




MEMORANDUM

To: Mark Adams, LHG
Washington State Department of Ecology

Date: January 20, 2021

From: Heather Good, LHG


Project No.: 1803.01.04

RE: December 2020 Slab Inspection and Vapor Intrusion Priority Monitoring
Precision Engineering, Inc., Seattle, Washington
Agreed Order No. DE 18079; Facility Site ID 2056; Cleanup Site ID 4532

Maul Foster & Alongi, Inc. (MFA) prepared this memorandum to transmit documentation of and data from the first quarterly slab inspection and vapor intrusion priority (VIP) air monitoring event conducted at the Precision Engineering, Inc. (Precision) site (the Site). Activities were conducted in accordance with the Washington State Department of Ecology (Ecology)-approved VIP work plan, included as Section 7 of MFA's draft vapor report¹.

SLAB INSPECTION

A site visit was conducted on December 17, 2020 to inspect slab conditions. Slab inspection documentation is provided as Attachment A and includes an inspection form summarizing observed slab conditions, a figure showing locations of slab conditions noted in the inspection form, and photographs taken during the site reconnaissance.

MFA observed localized areas of unsealed cracks and groundwater seepage and minimal, surficial degradation of crack sealant, but overall, the slab appeared to be in good condition (see Attachment A).

AIR MONITORING

Radiello 130 passive vapor samplers were deployed over a three-week period from December 17, 2020 to January 7, 2021 in three locations: the office (RAD1), sewing room (RAD4), and Warehouse 1 (RAD5) (see Figure 4-1 of the draft vapor report¹).

¹ MFA. 2020. Vapor report: vapor intrusion assessment, interim remedial actions, vapor intrusion priority work plan, Precision Engineering, Inc., site. Prepared for Dick Morgan. Maul Foster & Alongi, Inc., Bellingham, Washington. November 6.

The samples and a trip blank were analyzed for trichloroethene (TCE) by U.S. Environmental Protection Agency Method TO-17. The laboratory analytical report is provided as Attachment B. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they met project-specific data quality objectives. A data validation memorandum summarizing data evaluation procedures, data usability, and deviations from specific field and/or laboratory methods is included as Attachment C. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

TCE was detected in all three samples at concentrations ranging from 0.54 to 0.87 micrograms per cubic liter (ug/m^3), below Ecology's workplace scenario short-term action limit of $7.5 \text{ ug}/\text{m}^3$ provided in Implementation Memorandum No. 22², but above the Model Toxics Control Act Method B indoor air cleanup level of $0.33 \text{ ug}/\text{m}^3$.

DISCUSSION AND RECOMMENDATIONS

The slab was observed to be in generally good condition, aside from the minor issues noted in Attachment A. TCE in indoor air was below the short-term action limit and lower than results from confirmation vapor sampling conducted immediately after implementation of the interim remedial actions¹; therefore, the minor slab issues do not appear to be contributing to worsening conditions. Based on these findings, MFA does not recommend resuming air purification.

MFA will continue to visually monitor the slab conditions and conduct air monitoring, as described in the VIP work plan¹. The next quarterly event is scheduled for March 2021.

ATTACHMENTS

Limitations

Attachment A—Slab Inspection Documentation

Attachment B—Analytical Lab Report

Attachment C—Data Validation Memorandum

² Ecology. 2019. Implementation memorandum no. 22: vapor intrusion investigations and short-term trichloroethene toxicity. Washington State Department of Ecology, Lacey, Washington. October 1.

LIMITATIONS

The services undertaken in completing this memorandum were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This memorandum is solely for the use and information of our client unless otherwise noted. Any reliance on this memorandum by a third party is at such party's sole risk.

Opinions and recommendations contained in this memorandum apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this memorandum.

ATTACHMENT A

SLAB INSPECTION DOCUMENTATION



Slab Inspection Form
Precision Engineering, Inc. Site
Seattle, Washington



Date:	12/17/2020
Weather:	Overcast, 48° F
Precipitation (prior 24 hrs):	0.49" on 12/16/2020
Completed By:	E. Lundeen, EIT, Maul Foster & Alongi, Inc.

General Observations:

The sealed cracks in the concrete slab generally appeared to be in good condition in Warehouse 1 and 2, with some areas of sealant degradation and groundwater intrusion in Warehouse 3. An unsealed area was identified in Warehouse 1.

The evaporator pit cap appears to be in good condition.

Specific Observations:

Slab Sealing:

In Warehouse 1, the sealed cracks are generally in good condition. There is minimal cracking or flaking of sealant. A few unsealed cracks were observed that had been covered with inventory when the crack sealing work was conducted (see the attached figure).

In Warehouse 2, most of the sealed cracks are generally in good condition. There are a few cracks in this area that show minor cracking and flaking of the sealant, but it appears to be surficial.

In Warehouse 3, MFA observed areas of groundwater seepage that no longer have sealant present. These areas should be monitored (see the attached figure). In a few places, the sealant has come out of shallow slab seams.

Evaporator Pit Cap:

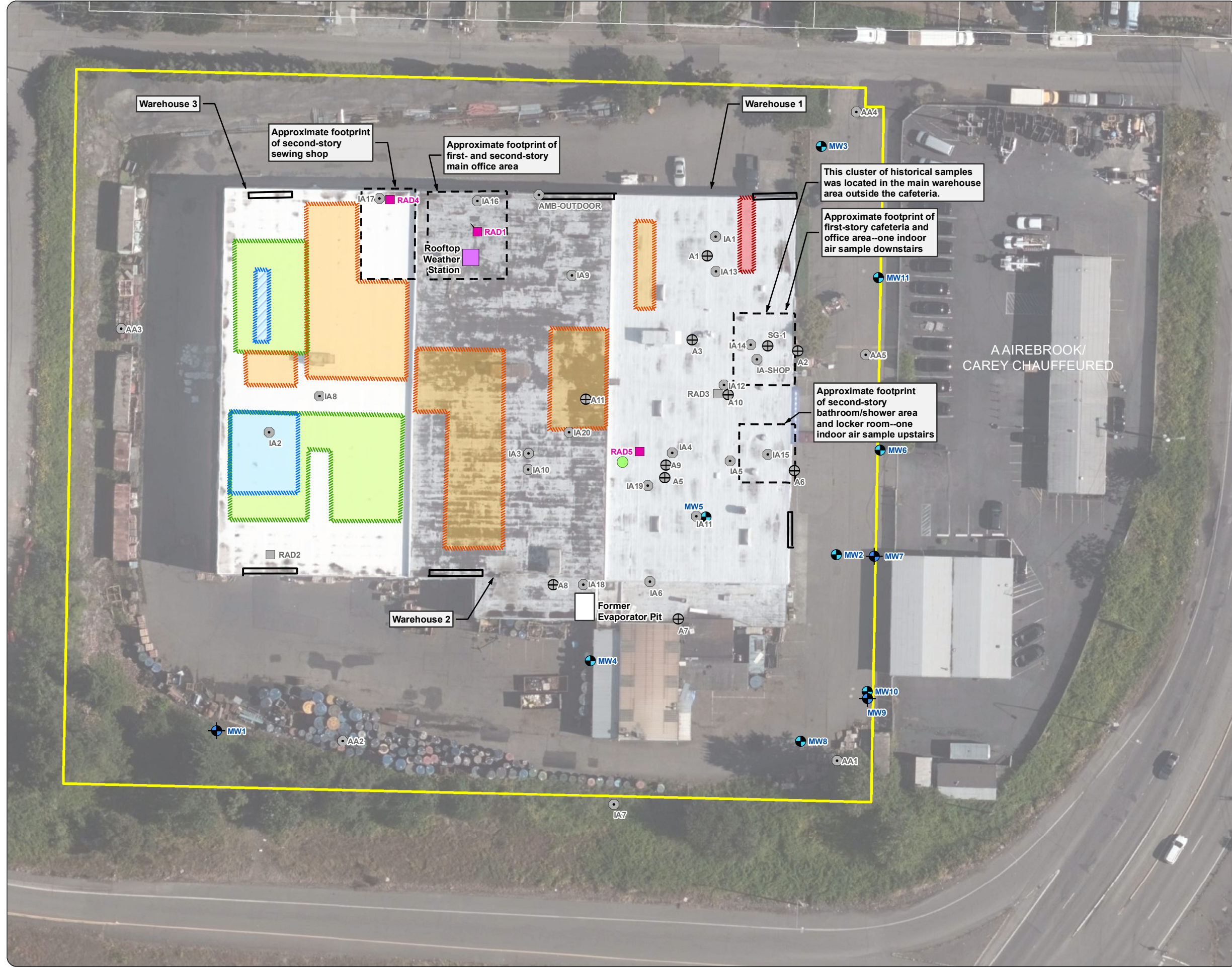
The former evaporator pit was backfilled with compacted gravel and capped with concrete on April 13 2020. The cap is currently in good condition.

The former evaporator pit is currently covered with heavy equipment, but the exposed areas appear to be intact with no damage to the concrete.

No settling or bulging was observed.

Path: X:\1803_01_04\Projects\Slab_Inspection\Fig_Dec2020_SlabInspectionLocations.mxd
 Project: 1803.01.04
 Produced By: abtby
 Approved By: hgood
 Print Date: 1/15/2021

**Figure
 December 2020
 Slab Inspection**
 Precision Engineering, Inc.
 Seattle, Washington



Legend

- Slab Inspection Areas**
- ▭ Unsealed Cracks and Seams
 - ▭ Groundwater Seepage
 - ▭ Potential Groundwater Seepage
 - ▭ Minor Sealant Flaking and Cracking
 - ▭ Sealant Peeling from Seams^(a)
- Vapor Sample Locations**
- Passive Sampler
- Previous Vapor Sample Locations**
- Indoor/Ambient Air
 - ⊕ Sub-slab Soil Gas
 - Passive Sampler
- Property Features**
- Former Trichloroethane Tank
 - Shallow Monitoring Well
 - ⊕ Deep Monitoring Well
 - Overhead Door (Approximate)
 - ▭ Property Parcel
 - ▭ King County Parcel

NOTES:
 The slab inspection was conducted by Evelyn Lundeen on December 17, 2020.
 Well locations for MW1 to MW8 were surveyed by Duncanson, Inc. All other feature locations are approximate.
 (a) Seams are approximately 1-centimeter deep, linear depressions in the concrete slab with a visible bottom. Seams are not anticipated to contribute to vapor intrusion.



Source:
 Aerial photograph obtained from Mapbox.
 Parcel data obtained from King County GIS.



This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
December 2020 Slab Inspection
Project Number: 1803.01.04
Location: 1231 S Director Street, Seattle, Washington

Photo No. 1.

Description

Typical sealed crack in Warehouse 1. No observed cracking or flaking of the sealant.



Photo No. 2.

Description

Typical sealed crack in Warehouse 1. No observed cracking or flaking of the sealant.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
December 2020 Slab Inspection
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Location: 1231 S Director Street, Seattle, Washington

Photo No. 3.

Description

Unsealed crack in north portion of Warehouse 1. Area was covered by inventory at the time of slab sealing.



Photo No. 4.

Description

Cracking and flaking sealant in Warehouse 1. Crack does not appear to extend into the slab.





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PHOTOGRAPHS

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Photo No. 5.

Description

Typical cracking and flaking of sealant in Warehouse 2.



Photo No. 6.

Description

Intact sealant in wire rigging area.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
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Location: 1231 S Director Street, Seattle, Washington

Photo No. 7.

Description

Groundwater seepage in
Warehouse 3.



Photo No. 8.

Description

Groundwater seepage in
Warehouse 3.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
December 2020 Slab Inspection
Project Number: 1803.01.04
Location: 1231 S Director Street, Seattle, Washington

Photo No. 9.

Description

Peeling sealant in seams in Warehouse 3. Seams are approximately 1 centimeter deep, and do not appear to extend the full thickness of the slab.



Photo No. 10.

Description

Cracking sealant in Warehouse 3.





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PHOTOGRAPHS

Project Name: Precision Engineering, Inc.
December 2020 Slab Inspection
Project Number: 1803.01.04
Location: 1231 S Director Street, Seattle, Washington

Photo No. 11.

Description

Large sealant patch in
Warehouse 3.



Photo No. 12.

Description

Cracking and flaking
sealant in Warehouse 3.



ATTACHMENT B

ANALYTICAL LAB REPORT



1/13/2021

Ms. Heather Good
Maul Foster and Alongi Inc.
1329 North State Street
Suite 301
Bellingham WA 98225

Project Name: Precision Engineering

Project #: 1803.01.04

Workorder #: 2101109

Dear Ms. Heather Good

The following report includes the data for the above referenced project for sample(s) received on 1/8/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by Passive S.E. RAD130/SKC are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,



Alexandra Winslow
Project Manager

WORK ORDER #: 2101109

Work Order Summary

CLIENT: Ms. Heather Good
Maul Foster and Alongi Inc.
1329 North State Street
Suite 301
Bellingham, WA 98225

BILL TO: Accounts Payable
Maul Foster and Alongi Inc.
400 E. Mill Plain Blvd
Suite 400
Vancouver, WA 98660

PHONE: 360-594-6262
P.O. #

FAX: 360-594-6270
PROJECT # 1803.01.04 Precision Engineering

DATE RECEIVED: 01/08/2021
CONTACT: Alexandra Winslow

DATE COMPLETED: 01/13/2021

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	RAD1-121720	Passive S.E. RAD130/SKC
02A	RAD4-121720	Passive S.E. RAD130/SKC
03A	RAD5-121720	Passive S.E. RAD130/SKC
04A	Trip Blank	Passive S.E. RAD130/SKC
05A	Lab Blank	Passive S.E. RAD130/SKC
06A	LCS	Passive S.E. RAD130/SKC
06AA	LCSD	Passive S.E. RAD130/SKC

CERTIFIED BY:



Technical Director

DATE: 01/13/21

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)

Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.

Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

**LABORATORY NARRATIVE
RAD130 Passive SE by Mod EPA TO-17
Maul Foster and Alongi Inc.
Workorder# 2101109**

Four Radiello 130 (Solvent) samples were received on January 08, 2021. The laboratory analyzed the charcoal sorbent bed of the passive sampler following modified method EPA TO-17. The VOCs were chemically extracted using carbon disulfide and an aliquot of the extract was injected into a GC/MS for identification and quantification of volatile organic compounds (VOCs).

The mass of each target compound adsorbed by the sampler was converted to units of concentration using the sample deployment time and the sampling rate for each VOC. If sampling rates were calculated by the lab or the manufacturer, the concentration result has been flagged as an estimated value. Results are not corrected for desorption efficiency.

The reference method used for this procedure is EPA TO-17, which describes the collection of VOCs in ambient air using sorbents and analysis by GC/MS. Because TO-17 describes active sample collection using a pump and thermal desorption as the preparation step, several modifications are required. Modifications to TO-17 are listed in the table below:

<i>Requirement</i>	<i>TO-17</i>	<i>ATL Modifications</i>
Sample Collection	Pump pulls measured air volume through sorbent tube	VOCs in air adsorbed onto sorbent bed passively through diffusion
Sample Preparation	Thermal extraction	Solvent extraction
Sorbent tube conditioning	Condition newly packed tubes prior to use	Charcoal-based sorbent is a single use media and conditioning is conducted by vendor.
Instrumentation	Thermal desorption introduction system	Liquid injection introduction system
Internal Standard	Gas-phase internal standard introduced on the tube or focusing trap during analysis	Liquid-phase internal standard introduced on the tube at the time of extraction
Media and sample storage	<4 deg C, 30 days	Media shelf life is determined by vendor; sample hold-time is 6 months for the RAD130 and WMS. Sample preservation requirements are storage in a cool, solvent-free refrigerator and optional use of ice during shipping.
Internal Standard Recovery	+/-40% of daily CCV area	-50% to +100% of daily CCV area

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

To calculate ug/m3 concentrations in the Lab Blank and Trip Blank, a sampling duration of 30245 minutes was applied. The assumed temperature used for the uptake rate is listed on the data page. If

the field temperatures were provided, the rate was adjusted in the same manner as the field samples.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicate as follows:

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

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

N - The identification is based on presumptive evidence.

C - Estimated concentration due to calculated sampling rate

CN - See case narrative explanation.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
VOCS BY PASSIVE SAMPLER - GC/MS**

Client Sample ID: RAD1-121720

Lab ID#: 2101109-01A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.1	0.54

Client Sample ID: RAD4-121720

Lab ID#: 2101109-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.8	0.87

Client Sample ID: RAD5-121720

Lab ID#: 2101109-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.6	0.77

Client Sample ID: Trip Blank

Lab ID#: 2101109-04A

No Detections Were Found.

Client Sample ID: RAD1-121720

Lab ID#: 2101109-01A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011216sim	Date of Collection:	1/7/21 11:45:00 AM
Dil. Factor:	1.00	Date of Analysis:	1/12/21 01:40 PM
		Date of Extraction:	1/12/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.1	0.54

Temperature = 77.0F , duration time = 30245 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

Client Sample ID: RAD4-121720

Lab ID#: 2101109-02A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011217sim	Date of Collection:	1/7/21 11:50:00 AM
Dil. Factor:	1.00	Date of Analysis:	1/12/21 02:06 PM
		Date of Extraction:	1/12/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.8	0.87

Temperature = 77.0F , duration time = 30245 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

Client Sample ID: RAD5-121720

Lab ID#: 2101109-03A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011218sim	Date of Collection:	1/7/21 11:55:00 AM
Dil. Factor:	1.00	Date of Analysis:	1/12/21 02:31 PM
		Date of Extraction:	1/12/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	1.6	0.77

Temperature = 77.0F , duration time = 30245 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

Client Sample ID: Trip Blank

Lab ID#: 2101109-04A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011215sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 01:14 PM
		Date of Extraction:	1/12/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	Not Detected	Not Detected

Temperature = 77.0F , duration time = 30245 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130



Client Sample ID: Lab Blank

Lab ID#: 2101109-05A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011214sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 12:49 PM
		Date of Extraction:	1/12/21

Compound	Rpt. Limit (ug)	Rpt. Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
Trichloroethene	0.10	0.048	Not Detected	Not Detected

Temperature = 77.0F , duration time = 30245 minutes.

Container Type: Radiello 130 (Solvent)

Surrogates	%Recovery	Method Limits
Toluene-d8	82	70-130

Client Sample ID: LCS

Lab ID#: 2101109-06A

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011212sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 11:49 AM
		Date of Extraction:	1/12/21

Compound	%Recovery	Method Limits
Trichloroethene	95	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	81	70-130

Client Sample ID: LCSD

Lab ID#: 2101109-06AA

VOCS BY PASSIVE SAMPLER - GC/MS

File Name:	18011213sim	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	1/12/21 12:14 PM
		Date of Extraction:	1/12/21

Compound	%Recovery	Method Limits
Trichloroethene	96	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	80	70-130

Passive Sorbent Chain of Custody

WO#: **2101109**

Case Seal #: _____

Company: Maul Foster & Ahngi, Inc. Project #: 1803.01.04 P.O.# _____
 Project Manager: Heather Good Project Name: Precision Engineering
 Contact phone/email: 360-594-6268 Collected by: Michael Tarbert

Lab ID	Sample Identification	Sampler ID	Date of Deployment (mm/dd/yy)	Time of Deployment (hr:min)	Date of Retrieval (mm/dd/yy)	Time of Retrieval (hr:min)	Sample Matrix (check one)				Reporting Units (circle)		Turn Around Time:
							Indoor/Outdoor Air	Soil Gas	Workplace Monitoring	Other	ppbv	ug/m3	<input type="checkbox"/> Normal
01A	RAD1-121720	W310S	12/17/2020	11:40	1/7/2021	11:45	X				ug/m3	<input checked="" type="checkbox"/> Rush <u>3-day</u> Specify	
02A	RAD4-121720	W308S		11:45		11:50					ug/m3		
03A	RAD5-121720	W312S		11:50		11:55					ug/m3		
04A	Trip Blank	W311S	N/A	N/A	N/A	N/A					ug/m3		

Relinquished by: <u>Michael Tarbert</u>	Date: <u>1/7/2021</u>	Time: <u>12:30PM</u>	Received by: <u>Ch ENTZ</u>	Date: <u>1-8-21</u>	Time: <u>1102</u>	Notes to Lab: <u>MRL needed</u> <u>CF = 0.33</u> <u>ug/m3</u>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:	

Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples.

Lab Use Only			
Shipper Name: <u>Fed Ex</u>	Custody Seals Intact?	Yes No <u>None</u>	Sample Condition Upon Receipt: <u>Good</u> SDR
Air bill #:	Temperature (°C): <u>N/A</u>		

ATTACHMENT C

DATA VALIDATION MEMORANDUM



DATA QUALITY ASSURANCE/ QUALITY CONTROL REVIEW

PROJECT NO. 1803.01.04 | JANUARY 15, 2021 | PRECISION ENGINEERING,
INC.

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for indoor air samples collected at the Precision Engineering, Inc., site located at 1231 S Director Street in Seattle, Washington. The samples were collected from December 17, 2020 to January 7, 2021.

Eurofins Air Toxics (Eurofins) performed the analyses. Eurofins report number 2101109 was reviewed. Analyses performed and samples analyzed are listed in the tables below.

Analysis	Reference
TCE—Radiello 130	EPA TO-17 Modified

NOTES:

EPA = U.S. Environmental Protection Agency.

TCE = trichloroethene.

Report 2101109
Samples Analyzed
RAD1-121720
RAD4-121720
RAD5-121720
Trip Blank

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) procedures (EPA, 2017) and appropriate laboratory and method-specific guidelines (Eurofins, 2019; EPA, 1986).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch.

All laboratory method blanks were non-detect.

Trip Blanks

According to report 2101109, a trip blank sample was submitted to Eurofins for EPA Method TO-17 modified analysis. Eurofins noted that the trip blank sample volume was calculated based on a sampling duration of 30,245 minutes, or three weeks and five minutes, which was the sampling duration used for all associated project samples.

The trip blank was non-detect.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. All surrogate recoveries were within acceptance limits.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. Laboratory duplicate results were not reported.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS and LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. No field duplicates were submitted for analysis.

REPORTING LIMITS

Eurofins used routine reporting limits for non-detect results.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

No issues were found.

REFERENCES

EPA. 1986. Test methods for evaluating solid waste, physical/chemical methods. EPA publication SW-846. 3d ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), and VI phase III (2019).

EPA. 2017. EPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

Eurofins. 2019. Laboratory quality assurance manual. Revision 13. Eurofins Air Toxics. Folsom, California. September 9.