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973-883-8500 tel

August 4, 2021

Mr. Payson Long
Project Manager
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 1223-7011

Re: ServAll Laundry Site, # 1-52-077
Soil Vapor Intrusion Sampling Results

Dear Mr. Long:

This letter report presents the results of the recent soil vapor sampling performed at the ServAll Laundry Site. The Site is located at 8 Drayton Avenue in Bay Shore, Suffolk County, New York (Figure 1) in a mixed use industrial/residential area. The ServAll Laundry facility was located on a 20,000 square foot property. The ServAll Uniform Rental, Inc. operated as a commercial laundry from 1969 to 1972, and as dry cleaner/laundry from 1972 to 1984. During this time, unknown quantities of wash water overflow containing PCE and heavy metals were pumped to, and occasionally overflowed from, on-Site cesspools.

In 1978, the Suffolk County Department of Health Services (SCDHS) conducted an on-Site sampling of cesspools and storm drains. Results from some of the samples showed detections of tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride, chloroform, methylbenzenes, and a number of Target Analyte List (TAL) metals. ServAll Uniform cleaned the on-Site storm drains and an unknown number of cesspools in 1981 removing sludge and contaminated water.

In 1983, SCDHS performed a groundwater investigation and identified a volatile organics plume southeast of the Site. The plume was found to extend 0.3 miles upgradient from the Suffolk County Water Authority (SCWA) Thomas Avenue Wellfield (located 1 mile south of the Site). The Thomas Avenue Wellfield is located off Thomas Avenue, near the Bay Shore Middle School and northwest of MW-11 (see Figure 2).

A State-funded remedial investigation/feasibility study (RI/FS) was completed at the Site, in which field work was completed from November 1990 through December 1991. The results of the investigation were documented in the final report dated January 1992 (E.C. Jordan Co.). The RI/ FS confirmed the presence of volatile organic compounds (VOCs) in groundwater, delineated the groundwater plume, and quantified on-Site contamination.

The plume is located in the Upper Glacial Aquifer, which consists of coarsely stratified, fine to medium sand with trace amounts of gravel, cobbles, coarse sand, and silt. The aquifer ranges in thickness from 120 feet at the Site to 86 feet 1.5 miles downgradient of the Site. Groundwater flows to the southeast towards Penataquit Creek at about 910 feet per year (ft/year). The RI concluded that the plume appeared to be

moving at approximately 443 to 484 ft/year from 1974 to 1988, and 355 ft/year since 1988 (E.C. Jordan, October 1991). Similar flow numbers were found during the long-term monitoring sampling events.

A Record of Decision (ROD) was issued by the NYSDEC for the Site on March 31, 1992. The remedy presented in the ROD was in-situ source soil treatment/source area groundwater extraction. The ROD stated that treatment of the entire plume emanating from the Site was not found to be practical, and therefore, the selected remedy would not satisfy the statutory preference for complete treatment as a principal element. Determination of the ultimate fate of the untreated portion of the plume was determined by the ROD directed discharge study (ABB Environmental Services, December 1995), which was conducted on the leading edge (hydraulically downgradient) of the plume.

The ROD specified source removal work consisting of a soil vapor extraction (SVE) system. The SVE system was in operation from the Spring of 1996 to the Spring of 1998. The groundwater pump and treat remedial system operated from March 1998 through November 2001. The operation of the remedial system was terminated in November 2001 when NYSDEC determined further operations were not necessary as stated in a letter dated October 18, 2001 from NYSDEC to Earth Tech. The groundwater treatment system inside the ServAll building was dismantled and disposed in April 2009. The extraction well and reinjection well were abandoned in August 2015.

The Site is currently in long term monitoring. Groundwater samples are collected from fifteen monitoring wells on a five-quarter basis. Samples are analyzed for VOCs. The results of the five-quarter sampling are summarized in a report after each sampling event. The last groundwater sampling event was conducted in May 2021. The locations of the monitoring wells are shown in Figure 2.

Soil Vapor Intrusion Sampling

At the request of NYSDEC, soil vapor intrusion samples were collected on March 30 and 31, 2021. Sampling was conducted in accordance with the NYSDEC Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and updates). Canister sampling field test data sheets are included in Attachment A.

Two subslab sampling points (SV1-1 and SV1-2) were installed inside the building as shown on Figure 3. As the ServAll facility is currently unoccupied, a pre-sampling building survey was not conducted. Two subslab samples were installed through the concrete floor using a hammer drill. Samples were set up on March 30, 2021 with 24-hours flow regulators. A field duplicate sample (SV1-2X) was collected at SV1-2. An indoor air sample (ID-1) and outdoor air sample (OD-1) were also collected (Figure 3). All samples were retrieved on March 31, 2021 and delivered to Eurofins Test America, Knoxville, Tennessee. The laboratory data was forwarded to Environmental Data Validation, Inc. (EDV) for validation. A Data Usability Summary Report (DUSR) was prepared and is included as Attachment B.

Sample results are shown on Table 1. Results were compared to the Soil Vapor Indoor Air Matrix Tables in the May 2017 updates to the NYSDEC Guidance document (Attachment C).

Several compounds were detected in the indoor air, outdoor air and subslab samples that do not have guidance values on the Matrix tables.

Matrix Table A has guidance values for trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), and carbon tetrachloride. 1,1-DCE and carbon tetrachloride were not detected in the indoor air or either subslab sample; Matrix A recommends no further action for both compounds. Cis-1,2-DCE and TCE were not detected in the indoor air sample or subslab sample SV1-1. Cis-1,2-DCE (640 µg/m^3) and TCE (990 µg/m^3) were detected in subslab sample SV1-2; Indoor Matrix A recommends mitigation for both compounds.

Matrix Table B has guidance values for tetrachloroethene (PCE), 1,1,1-trichloroethene (1,1,1-TCE), and methylene chloride. 1,1,1-TCE and methylene chloride were not detected in the indoor air sample or either subslab sample; methylene chloride was detected in the outdoor sample at a concentration of 3.2 µg/m^3. PCE was detected in the indoor air sample at a concentration of 64 µg/m^3 and the outdoor air sample at 69 µg/m^3. PCE was detected in subslab sample SV1-1 at a concentration of 90 µg/m^3; Matrix B recommends identifying the source and resampling or mitigation. PCE was detected in subslab sample SV1-2 at a concentration of 46,000 µg/m^3; Matrix B recommends mitigation.

Matrix Table C has a guidance value for vinyl chloride. Vinyl chloride was not detected in the indoor air sample or either subslab sample.

Previous SVI investigations

Subslab and indoor air samples were last collected at the Site in March 2009. The results were documented in the Final Soil Vapor Intrusion Sampling Report (AECOM, August 6, 2010). The PCE concentration in the ServAll building subslab sample was 66,138 µg/m^3 with the recommendation to mitigate the contamination. Subslab and indoor air samples collected from private residences along Frederick Avenue Walbridge Avenue indicated that no further action was warranted.

Conclusions and Recommendations

Groundwater samples were last collected in May 2021 (the results are presented in a separate report). These results found PCE groundwater contamination immediately downgradient of the Site at shallow monitoring well MW-6B. Depth to groundwater in the vicinity of the Site is approximately 24 ft bgs. The PCE plume extends over 1 ½ miles south of the Site to monitoring wells MW-23S and MW-213D, near the Sunrise Highway.

It appears that a PCE source exists in the unsaturated soil on the south side of the ServAll building. Based on these soil vapor samples, mitigation is recommended for the Site building. The PCE concentration in SV1-1 recommends “identify the source and resample or mitigate”. In sample SV-1-2, concentrations of PCE, TCE and cis-1,2-DCE exceed the guidance values and mitigation is recommended.

A soil vapor extraction system should be installed at the ServAll facility to address soil vapor concentrations in the unsaturated soil zone.

If you have any questions on this submission, please call me at 973-883-8502.

Very truly yours,

AECOM Technical Services, Inc.

Paul Kareth, P.G.
Project Manager

Tables

TABLE 1
152077 SERVALL LAUNDRY
SUMMARY OF SOIL VAPOR INTRUSION SAMPLES

Location	Outdoor1		Indoor1		subslab		subslab		duplicate	
Sample ID	OD-1		ID-1		SV1-1		SV1-2		SV1-2X	
Lab Sample ID	140-22575-5		140-22575-4		140-22575-1		140-22575-2		140-22575-3	
Matrix	soil vapor		soil vapor		soil vapor		soil vapor		soil vapor	
Sample Date	3/31/21		3/31/21		3/31/21		3/31/21		3/31/21	
	Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
1,1,1-Trichloroethane	0.44	U	1.1	U	2.2	U	500	U	560	U
1,1,2,2-Tetrachloroethane	0.55	U	1.4	U	2.7	U	620	U	710	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.61	U	1.5	U	3.1	U	700	U	790	U
1,1,2-Trichloroethane	0.44	U	1.1	U	2.2	U	500	U	560	U
1,1-Dichloroethane	0.32	U	0.81	U	1.6	U	370	U	420	U
1,1-Dichloroethene	0.16	U	0.4	U	0.79	U	180	U	200	U
1,2,4-Trichlorobenzene	0.59	U	1.5	U	3.0	U	670	U	770	U
1,2,4-Trimethylbenzene	**4.2**		**3.9**		**4.1**		450	U	510	U
1,2-Dibromoethane (EDB)	0.61	U	1.5	U	3.1	U	700	U	790	U
1,2-Dichlorobenzene	0.48	U	1.2	U	2.4	U	550	UJ	620	UJ
1,2-Dichloroethane	0.32	U	0.81	U	1.6	U	370	U	420	U
1,2-Dichloropropane	0.37	U	0.92	U	1.8	U	420	U	480	U
1,2-Dichlorotetrafluoroethane	0.56	U	1.4	U	2.8	U	630	UJ	720	UJ
1,3,5-Trimethylbenzene	**1.3**		**1.2**		2.0	U	450	U	510	U
1,3-Dichlorobenzene	0.48	U	1.2	U	2.4	U	550	UJ	620	UJ
1,4-Dichlorobenzene	0.48	U	1.2	U	2.4	U	550	UJ	620	UJ
1,4-Dioxane	0.72	U	1.8	U	3.6	U	820	U	930	U
2,2,4-Trimethylpentane	**17.0**		**16.0**		**13.0**		1,100	U	1,200	U
Benzene	**6.4**		**2.1**		**2.0**		290	U	330	U
Benzyl chloride	0.83	U	2.1	U	4.1	U	940	UJ	1,100	UJ
Bromodichloromethane	0.54	U	1.3	U	2.7	U	610	U	690	U
Bromoform	0.83	U	2.1	U	4.1	U	940	U	1,100	U
Bromomethane	0.31	U	0.78	U	1.6	U	350	U	400	U
Carbon tetrachloride	**0.42**		0.5	U	1.0	U	230	UJ	260	UJ
Chlorobenzene	0.37	U	0.92	U	1.8	U	420	U	480	U
Chloroethane	0.21	U	0.53	U	1.1	U	240	U	270	U
Chloroform	0.39	U	0.98	U	2.0	U	440	U	500	U
Chloromethane	**1.2**		**1.5**		2.1	U	470	U	530	U
cis-1,2-Dichloroethene	**0.16**		0.4	U	0.79	U	**640**		**650**	
cis-1,3-Dichloropropene	0.36	U	0.91	U	1.8	U	410	U	470	U
Cyclohexane	**7.3**		**6.8**		**5.0**		780	U	890	U
Dibromochloromethane	0.68	U	1.7	U	0.34	U	770	UJ	880	UJ
Dichlorodifluoromethane	**0.9**		**1.4**		**13.0**		450	UJ	510	UJ
Ethanol	**290**	**D**	**180**		**250**		4,300	U	4,900	U
Ethylbenzene	**2.6**		**2.4**		**2.0**		390	U	450	U
Hexachlorobutadiene	0.85	UJ	2.1	UJ	4.3	UJ	970	UJ	1,100	UJ
M,P-Xylenes	**8.8**		**8.1**		**6.3**		390	U	450	U
Methyl Ethyl Ketone	**3.0**		2.4	U	4.7	U	1,100	U	1,200	U
Methyl Isobutyl Ketone	**1.7**		2.0	U	4.1	U	930	U	1,100	U
Methylene chloride	**3.2**		3.5	U	6.9	U	1,600	U	1,800	U
Naphthalene	1.0	U	2.6	U	5.2	U	1,200	U	1,400	U
n-Hexane	**9.5**		**8.2**		**5.7**		800	U	910	U
o-Xylene	**4.2**		**3.9**		**3.4**		390	U	450	U

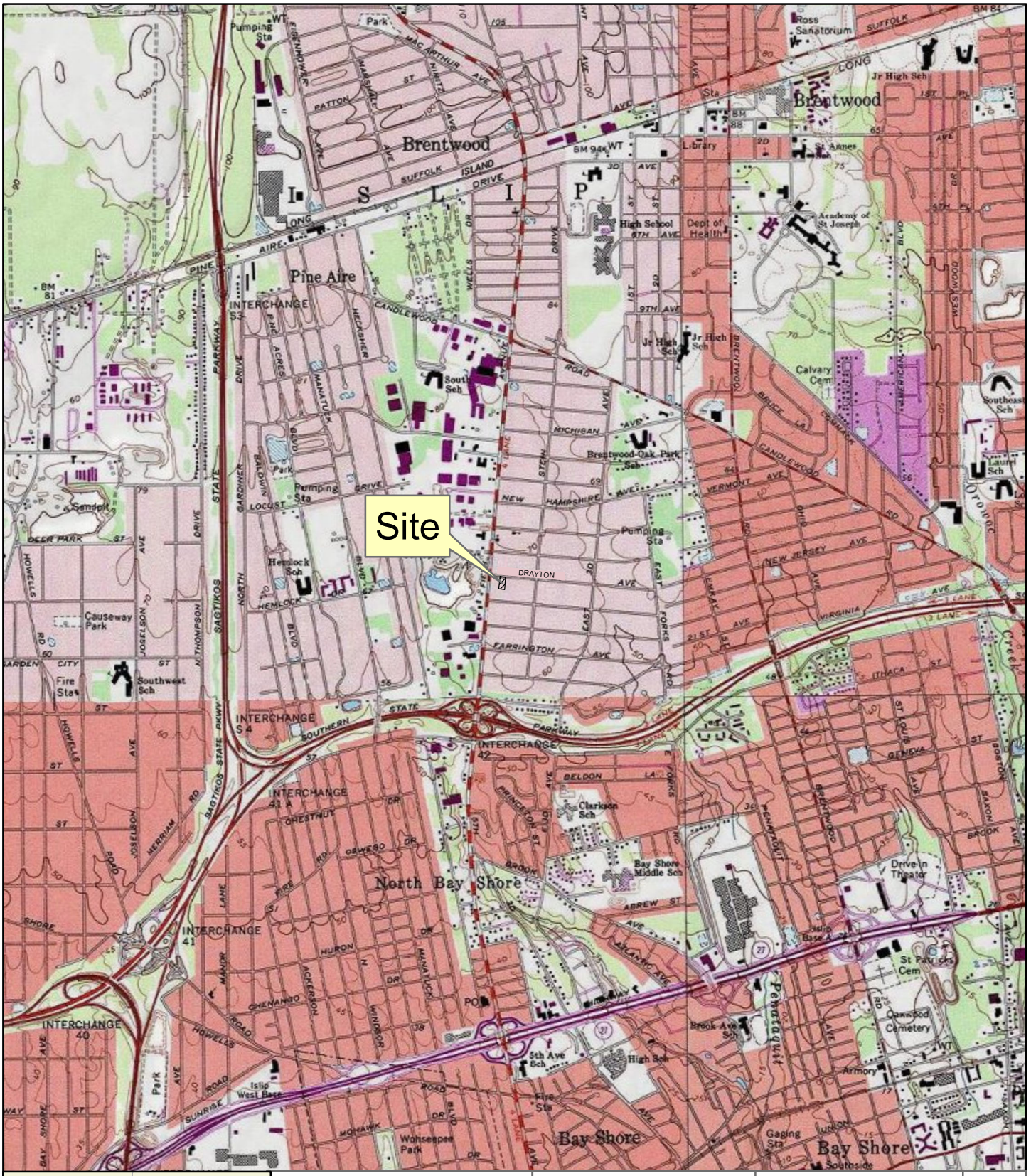
TABLE 1
152077 SERVALL LAUNDRY
SUMMARY OF SOIL VAPOR INTRUSION SAMPLES

Location	Outdoor1		Indoor1		subslab		subslab		duplicate	
Sample ID	OD-1		ID-1		SV1-1		SV1-2		SV1-2X	
Lab Sample ID	140-22575-5		140-22575-4		140-22575-1		140-22575-2		140-22575-3	
Matrix	soil vapor		soil vapor		soil vapor		soil vapor		soil vapor	
Sample Date	3/31/21		3/31/21		3/31/21		3/31/21		3/31/21	
	Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q	Conc.	Q
Styrene	0.34	U	0.85	U	1.7	U	390	U	440	U
tert-Butyl alcohol	**7.2**		**5.3**		4.9	U	1,100	U	1,300	U
Tert-Butyl Methyl Ether	0.58	U	1.4	U	2.9	U	650	U	740	U
Tetrachloroethene	**69.0**		**64.0**		**90.0**		**46,000**		**47,000**	
Toluene	**12.0**		**11.0**		**8.2**		510	U	580	U
trans-1,2-Dichloroethene	**1.3**		0.79	U	1.6	U	360	U	410	U
trans-1,3-Dichloropropene	0.36	U	0.91	U	1.8	U	410	U	470	U
Trichloroethene	**0.38**		0.48	U	0.97	U	**990**		**1,000**	
Trichlorofluoromethane	**1.1**		**1.5**		2.2	U	510	U	580	U
Vinyl chloride	0.1	U	0.26	U	0.51	U	120	U	130	U

Notes:
All concentrations in µg/m^3
BOLD - detected concentration
U - Not Detected
J - Estimated value
T - LCS and/or LCSD is outside acceptable limits, high baised
D - Dilution

Soil Vapor / Indoor Air Matrix A
Soil Vapor / Indoor Air Matrix B
Soil Vapor / Indoor Air Matrix C

Figures



USGS NY Bay Shore West and Green Lawn Quadrangles

U.S.G.S. 1:24 000 SCALE TOPOGRAPHIC MAP

Prepared by: AECOM

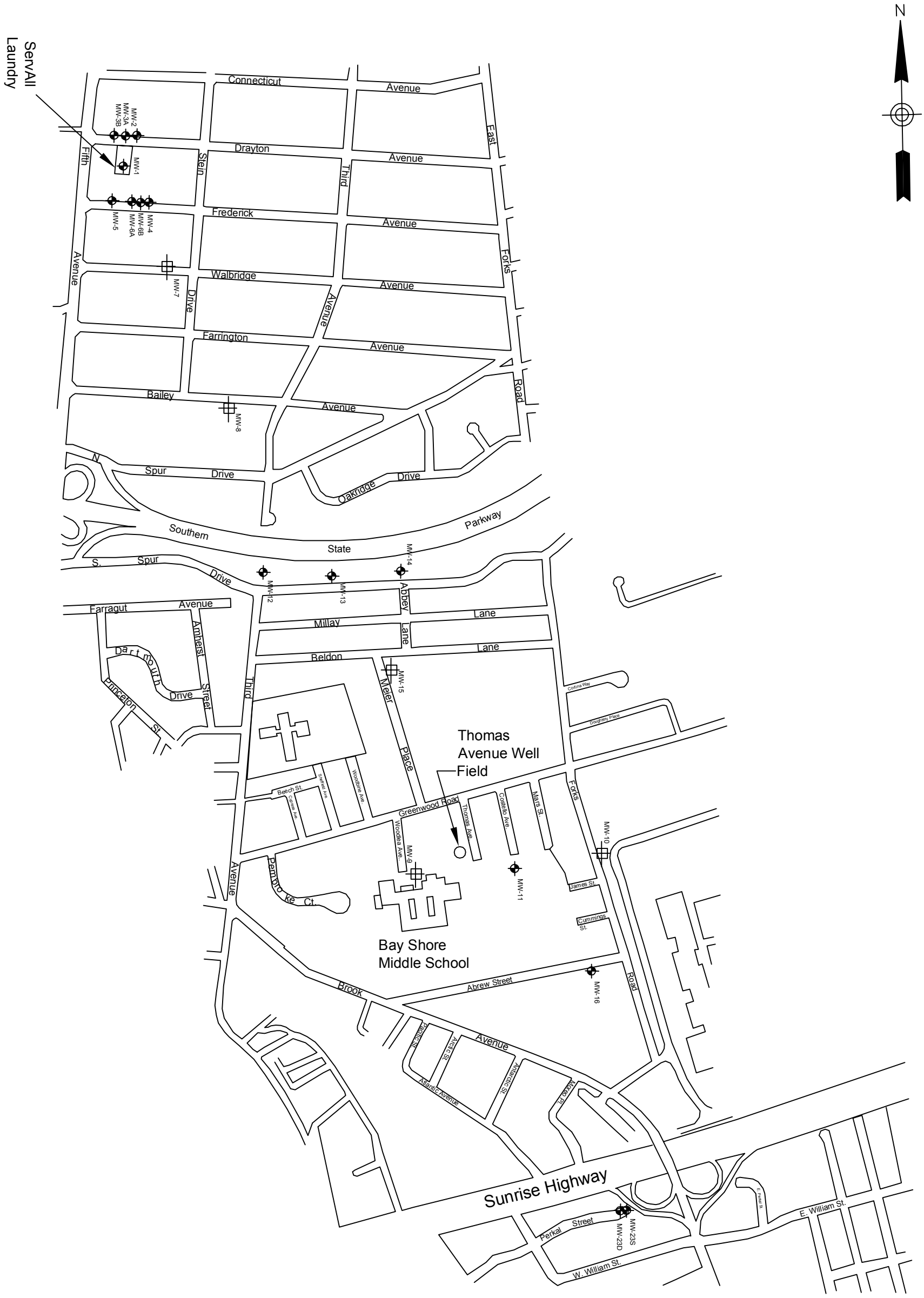
Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Multi Site G
Operation, Maintenance & Monitoring

Site Location
ServAll Laundry Site

Date:	Scale:	Figure No. :
January 2013	1 inch = 2,500 feet	1

L:\work\60277021_Multi_Site_G\01 - ServAll Laundry\7.0 Deliverables\7.2 CADD\LTM-Reports



LEGEND:

MW-16 EXISTING MONITORING WELLS

MW-10 DAMAGED OR MISSING MONITORING WELLS

GRAPHIC SCALE

0 350 700 1400

Scale in Feet

Prepared by : AECOM

SUBMITTED BY : PK/jk	MULTI SITE G - SERVALL LAUNDRY SITE SITE NO. 1-52-026
DRAWN BY : SC	**MONITORING WELL LOCATION MAP**
APPROVED BY : PK	DATE : AUGUST 2016 / SCALE : AS SHOWN / DRAWING NO. : **2**

Analyte (µg/m³)	SV1-1 3/31/21
cis-1,2-Dichloroethene	0.79 U
Tetrachloroethene	90.0
Trichloroethene	0.97 U

Analyte (µg/m³)	ID-1 3/31/21
cis-1,2-Dichloroethene	0.4 U
Tetrachloroethene	64.0
Trichloroethene	0.48 U

Analyte (µg/m³)	SV1-2 3/31/21	Duplicate 3/31/21
cis-1,2-Dichloroethene	640	650
Tetrachloroethene	46,000	47,000
Trichloroethene	990	1,000

Analyte (µg/m³)	OD-1 3/31/21
cis-1,2-Dichloroethene	0.16
Tetrachloroethene	69.0
Trichloroethene	0.38

Legend

- Indoor Air Sample
- Outdoor Air Sample
- Sub-Slab Sample
- 8 DRAYTON AVE

Prepared by: AECOM

Prepared for: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Multi Site G
ServAll Laundry Site
Site # 1-52-077

Sub-Slab, Indoor Air and Outdoor Air Sampling Results March 2021

Date:	Scale:	Figure No. :
July 2021	1 inch = 33 feet	3

Attachment A

Canister Sampling Field Test Data Sheets

TestAmerica Burlington
Canister Sampling Field Test Data Sheet

General Information

Site Location:	Serv All Laundry #152077	Job Number:	60631073
Site Address:	8 Drayton Ave. Bay Shore, NY	Size of Canister:	6L
Field ID No:	SV1 - 1	Canister Serial No:	7910
Sampling Date(s):	3-31-21	Flow Controller No:	10443
Shipping Date:	3-31-21		

Sampling Information

AMBIENT READINGS (Outside)

	Temperature (°F)	Barometric Pressure (inches of Hg)
Start	50	30.43
Stop	55	30.18

SAMPLING TIMES (24 hour clock)

	Local Times	Elapsed Time Meter Reading
Start	1015	24 HR
Stop	1015	

CANISTER PRESSURE (inches of Hg) From Gauge

Start	-30
Stop	-5

INTERIOR TEMPERATURE °F

Start	50
Stop	55

Signature/Title
Investigator

Laboratory Information

FLOW RATES (ml/min) Flow Controller Readout

Shipping out from Lab	required (from lab record log) after return
Receiving in Lab	(if applicable only if changed)

CANISTER PRESSURE (inches of Hg)

Initial Pressure (to field)	required (from lab record log) after return
Final Pressure (from field)	required (from lab record log) after return

Data Shipped Out: _____

Date Received Back: _____

Individual Canister Certification (provide File #): _____

Batch Certification (provide Batch ID#): _____

Signature/Title
GC/MS Analyst

TestAmerica Burlington
Canister Sampling Field Test Data Sheet

General Information

Site Location: Serv All Laundry #152077
Site Address: 8 Drayton Ave, Bay Shore, NY
Field ID No: SV1-2
Sampling Date(s): 3-31-21
Shipping Date: 3-31-21

Job Number: 60631073
Size of Canister: 6L
Canister Serial No: 10037
Flow Controller No: 8830

Sampling Information

AMBIENT READINGS (Outside)

	Temperature (°F)	Barometric Pressure (inches of Hg)
Start	50	30.43
Stop	55	30.18

SAMPLING TIMES (24 hour clock)

	Local Times	Elapsed Time Meter Reading
Start	10:02	24 HR
Stop	10:02	

CANISTER PRESSURE (inches of Hg) From Gauge

Start	-30
Stop	-6

INTERIOR TEMPERATURE °F

Start	50
Stop	55

Signature/Title
Investigator

Laboratory Information

FLOW RATES (ml/min) Flow Controller Readout

Shipping out from Lab	required (from lab record log) after return
Receiving in Lab	(if applicable only if changed)

CANISTER PRESSURE (inches of Hg)

Initial Pressure (to field)	required (from lab record log) after return
Final Pressure (from field)	required (from lab record log) after return

Data Shipped Out:
Date Received Back:
Individual Canister Certification (provide File #):
Batch Certification (provide Batch ID#):

Signature/Title
GC/MS Analyst

TestAmerica Burlington
Canister Sampling Field Test Data Sheet

General Information

Site Location: Serv All Laundry #152077
Site Address: 8 Drayton Ave. Bay Shore, NY
Field ID No: SV1-2X
Sampling Date(s): 3-31-21
Shipping Date: 3-31-21

Job Number: 60631073
Size of Canister: 6L
Canister Serial No: 8050
Flow Controller No: 7403

Sampling Information

AMBIENT READINGS (Outside)

	Temperature (°F)	Barometric Pressure (inches of Hg)
Start	50	30.43
Stop	55	30.18

SAMPLING TIMES (24 hour clock)

	Local Times	Elapsed Time Meter Reading
Start	1002	24 HRS
Stop	1002	

CANISTER PRESSURE (inches of Hg) From Gauge

Start	-30
Stop	-6

INTERIOR TEMPERATURE °F

Start	50
Stop	55

Signature/Title
Investigator

Laboratory Information

FLOW RATES (ml/min) Flow Controller Readout

Shipping out from Lab	required (from lab record log) after return
Receiving in Lab	(if applicable only if changed)

CANISTER PRESSURE (inches of Hg)

Initial Pressure (to field)	required (from lab record log) after return
Final Pressure (from field)	required (from lab record log) after return

Data Shipped Out:
Date Received Back:
Individual Canister Certification (provide File #):
Batch Certification (provide Batch ID#):

Signature/Title
GC/MS Analyst

TestAmerica Burlington
Canister Sampling Field Test Data Sheet

General Information

Site Location:	Serv All Laundry #152077	Job Number:	60631073
Site Address:	8 Drayton Ave. Bay Shore, NY	Size of Canister:	6L
Field ID No:	ID-1	Canister Serial No:	34000356
Sampling Date(s):	3-31-21	Flow Controller No:	7020
Shipping Date:	3-31-21		

Sampling Information

AMBIENT READINGS (Outside)

	Temperature (°F)	Barometric Pressure (inches of Hg)
Start	50	30.43
Stop	55	30.18

SAMPLING TIMES (24 hour clock)

	Local Times	Elapsed Time Meter Reading
Start	1005	24 Hrs
Stop	1005	

CANISTER PRESSURE (inches of Hg) From Gauge

Start	-30
Stop	-6

INTERIOR TEMPERATURE °F

Start	50
Stop	55

Signature/Title
Investigator

Laboratory Information

FLOW RATES (ml/min) Flow Controller Readout

Shipping out from Lab		required (from lab record log) after return
Receiving in Lab		(if applicable only if changed)

CANISTER PRESSURE (inches of Hg)

Initial Pressure (to field)		required (from lab record log) after return
Final Pressure (from field)		required (from lab record log) after return

Data Shipped Out: _____

Date Received Back: _____

Individual Canister Certification (provide File #): _____

Batch Certification (provide Batch ID#): _____

Signature/Title
GC/MS Analyst

TestAmerica Burlington
Canister Sampling Field Test Data Sheet

General Information

Site Location:	SerVAll Laundry #152077	Job Number:	60631073
Site Address:	8 Drayton Ave. Bay Shore, NY	Size of Canister:	6L
Field ID No:	OD-1	Canister Serial No:	11046
Sampling Date(s):	3-31-21	Flow Controller No:	12143
Shipping Date:	3-31-21		

Sampling Information

AMBIENT READINGS (Outside)

	Temperature (°F)	Barometric Pressure (inches of Hg)
Start	50	30.43
Stop	55	30.18

SAMPLING TIMES (24 hour clock)

	Local Times	Elapsed Time Meter Reading
Start	1012	24 HRS
Stop	1012	

CANISTER PRESSURE (inches of Hg) From Gauge

Start	-30
Stop	-6

INTERIOR TEMPERATURE °F

Start	50
Stop	55

Signature/Title
Investigator

Laboratory Information

FLOW RATES (ml/min) Flow Controller Readout

Shipping out from Lab	required (from lab record log) after return
Receiving in Lab	(if applicable only if changed)

CANISTER PRESSURE (inches of Hg)

Initial Pressure (to field)	required (from lab record log) after return
Final Pressure (from field)	required (from lab record log) after return

Data Shipped Out: _____

Date Received Back: _____

Individual Canister Certification (provide File #): _____

Batch Certification (provide Batch ID#): _____

Signature/Title
GC/MS Analyst

Attachment B

DUSR

DATA USABILITY SUMMARY REPORT

For

ServAll Laundry #152077
AIR SAMPLES

VOA
SDG No. 140-22575-1

Sampling Date: March 31, 2021

Submitted to:

AECOM
257 West Genesee Street
Suite 400
Buffalo, New York, USA
716-856-5636

Prepared by:

Environmental Occupational & Public Health Consultants Inc. (EOPHC)
Environmental Data Validation Inc. (EDV, Inc.)
1326 Orangewood Ave
Pittsburgh, PA 15216
(412) 341-5281

Site: ServAll Laundry #152077 SDG #: 140-22575-1
Client: AECOM Date: April 30, 2021

Laboratory: Eurofins TestAmerica Reviewer: D. McGuire

Sample Identification Table

Client Sample ID	Laboratory ID	Matrix	VOC
SV1-1	140-22575-1	Air	X
SV1-2	140-22575-2	Air	X
SV1-2X	140-22575-3	Air	X
ID-1	140-22575-4	Air	X
OD-1	140-22575-5	Air	X

The data package contained five (5) air samples. The samples were analyzed via Method TO-15. The adherence of laboratory analytical performance to this method's analytical specifications was evaluated during the data validation process. The data package was evaluated for its usability as defined by the Guidance for the Development of Data Usability Summary Reports (DER-10, 11/09). USEPA Region II standard operating procedures were used as guidance documents. According to the NYSDEC Guidance for the Development of Data Usability Summary Reports, the following QC data were evaluated: blanks, instrument tunings, calibration standards, calibration verifications, laboratory controls, surrogate recoveries, spike recoveries, and sample data.

The following Attachments are a part of this report— all validated Form 1s are presented in Attachment A. All Case Narrative and Chain of Custody (COC) records are presented in Attachment B.

All QC data were within quality control limits, except the following issues:

Cover letter, Narrative and Data Reporting Forms (Form 1s): The deficiencies noted in the case narrative that affect data usability have been discussed in applicable sections. Data that have no impact on data usability are not discussed.

Chain of Custody (COC): All samples listed in the Sample Identification Table were present on the COC.

Preservation: Preservation was acceptable.

Holding Time: Holding times were within acceptable criterion for all samples.

Blanks Quality Control: There was no blank contamination present.

Calibration Quality Control: The following were qualified due to calibration issues;

Sample ID	Compound	Qualifier
SV1-2 SV1-2X	1,2-Dichlorotetrafluoroethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzyl chloride, Carbon tetrachloride, Dibromochloromethane, Dichlorodifluoromethane, Hexachlorobutadiene	UJ
SV1-1 ID-1 OD-1	Hexachlorobutadiene	UJ

Laboratory Control Sample (LCS): The recoveries were acceptable.

Surrogates: The recoveries were acceptable.

Internal Standards: All results were acceptable.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD): MS/MSD samples were not analyzed.

Field Duplicate: RPDs are calculated when both parent and duplicate sample report detects. The following RPDs were calculated;

Compound	Sample ID conc. (ug/mg3) SV1-2	Duplicate ID conc. (ug/mg3) SV1-2X	RPD
cis-1,2-Dichloroethene	640	650	1.55
Tetrachloroethene	46000	47000	2.15
Trichloroethene	990	1000	1.005

Compound Quantitation: Quantitations were acceptable. Sample OD-1 ethanol result shall be considered rejected (R) due to exceeding the calibration range. The diluted ethanol result shall be considered useable.

Tentatively Identified Compounds: Not Applicable.

Additional Comments: Some Form 1s and case narratives are reporting criteria out of QC limits. If data were impacted due to the deficiency, it is discussed in the DUSR and appropriate qualifier(s) applied. Therefore, all discussions in the DUSR relate to all conditions that affected data usability. When there are multiple analyses, the validator presents the best run (Attachment A).

Data usability: Data qualified with the "UJ" qualifier are to be used cautiously as they are estimated data with some quality control issues. Data qualified with the "J" qualifier are to be used cautiously as they are estimated data with some quality control issues. Data qualified with the "R" qualifier are not usable due to severe quality control issues. Data qualified with the "U" qualifier are usable at the reporting limit.

ATTACHMENT A

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-1 Lab Sample ID: 140-22575-1

Matrix: Air Lab File ID: RD08P101.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:15

Sample wt/vol: 100(mL) Date Analyzed: 04/08/2021 14:52

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.40	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		0.40	
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.40	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		0.40	
75-34-3	1,1-Dichloroethane	98.96	ND		0.40	
75-35-4	1,1-Dichloroethene	96.94	ND		0.20	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.40	
95-63-6	1,2,4-Trimethylbenzene	120.20	0.83		0.40	
106-93-4	1,2-Dibromoethane	187.87	ND		0.40	
95-50-1	1,2-Dichlorobenzene	147.00	ND		0.40	
107-06-2	1,2-Dichloroethane	98.96	ND		0.40	
78-87-5	1,2-Dichloropropane	112.99	ND		0.40	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		0.40	
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		0.40	
541-73-1	1,3-Dichlorobenzene	147.00	ND		0.40	
106-46-7	1,4-Dichlorobenzene	147.00	ND		0.40	
123-91-1	1,4-Dioxane	88.11	ND		1.0	
540-84-1	2,2,4-Trimethylpentane	114.23	2.8		1.0	
78-93-3	2-Butanone	72.11	ND		1.6	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		1.0	
71-43-2	Benzene	78.11	0.62		0.40	
100-44-7	Benzyl chloride	126.58	ND		0.80	
75-27-4	Bromodichloromethane	163.83	ND		0.40	
75-25-2	Bromoform	252.75	ND		0.40	
74-83-9	Bromomethane	94.94	ND		0.40	
56-23-5	Carbon tetrachloride	153.81	ND		0.16	
108-90-7	Chlorobenzene	112.56	ND		0.40	
75-00-3	Chloroethane	64.52	ND		0.40	
67-66-3	Chloroform	119.38	ND		0.40	
74-87-3	Chloromethane	50.49	ND		1.0	
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.20	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		0.40	
110-82-7	Cyclohexane	84.16	1.4		1.0	

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-1 Lab Sample ID: 140-22575-1

Matrix: Air Lab File ID: RD08P101.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:15

Sample wt/vol: 100(mL) Date Analyzed: 04/08/2021 14:52

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND		0.40	
75-71-8	Dichlorodifluoromethane	120.91	2.6		0.40	
64-17-5	Ethanol	46.07	130		10	
100-41-4	Ethylbenzene	106.17	0.46		0.40	
87-68-3	Hexachlorobutadiene	260.76	ND		0.40	UJ
110-54-3	Hexane	86.17	1.6		1.0	
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.80	
75-09-2	Methylene Chloride	84.93	ND		2.0	
179601-23-1	m-Xylene & p-Xylene	106.17	1.5		0.40	
91-20-3	Naphthalene	128.17	ND		1.0	
95-47-6	o-Xylene	106.17	0.78		0.40	
100-42-5	Styrene	104.15	ND		0.40	
75-65-0	t-Butyl alcohol	74.12	ND		1.6	
127-18-4	Tetrachloroethene	165.83	13		0.40	
108-88-3	Toluene	92.14	2.2		0.60	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.40	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		0.40	
79-01-6	Trichloroethene	131.39	ND		0.18	
75-69-4	Trichlorofluoromethane	137.37	ND		0.40	
75-01-4	Vinyl chloride	62.50	ND		0.20	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	102		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-1 Lab Sample ID: 140-22575-1

Matrix: Air Lab File ID: RD08P101.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:15

Sample wt/vol: 100(mL) Date Analyzed: 04/08/2021 14:52

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		2.2	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		2.7	
79-00-5	1,1,2-Trichloroethane	133.41	ND		2.2	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		3.1	
75-34-3	1,1-Dichloroethane	98.96	ND		1.6	
75-35-4	1,1-Dichloroethene	96.94	ND		0.79	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		3.0	
95-63-6	1,2,4-Trimethylbenzene	120.20	4.1		2.0	
106-93-4	1,2-Dibromoethane	187.87	ND		3.1	
95-50-1	1,2-Dichlorobenzene	147.00	ND		2.4	
107-06-2	1,2-Dichloroethane	98.96	ND		1.6	
78-87-5	1,2-Dichloropropane	112.99	ND		1.8	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		2.8	
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		2.0	
541-73-1	1,3-Dichlorobenzene	147.00	ND		2.4	
106-46-7	1,4-Dichlorobenzene	147.00	ND		2.4	
123-91-1	1,4-Dioxane	88.11	ND		3.6	
540-84-1	2,2,4-Trimethylpentane	114.23	13		4.7	
78-93-3	2-Butanone	72.11	ND		4.7	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		4.1	
71-43-2	Benzene	78.11	2.0		1.3	
100-44-7	Benzyl chloride	126.58	ND		4.1	
75-27-4	Bromodichloromethane	163.83	ND		2.7	
75-25-2	Bromoform	252.75	ND		4.1	
74-83-9	Bromomethane	94.94	ND		1.6	
56-23-5	Carbon tetrachloride	153.81	ND		1.0	
108-90-7	Chlorobenzene	112.56	ND		1.8	
75-00-3	Chloroethane	64.52	ND		1.1	
67-66-3	Chloroform	119.38	ND		2.0	
74-87-3	Chloromethane	50.49	ND		2.1	
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.79	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		1.8	
110-82-7	Cyclohexane	84.16	5.0		3.4	

DLM 4/30/21

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-1 Lab Sample ID: 140-22575-1

Matrix: Air Lab File ID: RD08P101.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:15

Sample wt/vol: 100(mL) Date Analyzed: 04/08/2021 14:52

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND		3.4	
75-71-8	Dichlorodifluoromethane	120.91	13		2.0	
64-17-5	Ethanol	46.07	250		19	
100-41-4	Ethylbenzene	106.17	2.0		1.7	
87-68-3	Hexachlorobutadiene	260.76	ND		4.3	UJ
110-54-3	Hexane	86.17	5.7		3.5	
1634-04-4	Methyl tert-butyl ether	88.15	ND		2.9	
75-09-2	Methylene Chloride	84.93	ND		6.9	
179601-23-1	m-Xylene & p-Xylene	106.17	6.3		1.7	
91-20-3	Naphthalene	128.17	ND		5.2	
95-47-6	o-Xylene	106.17	3.4		1.7	
100-42-5	Styrene	104.15	ND		1.7	
75-65-0	t-Butyl alcohol	74.12	ND		4.9	
127-18-4	Tetrachloroethene	165.83	90		2.7	
108-88-3	Toluene	92.14	8.2		2.3	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		1.6	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		1.8	
79-01-6	Trichloroethene	131.39	ND		0.97	
75-69-4	Trichlorofluoromethane	137.37	ND		2.2	
75-01-4	Vinyl chloride	62.50	ND		0.51	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	102		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2 Lab Sample ID: 140-22575-2

Matrix: Air Lab File ID: SD07P115.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/08/2021 02:39

Soil Aliquot Vol: Dilution Factor: 34.04

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		91	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		91	
79-00-5	1,1,2-Trichloroethane	133.41	ND		91	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		91	
75-34-3	1,1-Dichloroethane	98.96	ND		91	
75-35-4	1,1-Dichloroethene	96.94	ND		45	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		91	
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		91	
106-93-4	1,2-Dibromoethane	187.87	ND		91	
95-50-1	1,2-Dichlorobenzene	147.00	ND	*+	91	UJ
107-06-2	1,2-Dichloroethane	98.96	ND		91	
78-87-5	1,2-Dichloropropane	112.99	ND		91	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		91	UJ
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		91	
541-73-1	1,3-Dichlorobenzene	147.00	ND	*+	91	UJ
106-46-7	1,4-Dichlorobenzene	147.00	ND	*+	91	UJ
123-91-1	1,4-Dioxane	88.11	ND		230	
540-84-1	2,2,4-Trimethylpentane	114.23	ND		230	
78-93-3	2-Butanone	72.11	ND		360	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		230	
71-43-2	Benzene	78.11	ND		91	
100-44-7	Benzyl chloride	126.58	ND	*+	180	UJ
75-27-4	Bromodichloromethane	163.83	ND		91	
75-25-2	Bromoform	252.75	ND		91	
74-83-9	Bromomethane	94.94	ND		91	
56-23-5	Carbon tetrachloride	153.81	ND	*+	36	UJ
108-90-7	Chlorobenzene	112.56	ND		91	
75-00-3	Chloroethane	64.52	ND		91	
67-66-3	Chloroform	119.38	ND		91	
74-87-3	Chloromethane	50.49	ND		230	
156-59-2	cis-1,2-Dichloroethene	96.94	160		45	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		91	
110-82-7	Cyclohexane	84.16	ND		230	

DLM 4/30/21

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2 Lab Sample ID: 140-22575-2

Matrix: Air Lab File ID: SD07P115.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/08/2021 02:39

Soil Aliquot Vol: Dilution Factor: 34.04

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND	*+	91	UJ
75-71-8	Dichlorodifluoromethane	120.91	ND	*+	91	UJ
64-17-5	Ethanol	46.07	ND		2300	
100-41-4	Ethylbenzene	106.17	ND		91	
87-68-3	Hexachlorobutadiene	260.76	ND	*+	91	UJ
110-54-3	Hexane	86.17	ND		230	
1634-04-4	Methyl tert-butyl ether	88.15	ND		180	
75-09-2	Methylene Chloride	84.93	ND		450	
179601-23-1	m-Xylene & p-Xylene	106.17	ND		91	
91-20-3	Naphthalene	128.17	ND		230	
95-47-6	o-Xylene	106.17	ND		91	
100-42-5	Styrene	104.15	ND		91	
75-65-0	t-Butyl alcohol	74.12	ND		360	
127-18-4	Tetrachloroethene	165.83	6800		91	
108-88-3	Toluene	92.14	ND		140	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		91	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		91	
79-01-6	Trichloroethene	131.39	180		41	
75-69-4	Trichlorofluoromethane	137.37	ND		91	
75-01-4	Vinyl chloride	62.50	ND		45	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2 Lab Sample ID: 140-22575-2

Matrix: Air Lab File ID: SD07P115.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/08/2021 02:39

Soil Aliquot Vol: Dilution Factor: 34.04

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		500	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		620	
79-00-5	1,1,2-Trichloroethane	133.41	ND		500	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		700	
75-34-3	1,1-Dichloroethane	98.96	ND		370	
75-35-4	1,1-Dichloroethene	96.94	ND		180	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		670	
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		450	
106-93-4	1,2-Dibromoethane	187.87	ND		700	
95-50-1	1,2-Dichlorobenzene	147.00	ND	*+	550	UJ
107-06-2	1,2-Dichloroethane	98.96	ND		370	
78-87-5	1,2-Dichloropropane	112.99	ND		420	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		630	UJ
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		450	
541-73-1	1,3-Dichlorobenzene	147.00	ND	*+	550	UJ
106-46-7	1,4-Dichlorobenzene	147.00	ND	*+	550	UJ
123-91-1	1,4-Dioxane	88.11	ND		820	
540-84-1	2,2,4-Trimethylpentane	114.23	ND		1100	
78-93-3	2-Butanone	72.11	ND		1100	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		930	
71-43-2	Benzene	78.11	ND		290	
100-44-7	Benzyl chloride	126.58	ND	*+	940	UJ
75-27-4	Bromodichloromethane	163.83	ND		610	
75-25-2	Bromoform	252.75	ND		940	
74-83-9	Bromomethane	94.94	ND		350	
56-23-5	Carbon tetrachloride	153.81	ND	*+	230	UJ
108-90-7	Chlorobenzene	112.56	ND		420	
75-00-3	Chloroethane	64.52	ND		240	
67-66-3	Chloroform	119.38	ND		440	
74-87-3	Chloromethane	50.49	ND		470	
156-59-2	cis-1,2-Dichloroethene	96.94	640		180	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		410	
110-82-7	Cyclohexane	84.16	ND		780	

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2 Lab Sample ID: 140-22575-2

Matrix: Air Lab File ID: SD07P115.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/08/2021 02:39

Soil Aliquot Vol: Dilution Factor: 34.04

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND	*+	770	UJ
75-71-8	Dichlorodifluoromethane	120.91	ND	*+	450	UJ
64-17-5	Ethanol	46.07	ND		4300	
100-41-4	Ethylbenzene	106.17	ND		390	
87-68-3	Hexachlorobutadiene	260.76	ND	*+	970	UJ
110-54-3	Hexane	86.17	ND		800	
1634-04-4	Methyl tert-butyl ether	88.15	ND		650	
75-09-2	Methylene Chloride	84.93	ND		1600	
179601-23-1	m-Xylene & p-Xylene	106.17	ND		390	
91-20-3	Naphthalene	128.17	ND		1200	
95-47-6	o-Xylene	106.17	ND		390	
100-42-5	Styrene	104.15	ND		390	
75-65-0	t-Butyl alcohol	74.12	ND		1100	
127-18-4	Tetrachloroethene	165.83	46000		620	
108-88-3	Toluene	92.14	ND		510	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		360	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		410	
79-01-6	Trichloroethene	131.39	990		220	
75-69-4	Trichlorofluoromethane	137.37	ND		510	
75-01-4	Vinyl chloride	62.50	ND		120	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	101		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2X Lab Sample ID: 140-22575-3

Matrix: Air Lab File ID: SD07P110.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/07/2021 22:51

Soil Aliquot Vol: Dilution Factor: 38.73

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		100	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		100	
79-00-5	1,1,2-Trichloroethane	133.41	ND		100	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		100	
75-34-3	1,1-Dichloroethane	98.96	ND		100	
75-35-4	1,1-Dichloroethene	96.94	ND		52	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		100	
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		100	
106-93-4	1,2-Dibromoethane	187.87	ND		100	
95-50-1	1,2-Dichlorobenzene	147.00	ND	*+	100	UJ
107-06-2	1,2-Dichloroethane	98.96	ND		100	
78-87-5	1,2-Dichloropropane	112.99	ND		100	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		100	UJ
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		100	
541-73-1	1,3-Dichlorobenzene	147.00	ND	*+	100	UJ
106-46-7	1,4-Dichlorobenzene	147.00	ND	*+	100	UJ
123-91-1	1,4-Dioxane	88.11	ND		260	
540-84-1	2,2,4-Trimethylpentane	114.23	ND		260	
78-93-3	2-Butanone	72.11	ND		410	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		260	
71-43-2	Benzene	78.11	ND		100	
100-44-7	Benzyl chloride	126.58	ND	*+	210	UJ
75-27-4	Bromodichloromethane	163.83	ND		100	
75-25-2	Bromoform	252.75	ND		100	
74-83-9	Bromomethane	94.94	ND		100	
56-23-5	Carbon tetrachloride	153.81	ND	*+	41	UJ
108-90-7	Chlorobenzene	112.56	ND		100	
75-00-3	Chloroethane	64.52	ND		100	
67-66-3	Chloroform	119.38	ND		100	
74-87-3	Chloromethane	50.49	ND		260	
156-59-2	cis-1,2-Dichloroethene	96.94	160		52	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		100	
110-82-7	Cyclohexane	84.16	ND		260	

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2X Lab Sample ID: 140-22575-3

Matrix: Air Lab File ID: SD07P110.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/07/2021 22:51

Soil Aliquot Vol: Dilution Factor: 38.73

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND	*+	100	UJ
75-71-8	Dichlorodifluoromethane	120.91	ND	*+	100	UJ
64-17-5	Ethanol	46.07	ND		2600	
100-41-4	Ethylbenzene	106.17	ND		100	
87-68-3	Hexachlorobutadiene	260.76	ND	*+	100	UJ
110-54-3	Hexane	86.17	ND		260	
1634-04-4	Methyl tert-butyl ether	88.15	ND		210	
75-09-2	Methylene Chloride	84.93	ND		520	
179601-23-1	m-Xylene & p-Xylene	106.17	ND		100	
91-20-3	Naphthalene	128.17	ND		260	
95-47-6	o-Xylene	106.17	ND		100	
100-42-5	Styrene	104.15	ND		100	
75-65-0	t-Butyl alcohol	74.12	ND		410	
127-18-4	Tetrachloroethene	165.83	6900		100	
108-88-3	Toluene	92.14	ND		150	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		100	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		100	
79-01-6	Trichloroethene	131.39	190		46	
75-69-4	Trichlorofluoromethane	137.37	ND		100	
75-01-4	Vinyl chloride	62.50	ND		52	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	100		60-140

DLM 4/30/21

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2X Lab Sample ID: 140-22575-3

Matrix: Air Lab File ID: SD07P110.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/07/2021 22:51

Soil Aliquot Vol: Dilution Factor: 38.73

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		560	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		710	
79-00-5	1,1,2-Trichloroethane	133.41	ND		560	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		790	
75-34-3	1,1-Dichloroethane	98.96	ND		420	
75-35-4	1,1-Dichloroethene	96.94	ND		200	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		770	
95-63-6	1,2,4-Trimethylbenzene	120.20	ND		510	
106-93-4	1,2-Dibromoethane	187.87	ND		790	
95-50-1	1,2-Dichlorobenzene	147.00	ND	*+	620	UJ
107-06-2	1,2-Dichloroethane	98.96	ND		420	
78-87-5	1,2-Dichloropropane	112.99	ND		480	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		720	UJ
108-67-8	1,3,5-Trimethylbenzene	120.20	ND		510	
541-73-1	1,3-Dichlorobenzene	147.00	ND	*+	620	UJ
106-46-7	1,4-Dichlorobenzene	147.00	ND	*+	620	UJ
123-91-1	1,4-Dioxane	88.11	ND		930	
540-84-1	2,2,4-Trimethylpentane	114.23	ND		1200	
78-93-3	2-Butanone	72.11	ND		1200	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		1100	
71-43-2	Benzene	78.11	ND		330	
100-44-7	Benzyl chloride	126.58	ND	*+	1100	UJ
75-27-4	Bromodichloromethane	163.83	ND		690	
75-25-2	Bromoform	252.75	ND		1100	
74-83-9	Bromomethane	94.94	ND		400	
56-23-5	Carbon tetrachloride	153.81	ND	*+	260	UJ
108-90-7	Chlorobenzene	112.56	ND		480	
75-00-3	Chloroethane	64.52	ND		270	
67-66-3	Chloroform	119.38	ND		500	
74-87-3	Chloromethane	50.49	ND		530	
156-59-2	cis-1,2-Dichloroethene	96.94	650		200	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		470	
110-82-7	Cyclohexane	84.16	ND		890	

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: SV1-2X Lab Sample ID: 140-22575-3

Matrix: Air Lab File ID: SD07P110.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:02

Sample wt/vol: 15(mL) Date Analyzed: 04/07/2021 22:51

Soil Aliquot Vol: Dilution Factor: 38.73

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48523 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND	*+	880	UJ
75-71-8	Dichlorodifluoromethane	120.91	ND	*+	510	UJ
64-17-5	Ethanol	46.07	ND		4900	
100-41-4	Ethylbenzene	106.17	ND		450	
87-68-3	Hexachlorobutadiene	260.76	ND	*+	1100	UJ
110-54-3	Hexane	86.17	ND		910	
1634-04-4	Methyl tert-butyl ether	88.15	ND		740	
75-09-2	Methylene Chloride	84.93	ND		1800	
179601-23-1	m-Xylene & p-Xylene	106.17	ND		450	
91-20-3	Naphthalene	128.17	ND		1400	
95-47-6	o-Xylene	106.17	ND		450	
100-42-5	Styrene	104.15	ND		440	
75-65-0	t-Butyl alcohol	74.12	ND		1300	
127-18-4	Tetrachloroethene	165.83	47000		700	
108-88-3	Toluene	92.14	ND		580	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		410	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		470	
79-01-6	Trichloroethene	131.39	1000		250	
75-69-4	Trichlorofluoromethane	137.37	ND		580	
75-01-4	Vinyl chloride	62.50	ND		130	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	100		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: ID-1 Lab Sample ID: 140-22575-4

Matrix: Air Lab File ID: RD08P102.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:05

Sample wt/vol: 200(mL) Date Analyzed: 04/08/2021 15:42

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.20	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		0.20	
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.20	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		0.20	
75-34-3	1,1-Dichloroethane	98.96	ND		0.20	
75-35-4	1,1-Dichloroethene	96.94	ND		0.10	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.20	
95-63-6	1,2,4-Trimethylbenzene	120.20	0.79		0.20	
106-93-4	1,2-Dibromoethane	187.87	ND		0.20	
95-50-1	1,2-Dichlorobenzene	147.00	ND		0.20	
107-06-2	1,2-Dichloroethane	98.96	ND		0.20	
78-87-5	1,2-Dichloropropane	112.99	ND		0.20	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		0.20	
108-67-8	1,3,5-Trimethylbenzene	120.20	0.25		0.20	
541-73-1	1,3-Dichlorobenzene	147.00	ND		0.20	
106-46-7	1,4-Dichlorobenzene	147.00	ND		0.20	
123-91-1	1,4-Dioxane	88.11	ND		0.50	
540-84-1	2,2,4-Trimethylpentane	114.23	3.4		0.50	
78-93-3	2-Butanone	72.11	ND		0.80	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		0.50	
71-43-2	Benzene	78.11	0.65		0.20	
100-44-7	Benzyl chloride	126.58	ND		0.40	
75-27-4	Bromodichloromethane	163.83	ND		0.20	
75-25-2	Bromoform	252.75	ND		0.20	
74-83-9	Bromomethane	94.94	ND		0.20	
56-23-5	Carbon tetrachloride	153.81	ND		0.080	
108-90-7	Chlorobenzene	112.56	ND		0.20	
75-00-3	Chloroethane	64.52	ND		0.20	
67-66-3	Chloroform	119.38	ND		0.20	
74-87-3	Chloromethane	50.49	0.72		0.50	
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.10	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		0.20	
110-82-7	Cyclohexane	84.16	2.0		0.50	

DLM 4/30/21

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: ID-1 Lab Sample ID: 140-22575-4

Matrix: Air Lab File ID: RD08P102.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:05

Sample wt/vol: 200(mL) Date Analyzed: 04/08/2021 15:42

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND		0.20	
75-71-8	Dichlorodifluoromethane	120.91	0.28		0.20	
64-17-5	Ethanol	46.07	94		5.0	
100-41-4	Ethylbenzene	106.17	0.56		0.20	
87-68-3	Hexachlorobutadiene	260.76	ND		0.20	UJ
110-54-3	Hexane	86.17	2.3		0.50	
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.40	
75-09-2	Methylene Chloride	84.93	ND		1.0	
179601-23-1	m-Xylene & p-Xylene	106.17	1.9		0.20	
91-20-3	Naphthalene	128.17	ND		0.50	
95-47-6	o-Xylene	106.17	0.90		0.20	
100-42-5	Styrene	104.15	ND		0.20	
75-65-0	t-Butyl alcohol	74.12	1.8		0.80	
127-18-4	Tetrachloroethene	165.83	9.5		0.20	
108-88-3	Toluene	92.14	2.9		0.30	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.20	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		0.20	
79-01-6	Trichloroethene	131.39	ND		0.090	
75-69-4	Trichlorofluoromethane	137.37	0.27		0.20	
75-01-4	Vinyl chloride	62.50	ND		0.10	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: ID-1 Lab Sample ID: 140-22575-4

Matrix: Air Lab File ID: RD08P102.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:05

Sample wt/vol: 200(mL) Date Analyzed: 04/08/2021 15:42

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		1.1	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		1.4	
79-00-5	1,1,2-Trichloroethane	133.41	ND		1.1	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		1.5	
75-34-3	1,1-Dichloroethane	98.96	ND		0.81	
75-35-4	1,1-Dichloroethene	96.94	ND		0.40	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		1.5	
95-63-6	1,2,4-Trimethylbenzene	120.20	3.9		0.98	
106-93-4	1,2-Dibromoethane	187.87	ND		1.5	
95-50-1	1,2-Dichlorobenzene	147.00	ND		1.2	
107-06-2	1,2-Dichloroethane	98.96	ND		0.81	
78-87-5	1,2-Dichloropropane	112.99	ND		0.92	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		1.4	
108-67-8	1,3,5-Trimethylbenzene	120.20	1.2		0.98	
541-73-1	1,3-Dichlorobenzene	147.00	ND		1.2	
106-46-7	1,4-Dichlorobenzene	147.00	ND		1.2	
123-91-1	1,4-Dioxane	88.11	ND		1.8	
540-84-1	2,2,4-Trimethylpentane	114.23	16		2.3	
78-93-3	2-Butanone	72.11	ND		2.4	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	ND		2.0	
71-43-2	Benzene	78.11	2.1		0.64	
100-44-7	Benzyl chloride	126.58	ND		2.1	
75-27-4	Bromodichloromethane	163.83	ND		1.3	
75-25-2	Bromoform	252.75	ND		2.1	
74-83-9	Bromomethane	94.94	ND		0.78	
56-23-5	Carbon tetrachloride	153.81	ND		0.50	
108-90-7	Chlorobenzene	112.56	ND		0.92	
75-00-3	Chloroethane	64.52	ND		0.53	
67-66-3	Chloroform	119.38	ND		0.98	
74-87-3	Chloromethane	50.49	1.5		1.0	
156-59-2	cis-1,2-Dichloroethene	96.94	ND		0.40	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		0.91	
110-82-7	Cyclohexane	84.16	6.8		1.7	

DLM 4/30/21

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: ID-1 Lab Sample ID: 140-22575-4

Matrix: Air Lab File ID: RD08P102.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:05

Sample wt/vol: 200(mL) Date Analyzed: 04/08/2021 15:42

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND		1.7	
75-71-8	Dichlorodifluoromethane	120.91	1.4		0.99	
64-17-5	Ethanol	46.07	180		9.4	
100-41-4	Ethylbenzene	106.17	2.4		0.87	
87-68-3	Hexachlorobutadiene	260.76	ND		2.1	UJ
110-54-3	Hexane	86.17	8.2		1.8	
1634-04-4	Methyl tert-butyl ether	88.15	ND		1.4	
75-09-2	Methylene Chloride	84.93	ND		3.5	
179601-23-1	m-Xylene & p-Xylene	106.17	8.1		0.87	
91-20-3	Naphthalene	128.17	ND		2.6	
95-47-6	o-Xylene	106.17	3.9		0.87	
100-42-5	Styrene	104.15	ND		0.85	
75-65-0	t-Butyl alcohol	74.12	5.3		2.4	
127-18-4	Tetrachloroethene	165.83	64		1.4	
108-88-3	Toluene	92.14	11		1.1	
156-60-5	trans-1,2-Dichloroethene	96.94	ND		0.79	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		0.91	
79-01-6	Trichloroethene	131.39	ND		0.48	
75-69-4	Trichlorofluoromethane	137.37	1.5		1.1	
75-01-4	Vinyl chloride	62.50	ND		0.26	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: OD-1 Lab Sample ID: 140-22575-5

Matrix: Air Lab File ID: RD08P103.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:12

Sample wt/vol: 500(mL) Date Analyzed: 04/08/2021 16:34

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.080	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		0.080	
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.080	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		0.080	
75-34-3	1,1-Dichloroethane	98.96	ND		0.080	
75-35-4	1,1-Dichloroethene	96.94	ND		0.040	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.080	
95-63-6	1,2,4-Trimethylbenzene	120.20	0.85		0.080	
106-93-4	1,2-Dibromoethane	187.87	ND		0.080	
95-50-1	1,2-Dichlorobenzene	147.00	ND		0.080	
107-06-2	1,2-Dichloroethane	98.96	ND		0.080	
78-87-5	1,2-Dichloropropane	112.99	ND		0.080	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		0.080	
108-67-8	1,3,5-Trimethylbenzene	120.20	0.26		0.080	
541-73-1	1,3-Dichlorobenzene	147.00	ND		0.080	
106-46-7	1,4-Dichlorobenzene	147.00	ND		0.080	
123-91-1	1,4-Dioxane	88.11	ND		0.20	
540-84-1	2,2,4-Trimethylpentane	114.23	3.5		0.20	
78-93-3	2-Butanone	72.11	1.0		0.32	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	0.41		0.20	
71-43-2	Benzene	78.11	2.0		0.080	
100-44-7	Benzyl chloride	126.58	ND		0.16	
75-27-4	Bromodichloromethane	163.83	ND		0.080	
75-25-2	Bromoform	252.75	ND		0.080	
74-83-9	Bromomethane	94.94	ND		0.080	
56-23-5	Carbon tetrachloride	153.81	0.067		0.032	
108-90-7	Chlorobenzene	112.56	ND		0.080	
75-00-3	Chloroethane	64.52	ND		0.080	
67-66-3	Chloroform	119.38	ND		0.080	
74-87-3	Chloromethane	50.49	0.59		0.20	
156-59-2	cis-1,2-Dichloroethene	96.94	0.042		0.040	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		0.080	
110-82-7	Cyclohexane	84.16	2.1		0.20	

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: OD-1 Lab Sample ID: 140-22575-5

Matrix: Air Lab File ID: RD08P103.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:12

Sample wt/vol: 500(mL) Date Analyzed: 04/08/2021 16:34

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND		0.080	
75-71-8	Dichlorodifluoromethane	120.91	0.18		0.080	
64-17-5	*Ethanol*	*46.07*	*130*	*E*	*2.0*	R
100-41-4	Ethylbenzene	106.17	0.60		0.080	
87-68-3	Hexachlorobutadiene	260.76	ND		0.080	UJ
110-54-3	Hexane	86.17	2.7		0.20	
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.16	
75-09-2	Methylene Chloride	84.93	0.91		0.40	
179601-23-1	m-Xylene & p-Xylene	106.17	2.0		0.080	
91-20-3	Naphthalene	128.17	ND		0.20	
95-47-6	o-Xylene	106.17	0.96		0.080	
100-42-5	Styrene	104.15	ND		0.080	
75-65-0	t-Butyl alcohol	74.12	2.4		0.32	
127-18-4	Tetrachloroethene	165.83	10		0.080	
108-88-3	Toluene	92.14	3.2		0.12	
156-60-5	trans-1,2-Dichloroethene	96.94	0.32		0.080	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		0.080	
79-01-6	Trichloroethene	131.39	0.071		0.036	
75-69-4	Trichlorofluoromethane	137.37	0.19		0.080	
75-01-4	Vinyl chloride	62.50	ND		0.040	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: OD-1 Lab Sample ID: 140-22575-5

Matrix: Air Lab File ID: RD08P103.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:12

Sample wt/vol: 500(mL) Date Analyzed: 04/08/2021 16:34

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
71-55-6	1,1,1-Trichloroethane	133.41	ND		0.44	
79-34-5	1,1,2,2-Tetrachloroethane	167.85	ND		0.55	
79-00-5	1,1,2-Trichloroethane	133.41	ND		0.44	
76-13-1	1,1,2-Trichlorotrifluoroethane	187.38	ND		0.61	
75-34-3	1,1-Dichloroethane	98.96	ND		0.32	
75-35-4	1,1-Dichloroethene	96.94	ND		0.16	
120-82-1	1,2,4-Trichlorobenzene	181.45	ND		0.59	
95-63-6	1,2,4-Trimethylbenzene	120.20	4.2		0.39	
106-93-4	1,2-Dibromoethane	187.87	ND		0.61	
95-50-1	1,2-Dichlorobenzene	147.00	ND		0.48	
107-06-2	1,2-Dichloroethane	98.96	ND		0.32	
78-87-5	1,2-Dichloropropane	112.99	ND		0.37	
76-14-2	1,2-Dichlorotetrafluoroethane	170.92	ND		0.56	
108-67-8	1,3,5-Trimethylbenzene	120.20	1.3		0.39	
541-73-1	1,3-Dichlorobenzene	147.00	ND		0.48	
106-46-7	1,4-Dichlorobenzene	147.00	ND		0.48	
123-91-1	1,4-Dioxane	88.11	ND		0.72	
540-84-1	2,2,4-Trimethylpentane	114.23	17		0.93	
78-93-3	2-Butanone	72.11	3.0		0.94	
108-10-1	4-Methyl-2-pentanone (MIBK)	100.16	1.7		0.82	
71-43-2	Benzene	78.11	6.4		0.26	
100-44-7	Benzyl chloride	126.58	ND		0.83	
75-27-4	Bromodichloromethane	163.83	ND		0.54	
75-25-2	Bromoform	252.75	ND		0.83	
74-83-9	Bromomethane	94.94	ND		0.31	
56-23-5	Carbon tetrachloride	153.81	0.42		0.20	
108-90-7	Chlorobenzene	112.56	ND		0.37	
75-00-3	Chloroethane	64.52	ND		0.21	
67-66-3	Chloroform	119.38	ND		0.39	
74-87-3	Chloromethane	50.49	1.2		0.41	
156-59-2	cis-1,2-Dichloroethene	96.94	0.16		0.16	
10061-01-5	cis-1,3-Dichloropropene	110.97	ND		0.36	
110-82-7	Cyclohexane	84.16	7.3		0.69	

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: OD-1 Lab Sample ID: 140-22575-5

Matrix: Air Lab File ID: RD08P103.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:12

Sample wt/vol: 500(mL) Date Analyzed: 04/08/2021 16:34

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
124-48-1	Dibromochloromethane	208.28	ND		0.68	
75-71-8	Dichlorodifluoromethane	120.91	0.90		0.40	
64-17-5	*Ethanol*	*46.07*	*240*	*E*	*3.8*	R
100-41-4	Ethylbenzene	106.17	2.6		0.35	
87-68-3	Hexachlorobutadiene	260.76	ND		0.85	UJ
110-54-3	Hexane	86.17	9.5		0.70	
1634-04-4	Methyl tert-butyl ether	88.15	ND		0.58	
75-09-2	Methylene Chloride	84.93	3.2		1.4	
179601-23-1	m-Xylene & p-Xylene	106.17	8.8		0.35	
91-20-3	Naphthalene	128.17	ND		1.0	
95-47-6	o-Xylene	106.17	4.2		0.35	
100-42-5	Styrene	104.15	ND		0.34	
75-65-0	t-Butyl alcohol	74.12	7.2		0.97	
127-18-4	Tetrachloroethene	165.83	69		0.54	
108-88-3	Toluene	92.14	12		0.45	
156-60-5	trans-1,2-Dichloroethene	96.94	1.3		0.32	
10061-02-6	trans-1,3-Dichloropropene	110.97	ND		0.36	
79-01-6	Trichloroethene	131.39	0.38		0.19	
75-69-4	Trichlorofluoromethane	137.37	1.1		0.45	
75-01-4	Vinyl chloride	62.50	ND		0.10	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	107		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: OD-1 DL Lab Sample ID: 140-22575-5 DL

Matrix: Air Lab File ID: RD08P103DL.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:12

Sample wt/vol: 100(mL) Date Analyzed: 04/09/2021 07:48

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ppb v/v

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
64-17-5	Ethanol	46.07	160	D	10	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		60-140

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 140-22575-1

SDG No.:

Client Sample ID: OD-1 DL Lab Sample ID: 140-22575-5 DL

Matrix: Air Lab File ID: RD08P103DL.D

Analysis Method: TO 15 LL Date Collected: 03/31/2021 10:12

Sample wt/vol: 100(mL) Date Analyzed: 04/09/2021 07:48

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-5 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 48569 Units: ug/m3

CAS NO.	COMPOUND NAME	MOLECULAR WEIGHT	RESULT	Q	RL	
64-17-5	Ethanol	46.07	290	D	19	

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	103		60-140

ATTACHMENT B

Job Narrative
140-22575-1

Comments
No additional comments.

Receipt
The samples were received on 4/1/2021 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice.

Air - GC/MS VOA
Methods D1946, TO 15 LL, TO-14A, TO-15: EPA methods TO-14A and TO-15 specify the use of humidified "zero air" as the blank reagent for canister cleaning, instrument calibration and sample analysis. Ultra-high purity humidified nitrogen from a cryogenic reservoir is used in place of "zero air" by TestAmerica Knoxville.

Method TO 15 LL: The continuing calibration verification (CCV) associated with batch 140-48523 exhibited % difference of > 30% for the following analyte(s) 1,2-Dichloro-1,1,2,2-tetrafluoroethane; however, the results were within the LCS acceptance limits. The EPA method requires that all target analytes in the continuing calibration verification standard be within 30% difference from the initial calibration. According to the laboratory standard operating procedure, the continuing calibration is acceptable if it meets the laboratory control sample acceptance criteria.

Method TO 15 LL: The continuing calibration verification (CCV) associated with batch 140-48523 recovered above the upper control limit for 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzyl chloride, Carbon tetrachloride, Chlorodibromomethane, Dichlorodifluoromethane and Hexachlorobutadiene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method TO 15 LL: The laboratory control sample (LCS) for analytical batch 140-48523 recovered outside control limits for the following analytes: 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Benzyl chloride, Carbon tetrachloride, Chlorodibromomethane, Dichlorodifluoromethane and Hexachlorobutadiene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method TO 15 LL: The continuing calibration verification (CCV) associated with batch 140-48569 exhibited % difference of > 30% for the following analyte(s) Hexachlorobutadiene; however, the results were within the LCS acceptance limits. The EPA method requires that all target analytes in the continuing calibration verification standard be within 30% difference from the initial calibration. According to the laboratory standard operating procedure, the continuing calibration is acceptable if it meets the laboratory control sample acceptance criteria.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples

140-22575 Chain of Custody

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information	Client Project Manager: PAUL KARETH	Samples Collected By: S. LIBERT, E. ACS	COC No:
Company Name: AECOM	Phone:		1 of 1 COCs
Address: 1255 BROAD ST	Email: PAUL.KARETH@AECOM.com		TALS Project #:
City/State/Zip CLIFTON, NJ			For Lab Use Only:
Phone: 973 883 8500	Site Contact:		Walk-in Client:
FAX:	Tel/Fax		Lab Sampling:
Project Name: SERVALL LAUNDRY	Analysis Turnaround Time		Job / SDG No.:
Site/Location: 8 DRAYTON AVE, BAY SHORE, NY	Standard (Specific):		(See below for Add'l Items)
P O # 60631073 - Site 152077	Rush (Specifiy):		

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
SV1-1	3-30-21	1015	3/31/21	1015	-30	-5	10443	7910	X									X					
SV1-2	↓	1002	↓	1002	-30	-6	8830	[illegible]	X									X					
SV1-2X		1002		1002	-30	-6	7403	[illegible]	X									X					
ID-1		1005		1005	-30	-6	7020	[illegible]	X								X						
OD-1		1012		1012	-30	-6	12143	11046	X								X						

Temperature (Fahrenheit)	Interior	Ambient
Start	50°	50°
Stop	55	55

Pressure (inches of Hg)	Interior	Ambient
Start	30.43	30.43
Stop	30.18	30.18

Received @ ambient, 1 box, Fedex PO
No Custody seal
trk# 9555 1204 2511
KW 4/1/21

Special Instructions/QC Requirements & Comments:

Samples Shipped by: STEVE LIBERT	Date / Time: 3-31-21	Samples Received by: [illegible] ETA 4/1/21 0950	
Samples Relinquished by:	Date / Time:	Received by:	6 flows
Relinquished by:	Date / Time:	Received by:	6 cans, IT
Lab Use Only: Shipper Name:	Opened by:	Condition:	

Form No. CA-C-WI-003, Rev. 2.23, dated 5/4/2020

Attachment C

NYSDEC Soil Vapor/Indoor Air Matrices

Soil Vapor/Indoor Air Matrix A

May 2017

Analytes Assigned:
Trichloroethene (TCE), *cis*-1,2-Dichloroethene (*c*12-DCE), 1,1-Dichloroethene (11-DCE), Carbon Tetrachloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)		
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 0.2	0.2 to < 1	1 and above
< 6	1. No further action	2. No Further Action	3. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
6 to < 60	4. No further action	5. MONITOR	6. MITIGATE
60 and above	7. MITIGATE	8. MITIGATE	9. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Mitigate: We recommend mitigation to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX A

This matrix summarizes actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of soil vapor contamination, nor does it preclude remediating contaminated soil vapor or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.20 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions might be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

Soil Vapor/Indoor Air Matrix B

May 2017

Analytes Assigned:
Tetrachloroethene (PCE), 1,1,1-Trichloroethane (111-TCA), Methylene Chloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m^3)		
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m^3)	< 3	3 to < 10	10 and above
< 100	1. No further action	2. No Further Action	3. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
100 to < 1,000	4. No further action	5. MONITOR	6. MITIGATE
1,000 and above	7. MITIGATE	8. MITIGATE	9. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Mitigate: We recommend mitigation to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX B

This matrix summarizes actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of soil vapor contamination, nor does it preclude remediating contaminated soil vapor or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 1 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions might be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.

Soil Vapor/Indoor Air Matrix C

May 2017

Analytes Assigned:
Vinyl Chloride

	INDOOR AIR CONCENTRATION of COMPOUND (mcg/m³)	
SUB-SLAB VAPOR CONCENTRATION of COMPOUND (mcg/m³)	< 0.2	0.2 and above
< 6	1. No further action	2. IDENTIFY SOURCE(S) and RESAMPLE or MITIGATE
6 to < 60	3. MONITOR	4. MITIGATE
60 and above	5. MITIGATE	6. MITIGATE

No further action: No additional actions are recommended to address human exposures.

Identify Source(s) and Resample or Mitigate: We recommend that reasonable and practical actions be taken to identify the source(s) affecting the indoor air quality and that actions be implemented to reduce indoor air concentrations to within background ranges. For example, if an indoor or outdoor air source is identified, we recommend the appropriate party implement actions to reduce the levels. In the event that indoor or outdoor sources are not readily identified or confirmed, resampling (which might include additional sub-slab vapor and indoor air sampling locations) is recommended to demonstrate that SVI mitigation actions are not needed. Based on the information available, mitigation might also be recommended when soil vapor intrusion cannot be ruled out.

Monitor: We recommend monitoring (sampling on a recurring basis), including but not necessarily limited to sub-slab vapor, basement air and outdoor air sampling, to determine whether concentrations in the indoor air or sub-slab vapor have changed and/or to evaluate temporal influences. Monitoring might also be recommended to determine whether existing building conditions (e.g., positive pressure heating, ventilation and air-conditioning systems) are maintaining the desired mitigation endpoint and to determine whether changes are needed. The type and frequency of monitoring is determined based on site-, building- and analyte-specific information, taking into account applicable environmental data and building operating conditions. Monitoring is an interim measure required to evaluate exposures related to soil vapor intrusion until contaminated environmental media are remediated.

Mitigate: We recommend mitigation to minimize current or potential exposures associated with soil vapor intrusion. The most common mitigation methods are sealing preferential pathways in conjunction with installing a sub-slab depressurization system and changing the pressurization of the building in conjunction with monitoring. The type, or combination of types, of mitigation is determined on a building-specific basis, taking into account building construction and operating conditions. Mitigation is considered a temporary measure implemented to address exposures related to soil vapor intrusion until contaminated environmental media are remediated.

These general recommendations are made with consideration being given to the additional notes on page 2.

ADDITIONAL NOTES FOR MATRIX C

This matrix summarizes actions recommended to address current and potential exposures related to soil vapor intrusion. To use the matrix appropriately as a tool in the decision-making process, the following should be noted:

[1] The matrix is generic. As such, it may be appropriate to modify a recommended action to accommodate analyte-specific, building-specific conditions (e.g., dirt floor in basement, crawl spaces, thick slabs, current occupancy, etc.), and/or factors provided in Section 3.2 of the guidance (e.g., current land use, environmental conditions, etc.). For example, collection of additional samples may be recommended when the matrix indicates "no further action" for a particular building, but the results of adjacent buildings (especially sub-slab vapor results) indicate a need to take actions to address exposures related to soil vapor intrusion. Mitigation might be recommended when the results of multiple contaminants indicate monitoring is recommended. Proactive actions may be proposed at any time. For example, the party implementing the actions may decide to install sub-slab depressurization systems on buildings where the matrix indicates "no further action" or "monitoring." Such an action might be undertaken for reasons other than public health (e.g., seeking community acceptance, reducing costs, etc.). However, actions implemented *in lieu* of sampling will typically be expected to be captured in the final engineering report and site management plan, and might not rule out the need for post-implementation sampling (e.g., to document effectiveness or to support terminating the action).

[2] Actions provided in the matrix are specific to addressing human exposures. Implementation of these actions does not preclude investigating possible sources of soil vapor contamination, nor does it preclude remediating contaminated soil vapor or the source of soil vapor contamination.

[3] Appropriate care should be taken during all aspects of sample collection to ensure that high quality data are obtained. Since the data are being used in the decision-making process, the laboratory analyzing the environmental samples must have current Environmental Laboratory Approval Program (ELAP) certification for the appropriate analyte and environmental matrix combinations. Furthermore, samples should be analyzed by methods that can achieve a minimum reporting limit of 0.20 microgram per cubic meter for indoor and outdoor air samples. For sub-slab vapor samples and dirt floor soil vapor samples, a minimum reporting limit of 1 microgram per cubic meter is recommended.

[4] Sub-slab vapor and indoor air samples are typically collected when the likelihood of soil vapor intrusion is considered to be the greatest (i.e., worst-case conditions). If samples are collected at other times (typically, samples collected outside of the heating season), then resampling during worst-case conditions might be appropriate to verify that actions taken to address exposures related to soil vapor intrusion are protective of human health.

[5] When current exposures are attributed to sources other than soil vapor intrusion, the agencies should be given documentation (e.g., applicable environmental data, completed indoor air sampling questionnaire, digital photographs, etc.) to support a proposed action other than that provided in the matrix box and to support agency assessment and follow-up.

[6] The party responsible for implementing the recommended actions will differ depending upon several factors, including but not limited to the following: the identified source of the volatile chemicals, the environmental remediation program, and analyte-specific, site-specific and building-specific factors.