilized (circle all that apply):

Natural gas / electric / fuel oil / wood / coal / solar / kerosene

Are the basement walls or floor sealed with waterproof paint or epoxy coatings? *Yes / No*

Is there a whole space/house fan? *Yes / No*

Septic system? *Yes / Yes (but not used) / No*

Irrigation/private well? *Yes / Yes (but not used) / No*

Type of ground cover outside of building: grass / concrete / asphalt / other (specify) _____

Existing subsurface depressurization (radon) system in place? *Yes / No* *active / passive*

Sub-slab vapor/moisture barrier in place? *Yes / No*
 Type of barrier: _____

Part III - Outside Contaminant Sources

Known contaminated site (1000-ft. radius): _____

Other stationary sources nearby (gas stations, emission stacks, etc.): _____

Heavy vehicular traffic distance (or other mobile sources): _____

Part IV – Indoor Contaminant Sources

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor and room), and whether the item was removed from the building 48 hours prior to indoor air sampling event. Any ventilation implemented after removal of the items should be completed at least 24 hours prior to the commencement of the indoor air sampling event.

Potential Sources	Location(s) – PID readings	Removed (Yes / No / NA)
Gasoline storage cans		
Gas-powered equipment		
Kerosene storage cans		
Paints / thinners / strippers		
Cleaning solvents		
Oven cleaners		
Carpet / upholstery cleaners		
Other house cleaning products		
Moth balls		
Polishes / waxes		
Insecticides/ Herbicides		
Furniture / floor polish		
Nail polish / polish remover		
Hairspray		
Cologne / perfume		
Air fresheners		
Fuel tank (inside building)		NA
Wood stove or fireplace		NA
New furniture / upholstery		
New carpeting / flooring		NA
Hobbies - glues, paints, etc.		

Part V – Miscellaneous Items

Do any occupants of the building smoke? *Yes / No* How often/last time? _____

Does the building have an attached garage directly connected to living space? *Yes / No*

 If so, is a car usually parked in the garage? *Yes / No*

 Are gas-powered equipment or cans of gasoline/fuels stored in the garage? *Yes / No*

Do the occupants of the building have their clothes dry cleaned? *Yes / No*

 If yes, how often? weekly / monthly / 3-4 times a year

Do any of the occupants use solvents in work? *Yes (describe above) / No*

Has there ever been a fire in the building? *Yes / No* If yes, when? _____

Has painting or staining been done in the building in the last 6 months? *Yes / No*

 If yes, when _____ and where? _____

Part VI – Sampling Information

Sample Technician: _____ Phone number: () _____ - _____

Sample Source: Indoor Air / Sub-Slab / Shallow/Deep Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / Stainless Steel Canister / Other (specify): _____

Analytical Method: TO-15 / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations (floor, room):

Field ID # _____ - _____ Field ID # _____ - _____

Field ID # _____ - _____ Field ID # _____ - _____

Were “Instructions for Occupants” followed? *Yes / No*

If not, describe modifications: _____

Part VII - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? *Yes / No*

Describe the arrival and departure weather conditions: _____

Arrival Indoor/Outdoor Temp: _____ Subslab and Indoor Pressure: _____

Departure Indoor/Outdoor Temp: _____ Subslab and Indoor Pressure: _____

Include a copy of the sampling day barometric pressure chart.

Part VIII – Barrier Inspection

Walk the entire area of the sampling space and carefully inspect the concrete floor. Generally describe the condition of the floor: _____

Concrete surface: cracks / penetrations (incl.bolts and drains) / staining / ponding or spills

Utilities and penetrations (describe in detail and document on the site plan): _____

Photos of new observations.

Part IX – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

Attachment C: Vapor Pin™ Installation and Sampling SOPs



Standard Operating Procedure Installation and Extraction of the Vapor Pin® Sampling Device

Updated January 28, 2021

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® sampling device for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® sampling device for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® sampling device [VAPOR PIN® sampling device and silicone sleeve (Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole must be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® sampling device installation/extraction tool;

- Dead blow hammer;
- VAPOR PIN® sampling device flush mount cover, if desired;
- VAPOR PIN® sampling device drilling guide, if desired;
- VAPOR PIN® sampling device protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN® sampling device.

PHOTO

Figure 1. Assembled VAPOR PIN® sampling device

Installation Procedure:

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Set up wet/dry vacuum to collect drill cuttings.
- 3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® sampling device drilling guide is recommended.

VAPOR PIN® sampling device protected under US Patent # 8,220,347 B2 and other US and International Patents

- 4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole must be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.
- 5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.
- 6) Place the lower end of VAPOR PIN® sampling device assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

PHOTO

Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® sampling device shoulder. Place the protective cap on VAPOR PIN® sampling device to prevent vapor loss prior to sampling (Figure 3).

PHOTO

Figure 3. Installed VAPOR PIN® sampling device

- 7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

PHOTO

Figure 4. Secure Cover Installed

- 8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.
- 9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN® sampling device. This connection can be made using a short

piece of Tygon™ tubing to join the VAPOR PIN® sampling device with the Nylaflo tubing (Figure 5). Put the Nylaflo tubing as close to the VAPOR PIN® sampling device as possible to minimize contact between soil gas and Tygon™ tubing.

PHOTO

Figure 5. VAPOR PIN® sampling device sample connection

- 10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® sampling device via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

PHOTO

Figure 6. Water dam used for leak detection

- 11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN® sampling device.

Extraction Procedure:

- 1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® sampling device (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® sampling device will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.
- 2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

PHOTO

Figure 7. Removing the VAPOR PIN® sampling device

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN®

sampling device in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, STAINLESS – ½ hour, BRASS 8 minutes

- 3) Replacement parts and supplies are available online.



Standard Operating Procedure Installation of the Vapor Pin® Sampling Device Insert

January 28, 2021

Scope:

This standard operating procedure describes the installation the Vapor Pin® sampling device Insert (Figure 1).

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin® sampling device Insert. The Vapor Pin® sampling device Insert is used to facilitate the collection of soil gas samples and pressure measurements beneath engineered vapor intrusion barriers (e.g., Geo-Seal®), or vapor mitigation coatings (e.g., Retro-Coat™).

Equipment Needed:

- Vapor Pin® sampling device Insert;
- Vapor Pin® sampling device Insert Cap;
- Hacksaw (optional);
- Power drill and small diameter bits (optional);
- Threaded rod (1/2" x 13); and
- Dead blow hammer.

Installation Procedure New Construction:

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Locate the desired position (horizontally and vertically) of the top of the Vapor Pin® sampling device Insert.

- 3) Pierce the barrier with a threaded rod of sufficient length to extend slightly above the elevation of the finished floor and into the subgrade a sufficient depth to provide support for the Vapor Pin® sampling device Insert. Make sure the rod is perpendicular to the proposed floor surface. Avoid bending the rod, as it may inhibit its removal after the concrete has cured. Also avoid damaging the threads on the rod.

- 4) Dry fit the Vapor Pin® sampling device Insert and trim, or extend the length. Extend the length by sliding the Insert into a length of 1.5 inch diameter schedule 40 PVC pipe. The insert and pipe can be joined using PVC cement or similar material. Allow sufficient time for the adhesive to cure prior to sampling. Vent holes may be added at the bottom of the Insert or PVC extension to promote air flow.

- 5) Assemble the Vapor Pin® sampling device Insert and Cap by pressing the Cap into the top of the Insert. Position the assembly on the threaded rod so that the top of the Cap lies flush with the elevation of the finished floor. It is important that the position of the Insert be perpendicular to the slab so that the Vapor Pin® sampling device Secure Cover meets uniformly with the floor.

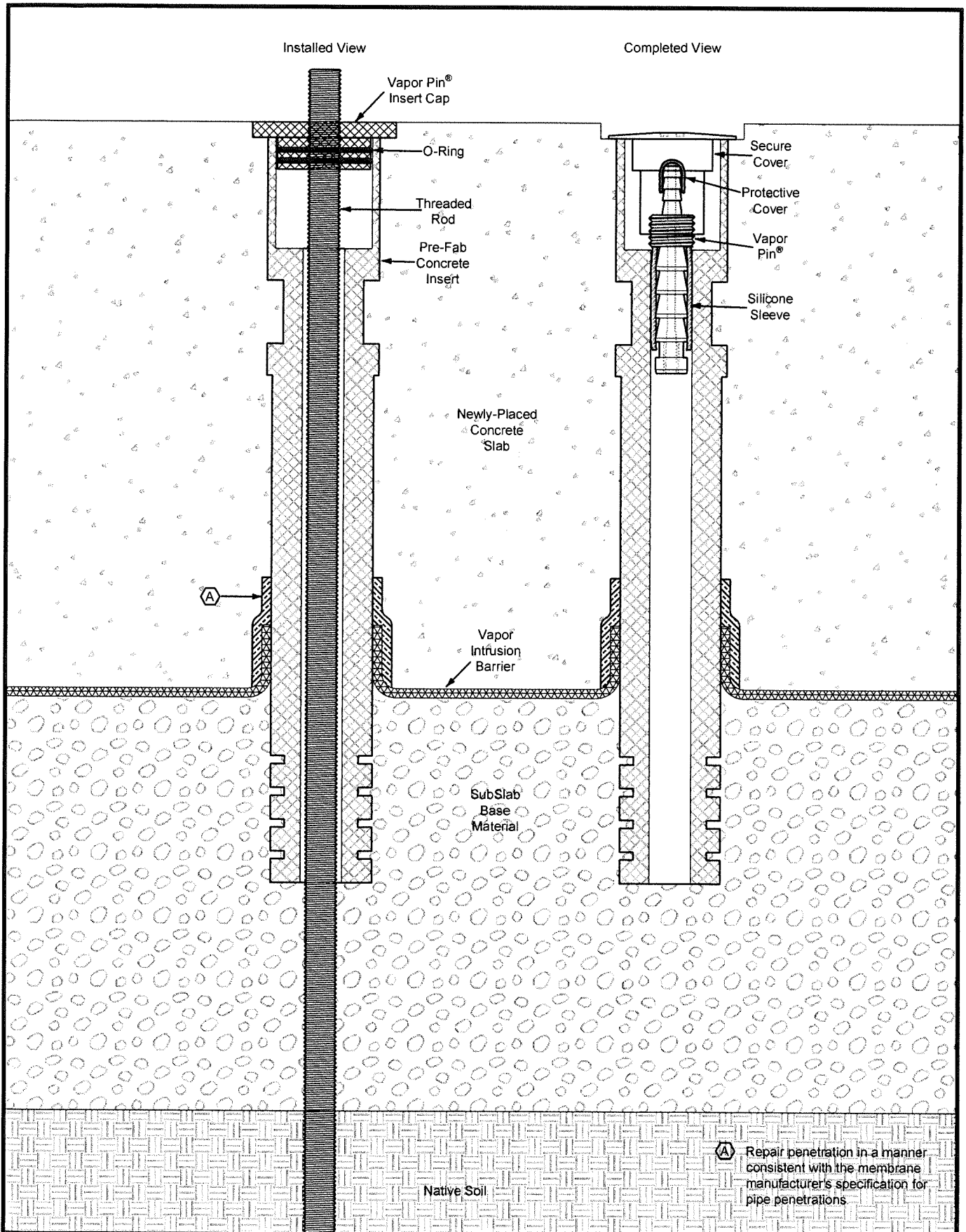
- 6) Marry the barrier to the Insert per the manufacture's specification prior to pouring the concrete slab.

VAPOR PIN® sampling device protected under US Patent # 8,220,347 B2 and other US and International Patents

- 7) After the concrete has set, remove the threaded rod and Cap and install the Vapor Pin® or FLX-VP Vapor Pin® sampling device product in the Insert.
- 5) Dry fit the Vapor Pin® sampling device Insert and trim, or extend the length. Extend the length by sliding the Insert into a length of 1.5 inch diameter schedule 40 PVC pipe. The Insert and pipe can be joined using PVC cement or similar material. Allow sufficient time for the adhesive to cure prior to sampling. Vent holes may be added at the bottom of the Insert or PVC extension to promote air flow.

Installation Procedure Existing Construction:

- 1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
- 2) Prior to installation in an existing slab, a large diameter hole must be cored through the slab to either expose the barrier, or provide access to the base beneath the slab prior to the application of a vapor mitigation coating. Contact the vendor of the barrier or coating about the desired diameter of the hole, the procedures used to expose the seal, and the methods and materials used to marry the seal or coating to the Insert prior to proceeding.
- 3) Locate the desired position (horizontally and vertically) of the top of the Vapor Pin® sampling device Insert.
- 4) Pierce the barrier (if applicable) with a threaded rod of sufficient length to extend slightly above the elevation of the finished floor and into the subgrade a sufficient depth to provide support for the Vapor Pin® sampling device Insert. Make sure the rod is perpendicular to the proposed floor surface. Avoid bending the rod, as it may inhibit its removal after the concrete has cured. Also avoid damaging the threads on the rod.
- 6) Assemble the Vapor Pin® sampling device Insert and Cap by pressing the Cap into the top of the Insert. Position the assembly on the threaded rod so that the top of the Cap lies flush with the elevation of the finished floor. It is important that the position of the Insert be perpendicular to the slab so that the Vapor Pin® sampling device Secure Cover meets uniformly with the floor.
- 7) If the Insert is used in conjunction with a vapor intrusion barrier, marry the barrier to the Insert per the barrier manufacture's specification prior to pouring the concrete slab.
- 8) After the concrete has set, remove the threaded rod and Cap and install the Vapor Pin® sampling device or FLX-VP Vapor Pin® sampling device product in the Insert.



VaporPin®

Vapor Pin® Insert with Cap,
Vapor Pin Enterprises, Inc.

Figure

1



Standard Operating Procedure Leak Testing the VAPOR PIN® Sampling Device Via Water Dam

Updated January 28, 2021

Scope:

The operating procedure describes the methodology to test a VAPOR PIN® sampling device or equivalent sub-slab sampling device for leakage of indoor air.

Purpose:

The purpose of this procedure is to assess the potential for indoor air to leak past the VAPOR PIN® sampling device and dilute the sub-slab soil gas sample.

Equipment Needed:

- Water dam
- Play-Dough or VOC free modeling clay
- distilled water
- VAPOR PIN® sampling device and associated sample tubing.

Procedure:

- 1) Drill a 5/8" diameter hole in the concrete slab and install the VAPOR PIN® sampling device as per the Standard Operating Procedure (SOP).
- 2) Clean the slab within a 2-inch radius of the VAPOR PIN® sampling device to remove dust. Avoid wetting the concrete or wait until the concrete is dry before proceeding and avoid cleaning with VOC-containing substances. A whisk broom or shop vacuum is recommended. Any remaining dust can be picked up with a

piece of scrap Play-Dough or modeling clay.

- 3) Roll a 1-inch diameter ball of Play-Doh or modeling clay between your palms to form a "snake" approximately 7 inches long and press it against the end of the water dam. Push the water dam gently against the slab to form a seal with the concrete.
- 4) Attach the sample tubing to the top of the VAPOR PIN® sampling device and pour enough distilled water into the water dam to immerse base of the VAPOR PIN®, and if desired, the tubing connection at the top of the VAPOR PIN® sampling device.
- 5) Purge the sample point as required by the data quality objectives. Concrete will absorb some of the water, which is normal; however, if water is lost to the sub-slab, stop, remove the water from the water dam, and reposition the VAPOR PIN® sampling device to stop the leakage. Reseat the leak test equipment, if needed.
- 6) If the VAPOR PIN® sampling device is installed in the flush-mount configuration, the larger hole can be filled with water in place of the water dam and Play-Dough.

Figure 1. Water dam used for leak detection

PHOTO

VAPOR PIN® sampling device protected under US Patent # 8,220,347 B2 and other US and International Patents

Attachment D: Subslab Soil Gas Sampling Train Instructions

Soil Gas Manifold Instructions



Initial Setup

- 1) Cut the ¼" OD FEP tubing into 3 sections
- 2) Insert 1 section into each open piece of silicon tubing in the sampling tee
- 3) Attach the well point line and the purge line to the 3 way valve sections on the end of the tee
- 4) To test the initial canister vacuum: Make sure the canister is tightly capped then quickly open and close the canister while observing the vacuum gauge. If the vacuum reads below 27" Hg – contact the laboratory (206) 285-8282
- 5) Double-check the sample canister is closed and remove the end cap
- 6) Attach the sample line (center tee section without a 3 way valve) to the canister using a ¼" nut and a PTFE ferrule. Do not open the sample canister.
- 7) Attach a purge canister, pump or syringe to the purge line valve using a short piece of FEP or other tubing
- 8) If using a purge can, attach to canister using a ¼" nut and a PTFE ferrule

3 Way Valve Operation

- 1) The valve switch reads "Off" with an arrow on it
- 2) **Point the switch at the pathway to be closed**, the other 2 pathways are open

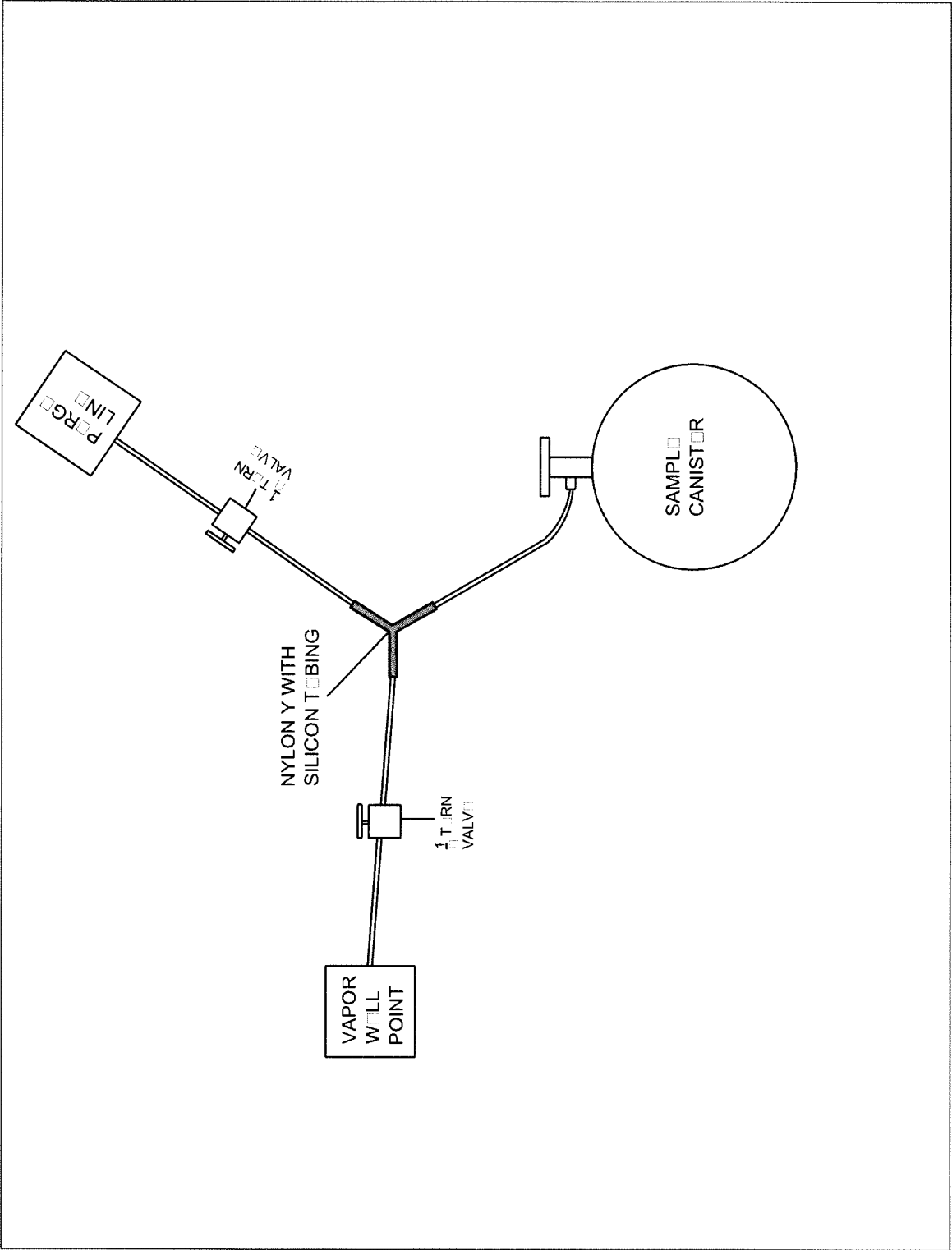
Shut-In Test Procedure

- 1) Close the well point valve by pointing the switch to the center of the tee
- 2) Open the purge line valve
- 3) Apply vacuum on the system using the purge line. The vacuum will be registered on the sample canister gauge. Do not open the sample canister.
- 4) Close the purge line valve (after applying vacuum) prior to evaluating shut-in test.

Collecting Samples

- 1) Before sampling, set up any leak testing equipment, if necessary.
 - a. Leak evaluation can be performed using a shroud and a tracer such as helium, 1,2-difluoroethane, or IPA.
- 2) Open well point turn valve
- 3) Purge and then close purge line valve after purging
- 4) Open the sample canister
 - a. Document the initial and final time and the initial and final vacuum on the COC

[https://portseattle-my.sharepoint.com/personal/kuroiwa_r_portseattle_org/Documents/PROJECTS active/UEP transfer files to OneDrive/Tran - Woodmont/Cleanup Action Plan and Implement/VI and Barrier mon work plan/final VI Mon plan/appC-Soil Gas Manifold Instructions for kits.doc](https://portseattle-my.sharepoint.com/personal/kuroiwa_r_portseattle_org/Documents/PROJECTS%20active/UEP%20transfer%20files%20to%20OneDrive/Tran%20-%20Woodmont/Cleanup%20Action%20Plan%20and%20Implement/VI%20and%20Barrier%20mon%20work%20plan/final%20VI%20Mon%20plan/appC-Soil%20Gas%20Manifold%20Instructions%20for%20kits.doc)



Attachment D: Subslab Soil Gas Sampling Train Instructions

Soil Gas Manifold Instructions



Initial Setup

- 1) Cut the ¼" OD FEP tubing into 3 sections
- 2) Insert 1 section into each open piece of silicon tubing in the sampling tee
- 3) Attach the well point line and the purge line to the 3 way valve sections on the end of the tee
- 4) To test the initial canister vacuum: Make sure the canister is tightly capped then quickly open and close the canister while observing the vacuum gauge. If the vacuum reads below 27" Hg – contact the laboratory (206) 285-8282
- 5) Double-check the sample canister is closed and remove the end cap
- 6) Attach the sample line (center tee section without a 3 way valve) to the canister using a ¼" nut and a PTFE ferrule. Do not open the sample canister.
- 7) Attach a purge canister, pump or syringe to the purge line valve using a short piece of FEP or other tubing
- 8) If using a purge can, attach to canister using a ¼" nut and a PTFE ferrule

3 Way Valve Operation

- 1) The valve switch reads "Off" with an arrow on it
- 2) **Point the switch at the pathway to be closed**, the other 2 pathways are open

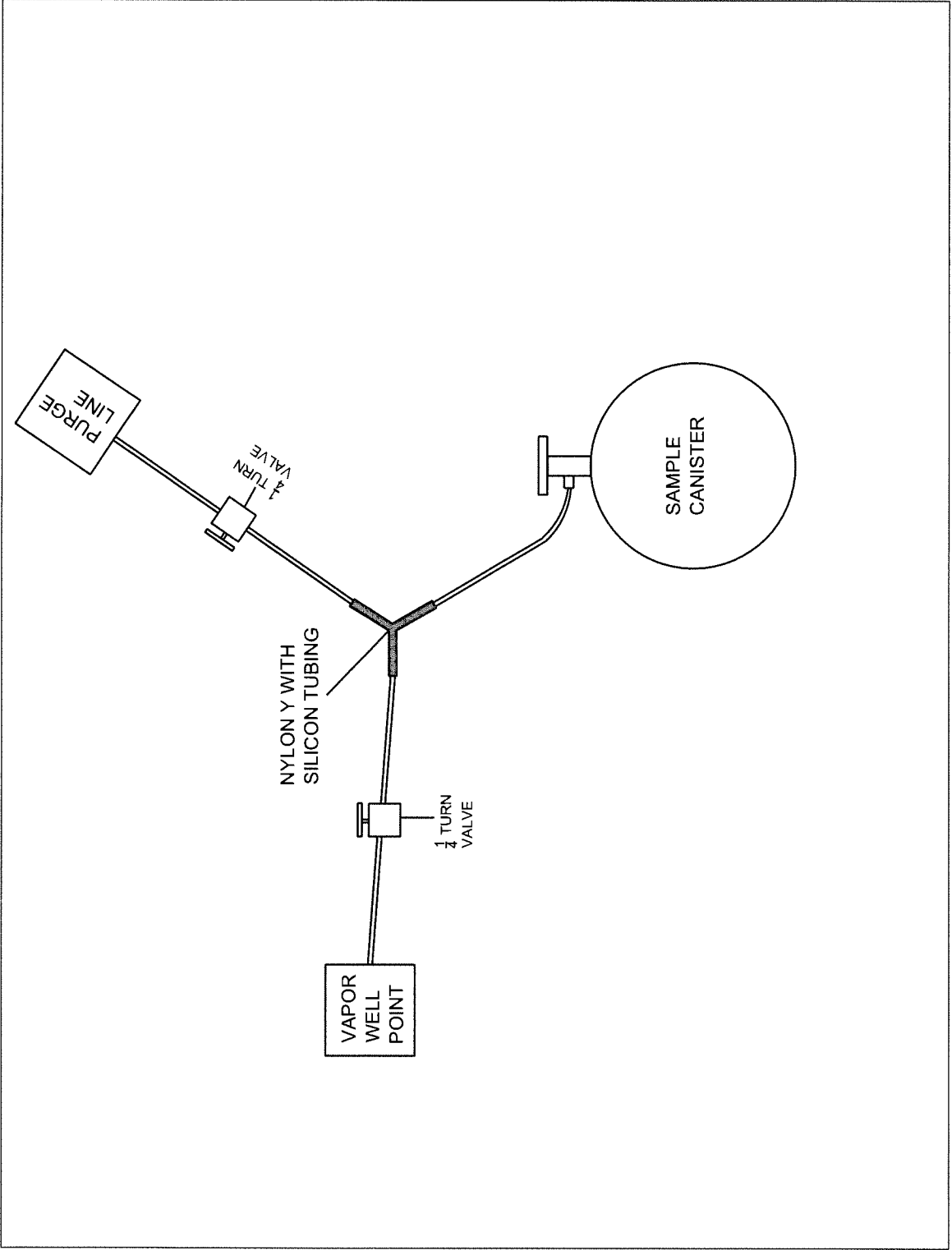
Shut-In Test Procedure

- 1) Close the well point valve by pointing the switch to the center of the tee
- 2) Open the purge line valve
- 3) Apply vacuum on the system using the purge line. The vacuum will be registered on the sample canister gauge. Do not open the sample canister.
- 4) Close the purge line valve (after applying vacuum) prior to evaluating shut-in test.

Collecting Samples

- 1) Before sampling, set up any leak testing equipment, if necessary.
 - a. Leak evaluation can be performed using a shroud and a tracer such as helium, 1,2-difluoroethane, or IPA.
- 2) Open well point turn valve
- 3) Purge and then close purge line valve after purging
- 4) Open the sample canister
 - a. Document the initial and final time and the initial and final vacuum on the COC

[https://portseattle-my.sharepoint.com/personal/kuroiwa_r_portseattle_org/Documents/PROJECTS active/UEP transfer files to OneDrive/Tran - Woodmont/Cleanup Action Plan and Implement/VI and Barrier mon work plan/final VI Mon plan/appC-Soil Gas Manifold Instructions for kits.doc](https://portseattle-my.sharepoint.com/personal/kuroiwa_r_portseattle_org/Documents/PROJECTS%20active/UEP%20transfer%20files%20to%20OneDrive/Tran%20-%20Woodmont/Cleanup%20Action%20Plan%20and%20Implement/VI%20and%20Barrier%20mon%20work%20plan/final%20VI%20Mon%20plan/appC-Soil%20Gas%20Manifold%20Instructions%20for%20kits.doc)



**Attachment B: Vapor Intrusion Building Survey and Sampling Form
(including Barrier Inspection)**

VAPOR INTRUSTION BUILDING SURVEY
and SAMPLING FORM (including Barrier Inspection)

Preparer's name: R. Kuroiwa Date: 2/15/25
Preparer's affiliation: field tech Phone #: _____
Site Name: Syrdal - Pine Lake Clean Project #: _____

Part I - Occupants

Building Address: 2830 228th Ave SE, Sammamish, WA
Property Contact: Mr. Kim Owner Renter other: _____
Contact's Phone: home () _____ work () _____ cell () _____
of Building occupants: Children under age 13 Children age 13-18 Adults 1-3 per day
Occupation and Hours in Space: Dry cleaner, VOC-free machine 8 hrs/d

Part II - Building Characteristics

Building type: residential / multi-family residential / office strip mall commercial industrial
Describe building: One story mall w/ various bizs Year constructed: ~1990
Sensitive population: day care / nursing home / hospital / school / other (specify): None
Number of floors below grade: (full basement / crawl space / slab on grade)
Number of floors at or above grade:
Depth of basement below grade surface: _____ ft. Basement size: _____ ft²
Basement floor construction: concrete / dirt / floating / stone / other (specify): _____
Foundation walls: poured concrete / cinder blocks / stone / other (specify) _____
Basement sump present? Yes / No Sump pump? Yes No Water in sump? Yes / No

Type of heating system (circle all that apply):
 hot air circulation hot air radiation wood steam radiation
 heat pump hot water radiation kerosene heater electric baseboard
describe: _____

Type of ventilation system (circle all that apply):
central air conditioning mechanical fans bathroom ventilation fans individual air
conditioning units kitchen range hood fan outside air intake
describe: _____

Type of fuel utilized (circle all that apply):
Natural gas electric fuel oil / wood / coal / solar / kerosene

Are the basement walls or floor sealed with waterproof paint or epoxy coatings? Yes No

Is there a whole space/house fan? Yes / No

Septic system? Yes / Yes (but not used) / No

Irrigation/private well? Yes / Yes (but not used) / No

Type of ground cover outside of building: grass / concrete / asphalt / other (specify) _____

Existing subsurface depressurization (radon) system in place? Yes / No active / passive

Sub-slab vapor/moisture barrier in place? Yes / No
 Type of barrier: plastic - 6 mil

Part III - Outside Contaminant Sources

Known contaminated site (1000-ft. radius): _____

Other stationary sources nearby (gas stations, emission stacks, etc.): _____

Heavy vehicular traffic distance (or other mobile sources): _____ ~100 feet west 228th Ave

Part IV - Indoor Contaminant Sources

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor and room), and whether the item was removed from the building 48 hours prior to indoor air sampling event. Any ventilation implemented after removal of the items should be completed at least 24 hours prior to the commencement of the indoor air sampling event.

Potential Sources	Location(s) – PID readings	Removed (Yes / No / NA)	
Gasoline storage cans	<i>None</i>		
Gas-powered equipment			
Kerosene storage cans			
Paints / thinners / strippers			
Cleaning solvents			
Oven cleaners			
Carpet / upholstery cleaners			
Other house cleaning products			
Moth balls			
Polishes / waxes			
Insecticides/ Herbicides			
Furniture / floor polish			
Nail polish / polish remover			
Hairspray			
Cologne / perfume			
Air fresheners			
Fuel tank (inside building)			NA
Wood stove or fireplace			NA
New furniture / upholstery			
New carpeting / flooring			NA
Hobbies - glues, paints, etc.			

Part V – Miscellaneous Items

Do any occupants of the building smoke? Yes (No) How often/last time? _____

Does the building have an attached garage directly connected to living space? Yes / (No)

If so, is a car usually parked in the garage? Yes / No

Are gas-powered equipment or cans of gasoline/fuels stored in the garage? Yes / No

Do the occupants of the building have their clothes dry cleaned? (Yes) No *prob owners*

If yes, how often? weekly / monthly / 3-4 times a year

Do any of the occupants use solvents in work? Yes (describe above) (No)

Has there ever been a fire in the building? Yes / (No) If yes, when? _____

Has painting or staining been done in the building in the last 6 months? Yes (No)

If yes, when _____ and where? _____

Part VI – Sampling Information

Sample Technician: RKU Phone number: () _____ - _____

Sample Source: (Indoor Air) / (Sub-Slab) / Shallow/Deep Soil Gas / Exterior Soil Gas

Sampler Type: Tedlar bag / Sorbent / (Stainless Steel Canister) / Other (specify): _____

Analytical Method: (TO-15) / TO-17 / other: _____ Cert. Laboratory: _____

Sample locations (floor, room):

Field ID # VI-1, VI-2, Amb-1 Field ID # _____ - _____

Field ID # SS-1, SS-2 Field ID # _____ - _____

Were "Instructions for Occupants" followed? (Yes)

If not, describe modifications: _____

Part VII - Meteorological Conditions

Was there significant precipitation within 12 hours prior to (or during) the sampling event? Yes / (No)

Describe the arrival and departure weather conditions: _____

Cloudy, cold ~ 44° F outside ~ 65° F inside

Arrival Indoor/Outdoor Temp: 44/65 Subslab and Indoor Pressure: _____

Departure Indoor/Outdoor Temp: 45/65 Subslab and Indoor Pressure: _____

Include a copy of the sampling day barometric pressure chart.

Part VIII – Barrier Inspection

Walk the entire area of the sampling space and carefully inspect the concrete floor. Generally describe the condition of the floor: slab good condition. no new penetration of cracks

Concrete surface: cracks / penetrations (incl. bolts and drains) / staining / ponding or spills - No

Utilities and penetrations (describe in detail and document on the site plan): No

Photos of new observations. (taken)

Part IX – General Observations

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

Sat. open 9-5. Morning staff
in (~3 gyps) steam pressing & folding

Attachment C: Soil Gas and Indoor Air Analytical Reports

Friedman & Bruya, Inc.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Elizabeth Webber-Bruya
Ann Webber-Bruya
Michael Erdahl
Vineta Mills
Eric Young

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

March 3, 2025

John Funderburk, Project Manager
Urban Environmental Partners
2324 1st Ave, Suite 203
Seattle, WA 98121

Dear Mr Funderburk:

Included are the results from the testing of material submitted on February 15, 2025 from the Pine Lake, F&BI 502172 project. There are 11 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Urban Env Partners Data (UEP)
UEP0303R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 15, 2025 by Friedman & Bruya, Inc. from the Urban Environmental Partners Pine Lake, F&BI 502172 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Urban Environmental Partners</u>
502172 -01	VI-1
502172 -02	VI-2
502172 -03	Amb-1
502172 -04	SV-1
502172 -05	SV-2

The 2-propanol concentration in samples SV-1 and SV-2 exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VI-1	Client:	Urban Environmental Partners
Date Received:	02/15/25	Project:	Pine Lake, F&BI 502172
Date Collected:	02/15/25	Lab ID:	502172-01 1/2.0
Date Analyzed:	02/18/25	Data File:	021818.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.26	<0.1
Chloroethane	<5.3	<2
1,1-Dichloroethene	<0.79	<0.2
trans-1,2-Dichloroethene	<0.79	<0.2
1,1-Dichloroethane	<0.81	<0.2
cis-1,2-Dichloroethene	<0.79	<0.2
1,2-Dichloroethane (EDC)	0.097	0.024
1,1,1-Trichloroethane	<1.1	<0.2
Trichloroethene	<0.21	<0.04
1,1,2-Trichloroethane	<0.11	<0.02
Tetrachloroethene	<14	<2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	VI-2	Client:	Urban Environmental Partners
Date Received:	02/15/25	Project:	Pine Lake, F&BI 502172
Date Collected:	02/15/25	Lab ID:	502172-02 1/1.9
Date Analyzed:	02/18/25	Data File:	021817.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.24	<0.095
Chloroethane	<5	<1.9
1,1-Dichloroethene	<0.75	<0.19
trans-1,2-Dichloroethene	<0.75	<0.19
1,1-Dichloroethane	<0.77	<0.19
cis-1,2-Dichloroethene	<0.75	<0.19
1,2-Dichloroethane (EDC)	0.10	0.025
1,1,1-Trichloroethane	<1	<0.19
Trichloroethene	<0.2	<0.038
1,1,2-Trichloroethane	<0.1	<0.019
Tetrachloroethene	<13	<1.9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Amb-1	Client:	Urban Environmental Partners
Date Received:	02/15/25	Project:	Pine Lake, F&BI 502172
Date Collected:	02/15/25	Lab ID:	502172-03 1/1.4
Date Analyzed:	02/18/25	Data File:	021816.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.18	<0.07
Chloroethane	<3.7	<1.4
1,1-Dichloroethene	<0.56	<0.14
trans-1,2-Dichloroethene	<0.56	<0.14
1,1-Dichloroethane	<0.57	<0.14
cis-1,2-Dichloroethene	<0.56	<0.14
1,2-Dichloroethane (EDC)	0.057	0.014
1,1,1-Trichloroethane	<0.76	<0.14
Trichloroethene	<0.15	<0.028
1,1,2-Trichloroethane	<0.076	<0.014
Tetrachloroethene	<9.5	<1.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SV-1	Client:	Urban Environmental Partners
Date Received:	02/15/25	Project:	Pine Lake, F&BI 502172
Date Collected:	02/15/25	Lab ID:	502172-04 1/230
Date Analyzed:	02/26/25	Data File:	022620.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<29	<11
Chloroethane	<610	<230
2-Propanol	2,500,000 ve	1,000,000 ve
1,1-Dichloroethene	<91	<23
trans-1,2-Dichloroethene	<91	<23
1,1-Dichloroethane	<93	<23
cis-1,2-Dichloroethene	<91	<23
1,2-Dichloroethane (EDC)	13	3.2
1,1,1-Trichloroethane	<130	<23
Trichloroethene	<25	<4.6
1,1,2-Trichloroethane	<13	<2.3
Tetrachloroethene	4,500	670

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SV-2	Client:	Urban Environmental Partners
Date Received:	02/15/25	Project:	Pine Lake, F&BI 502172
Date Collected:	02/15/25	Lab ID:	502172-05 1/200
Date Analyzed:	02/26/25	Data File:	022621.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<26	<10
Chloroethane	<530	<200
2-Propanol	270,000 ve	110,000 ve
1,1-Dichloroethene	<79	<20
trans-1,2-Dichloroethene	<79	<20
1,1-Dichloroethane	<81	<20
cis-1,2-Dichloroethene	<79	<20
1,2-Dichloroethane (EDC)	8.9	2.2
1,1,1-Trichloroethane	<110	<20
Trichloroethene	<21	<4
1,1,2-Trichloroethane	<11	<2
Tetrachloroethene	5,600	820

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Urban Environmental Partners
Date Received:	Not Applicable	Project:	Pine Lake, F&BI 502172
Date Collected:	Not Applicable	Lab ID:	05-0292 MB
Date Analyzed:	02/18/25	Data File:	021812.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.13	<0.05
Chloroethane	<2.6	<1
2-Propanol	<8.6	<3.5
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Urban Environmental Partners
Date Received:	Not Applicable	Project:	Pine Lake, F&BI 502172
Date Collected:	Not Applicable	Lab ID:	05-0412 MB
Date Analyzed:	02/26/25	Data File:	022612.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.13	<0.05
Chloroethane	<2.6	<1
2-Propanol	<8.6	<3.5
1,1-Dichloroethene	<0.4	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1
1,1-Dichloroethane	<0.4	<0.1
cis-1,2-Dichloroethene	<0.4	<0.1
1,2-Dichloroethane (EDC)	<0.04	<0.01
1,1,1-Trichloroethane	<0.55	<0.1
Trichloroethene	<0.11	<0.02
1,1,2-Trichloroethane	<0.055	<0.01
Tetrachloroethene	<6.8	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/03/25

Date Received: 02/15/25

Project: Pine Lake, F&BI 502172

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: 502170-03 1/5.4 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 25)
Vinyl chloride	ug/m3	<0.69	<0.69	nm
Chloroethane	ug/m3	<14	<14	nm
2-Propanol	ug/m3	<46	<46	nm
1,1-Dichloroethene	ug/m3	<2.1	<2.1	nm
trans-1,2-Dichloroethene	ug/m3	<2.1	<2.1	nm
1,1-Dichloroethane	ug/m3	<2.2	<2.2	nm
cis-1,2-Dichloroethene	ug/m3	<2.1	<2.1	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.22	<0.22	nm
1,1,1-Trichloroethane	ug/m3	<2.9	<2.9	nm
Trichloroethene	ug/m3	<0.58	<0.58	nm
1,1,2-Trichloroethane	ug/m3	<0.29	<0.29	nm
Tetrachloroethene	ug/m3	<37	<37	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	ug/m3	35	98	70-130
Chloroethane	ug/m3	36	107	70-130
2-Propanol	ug/m3	33	88	70-130
1,1-Dichloroethene	ug/m3	54	103	70-130
trans-1,2-Dichloroethene	ug/m3	54	99	70-130
1,1-Dichloroethane	ug/m3	55	106	70-130
cis-1,2-Dichloroethene	ug/m3	54	97	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	116	70-130
1,1,1-Trichloroethane	ug/m3	74	112	70-130
Trichloroethene	ug/m3	73	116	70-130
1,1,2-Trichloroethane	ug/m3	74	120	70-130
Tetrachloroethene	ug/m3	92	119	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/03/25

Date Received: 02/15/25

Project: Pine Lake, F&BI 502172

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES
FOR VOLATILES BY METHOD TO-15**

Laboratory Code: 502203-01 1/5.2 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 25)
Vinyl chloride	ug/m3	<0.66	<0.66	nm
Chloroethane	ug/m3	<14	<14	nm
2-Propanol	ug/m3	<45	<45	nm
1,1-Dichloroethene	ug/m3	<2.1	<2.1	nm
trans-1,2-Dichloroethene	ug/m3	<2.1	<2.1	nm
1,1-Dichloroethane	ug/m3	<2.1	<2.1	nm
cis-1,2-Dichloroethene	ug/m3	<2.1	<2.1	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.21	<0.21	nm
1,1,1-Trichloroethane	ug/m3	<2.8	<2.8	nm
Trichloroethene	ug/m3	<0.56	<0.56	nm
1,1,2-Trichloroethane	ug/m3	<0.28	<0.28	nm
Tetrachloroethene	ug/m3	<35	<35	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	ug/m3	35	98	70-130
Chloroethane	ug/m3	36	109	70-130
2-Propanol	ug/m3	33	100	70-130
1,1-Dichloroethene	ug/m3	54	107	70-130
trans-1,2-Dichloroethene	ug/m3	54	102	70-130
1,1-Dichloroethane	ug/m3	55	110	70-130
cis-1,2-Dichloroethene	ug/m3	54	99	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	125	70-130
1,1,1-Trichloroethane	ug/m3	74	123	70-130
Trichloroethene	ug/m3	73	113	70-130
1,1,2-Trichloroethane	ug/m3	74	119	70-130
Tetrachloroethene	ug/m3	92	125	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.
- c - The presence of the analyte may be due to carryover from previous sample injections.
- cf - The sample was centrifuged prior to analysis.
- d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv - Insufficient sample volume was available to achieve normal reporting limits.
- f - The sample was laboratory filtered prior to analysis.
- fb - The analyte was detected in the method blank.
- fc - The analyte is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs - Headspace was present in the container used for analysis.
- ht - The analysis was performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of control limits due to sample matrix effects.
- j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- lc - The presence of the analyte is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

502172

SAMPLE CHAIN OF CUSTODY

02/15/85

Report To Urban Env Partner

Company John Fundelbuch

Address 5

City, State, ZIP _____

Phone _____ Email _____

SAMPLERS (signature) D. Keenan

PROJECT NAME & ADDRESS Pine Lake

PO # _____

NOTES:

INVOICE TO _____

Page # 1 of 1

TENNAPOLIND TIME

Standard

RUSH

Rush charges authorized by: _____

SAMPLE DISPOSAL

Definite Clean following

Final report delivery

Hold (Fee may apply): _____

ANALYSIS REQUESTED

TO15 Full Scan	
TO15 BTEXN	
APU	
Chlorinated VOCs	
Helium	

Notes

Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. (Hg)	Field Initial Time	Final Vac. (Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	APU	Chlorinated VOCs	Helium	Notes
VI-1	01	49850		IA / SG		30+	10:23	17	7:15				<input checked="" type="checkbox"/>		8-hr.
VI-2	02	40706		IA / SG		30+	10:25	19	7:15				<input checked="" type="checkbox"/>		"
Amb-9	03	49856		IA / SG		30+	10:28	16	7:46				<input checked="" type="checkbox"/>		"
SV-1	04			IA / SG		30	2:30	0	7:39				<input checked="" type="checkbox"/>		
SV-2	05			IA / SG		30	2:44	10	7:48				<input checked="" type="checkbox"/>		

SIGNATURE

Relinquished by: [Signature]

PRINT NAME Roy Kuronina

COMPANY USEP Inc

DATE TIME 2/15/85 4:00

Relinquished by: [Signature]

PRINT NAME Whelelli

COMPANY FIRM

DATE TIME 2/15/85 19:06

Received by: _____

Samples received at 16:00

Friedman & Bruya, Inc.
 5500 4th Avenue South
 Seattle, WA 98108
 Ph. (206) 285-8282
 Fax (206) 283-5044
 FORMS-COC-COCCTO-15.DOC

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 502172 CLIENT UFPI INITIALS/ DATE: AP 02/15

If custody seals are present on cooler, are they intact? NA YES NO

Cooler/Sample temperature 16 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? YES NO

How did samples arrive?
 Over the Counter Picked up by F&BI FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? YES NO Initials/ Date: AP 02/17/25
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory unknown days

Are the samples clearly identified? (explain "no" answer below) YES NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) YES NO

Were appropriate sample containers used? YES NO Unknown

If custody seals are present on samples, are they intact? NA YES NO

Are samples requiring no headspace, headspace free? NA YES NO

Is the following information provided on the COC, and does it match the sample label? (explain "no" answer below)

Sample ID's	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Not on COC/label
Date Sampled	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Not on <u>COC/label</u>
Time Sampled	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Not on COC/label
# of Containers	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Relinquished	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Requested analysis	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On Hold	

Other comments (use a separate page if needed)
No ID tag on VI - 1. Labeled based on canister ID.
No canister ID on COC for SV - 1 & SV - 2

Air Samples: Were any additional canisters/tubes received? NA YES NO
Number of ^{purge can} unused TO15 canisters 01 Number of unused TO17 tubes _____
Catalog # 27409