

SoundEarth Strategies, Inc. 1011 SW Klickitat Way, Suite 212 Seattle, Washington 98134

March 5, 2025

Mr. Scott Koppelman AMLI Residential Partners 425 Pontius Avenue North, Suite 400 Seattle, Washington 98109

SUBJECT: SUPPLEMENTAL SUBSURFACE INVESTIGATION WORK PLAN Avtech Corp 3400 Wallingford Avenue North, Seattle, Washington Facility/Site No.: 71755531 Cleanup Site ID No.: 12131 VCP Project No.: NW2739 Project No.: 0789-004

Dear Mr. Koppelman:

SoundEarth Strategies, Inc. (SoundEarth) has prepared this work plan on behalf of AMLI Residential Partners (AMLI) to complete a supplemental subsurface investigation (SSI) and vapor intrusion evaluation at the Avtech Corp property located at 3400 Wallingford Avenue North in Seattle, Washington (the Property). The areas in which impacts originating from the Property have come to be located are referred to as the Site, which is enrolled in the Washington State Department of Ecology's (Ecology's) Voluntary Cleanup Program (VCP Project No. NW2739, Facility/Site No. 71755531). This work is being performed in support of pursuing a No Further Action determination.

# INTRODUCTION

This SSI work plan has been prepared in response to the letter issued by Ecology on January 19, 2023 (Ecology 2023; Ecology January 2023 opinion letter), which detailed Ecology's opinion regarding SoundEarth's prior work plan for groundwater monitoring and vapor intrusion assessment activities (SoundEarth 2022). The Ecology January 2023 opinion letter included comments regarding three primary components of the Site characterization and remediation work conducted to date: (a) delineation of remaining soil containing trichloroethene (TCE) at concentrations above Site cleanup levels, (b) delineation of TCE exceedances in groundwater, and (c) vapor intrusion assessment. The focus of this work plan is as follows:

- Perform confirmation sampling and analysis of soil from beneath the area located within and immediately north of North 34th Street following the completion of soil vapor extraction (SVE) remedial actions.
- Evaluate the effectiveness of prior remedial actions, including the excavation and removal of chlorinated volatile organic compound (CVOC)—impacted soil, chemical oxidant injections, and SVE operation in reducing the concentrations of TCE in soil vapor, and the associated risk of vapor intrusion.

The scope of work proposed for further delineation of TCE exceedances in groundwater was presented in SoundEarth's work plan dated November 15, 2022 (SoundEarth 2022). Ecology concurred with the proposed scope of work and requested that injection wells IW04A, IW15, IW30, IW39, and IW47 be included in groundwater monitoring network. Future groundwater monitoring and sampling will be temporarily postponed until data is obtained from the confirmation soil sampling and soil vapor evaluation; postponement will also afford an opportunity for the sodium permanganate that was previously injected to the aquifer to attenuate.

# BACKGROUND

The Property consists of six tax parcels on the northern and southern sides of North 34th Street (King County Parcel Nos. 4083306660, 4083306670, 4083306695, 4083307105, 4083307155, and 4083307160) that encompass a total of approximately 87,894 square feet (2.02 acres) of land. The three parcels north of North 34th Street (King County Parcel Nos. 4083306660, 4083306670, and 4083306695) are collectively known as the North Block. The three parcels south of North 34th Street (King County Parcel Nos. 4083307160) are collectively known as the South Block.

Multiple phases of remedial investigation activities have been conducted at the Property by SoundEarth since 2012. Based on the data gathered during these investigations, the Site, which is defined by the nature and extent of contamination associated with one or more releases of hazardous substances prior to the implementation of remediation activities, includes soil contaminated with TCE, tetrachloroethene (PCE), lead, and polycyclic aromatic hydrocarbons and groundwater contaminated with TCE. The identified TCE and PCE impacts likely resulted from a release associated with the Avtech Corporation manufacturing facility formerly located on the North Block of the Property. The field activities and findings of these investigations are included in SoundEarth's Draft Remedial Investigation and Feasibility Study Report dated January 10, 2014 (SoundEarth 2014a; 2014 Draft RIFS Report), and SoundEarth's letter regarding SoundEarth's RI/FS/CAP Addendum to AMLI dated August 6, 2014 (SoundEarth 2014b). Soil boring and well locations from all investigations conducted to date are shown on Figure 1.

In 2014, SoundEarth initiated interim cleanup actions at the Site, which included source removal by excavation in conjunction with the construction of the existing buildings on the Property, the installation and operation of an SVE system beneath the newly constructed building on the North Block to mitigate potential vapor intrusion, and in-situ chemical oxidation to address residual groundwater contamination beneath the Property and adjacent rights-of-way (ROWs). Interim cleanup actions conducted between 2014 and 2016, which included remedial excavation activities; installation of injection wells; potassium permanganate injection events conducted in March 2015, July 2016, and December 2016; and installation of the SVE system in March 2015, are documented in SoundEarth's Cleanup Action Report to AMLI dated June 19, 2017 (SoundEarth 2017a; 2017 Cleanup Action Report).

Groundwater monitoring has been conducted at the Site during most quarters since the second quarter of 2012. Groundwater monitoring activities and results through the third quarter of 2017 have been documented in groundwater monitoring reports, the most recent of which was dated October 18, 2017 (SoundEarth 2017b). The results of groundwater monitoring and remedial injection activities conducted at the Site since the third quarter of 2017 are summarized in SoundEarth's Remedial Injection and Groundwater Monitoring Work Plan (Updated) (SoundEarth 2023) and in electronic submittals dated April 22 and December 11, 2024 (SoundEarth 2024a, 2024b).

#### PROPOSED SCOPE OF WORK

SoundEarth proposes the following scope of work to address Ecology's January 2023 comments regarding the delineation of soil beneath the Site that may contain TCE at concentrations above Site cleanup levels and the completion of a vapor intrusion assessment.

# Delineation of Remaining Soil Containing TCE above Site Cleanup Levels

At the completion of remedial excavation activities, soil containing TCE at concentrations exceeding the Washington State Model Toxics Control Act (MTCA) Method A cleanup level was encountered at a total of seven locations on the North Block of the Property and in the North 34th Street ROW, including the following:

- Excavation bottom confirmation sample A2-65N85E-68-BTM, collected from the south-central portion of the North Block at an approximate depth of 17 feet below ground surface (bgs; approximate elevation of 68 feet above mean sea level [AMSL])
- Samples collected from soil borings SB201 and SB204, located on the south-central portion of the North Block, at an approximate depth of 20 feet bgs (approximate elevation of 65 feet AMSL)
- Samples collected from soil boring IW03, located outside of the redevelopment excavation area on the southeastern portion of the North Block, at approximate depths of 15 and 25 feet bgs (approximate elevations of 70 and 60 feet AMSL, respectively)
- Samples collected from soil boring MW16, located on the south-central portion of the North Block outside of the redevelopment excavation area, at approximate depths of 15, 25, and 30 bgs (approximate elevations of 70, 60, and 55 feet AMSL, respectively).
- Samples collected from soil borings B06/MW04 and B18/MW13, located in the North 34th Street ROW, at an approximate depth of 35 feet bgs (approximate elevation of 44 feet AMSL)

In May 2019, to evaluate the effectiveness of the SVE system that had operated since January 2017, SoundEarth advanced three additional soil borings beneath the floor slab on the south-central portion of the North Block. Soil borings P1 through P3 were advanced at the locations of soil borings SB201 and SB204 and bottom confirmation soil sample A2-65N85E-68-BTM, respectively (Figure 1). Soil samples were collected from each boring at the depth where TCE was previously detected at concentrations exceeding the MTCA Method A cleanup level. TCE was not detected at concentrations above the laboratory reporting limit in the soil samples collected from soil borings P1 or P2 at an approximate elevation of 65 feet AMSL or from soil boring P3 at an approximate elevation of 68 feet AMSL, indicating that the SVE system has effectively remediated the soil contamination that had been previously detected beneath this portion of the Property. To date, additional soil sampling has not been conducted to evaluate the post-remediation concentrations of TCE in the locations of soil borings IW03, MW16, B06/MW04, or B18/MW13.

Soil sample analytical results for soil borings P1 through P3, as well as the results for those boring locations where the post-remediation concentrations of TCE remain unassessed (soil borings IW03, MW16, B06/MW04, and B18/MW13), are provided in Table 1. Soil analytical results for all soil samples collected during previous investigations and during remedial excavation activities can be found as attachments to

SoundEarth's 2014 Draft RIFS Report and 2017 Cleanup Action Report. The locations and analytical results of soil samples collected during previous investigations and remedial excavation activities are shown in plan view on Figures 2 and 3 and in cross-section view on Figures 4 through 6.

To further assess post-remediation soil conditions, SoundEarth proposes the collection and analysis of soil samples from borings that will be advanced in close proximity to previous soil borings IW03 and MW16, located on the southern portion of the Property (north of North 34th Street), as well as previous borings B06/MW04 and B18/MW13, located in the North 34th Street ROW. The proposed scope of work includes the following:

- Coordinating activities with subcontractors.
- Updating the existing Health and Safety Plan.
- Performing one-call and private utility locating.
- Applying for and securing a Street Use Permit with the City of Seattle Department of Transportation (includes preparation of Traffic Control Plan).
- Concrete coring of sidewalk, if required.
- Performing vacuum clearance of soil borings.
- Advancing four soil borings within 5 feet of soil borings IW03, MW16, B06/MW04, and B18/MW13 using a hollow-stem auger rig. Confirmation soil samples will be collected at the depths of TCE exceedances as follows (see Table 1):
  - IW03 15 and 25 feet bgs; 70 and 60 feet AMSL, respectively
  - MW16 15, 25, and 30 feet bgs; 70, 60, and 55 feet AMSL, respectively
  - B06/MW04 and B18/MW13 35 feet bgs; 44 feet AMSL

The soil samples will be obtained using a 2.5-inch diameter, split-barrel sampler driven a maximum of 18 inches by a 140-pound weight falling a vertical distance of approximately 30 inches. The soil samples will be visually examined and classified in general accordance with ASTM International D2488 and field screened for the presence of volatile organic compounds using a photoionization detector (PID). Upon completion of the sampling activities, the borings will be backfilled with bentonite and the surface restored to its original condition (e.g., concrete, asphalt).

- Submitting the soil samples for analysis of TCE by US Environmental Protection Agency (EPA) Method 8260D.
- Storing the investigation-derived waste in 55-gallon drums for waste characterization, soil profiling, and subsequent disposal.

# Vapor Intrusion Assessment

The SVE system was installed prior to construction of the new building on the North Block in March and April 2015. The SVE system consisted of six vertical SVE wells (SVE06A, SVE06B, SVE08A, SVE08B, SVE09A, and SVE09B) and three horizontal SVE wells (SVE02, SVE04, and SVE05), as shown in plan view on Figure 2 and in cross-section view on Figures 4 through 6. The vertical SVE wells were installed to depths between

66 and 68 feet AMSL with 12 to 13 feet of screen. The horizontal SVE wells were installed at depths between 66 and 68 feet AMSL. The SVE well conveyance pipes extend beneath the foundation slab from the wellheads to a manifold located at the SVE system compound, which is situated in the basement parking garage of the building on the North Block.

The SVE system was started in January 2017 and operated until December 2020. During the SVE operational period, approximately 40 pounds of vapor-phase CVOCs were removed from the subsurface. In December 2020, the SVE operation was terminated due to declining CVOC mass removal rates, as demonstrated by the fact that CVOCs were not detected at concentrations above the laboratory reporting limits in effluent samples and PID measurements were negligible.

To evaluate the effectiveness of completed remedial actions and the potential risk associated with the vapor intrusion pathway, SoundEarth proposes collecting an influent soil vapor sample from the extracted soil gas for chemical analysis and evaluation in accordance with Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action (Ecology 2009). The proposed scope of work includes the following:

- Restarting the SVE system and extracting soil gas from the six vertical and three horizontal extraction wells.
- Measuring and recording the SVE system parameters during startup and prior to collection of the influent soil vapor sample. The recorded measurements will include the individual well/blower vacuum, the individual and total extraction rates, the individual and total PID measurements, and the system run time.
- Collecting an influent soil vapor sample that is representative of the total extracted soil gas within 24 hours of startup and submitting for analysis of PCE, TCE, cis-1,2-dichloroethene, and vinyl chloride using EPA Method TO-15.

# REPORTING

Following completion of the confirmation soil and soil vapor sampling activities and receipt of final analytical results, a report will be prepared with a summary of field activities and results and a discussion of SoundEarth's findings and conclusions. The report will include a site plan showing the soil boring locations, cross sections with confirmation soil sampling results, soil and soil vapor summary tables, and attachments (e.g., laboratory analytical reports and soil boring logs). The report will be submitted electronically to Ecology for review and comment.

# CLOSING

SoundEarth appreciates the opportunity to work with you on this project. Please contact the undersigned at (206) 306-1900 if you have any questions or require additional information.

Respectfully,

SoundEarth Strategies, Inc.

Clare Tochilin, LG Associate Geologist

Ryan<sup>\*</sup>K. Bixby, LG

Managing Principal

Levi Fernandes, PE Senior Engineer

Attachments: Figure 1, Property and Exploration Location Plan
Figure 2, Remedial Excavation Extent, Soil Sample Locations and Extent of TCE Impacts in Soil – North Block
Figure 3, Soil Sample Locations and Remedial Excavation Extents – South Block
Figure 4, Geologic Cross Section A-A'
Figure 5, Geologic Cross Section B-B'
Figure 6, Geologic Cross Section C-C'
Table 1, Residual TCE-Contaminated Soil Samples Prior to In-Situ Remediation

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# REFERENCES

SoundEarth Strategies, Inc. (SoundEarth). 2014a. Draft Remedial Investigation and Feasibility Study Report, Avtech Property, 3400 Wallingford Avenue North, Seattle, Washington. Prepared for AMLI Residential Partners. January 10.

\_\_\_. 2014b. Letter regarding RI/FS/CAP Addendum, Avtech Corporation Property, 3400 Wallingford Avenue North, Seattle, Washington. From Rob Roberts, John Funderburk, and Terry Montoya. To Scott Koppelman, AMLI Residential Partners. August 6.

\_\_\_\_\_. 2017a. Letter regarding Cleanup Action Report, AMLI Wallingford Property, 3400 Wallingford Avenue North, Seattle, Washington 98103. From Chris Cass, Rob Roberts, John Funderburk, and Terry Montoya. To Scott Koppelman, AMLI Residential Partners. June 19.

- \_\_\_\_\_\_. 2017b. Letter regarding Third Quarter 2017 Groundwater Monitoring Report, Former Avtech Property (AMLI Wallingford), 3400 Wallingford Avenue North, Seattle, Washington. From Clare Tochilin and Rob Roberts. To Scott Koppelman, AMLI Residential Partners. October 18.
- \_\_\_\_\_\_. 2022. Letter regarding Remedial Injection and Groundwater Monitoring Work Plan, AMLI Wallingford Property, 3400 Wallingford Avenue North, Seattle, Washington 98103. From Clare Tochilin, Levi Fernandes, and Ryan Bixby. To Scott Koppelman, AMLI Residential Partners. November 15.
- . 2023. Letter regarding Remedial Injection and Groundwater Monitoring Work Plan (Updated), AMLI Wallingford Property, 3400 Wallingford Avenue North, Seattle, Washington 98103. From Clare Tochilin, Levi Fernandes, and Ryan Bixby. To Scott Koppelman, AMLI Residential Partners. June 20.
- . 2024a. Email regarding AMLI Wallingford Compliance GW Well Network. From Levi Fernandes. To David Unruh, Washington State Department of Ecology. April 22.
- . 2024b. Email regarding AMLI Wallingford Compliance GW Well Network. From Levi Fernandes. To David Unruh, Washington State Department of Ecology. December 11.
- Washington State Department of Ecology (Ecology). 2009. *Guidance for Evaluating Vapor Intrusion in Washington State: Investigation and Remedial Action.* Publication No. 09-09-047. Revised March 2022. January.
- \_\_\_\_\_\_. 2023. Letter regarding Opinion Pursuant to WAC 173-340-515(5) on Remedial Action, Avtech Corp, 3400 Wallingford Avenue N, Seattle, WA 98103. From David Unruh. To Levi Fernandes, SoundEarth Strategies, Inc. January 19.

**FIGURES** 





	LEGEND						
	SETBACK FOR NEW BUILDING						
	PROPERTY BOUNDARY						
	PARCEL BOUNDARY						
	SEWER LINE (APPROXIMATE)						
🕅 B-220N65E-92-BTM	CATCH BASIN						
$\Delta$							
● ▲ MW18							
المراجع مراجع المراجع							
	INJECTION WELL						
<b>H</b> P107	PUSH-PROBE BORING						
⊕ SB212	MINI-TRACK AUGER BORING (JUL 2013, APRIL - MAY 2014)						
• MW18	POST FOUNDATION CONSTRUCTION MONITORING WELL (2015)						
⊕B12	SOIL BORING						
🕀 SB212	MINI-TRACK AUGER BORING (JULY 2013)						
<b>⊕</b> B104	HOLLOW STEM AUGER BORING (JAN 2013)						
<b>⊕</b> B104	HOLLOW STEM AUGER 30-DEGREE ANGLE BORING (JAN 2013)						
• IW56	PRECONSTRUCTION INJECTION WELL (APR 2014 - JUN 2014)						
ФР3	SUB-SLAB SOIL BORING (MAY 2019)						
SVE09B	SOIL VAPOR EXTRACTION WELL						
$\oplus$	PROPOSED CONFIRMATION SOIL SAMPLING BORING						
bgs/BGS	BELOW GROUND SURFACE						
HSA MTCA	HOLLOW-STEM AUGER MODEL TOXICS CONTROL ACT						
NAVD88	THE NORTH AMERICAN VERTICAL DATUM OF 1988						
PCS	PETROLEUM-CONTAMINATED SOIL						
TCE							
031	UNDERGROUND STORAGE LANK						
A5	KNOWN OVEREXCAVATION AREA						
A3	HOT SPOT REMOVAL • 0'-10' CLEAN SOIL (85' TO 75' ELEVATION) • 10'-17' CONTAMINATED (75' TO 68' ELEVATION)						
A2	AREA A - SOURCE AREA • 0'-10' CLEAN SOIL (85' TO 75' ELEVATION) • 10'-19' CONTAMINATED (75' TO 66' ELEVATION)						
A4	SOIL SCREEN AND STOCK PILE AREA (10' -17')						
A1	SOIL SCREEN AND STOCK PILE SOURCE (0 - 10') (85' TO 75' ELEVATION)						
	AREA EX01 PCS REMOVAL						
	APPROXIMATE EXTENT OF EXCAVATION AREA B						
	APPROXIMATE EXTENT OF EXCAVATION AREA C1						
[]]]]	APPROXIMATE EXTENT OF TCE ABOVE MTCA METHOD A CLEANUP LEVEL IN SOIL REMAINING IN PLACE						
	DENOTES TCE CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVEL						
	DENOTES TCE CONCENTRATION PREVIOUSLY EXCEEDING MTCA METHOD A CLEANUP LEVEL REMEDIATED BY SOIL VAPOR EXTRACTION SYSTEM						



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FIGURE 2 REMEDIAL EXCAVATION EXTENT, SOIL SAMPLE LOCATIONS AND EXTENT OF TCE IMPACTS IN SOIL -

NORTH BLOCK



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REMEDIAL EXCAVATION EXTENTS -







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FIGURE 4

GEOLOGIC CROSS SECTION A-A'





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APPROXIMATE HORIZONTAL SCALE IN FEET NOT FOR CONSTRUCTION OR ENGINEERING PURPOSES



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FIGURE 6

GEOLOGIC CROSS SECTION C-C'

TABLE



# Table 1 Residual TCE-Contaminated Soil Samples Prior to In-Situ Remediation Avtech Corp 3400 Wallingford Avenue North Seattle, Washington

	Analytical Results (mg/kg)										
Sample ID	Sample Location	Sample Date	Sample Type	Sample Matrix	Sample Elevation <sup>(1)</sup> (feet)	Sample Status (In Place/Remediated)	TCE <sup>(2)</sup>	PCE <sup>(2)</sup>			
Excavation Area A2											
A2-65N85E-68-BTM	North Block	02/11/15	Bottom	Soil	68	Remediated by SVE system	0.043	< 0.025			
P3-2019-01 (same location as A2-65N85E-68-BTM)	North Block	05/17/19	Sub-slab boring (2019)	Soil	68	In place	<0.02	< 0.025			
SB201-20	North Block	07/09/13	Boring	Soil	65	Remediated by SVE system	0.039	<0.025			
P1-2019-04 (same location as SB201-20)	North Block	05/17/19	Sub-slab boring (2019)	Soil	65	In place	<0.02	< 0.025			
SB204-20	North Block	07/09/13	Boring	Soil	65	Remediated by SVE system	0.031	< 0.025			
P2-2019-05 (same location as SB204-20)	North Block	05/17/19	Sub-slab boring (2019)	Soil	65	In place	<0.02	<0.025			
April 2014 SoundEarth Soil Borings Outside of the Mass Excavation											
B-IW03-15	North Block	04/03/14	Boring	Soil	70	In place	0.044	< 0.025			
B-IW03-25	North Block	04/03/14	Boring	Soil	60	In place	0.063	< 0.025			
B-MW16-15	North Block	04/02/14	Boring	Soil	70	In place	0.034	< 0.025			
B-MW16-25	North Block	04/02/14	Boring	Soil	60	In place	0.066	< 0.025			
B-MW16-30	North Block	04/02/14	Boring	Soil	55	In place	0.042	< 0.025			
January and April 2012 Soil Borings In North 34th Street Right-of-Way											
B06-35	North Block	01/11/12	Boring	Soil	44	In place	0.046	<0.025			
B18-35	North Block	04/26/12	Boring	Soil	44	In place	0.032	<0.025			
MTCA Method A Cleanup Levels <sup>(3)</sup>								0.05			

NOTES:

Red denotes concentration exceeds MTCA Method A cleanup level for soil.

Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

<sup>(1)</sup> Elevations in NAVD88.

<sup>(2)</sup> Analyzed by EPA Method 8260C.

<sup>(3)</sup>MTCA Method A Cleanup Levels, Table 740-1 of WAC 173-340-900, revised November 2007.

< = not detected at a concentration above the laboratory reporting limit

EPA = US Environmental Protection Agency

mg/kg = milligrams per kilogram

MTCA= Washington State Model Toxics Control Act

NAVD88 = North American Vertical Datum of 1988

PCE = tetrachloroethene

SoundEarth = SoundEarth Strategies, Inc.

SVE = soil vapor extraction

TCE = trichloroethene

WAC = Washington Administrative Code