



To:	Kum Kang	From:	Andrew S. Blake, L.G., R.G.
Company:	TH & JP LLC	Date:	March 12, 2024
Address:	11150 SE Rimrock Drive Happy Valley, OR 97086		
cc:	Mark Pugh, Oregon Department of Environmental Quality Tera Heintz, TH & JP LLC Kum Kang, TH & JP LLC		
SEC Project:	ECSI# 6478		
RE:	March 2024 Technical Memorandum: VES Monitoring Results – 2 nd Quarter 4300 NE Hancock Street Portland, Oregon 97213-1428		

Succeed Environmental Consulting LLC (SEC) is pleased to present this memorandum discussing the results of the 2nd Quarterly VES monitoring activities completed at 4300 NE Hancock Street in Portland, Oregon (project site). The 0.34-acre Subject Property includes the western portion of tax lot 4900 of Multnomah County tax map 1N2E30CC and consists of a multi-tenant commercial building. The property is currently occupied by a commercial dry-cleaning facility (Tie’s), a gym, and a fish store. A release of chlorinated solvents [primarily tetrachloroethylene (PCE)] was identified in soil and sub-slab vapor at the project site in 2021. Between September 2022 and March 2023, several samples were collected from the site, as discussed in as discussed in SEC’s March 2023 memorandum¹, and indicated that sub-slab vapor and indoor air was adversely impacted by the previous release of VOCs (see Tables 1 and 2).

On May 31, 2021, SEC and Advanced Remediation Technologies, Inc. (ARM) prepared an Interim Remedial Action Plan (IRAP)² to construct a sub-surface depressurization (SSD) system at the site. The Oregon Department of Environmental Quality (DEQ) reviewed the IRAM and suggested the addition of a granular activated carbon (GAC) filter, which was incorporated into SSD system design. SEC proceeded with the IRAM on June 8, 2023. The SSD system was activated on August 8, 2023, and system monitoring commenced in accordance with the IRAM shortly thereafter. The results of previous monitoring events are included in the memorandum and confirm that the SSD system is removing and successfully filtering sub-slab vapor that was impacted by the previous release of VOCs.

The 2nd Quarter of SSD system monitoring is discussed herein. A vicinity map is presented on Figure 1. The approximate configuration of the SSD system and the sub-slab monitoring ports are presented on Figure 2. The approximate indoor air sample locations are shown relative to previous soi and soil-gas sample locations on Figure 3.

¹ Technical Memorandum Re: *March 2023 Vapor Sample Results; 4300 NE Hancock Street; Portland, Oregon 97213-1428*, prepared by SEC, dated March 25, 2023.

² *Interim Remedial Action Plan; Tie’s Drycleaner Property; 4300 NE Hancock Street; Portland, Oregon 97213; ECSI #6478*, prepared by ARM and SEC, dated May 12, 2023, revised May 31, 2023.



INDOOR AIR EVALUATION: FIRST QUARTERLY EVENT

On February 28, 2024, SEC collected two indoor air samples (Fish Front and TIE's Rear) at the Subject Property for analysis of VOCs by Environmental Protection Agency (EPA) method TO-15. These two sample locations were selected, as they previously exhibited the highest concentrations of PCE in their respective spaces. Both samples were collected using laboratory a provided 6-liter Summa™ canisters with in-line filters restricting air flow to evaluate indoor air representative of a workday. Each sample was shipped to Friedman and Bruya of Seattle, Washington, under general chain-of-custody protocols for analysis of volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method TO-15.

No other VOCs were detected during this event at concentrations greater than corresponding DEQ Risk-Based Concentrations (RBCs). The results are presented on Table 1. A copy of the corresponding chemical analytical laboratory report is attached to this memorandum.

SSD SYSTEM EVALUATION

Between August 8 and February 28, 2024, SEC accessed and monitored the SSD system at each depressurization point³, and at the system effluent (before and after the GAC filter). The moisture knock-out was monitored for the presence of condensation on October 4, 2023. There was not moisture observed within the knock-out. This may be due to evaporation, as the temperature of the knock-out has been measured between 132.6° and 147° Fahrenheit (located in Tie's boiler room).

SSD monitoring consisted of the collection of pressure and/or photoionization detector (PID) readings from each sample point, and the collection of effluent flow velocity measurements. The results are summarized on Table 2, and generally indicate the following:

- The SSD system is operational and creating a vacuum beneath the building. The effluent fan is operational and maintaining a vacuum within the piping of the SSD system.
- Measured effluent flow velocities range between approximately 380 and 590 feet per minute (FPM), with a recently measured velocity of 500 FPM.
- Calculated effluent flow volumes range between approximately 42 and 63.6 cubic feet per minute (CFM), with a recent measured flow volume of 54.22 CFM.

SUB-SLAB VAPOR EVALUATION

Between August 8, 2023 and February 28, 2024, SEC accessed and monitored seven dedicated sample ports⁴. SSV monitoring consisted of the collection of pressure readings from each sample point. Influent pressure readings at the SSD locations were taken with a Dwyer 2000 Magnehelic with a pressure range of -2.5" to -3.0" inches of water (IOW) ±2%. SEC's results are summarized on Table 2.

Pressure readings at the sub-slab vapor monitoring locations were taken with a Dwyer 2000 Magnehelic with a pressure range of 0.00" to 0.10" IOW ±2%. SEC's results are summarized on Table 3, and indicate that the SSD system is maintaining a vacuum beneath most of the building.

³ SSD-1 through SSD-9

⁴ SS Fish, SS Gym, SS Tie's ENE, SS Tie's ESE, SS Tie's ESE, SS Tie's NW, SS Tie's SE, and SS Tie's SW



EFFLUENT EVALUATION

Between August 8, 2023 and February 28, 2024, SEC collected samples at the system effluent (before and after the GAC filter) for analysis of VOCs by Environmental Protection Agency (EPA) method TO-15.

All samples were collected using sampling equipment consisting of laboratory a provided 1-liter Summa™ canister with in-line filters (0.7 micron) and a flow controller (restricting air flow to a rate of less than 200 milliliters per minute), which was connected to dedicated stainless-steel soil-gas sampling probes via Teflon™ tubing. Each sample was shipped to Friedman and Bruya of Seattle, Washington, under general chain-of-custody protocols for analysis of volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method TO-15.

A copy of the corresponding chemical analytical laboratory report is attached to this memorandum. The results are presented on Table 4 and are summarized below:

- PCE and TCE concentrations have decreased continuously since the SSD system was activated in August 2023.
- The detected concentration of PCE in the February 2024 influent sample appears to have increased slightly since the November 2023 event, which indicates that the SSV is still actively removing residual PCE from beneath the Subject Property.
- The GAC continues to filter contamination, primarily PCE, from the influent air prior to discharge. Although the detected concentration of TCE in the February 2024 effluent sample appears to have increased slightly, no detectable concentrations of PCE have been observed in system effluent samples collected to date.

It is noted that these results were previously compared to reference air dispersion values that were calculated using AERSCREEN software prior to system activation. Since discharge velocities are changing and the GAC is still filtering contamination from influent air prior to discharge, no new model has been created.

CONCLUSION

Based on the results of this assessment, the SSD system is currently removing sub-slab vapor that has been adversely impacted by the previous release of VOCs at the subject property. SEC will continue to monitor the SSD system in accordance with the IRAP, and will provide the third quarterly monthly memorandum in June 2023.



**SUCCEED
ENVIRONMENTAL
CONSULTING, LLC**

Memorandum

We truly appreciate the opportunity to be of service to you and stand ready to provide you with any further assistance that may be required for this project.

Sincerely,
Succeed Environmental Consulting, LLC

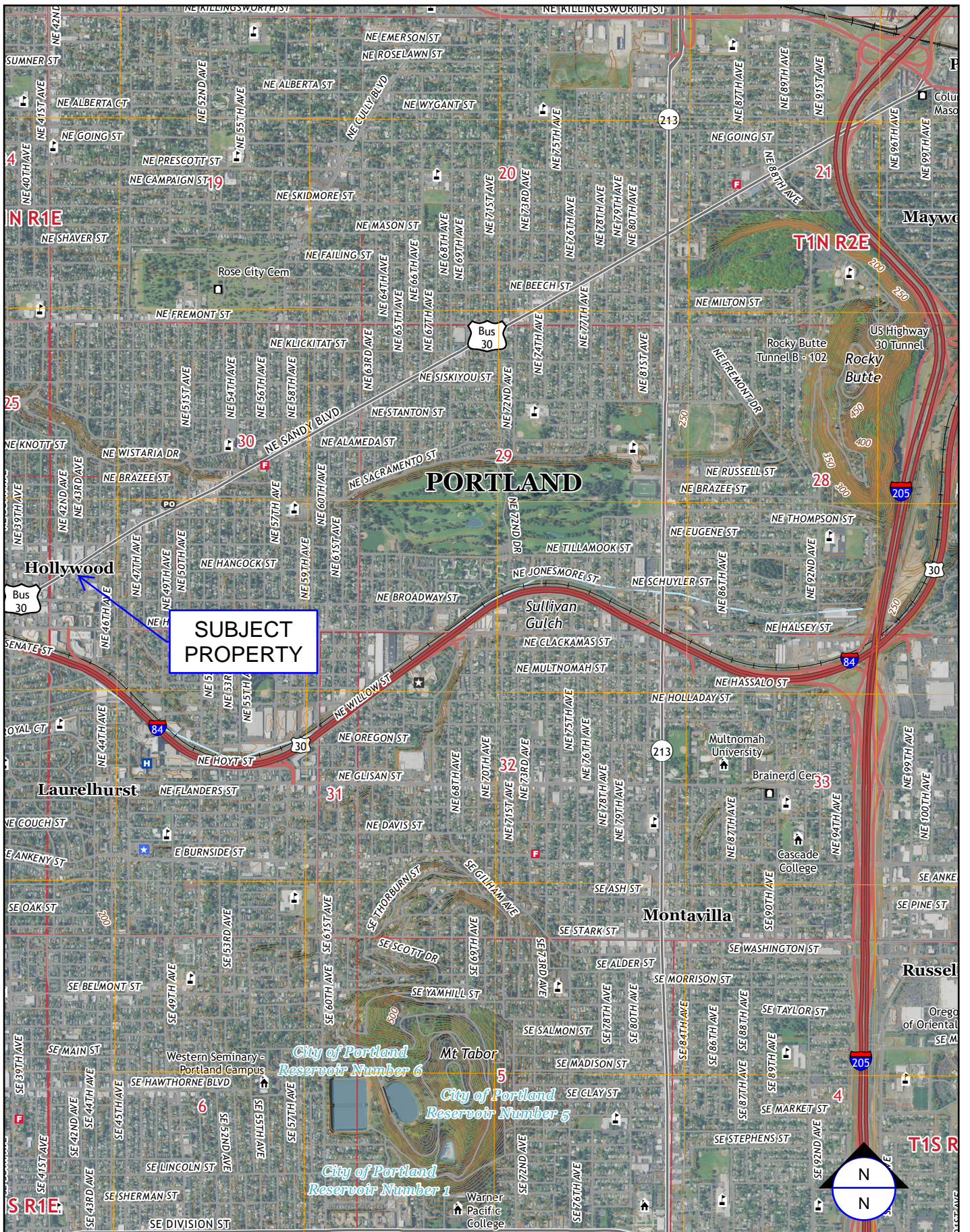
A handwritten signature in blue ink that reads "Andrew Blake".


Andrew S. Blake, R.G.
Principal Geologist

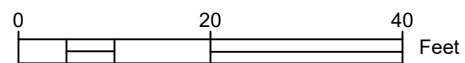
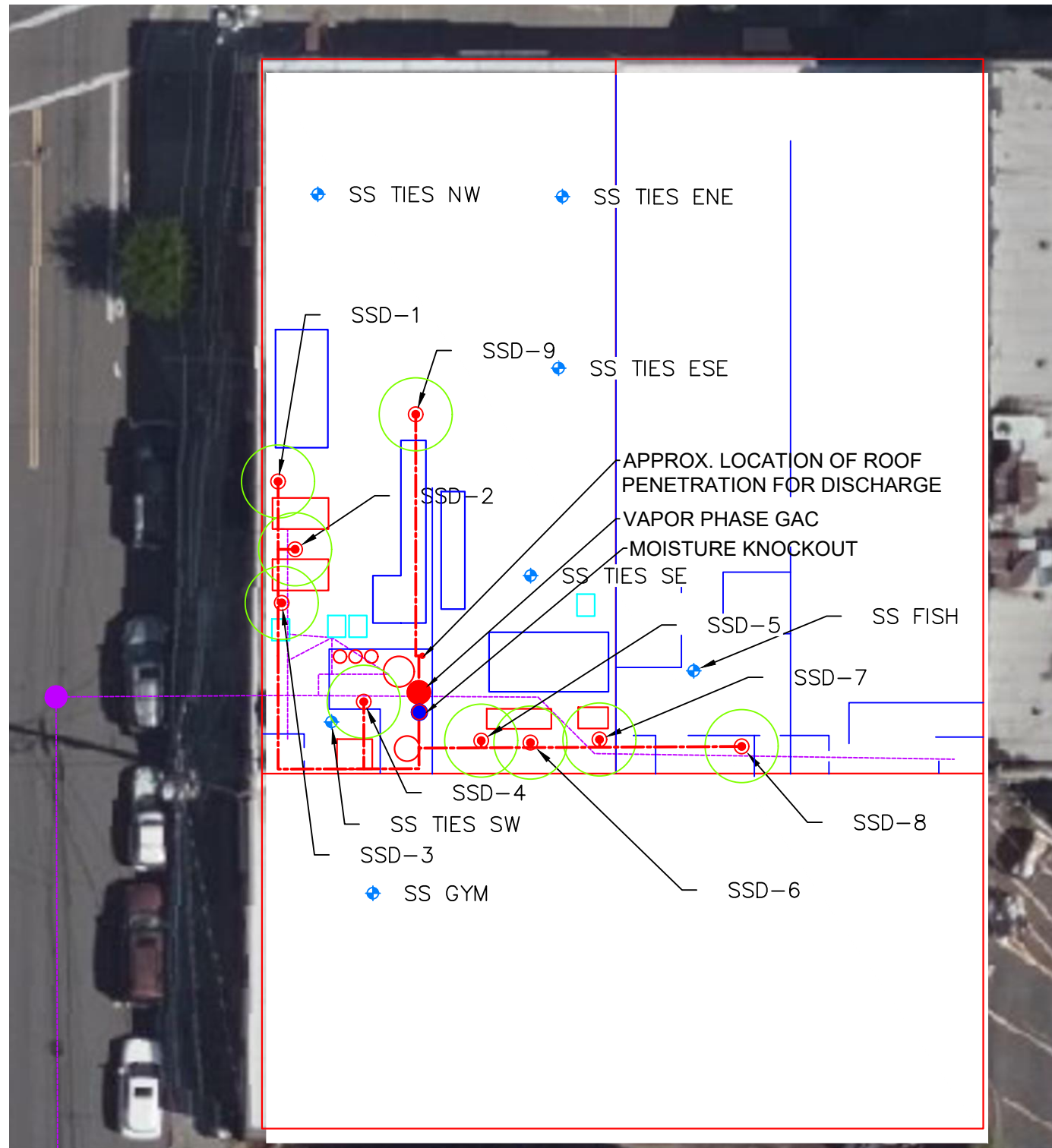


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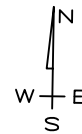


 <p>SUCCEED ENVIRONMENTAL CONSULTING, LLC</p>	TIE'S-1-01	VICINITY MAP	
	MARCH 2024	4300 NE HANCOCK ST PORTLAND, OREGON 97213	FIGURE 1



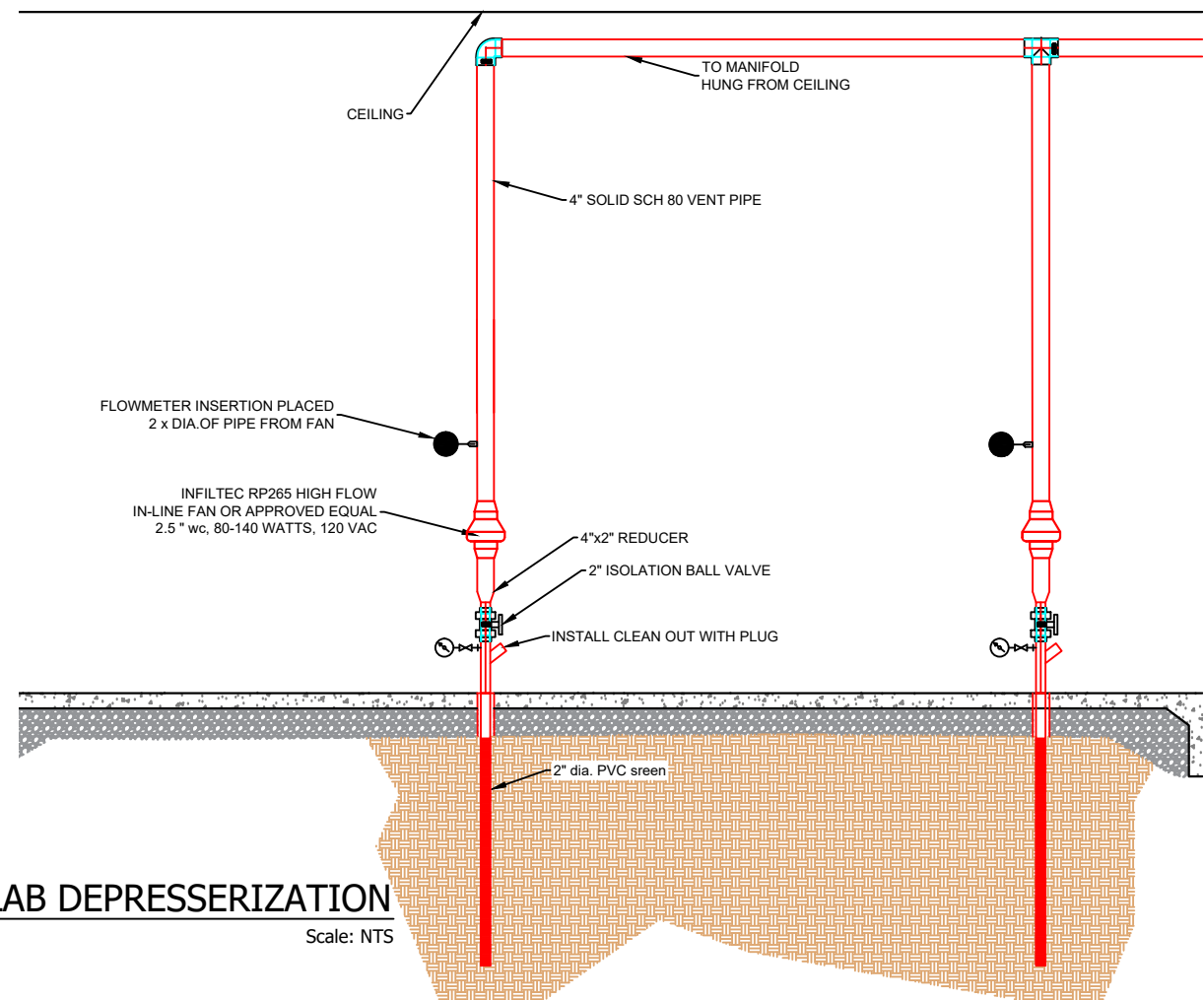
LEGEND

- + SUB SLAB VAPOR SAMPLE LOCATION
- SUB SLAB DEPRESSURIZATION POINT
- SANITARY SEWER
- VACUUM GAUGE
- AIR FLOW GAUGE



1 DISCHARGE DETAIL

Scale: NTS



2 SUBSLAB DEPRESSERIZATION

Scale: NTS

REVISION INFORMATION	
MILESTONE	DATE
SSD	
SDD AS-BUILT	
REVIEWING AGENCY	DEQ

"PARTNERS IN SERVICE"

Advanced Remediation Technologies, Inc

890 NW 1ST AVENUE, SUITE 108
CANYON, OREGON 97013
1-503-266-7172

SUCCESS ENVIRONMENTAL, LLC
TIE'S DRYCLEANERS







4300 NE HANCOCK ST, PORTLAND, OREGON

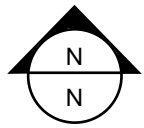
SITE PLAN, FIGURE 2

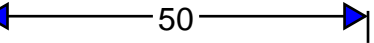
DATE	04/21/23
DRAWN	LAD
DESIGN	LAD
CHECK	KAD
SCALE	D
SITE PLAN	
SHEET	1 OF 1



LEGEND:

-  SITE BOUNDARY (APPROXIMATE)
-  DRY-CLEANING MACHINE LOCATION (APPROXIMATE)
-  SOLID WASTE DUMPSTERS (APPROXIMATE)
-  SOIL BORING LOCATION (PSS 2021)
-  SUB-SLAB VAPOR SAMPLE LOCATION (PSS, AEG, & SEC 2021-2023)
-  INDOOR AIR SAMPLE LOCATION (AEG & SEC 2022-2024)



(APPROXIMATE SCALE IN FEET)
 50

SITE PLAN BASED ON OBSERVATIONS MADE BY SEC. MEASUREMENTS DERIVED FROM THIS FIGURE SHOULD BE CONSIDERED APPROXIMATE.

SITE PLAN - SAMPLE LOCATIONS		FIGURE 3
TIE'S-1-01	4300 NE HANCOCK ST PORTLAND, OREGON 97213	
MARCH 2024		
 SUCCEED ENVIRONMENTAL CONSULTING, LLC		

TABLE 1
SUMMARY OF INDOOR AIR SAMPLE ANALYTICAL RESULTS
cVOCs DETECTED BY EPA METHOD TO-15
4300 NE HANCOCK STREET
PORTLAND, OREGON

Matrices: Air

Client Sample ID		Ambient		Gym		Tie's Front		Tie's Middle		Tie's Rear				Fish Front				Fish Back		DEQ Risk-Based Concentration (RBC) for Air Inhalation (Chronic Screening Level Value Updated March 2024)	
Collected By		AEG	SEC	AEG	SEC	AEG	SEC	AEG	SEC	AEG	SEC	SEC	SEC	AEG	SEC	SEC	SEC	AEG	SEC		
Date Collected		9/3/2022	3/10/2023	9/3/2022	3/10/2023	9/3/2022	3/10/2023	9/3/2022	3/10/2023	9/3/2022	3/10/2023	11/2/2023	2/28/2024	9/3/2022	3/10/2023	11/2/2023	2/28/2024	9/3/2022	3/10/2023		
Method	Analyte	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Occupational Receptor
TO-15	Tetrachloroethene	ug/m3	0.568	8.8 U	8.16	14	0.404 U	27	3.28	31	3.89	46	6.1 U	5.8 U	0.404	300 ve	6.9 J	5.8 U	14.7	210 ve	47
TO-15	Trichloroethene	ug/m3	0.0537 U	0.14 U	0.0537 U	0.13 U	0.0537 U	0.24	0.139	0.28	0.165	0.32	0.16 U	0.44	0.0537 U	0.59	0.17 U	0.18 U	0.0537 U	0.40	3
TO-15	1,2-Dichloroethane	ug/m3	0.0405 U	0.15	0.0405 U	0.15	0.0405 U	0.15	0.0405 U	0.17	0.0405 U	0.24	0.079	0.083	0.0405 U	3	1.5	0.096	1.13	2.55	0.47
TO-15	cis-1,2-Dichloroethene	ug/m3	0.396 U	0.52 U	0.396 U	0.48 U	0.396 U	0.52 U	0.396 U	0.4 U	0.396 U	0.4 U	0.59 U	0.67 U	0.396 U	0.4 U	0.63 U	0.67 U	0.396 U	0.63 U	180
TO-15	trans-1,2-Dichloroethene	ug/m3	0.198 U	0.52 U	0.198 U	0.48 U	0.198 U	0.52 U	0.198 U	0.4 U	0.198 U	0.4 U	0.59 U	0.67 U	0.198 U	0.4 U	0.63 U	0.67 U	0.198 U	0.63 U	180
TO-15	Vinyl Chloride	ug/m3	0.0256 U	0.17 Uj	0.0256 U	0.16 Uj	0.0256 U	0.17 Uj	0.0256 U	0.26 U	0.0256 U	0.26 U	0.23 U	0.26 U	0.0256 U	0.26 U	0.25 U	0.26 U	0.0256 U	0.21 Uj	2.8

Notes:

Bolding indicates analyte detection.

NE: not established.

>Pv: The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical.

U: Analyte was not detected at a concentration greater than the laboratory reporting limit (shown).

j: The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

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

Shading indicates RBC exceedance.

**TABLE 2
SUMMARY OF SUB-SLAB VAPOR FIELD DATA
PID AND PRESSURE MEASUREMENTS
4300 NE HANCOCK STREET
PORTLAND, OREGON**

Monitoring Location	Date	Inf. Pressure ("H ₂ O)	Eff. Pressure ("H ₂ O)	Volume Flow (CFM)	Flow Velocity (FPM)
SSD-1	8/8/2023	-2.5	-0.10	---	---
	8/17/2023	-2.5	-0.10	---	---
	8/24/2023	-2.5	-0.10	---	---
	8/30/2023	-2.5	-0.10	---	---
	9/6/2023	-2.5	-0.09	---	---
	10/4/2023	-2.5	-0.12	---	---
	11/2/2023	-2.5	-0.10	---	---
	2/28/2024	-2.5	-0.01	---	---
SSD-2	8/8/2023	-2.5	-0.08	---	---
	8/17/2023	-2.5	-0.08	---	---
	8/24/2023	-2.5	-0.08	---	---
	8/30/2023	-2.5	-0.08	---	---
	9/6/2023	-2.5	334[---	---
	10/4/2023	-2.5	-0.09	---	---
	11/2/2023	-2.5	-0.09	---	---
	2/28/2024	-2.5	-0.02	---	---
SSD-3	8/8/2023	-2.5	-0.08	---	---
	8/17/2023	-2.5	-0.08	---	---
	8/24/2023	-2.5	-0.08	---	---
	8/30/2023	-2.5	-0.08	---	---
	9/6/2023	-2.5	-0.08	---	---
	10/4/2023	-2.5	-0.11	---	---
	11/2/2023	-2.5	-0.10	---	---
	2/28/2024	-2.5	-0.03	---	---
SSD-4	8/8/2023	-2.5	-0.11	---	---
	8/17/2023	-2.5	-0.11	---	---
	8/24/2023	-2.5	0.09	---	---
	8/30/2023	-2.5	-0.11	---	---
	9/6/2023	-2.5	-0.01	---	---
	10/4/2023	-2.5	-0.12	---	---
	11/2/2023	-2.5	-0.11	---	---
	2/28/2024	-2.5	-0.04	---	---
SSD-5	8/8/2023	-2.5	-0.13	---	---
	8/17/2023	-2.5	-0.13	---	---
	8/24/2023	-2.5	-0.13	---	---
	8/30/2023	-2.5	-0.13	---	---
	9/6/2023	-2.5	-0.11	---	---
	10/4/2023	-3	-0.12	---	---
	11/2/2023	-3	-0.11	---	---
	2/28/2024	-3	-0.04	---	---

**TABLE 2
SUMMARY OF SUB-SLAB VAPOR FIELD DATA
PID AND PRESSURE MEASUREMENTS
4300 NE HANCOCK STREET
PORTLAND, OREGON**

Monitoring Location	Date	Inf. Pressure ("H ₂ O)	Eff. Pressure ("H ₂ O)	Volume Flow (CFM)	Flow Velocity (FPM)
SSD-6	8/8/2023	-2.5	-0.13	---	---
	8/17/2023	-2.5	-0.13	---	---
	8/24/2023	-2.5	-0.13	---	---
	8/30/2023	-2.5	-0.13	---	---
	9/6/2023	-2.5	-0.11	---	---
	10/4/2023	-2.5	-0.12	---	---
	11/2/2023	-2.5	-0.11	---	---
	2/28/2024	-2.5	-0.03	---	---
SSD-7	8/8/2023	-2.5	-0.12	---	---
	8/17/2023	-2.5	-0.12	---	---
	8/24/2023	-2.5	-0.12	---	---
	8/30/2023	-2.5	-0.12	---	---
	9/6/2023	-2.5	-0.11	---	---
	10/4/2023	-2.5	-0.12	---	---
	11/2/2023	-2.5	-0.10	---	---
	2/28/2024	-2.5	-0.02	---	---
SSD-8	8/8/2023	-2.5	-0.10	---	---
	8/17/2023	-0.10	-0.10	---	---
	8/24/2023	-0.10	-0.10	---	---
	8/30/2023	-0.10	-0.10	---	---
	9/6/2023		-0.03	---	---
	10/4/2023	-0.03	-0.03	---	---
	11/2/2023	-2.5	-0.10	---	---
	2/28/2024	-2.5	-0.03	---	---
SSD-9	8/8/2023	-2.5	-0.10	---	---
	8/17/2023	-2.5	-0.10	---	---
	8/24/2023	-2.75	-0.10	---	---
	8/30/2023	-2.75	-0.10	---	---
	9/6/2023	-2.75	-0.09	---	---
	10/4/2023	-2.5	-0.11	---	---
	11/2/2023	-2.5	-0.10	---	---
	2/28/2024	-2.5	-0.02	---	---
PRE/POST TREATMENT GAC	8/8/2023	-0.16	0.07	42.38	390
	8/17/2023	-0.16	0.07	44.5	410
	8/24/2023	-0.16	0.07	40.88	380
	8/30/2125	-0.15	0.08	58.25	540
	9/6/2023	-0.07	0.08	53.53	500
	10/4/2023	-0.5	0.065	60.73	560
	11/2/2023	-0.13	0.075	63.6	590
	2/28/2024	-0.065	0.08	54.22	500

TABLE 3
SUMMARY OF SUB-SLAB VAPOR FIELD DATA
PID AND PRESSURE MEASUREMENTS
4300 NE HANCOCK STREET
PORTLAND, OREGON

Monitoring Location	Date	PID Reading (PPM)	Pressure Measurement ("H ₂ O)
SS Fish	8/8/2023	28.6	-0.035
	8/17/2023	25.1	-0.035
	8/24/2023	23.8	-0.05
	8/30/2023	0.0	-0.065
	9/6/2023	0.0	-0.055
	10/4/2023	--	-0.065
	11/2/2023	--	-0.065
	2/28/2024	--	-0.065
SS Gym	8/8/2023	0.0	0.000
	8/17/2023	0.0	0.000
	8/24/2023	0.0	0.000
	8/30/2023	0.0	0.000
	10/4/2023	--	0.000
	11/2/2023	--	0.000
	2/28/2024	--	0.000
SS Tie's ENE	8/8/2023	0.0	-0.035
	8/17/2023	0.0	-0.035
	8/24/2023	0.0	-0.035
	8/30/2023	0.0	-0.045
	9/6/2023	0.0	-0.03
	10/4/2023	--	-0.04
	11/2/2023	--	-0.04
	2/28/2024	--	-0.04
SS Tie's ESE	8/8/2023	0.0	-0.035
	8/17/2023	0.0	-0.035
	8/24/2023	0.0	-0.03
	8/30/2023	0.0	-0.045
	9/6/2023	0.0	-0.03
	10/4/2023	--	-0.045
	11/2/2023	--	-0.04
	2/28/2024	--	-0.04
SS Tie's NW	8/8/2023	0.0	0.000
	8/17/2023	0.0	0.000
	8/24/2023	0.0	0.010
	8/30/2023	0.0	0.010
	9/6/2023	0.0	0.010
	10/4/2023	--	0.000
	11/2/2023	--	0.000
	2/28/2024	--	0.000

TABLE 3
SUMMARY OF SUB-SLAB VAPOR FIELD DATA
PID AND PRESSURE MEASUREMENTS
4300 NE HANCOCK STREET
PORTLAND, OREGON

Monitoring Location	Date	PID Reading (PPM)	Pressure Measurement ("H ₂ O)
SS Tie's SE	8/8/2023	0.0	-0.075
	8/17/2023	0.0	-0.075
	8/24/2023	0.0	-0.08
	8/30/2023	0.0	-0.095
	9/6/2023	0.0	-0.05
	10/4/2023	--	-0.100
	11/2/2023	--	-0.100
	2/28/2024	--	-0.100
SS Tie's SW	8/8/2023	0.0	-0.005
	8/17/2023	0.0	-0.005
	8/24/2023	0.0	-0.005
	8/30/2023	0.0	-0.005
	9/6/2023	0.0	-0.01
	10/4/2023	--	-0.005
	11/2/2023	--	0.000
	2/28/2024	--	0.000

TABLE 4
SUMMARY OF PRE- & POST-TREATMENT SAMPLE ANALYTICAL RESULTS
cVOCs DETECTED BY EPA METHOD TO-15
4300 NE HANCOCK STREET
PORTLAND, OREGON

Matrices: Air

Sample Location			INFLUENT (PRE GAC)						EFFLUENT (POST GAC)						Reference Air Dispersion Value (Calculated Aerscreen Threshold)
Collected By			SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC		
Date Collected			8/8/2023	8/17/2023	9/6/2023	10/4/2023	11/2/2023	2/28/2024	8/8/2023	8/17/2023	9/6/2023	10/4/2023	11/2/2023	2/28/2024	
Method	Analyte	Units	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Table 4 Value
TO-15	Tetrachloroethene	ug/m3	100,000 ve	56,000 ve	--	16,000 ve	14,000 ve	19,000 ve	43 U	130 U	58 U	62 U	64 U	64 U	(Update Pending)
TO-15	Trichloroethene	ug/m3	1200	660	--	210	190	170	0.69 U	2 U	0.91 U	0.98 U	1.0 U	25	(Update Pending)
TO-15	1,2-Dichloroethane	ug/m3	2 U	1.9 U	--	0.73 U	0.77 U	1.8 U	0.26 U	0.77 U	0.34 U	0.37 U	0.38 U	0.38 U	--
TO-15	cis-1,2-Dichloroethene	ug/m3	710	600	--	220	380	360	2.5 U	7.5 U	3.4 U	3.6 U	3.7 U	610 ve	--
TO-15	trans-1,2-Dichloroethene	ug/m3	19 U	18 U	--	7.1 U	7.5 U	18 U	2.5 U	7.5 U	3.4 U	3.6 U	3.7 U	5.9	--
TO-15	Vinyl Chloride	ug/m3	13 U	12 U	--	4.6 U	4.9 U	12 U	1.6 U	4.9 U	2.2 U	2.3 U	2.4 U	2.4 U	--
TO-15	Chloroform	ug/m3	47	14	--	4.7	--	--	0.31 U	1.7	0.42 U	0.53	--	--	--
TO-15	Tetrahydrofuran	ug/m3	140	27 U	--	11 U	--	--	3.8 U	11 U	5 U	5.4 U	--	--	--
TO-15	Styrene	ug/m3	390	39 U	--	15 U	--	--	5.5 U	16 U	7.2 U	7.8 U	--	--	--
--	PID Field Reading	ug/m3	24.0	17.7	3.1	--	--	--	40.2	38.4	4.6	--	--	--	--

Notes:

Bolding indicates analyte detection.

--: not established.

U: Analyte was not detected at a concentration greater than the laboratory reporting limit (shown).

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

Shading indicates Screening Level Value exceedance.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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

March 8, 2024

Andrew Blake, Project Manager
Succeed Environmental Consulting, LLC
1631 NE Broadway 211
Portland, OR 97232

Dear Mr Blake:

Included are the results from the testing of material submitted on March 1, 2024 from the Ties-1, F&BI 403022 project. There are 8 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
SCD0308R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on March 1, 2024 by Friedman & Bruya, Inc. from the Succeed Environmental Consulting, LLC Ties-1, F&BI 403022 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Succeed Environmental Consulting, LLC</u>
403022 -01	Influent-022824
403022 -02	Effluent-022824
403022 -03	Tie's Rear
403022 -04	Fish Front

The tetrachloroethene concentration in sample Influent-022824 and the cis-1,2-dichloroethene concentration in Effluent-022824 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:	Influent-022824	Client:	Succeed Environmental Consulting, LLC
Date Received:	03/01/24	Project:	Ties-1, F&BI 403022
Date Collected:	02/28/24	Lab ID:	403022-01 1/45
Date Analyzed:	03/05/24	Data File:	030428.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

	% Recovery:	Lower Limit:	Upper Limit:
Surrogates:			
4-Bromofluorobenzene	99	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<12	<4.5
Chloroethane	<120	<45
1,1-Dichloroethene	<18	<4.5
trans-1,2-Dichloroethene	<18	<4.5
1,1-Dichloroethane	<18	<4.5
cis-1,2-Dichloroethene	360	90
1,2-Dichloroethane (EDC)	<1.8	<0.45
1,1,1-Trichloroethane	<25	<4.5
Trichloroethene	170	31
1,1,2-Trichloroethane	<2.5	<0.45
Tetrachloroethene	19,000 ve	2,800 ve

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Effluent-022824	Client:	Succeed Environmental Consulting, LLC
Date Received:	03/01/24	Project:	Ties-1, F&BI 403022
Date Collected:	02/28/24	Lab ID:	403022-02 1/9.4
Date Analyzed:	03/05/24	Data File:	030427.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	101	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<2.4	<0.94
Chloroethane	<25	<9.4
1,1-Dichloroethene	<3.7	<0.94
trans-1,2-Dichloroethene	5.9	1.5
1,1-Dichloroethane	<3.8	<0.94
cis-1,2-Dichloroethene	610 ve	150 ve
1,2-Dichloroethane (EDC)	<0.38	<0.094
1,1,1-Trichloroethane	<5.1	<0.94
Trichloroethene	25	4.7
1,1,2-Trichloroethane	<0.51	<0.094
Tetrachloroethene	<64	<9.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Tie's Rear	Client:	Succeed Environmental Consulting, LLC
Date Received:	03/01/24	Project:	Ties-1, F&BI 403022
Date Collected:	02/28/24	Lab ID:	403022-03 1/1.7
Date Analyzed:	03/04/24	Data File:	030418.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.26 j	<0.1 j
Chloroethane	<4.5	<1.7
1,1-Dichloroethene	<0.67	<0.17
trans-1,2-Dichloroethene	<0.67	<0.17
1,1-Dichloroethane	<0.69	<0.17
cis-1,2-Dichloroethene	<0.67	<0.17
1,2-Dichloroethane (EDC)	0.083	0.020
1,1,1-Trichloroethane	<0.93	<0.17
Trichloroethene	0.44	0.082
1,1,2-Trichloroethane	<0.093	<0.017
Tetrachloroethene	<5.8 j	<0.85 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Fish Front	Client:	Succeed Environmental Consulting, LLC
Date Received:	03/01/24	Project:	Ties-1, F&BI 403022
Date Collected:	02/28/24	Lab ID:	403022-04 1/1.7
Date Analyzed:	03/04/24	Data File:	030419.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	100	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.26 j	<0.1 j
Chloroethane	<4.5	<1.7
1,1-Dichloroethene	<0.67	<0.17
trans-1,2-Dichloroethene	<0.67	<0.17
1,1-Dichloroethane	<0.69	<0.17
cis-1,2-Dichloroethene	<0.67	<0.17
1,2-Dichloroethane (EDC)	0.96	0.24
1,1,1-Trichloroethane	<0.93	<0.17
Trichloroethene	<0.18	<0.034
1,1,2-Trichloroethane	<0.093	<0.017
Tetrachloroethene	<5.8 j	<0.85 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Succeed Environmental Consulting, LLC
Date Received:	Not Applicable	Project:	Ties-1, F&BI 403022
Date Collected:	Not Applicable	Lab ID:	04-0407 mb
Date Analyzed:	03/04/24	Data File:	030412.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration	
	ug/m3	ppbv
Vinyl chloride	<0.16 j	<0.06 j
Chloroethane	<2.6	<1
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	<3.4 j	<0.5 j

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/08/24

Date Received: 03/01/24

Project: Ties-1, F&BI 403022

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

Laboratory Code: 403021-01 1/6.4 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Vinyl chloride	ug/m3	<1.6	<1.6	nm
Chloroethane	ug/m3	<17	<17	nm
1,1-Dichloroethene	ug/m3	<2.5	<2.5	nm
trans-1,2-Dichloroethene	ug/m3	<2.5	<2.5	nm
1,1-Dichloroethane	ug/m3	<2.6	<2.6	nm
cis-1,2-Dichloroethene	ug/m3	<2.5	<2.5	nm
1,2-Dichloroethane (EDC)	ug/m3	<0.26	<0.26	nm
1,1,1-Trichloroethane	ug/m3	<3.5	<3.5	nm
Trichloroethene	ug/m3	<0.69	<0.69	nm
1,1,2-Trichloroethane	ug/m3	<0.35	<0.35	nm
Tetrachloroethene	ug/m3	<43	<43	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Acceptance
			Recovery LCS	Criteria
Vinyl chloride	ug/m3	35	100	70-130
Chloroethane	ug/m3	36	101	70-130
1,1-Dichloroethene	ug/m3	54	109	70-130
trans-1,2-Dichloroethene	ug/m3	54	110	70-130
1,1-Dichloroethane	ug/m3	55	110	70-130
cis-1,2-Dichloroethene	ug/m3	54	108	70-130
1,2-Dichloroethane (EDC)	ug/m3	55	113	70-130
1,1,1-Trichloroethane	ug/m3	74	109	70-130
Trichloroethene	ug/m3	73	112	70-130
1,1,2-Trichloroethane	ug/m3	74	115	70-130
Tetrachloroethene	ug/m3	92	111	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 below the standard reporting limit. 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.

403022

SAMPLE CHAIN OF CUSTODY

03/01/24

Page # 1 of 1

Report To Andrew Blake

Company SEC

Address 1631 NE Broadway #211

City, State, ZIP Portland, OR 97232

Phone 771-371-0104 Email ablake@seced.com

SAMPLERS (signature)		PROJECT NAME & ADDRESS	PO #
<u>Tie's - 1</u>			
NOTES:		INVOICE TO	
<u>-</u>		<u>SEC</u>	

TURNAROUND TIME	SAMPLE DISPOSAL
<input checked="" type="checkbox"/> Standard	Default: Clean following
<input type="checkbox"/> RUSH	final report delivery
Rush charges authorized by:	Hold (Fee may apply):

SAMPLE INFORMATION

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	ANALYSIS REQUESTED				Notes
Influent - 022824	01	8210	62	IA / <u>SG</u>	2/29/24	-28	255 pm	-8	3:00 pm	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	
Effluent - 022824	02	8210	62	IA / <u>SG</u>	2/29/24	-28	3:00 pm	-8	3:05 pm					X
Tie's Rear	03	40707	07847	IA / <u>SG</u>	2/28/24	-28	1005	-16	3:25 pm					X
Fisk Front	04	18574	05348	IA / <u>SG</u>	2/28/24	-28	1000	-14	3:30 pm					X
				IA / SG										
				IA / SG										
				IA / SG										
				IA / SG										
				IA / SG										

Samples received at 12:00

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Relinquished by:		Andrew Blake	ANH PHAN	SEC		2/29/24	FED EX
Received by:				FS&		03/01/24	15:17
Relinquished by:							
Received by:							

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