8976 Wellington Road
Manassas, VA 20109

Sent via email

October 22, 2020

Jessica LaClair
New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau E
625 Broadway, 12th Floor
Albany, New York 12233-7017

Re: Subslab Depressurization System Completion and Startup Report (Phase II) – Building 330C
Former IBM East Fishkill Facility
EPA ID No. NYD000707901, NYSDEC Site No. 314054

Dear Ms. LaClair:

Enclosed is the *Subslab Depressurization System Completion and Startup Report (Phase II) - Building 330C* report for the western and central portion of B330C at the former IBM East Fishkill facility in Hopewell Junction, New York. The work described in the report was conducted in accordance with IBM's March 24, 2017 *Subslab Depressurization Conceptual Design Report – Building 330C*, which was approved by the New York State Department of Environmental Conservation (NYSDEC) and Department of Health (NYSDOH) in an August 23, 2017 letter.

If you have any questions, please contact me at (703) 257-2583.

Sincerely yours,
International Business Machines Corporation

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Enclosure: *Subslab Depressurization System Completion and Startup Report (Phase II) – Building 330C*

cc:	Julia Kenney	NYSDOH	(w/enclosure via e-mail)
	Mike Buckley	National Resources	(w/enclosure via e-mail)
	Carl Monheit	National Resources	(w/enclosure via e-mail)
	Gary Marone	Global Foundries	(w/enclosure via e-mail)
	David Shea	Sanborn Head	(w/enclosure via e-mail)

SANBORN HEAD ENGINEERING
Building Trust. Engineering Success.

20 Foundry Street
Concord, NH 03301

Dean Chartrand
IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

October 22, 2020
File No. 2999.04

Re: Draft Subslab Depressurization System Completion and Startup Report (Phase II) – Building 330C
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901
NYSDEC Site No. 314054

Dear Mr. Chartrand:

The enclosed report documents the completion of installation, and presents the results of startup performance monitoring, for Phase II of the subslab depressurization (SSD) system in Building 330C at the former IBM East Fishkill facility, currently owned by iPark East Fishkill LLC.

Please contact us if you require additional information.

Very truly yours,
SANBORN, HEAD ENGINEERING, P.C.

David Shea, P.E.
Sr. Vice President

Encl. Subslab Depressurization System Completion and Startup Report (Phase II) – Building 330C

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SANBORN HEAD ENGINEERING

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SUBSLAB DEPRESSURIZATION SYSTEM COMPLETION AND STARTUP REPORT (PHASE II)

BUILDING 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for IBM Corporate Environmental Affairs
File No. 2999.04
October 2020

SANBORN HEAD ENGINEERING

Building Trust. Engineering Success.

NYS Professional Engineer Certification
Subslab Depressurization System Completion and Startup Report (Phase II) – Building 330C
Former IBM East Fishkill Facility
EPA ID No. NYD000707901
NYSDEC Site No. 314054

I, David Shea, certify that I am currently a NYS registered professional engineer. I had primary direct responsibility for implementation of the subject construction program, and I certify that the subslab depressurization (SSD) system in Building 330C was implemented and that all construction activities were completed in substantial conformance with the design plans and specifications prepared by Sanborn, Head Engineering, PC (SHPC). This statement of conformance of the installation with the design documents is based on SHPC's on-site observations during construction and start-up of the SSD system in Building 330C.

Date: October 22, 2020

Name: David Shea

NYS P.E. License No. 70026

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SUBSLAB DEPRESSURIZATION SYSTEM
COMPLETION AND STARTUP REPORT (PHASE II) – BUILDING 330C
TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

This report documents the completion and startup performance monitoring results, including confirmatory indoor air sampling, associated with the Phase II portion of the subslab depressurization (SSD) system installation in Building 330C (B330C) at the former IBM East Fishkill facility located in Hopewell Junction, New York (the site). A site location plan is provided as Figure 1, and the location of B330C at the site is shown on Figure 2. B330C is currently owned by iPark East Fishkill LLC (iPark), also referred to as National Resources (NR). iPark renumbered its buildings in 2019, and B330C was renumbered as Building 755. However, to be consistent with prior reports, the building will be referred to as B330C herein.

The work described herein was conducted on behalf of IBM by Sanborn, Head Engineering, PC (SHPC). Progress updates and relevant data have been communicated to the New York State Department of Environmental Conservation and Department of Health (the Departments) through periodic correspondence and meetings.

The services conducted, and this report, are subject to the standard limitations for this type of work, as described in Appendix A.

2.0 BACKGROUND INFORMATION

IBM owned the East Fishkill facility property until July 2015, at which time the property was transferred to Global Foundries. Global Foundries subsequently subdivided the property into 8 lots and sold 6 lots to iPark in September 2017. The lot lines as of the date of this report are shown on Figure 2. B330C is located on Lot 7, which is owned by iPark East Fishkill LLC.

B330C was subject to vapor intrusion assessment under IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan,[1] and the assessment results were reported to the Departments in November 2009[2] and July 2014.[3]

Decommissioning of certain manufacturing areas was subsequently conducted by IBM and much of the building was vacated, although certain areas remained routinely occupied. Additional indoor air quality (IAQ) testing was conducted in April and November 2015 in conjunction with heating, ventilating, and air conditioning (HVAC) system shutdown testing, as described in a February 2016[4] report to the Departments. As part of this testing, screening of subslab vapor samples collected in April and May 2015 confirmed the presence of tetrachloroethene (PCE) in subslab vapor beneath B330C.

IBM elected to conduct SSD pilot testing in 2015 and 2016 to: 1) evaluate its potential effectiveness in controlling air pressure gradients across the floor slab in certain areas with

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1 Sanborn, Head Engineering, P.C., *Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, NY*, June 15, 2009.

2 Sanborn, Head Engineering, P.C., *Confirmatory Sampling Results, Buildings 330C and 338, VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, NY*, November 2009.

3 Sanborn, Head Engineering, P.C., *Report of Supplemental Remedial Measures, Building 330C VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, NY*, July 2014.

4 Sanborn, Head Engineering, P.C., *Report of HVAC Adjustment and Indoor Air Quality Testing – Buildings 330C and 338, Former IBM East Fishkill Facility, Hopewell Junction, New York*, February 2016.

higher potential for vapor intrusion, and 2) obtain observational data that could be used to support design of an SSD system.

Based on favorable results of the SSD pilot testing, in March 2016 IBM elected to install an interim SSD system (designated System VE-4) in the former Baseline Area located in the northwest portion of the building where the highest subslab PCE concentrations were observed and which was adjacent to an area of the building that remained occupied. IAQ sampling and screening were conducted after VE-4 was brought online, the results of which were presented in a July 2016 report[5] submitted to the Departments. As discussed in the report, the interim SSD system was found to be successful in reducing VOC vapor intrusion into the northwest portion of the building.

Results of the subslab vapor assessment, SSD pilot testing, and the conceptual design of a permanent SSD system for B330C were submitted to the Departments in a March 2017 report.[6] The Departments approved the design in a letter to IBM, dated August 23, 2017, and indicated that IBM may proceed with construction and operation of the SSD system.

In September 2017, iPark purchased the building and renovations have been ongoing. To accommodate building renovations, the SSD system was constructed in two phases. Phase I was commissioned in 2019 and covered the Cozzini Brothers and Country Produce tenant spaces, as documented in an October 2019 report[7] to the Departments.

This report documents the installation, startup, and subsequent IAQ testing of the second phase of the SSD system for B330C, which covers the former Baseline Area (where VE-4 was located), and the Global Foundries, More Good, and portions of the eMagin tenant spaces. The layout of the entire SSD system and the extent of Phases I and II of construction are shown on Figure 3. Figure 3 also provides a summary of current and proposed occupancy within B330C as reported to IBM by iPark.

3.0 SUBSLAB DEPRESSURIZATION SYSTEM INSTALLATION AND PERFORMANCE

The purpose of the SSD system is to capture subslab VOC vapors and establish control of cross-slab pressure gradients to reduce the potential for vapor intrusion to impact IAQ. Two equipment enclosures (Systems VE-7 and VE-8 shown on Figure 3) and the associated concrete pad were installed by IBM in November and December 2017. The first phase of the SSD system piping was constructed in March and April 2019 in general accordance with the conceptual design and began operation on April 30, 2019, while the second phase of the system was constructed in April through June 2020 and began operation on June 11, 2020. The layout of the entire system and the extent of the first and second phases of construction is shown on Figure 3.

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5 Sanborn, Head Engineering, P.C., *Report of Interim Measures and Indoor Air Quality Testing, Building 330C, Former IBM East Fishkill Facility, Hopewell Junction, NY*, July 22, 2016.

6 Sanborn, Head Engineering, P.C., *Subslab Depressurization Conceptual Design Report, Building 330C, Former IBM East Fishkill Facility, Hopewell Junction, NY*, March 24, 2017.

7 Sanborn, Head Engineering, P.C., *Subslab Depressurization System Completion and Startup Report (Phase I) – Building 330C, Former IBM East Fishkill Facility, Hopewell Junction, NY,* October 31, 2019.

The following sections provide a description of the SSD system and summarizes the startup activities, including operating conditions and performance results.

3.1 System Description

The SSD system described in the March 2017 conceptual design report was designed to cover areas where PCE levels in subslab vapor exceeded 50,000 µg/m^3, and which generally correspond to areas where PCE levels in indoor air have historically been higher than other areas of the building. The first phase of construction targeted the renovated and occupied Cozzini Brothers and Country Produce tenant spaces, which are shown on Figure 3. Cozzini Brothers occupies the former sintering furnace rooms on the south end of B330C, while Country Produce occupies the former casting and ball mill areas in the southwestern portion of the building. The second phase of construction targeted the Global Foundries, More Good, and portions of the eMagin tenant spaces. The Phase II portion of the SSD system also serves as a replacement for the VE-4 system in the former Baseline Area.

Subslab vapor is withdrawn from eight extraction ports (EP3006, EP3007, EP3015, EP3016, EP3018, EP3019, EP3020, and EP3021), shown on Figure 3 using two 25-horsepower, regenerative-type vacuum blowers installed inside the equipment enclosures (System VE-7 and System VE-8) located on the south side of B330C. System VE-7 extracts subslab vapor from EP3006, EP3007, EP3019, and EP3021, while System VE-8 extracts from EP3015, EP3016, EP3018, and EP3020. In each equipment enclosure, vapor is pulled through a vapor-liquid separator and treated via three 700-lb granular activated carbon (GAC) adsorber units plumbed in a lead-lag-polish series configuration. The treated vapor then enters the vacuum blower and is discharged above the B330C roofline and away from any outside air intakes. The systems are equipped with instruments, controls, and alarms so that the appropriate personnel are notified automatically in the event of a malfunction. Photographs of the system enclosures are provided in Exhibits 3.1 and 3.2 below.

Exhibit 3.1: SSD Equipment Enclosure Interior (System VE-7)

Exhibit 3.2: SSD Equipment Enclosure Exterior (System VE-8)

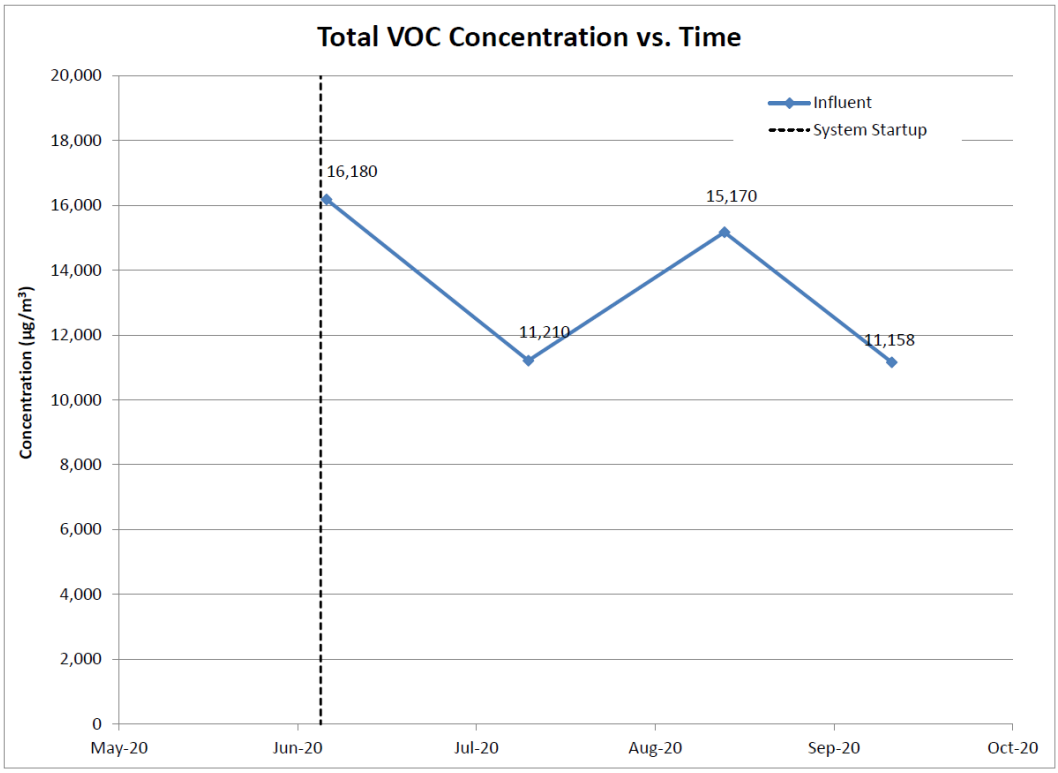
3.2 Vapor Extraction Performance Monitoring

The applied vacuums and flow rates measured at the eight extraction ports during startup are shown on Figure 4. A combined total of approximately 690 standard cubic feet per minute (scfm) of subslab vapor is being extracted by Systems VE-7 (460 scfm) and VE-8 (230 scfm). The resulting cross-slab differential pressure readings at these conditions are also shown on Figure 4, along with the inferred extent of the subslab pressure response depicted by the differential pressure isopleth at -0.004 inches of water column (in. wc). The applied vacuums, extracted vapor flow rates, and subslab differential pressure response are generally consistent with observations made during pilot testing activities that provided the basis for the SSD system design.

3.3 VOC Mass Removal

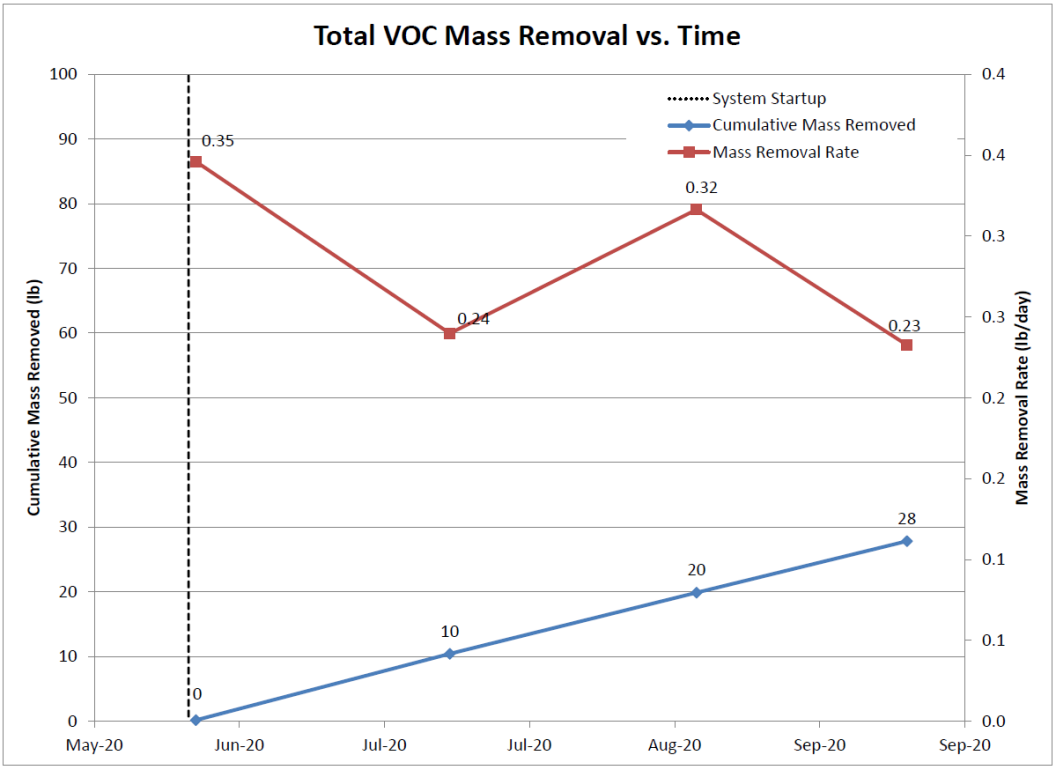
The SSD system is successfully removing VOC mass from beneath the building slab. To estimate the total VOC mass removed by System VE-8, process vapor samples have been collected from the influent of the VE-8 GAC treatment train a total of four times since startup. The plot in Exhibit 3.3 below shows total VOC concentrations versus time at the influent point of the system. Since subslab vapor was previously being extracted by the existing VE-4 and VE-7 SSD systems, the typical steep decrease in VOC concentrations following initial startup was not observed. The VOC concentrations shown in Exhibit 3.3 are generally consistent with recent historical data collected from the VE-4 and VE-7 SSD systems before the startup of VE-8 in June 2020.

Exhibit 3.3: System VE-8 Influent Total VOC Concentration vs. Time



The plot in Exhibit 3.4 below shows the total VOC mass removal rate and cumulative mass removed since the startup of VE-8 in June 2020. A total of approximately 28 pounds of VOCs have been removed by VE-8 since its startup through September 18, 2020. Prior to its replacement by VE-8, System VE-4 removed approximately 410 lbs of VOCs. In addition, System VE-7 has removed approximately 90 lbs of VOCs. In combination, the SSD systems have removed a total of approximately 528 pounds of VOCs through September 2020.

Exhibit 3.4: System VE-8 Total VOC Mass Removal vs. Time



To monitor treatment performance of the extracted vapor streams, grab samples are collected downstream of each of the three GAC vessels at each system on an approximately quarterly basis. Once the sampling data indicates the existing GAC is near exhaustion, it is replaced with virgin GAC.

3.4 Operations and Maintenance

The SSD systems operations and maintenance monitoring program is outlined below in Exhibit 3.5. In addition to the monitoring described below, the SSD systems are equipped with system shut-down alarms that notify operators when the system is not operational (e.g., during power outages, equipment malfunction).

Exhibit 3.5: SSD System Operations and Maintenance Plan

Task	Frequency
SSD system operational monitoring (blower run, vacuum, and flow – manual checks)	Weekly
SSD system combined influent vapor grab Summa® sampling and VOC analysis	Monthly
SSD system GAC treatment train grab Summa® sampling and VOC analysis	Quarterly
SSD system performance monitoring (extraction port flow rates and subslab differential pressures)	Annually

4.0 INDOOR AIR CONFIRMATORY SAMPLING

On August 17, 2020, approximately 60 days after startup of System VE-8, 17 indoor air samples were collected at the locations shown on Figure 5. The samples were collected while Systems VE-7 and VE-8 were operating, and the HVAC system was operating under normal building occupancy conditions. A summary of the HVAC operating conditions at the time of sampling, as well as a figure showing the HVAC zone locations, are provided in Appendix B for reference. Four of the samples were located in occupied areas outside the influence of the SSD system, as shown on Figure 5. In addition, please note that indoor air samples were previously collected in the Cozzini Bros. and Country Produce tenant spaces after Phase I startup of the SSD system, the results of which were reported in the October 2019 Phase I Startup Report.

The indoor air samples were collected over an 8-hour period into individually certified-clean SUMMA® canisters in accordance with the procedures described in the RFI Work Plan. The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of 22 VOCs listed in the RFI Work Plan using modified USEPA Method TO-15. The samples were typically collected at a height between 3 and 5 feet above the floor level. A field duplicate sample, ambient outdoor air sample, and nitrogen blank were also collected for quality assurance/quality control (QA/QC) purposes, which are discussed in Section 5. A summary of field sampling information, including location description, sample identifiers, sample collection times, and initial and final canister vacuums is provided in Table 2.

4.1 IA Sampling Results

The PCE and TCE indoor air concentrations are shown on Figure 5, and results for all analytes are summarized in Table 1. The analytical laboratory reports are provided in Appendix C.

Low levels of PCE were detected at 10 locations at concentrations ranging from 1.1 to 5.4 µg/m^3; the balance of the PCE results were less than the laboratory reporting limit. TCE was detected in only one location at a concentration of 0.78 µg/m^3.

Low levels of seven other analytes were detected in indoor air, including: acetone (8.9 to 160 µg/m^3 across all samples); carbon tetrachloride (0.41 to 0.79 µg/m^3 across all samples); cis-1,2-dichloroethene (1.0 µg/m^3 in one sample); toluene (0.61 to 2 µg/m^3 in 12 samples); trichlorofluoromethane (CFC11) (4.7 to 32 µg/m^3 across all samples); xylene (m,p-) (0.72 to

0.96 µg/m^3 in three samples); and xylene (o-) (0.77 µg/m^3 in one samples). With the exception of cis-1,2-dichloroethene, toluene, xylene (m,p-), and xylene (o-), these compounds were also detected in the ambient outside air sample, indicating that the concentrations detected at interior locations are likely attributable to the presence of these analytes in ambient outdoor air.

The maximum concentration of acetone (160 µg/m^3) was reported at IA0401, which is located in an eMagin laboratory. Based on correspondence with Global Foundries, acetone is used in the laboratory operations, which likely explains the acetone indoor air presence.

In aggregate, the 8-hour indoor air sample data demonstrate that the SSD system is achieving its design objective of intercepting VOCs in subslab soil gas and preventing migration into indoor air.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The analytical data for the confirmatory samples were provided to New Environmental Horizons, Inc. (NEH) of Arlington, MA and Skillman, NJ who conducted an in-depth data usability review. The Data Usability Summary Report (DUSR) is provided in Appendix D. The review found that all results were considered usable for project objectives/decisions.

6.0 TENANT NOTIFICATIONS

We understand that the property owner, NR, is responsible for notifying its tenants of these IAQ testing results under the tenant notification requirements of New York Environmental Conservation Law ENV Section 27-2405.

7.0 CONCLUSIONS

The results of the B330C SSD system Phase II startup performance monitoring and indoor air sampling indicate Systems VE-7 and VE-8 are meeting their design objectives of depressurizing the subslab and reducing VOC vapor intrusion to achieve acceptable indoor air quality. Confirmatory indoor air sampling indicates that the SSD systems have reduced PCE and TCE concentrations within the building to levels at or approaching non-detectable concentrations.

IBM intends to operate and maintain the B330C SSD systems as described in Section 3.4.

TABLES

Table 1
Summary of 8-Hour Indoor Air Analytical Results - B330C
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	AA0401			IA0400			IA0401			IA0402			IA0404			IA0404 Dup			IA0405			IA0416			IA0417			IA0436		
	Collection Date	8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020		
	Units	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias
Acetone	µg/m3	8.0			17			160	J	I	22			13			12			23			14			8.9			13		
Benzene	µg/m3	0.51	U		0.48	U		0.51	U		0.55	U		0.52	U		0.51	U		0.50	U		0.57	U		0.52	U		0.53	U	
Carbon tetrachloride	µg/m3	0.44			0.42			0.41			0.43			0.43			0.43			0.79			0.48			0.44			0.43		
CFC113 (Ethane, 1,1,2-trichloro-1,2,2-trifluoro-)	µg/m3	1.2	U		1.2	U		1.2	U		1.3	U		1.2	U		1.2	U		1.2	U		1.4	U		1.2	U		1.3	U	
Chlorobenzene (Monochlorobenzene)	µg/m3	0.74	U		0.70	U		0.74	U		0.79	U		0.74	U		0.73	U		0.72	U		0.82	U		0.76	U		0.76	U	
Dichlorobenzene (1,2-)	µg/m3	0.96	U		0.91	U		0.97	U		1.0	U		0.97	U		0.96	U		0.94	U		1.1	U		0.99	U		0.99	U	
Dichlorobenzene (1,3-)	µg/m3	0.96	U		0.91	U		0.97	U		1.0	U		0.97	U		0.96	U		0.94	U		1.1	U		0.99	U		0.99	U	
Dichlorobenzene (1,4-)	µg/m3	0.96	U		0.91	U		0.97	U		1.0	U		0.97	U		0.96	U		0.94	U		1.1	U		0.99	U		0.99	U	
Dichlorodifluoromethane (CFC12)	µg/m3	4.0	U		3.7	U		4.0	U		4.2	U		4.0	U		3.9	U		3.9	U		4.4	U		4.0	U		4.1	U	
Dichloroethene (1,1-)	µg/m3	0.063	U		0.060	U		0.064	U		0.068	U		0.064	U		0.063	U		0.062	U		0.071	U		0.065	U		0.065	U	
Dichloroethene (cis-1,2-)	µg/m3	0.13	U		0.12	U		0.13	U		0.14	U		0.13	U		0.13	U		1.0			0.14	U		0.13	U		0.13	U	
Ethylbenzene	µg/m3	0.69	U		0.66	U		0.70	U		0.74	U		0.70	U		0.69	U		0.68	U		0.78	U		0.71	U		0.72	U	
Methylene Chloride (Dichloromethane)	µg/m3	1.1	U		1.0	U		1.1	U		1.2	U		1.1	U		1.1	U		1.1	U		1.2	U		1.1	U		1.1	U	
Tetrachloroethene (PCE)	µg/m3	1.1	U		1.6			1.1	U		1.2	U		1.5			1.6			5.4			1.2	U		1.6			2.9		
Toluene	µg/m3	0.60	U		0.67			0.61	U		0.64	U		0.61	U		0.64			0.61			1.3			0.65			0.62	U	
Trichlorobenzene (1,2,4-)	µg/m3	5.9	U		5.6	U		6.0	U		6.3	U		6.0	U		5.9	U		5.8	U		6.6	U		6.1	U		6.1	U	
Trichloroethane (1,1,1-)	µg/m3	0.87	U		0.82	U		0.88	U		0.93	U		0.88	U		0.87	U		0.86	U		0.98	U		0.89	U		0.90	U	
Trichloroethene (TCE)	µg/m3	0.17	U		0.16	U		0.17	U		0.18	U		0.17	U		0.17	U		0.78			0.19	U		0.18	U		0.18	U	
Trichlorofluoromethane (CFC11)	µg/m3	1.4			6.2			6.2			14			8.8			8.7			4.7			32			13			11		
Vinyl chloride	µg/m3	0.041	U		0.038	U		0.041	U		0.044	U		0.041	U		0.041	U		0.040	U		0.046	U		0.042	U		0.042	U	
Xylene (m,p-)	µg/m3	0.69	U		0.66	U		0.72			0.74	U		0.70	U		0.69	U		0.68	U		0.78	U		0.71	U		0.72	U	
Xylene (o-)	µg/m3	0.69	U		0.66	U		0.70	U		0.74	U		0.70	U		0.69	U		0.68	U		0.78	U		0.71	U		0.72	U	

Notes:

1. Samples were collected by Sanborn, Head Engineering P.C. on behalf of IBM Corporation on the dates indicated over an approximately 8-hour sampling interval using 6-liter, stainless steel, pre-evacuated SUMMA® canisters. The samples were analyzed by Eurofins Air Toxics of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 using a combination of full scan and selective ion monitoring (SIM) mode.

2. The "AA" designation indicates that the sample consists of ambient air collected from outside the building. "Equipment Blank" represents a field blank sample, where laboratory-supplied nitrogen was transferred from one SUMMA® canister into another.

3. Results are displayed with two significant figures.

4. A data usability summary report (DUSR) was performed on the data by New Environmental Horizons, Inc. (NEH) . All results were considered acceptable, with the understanding of the potential uncertainty (bias) in the qualified results. In some cases, NEH assigned the following qualifiers and biases to the data. Refer to the DUSR report for further details.
"U" indicates the analyte is non-detect at or above the indicated sample specific practical quantification limit (PQL).
"J" indicates the result is estimated.
"I" indicates an indeterminate bias.

Table 1
Summary of 8-Hour Indoor Air Analytical Results - B330C
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Sample Location	IA0438			IA0455			IA0458			IA0468			IA0469			IA0470			IA0472			IA0488			IA0489			Equipment Blank		
	Collection Date	8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020			8/17/2020		
	Units	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias
Acetone	µg/m3	17			22			38			25			26			17			20			30			17			5.0	U	
Benzene	µg/m3	0.50	U		0.53	U		0.56	U		0.55	U		0.50	U		0.52	U		0.52	U		0.54	U		0.51	U		0.67	U	
Carbon tetrachloride	µg/m3	0.59			0.52			0.43			0.42			0.44			0.79			0.42			0.71			0.43			0.26	U	
CFC113 (Ethane, 1,1,2-trichloro-1,2,2-trifluoro-)	µg/m3	1.2	U		1.3	U		1.3	U		1.3	U		1.2	U		1.2	U		1.2	U		1.3	U		1.2	U		1.6	U	
Chlorobenzene (Monochlorobenzene)	µg/m3	0.73	U		0.76	U		0.81	U		0.80	U		0.71	U		0.74	U		0.76	U		0.77	U		0.73	U		0.96	U	
Dichlorobenzene (1,2-)	µg/m3	0.95	U		1.0	U		1.0	U		1.0	U		0.93	U		0.97	U		0.99	U		1.0	U		0.96	U		1.2	U	
Dichlorobenzene (1,3-)	µg/m3	0.95	U		1.0	U		1.0	U		1.0	U		0.93	U		0.97	U		0.99	U		1.0	U		0.96	U		1.2	U	
Dichlorobenzene (1,4-)	µg/m3	0.95	U		1.0	U		1.0	U		1.0	U		0.93	U		0.97	U		0.99	U		1.0	U		0.96	U		1.2	U	
Dichlorodifluoromethane (CFC12)	µg/m3	3.9	U		4.1	U		4.4	U		4.3	U		3.8	U		4.0	U		4.0	U		4.2	U		3.9	U		5.2	U	
Dichloroethene (1,1-)	µg/m3	0.063	U		0.066	U		0.070	U		0.068	U		0.061	U		0.064	U		0.065	U		0.067	U		0.063	U		0.083	U	
Dichloroethene (cis-1,2-)	µg/m3	0.12	U		0.13	U		0.14	U		0.14	U		0.12	U		0.13	U		0.13	U		0.13	U		0.13	U		0.16	U	
Ethylbenzene	µg/m3	0.69	U		0.72	U		0.76	U		0.75	U		0.67	U		0.70	U		0.71	U		0.73	U		0.69	U		0.91	U	
Methylene Chloride (Dichloromethane)	µg/m3	1.1	U		1.2	U		1.2	U		1.2	U		1.1	U		1.1	U		1.1	U		1.2	U		1.1	U		1.4	U	
Tetrachloroethene (PCE)	µg/m3	1.4			1.1	U		1.2	U		1.2	U		2.2			2.1			1.1	U		1.1			1.4			1.4	U	
Toluene	µg/m3	1.0			0.93			0.66			0.65	U		0.61			0.81			0.62	U		2.0			0.69			0.79	U	
Trichlorobenzene (1,2,4-)	µg/m3	5.9	U		6.2	U		6.5	U		6.4	U		5.8	U		6.0	U		6.1	U		6.2	U		5.9	U		7.8	U	
Trichloroethane (1,1,1-)	µg/m3	0.86	U		0.90	U		0.96	U		0.94	U		0.84	U		0.88	U		0.89	U		0.92	U		0.87	U		1.1	U	
Trichloroethene (TCE)	µg/m3	0.17	U		0.18	U		0.19	U		0.18	U		0.17	U		0.17	U		0.18	U		0.18	U		0.17	U		0.22	U	
Trichlorofluoromethane (CFC11)	µg/m3	30			20			7.2			7.8			14			10			6.1			11			14			1.2	U	
Vinyl chloride	µg/m3	0.040	U		0.042	U		0.045	U		0.044	U		0.040	U		0.041	U		0.042	U		0.043	U		0.041	U		0.053	U	
Xylene (m,p-)	µg/m3	0.69	U		0.72	U		0.96			0.75	U		0.75			0.70	U		0.71	U		0.73	U		0.69	U		0.91	U	
Xylene (o-)	µg/m3	0.69	U		0.72	U		0.77			0.75	U		0.67	U		0.70	U		0.71	U		0.73	U		0.69	U		0.91	U	

Notes:

1. Samples were collected by Sanborn, Head Engineering P.C. on behalf of IBM Corporation on the dates indicated over an approximately 8-hour sampling interval using 6-liter, stainless steel, pre-evacuated SUMMA® canisters. The samples were analyzed by Eurofins Air Toxics of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 using a combination of full scan and selective ion monitoring (SIM) mode.

2. The "AA" designation indicates that the sample consists of ambient air collected from outside the building. "Equipment Blank" represents a field blank sample, where laboratory-supplied nitrogen was transferred from one SUMMA® canister into another.

3. Results are displayed with two significant figures.

4. A data usability summary report (DUSR) was performed on the data by New Environmental Horizons, Inc. (NEH) . All results were considered acceptable, with the understanding of the potential uncertainty (bias) in the qualified results. In some cases, NEH assigned the following qualifiers and biases to the data. Refer to the DUSR report for further details.
"U" indicates the analyte is non-detect at or above the indicated sample specific practical quantification limit (PQL).
"J" indicates the result is estimated.
"I" indicates an indeterminate bias.

Table 2
Summary of Indoor Air Sample Information
Building 330C
Former IBM East Fishkill Facility
Hopewell Junction, NY

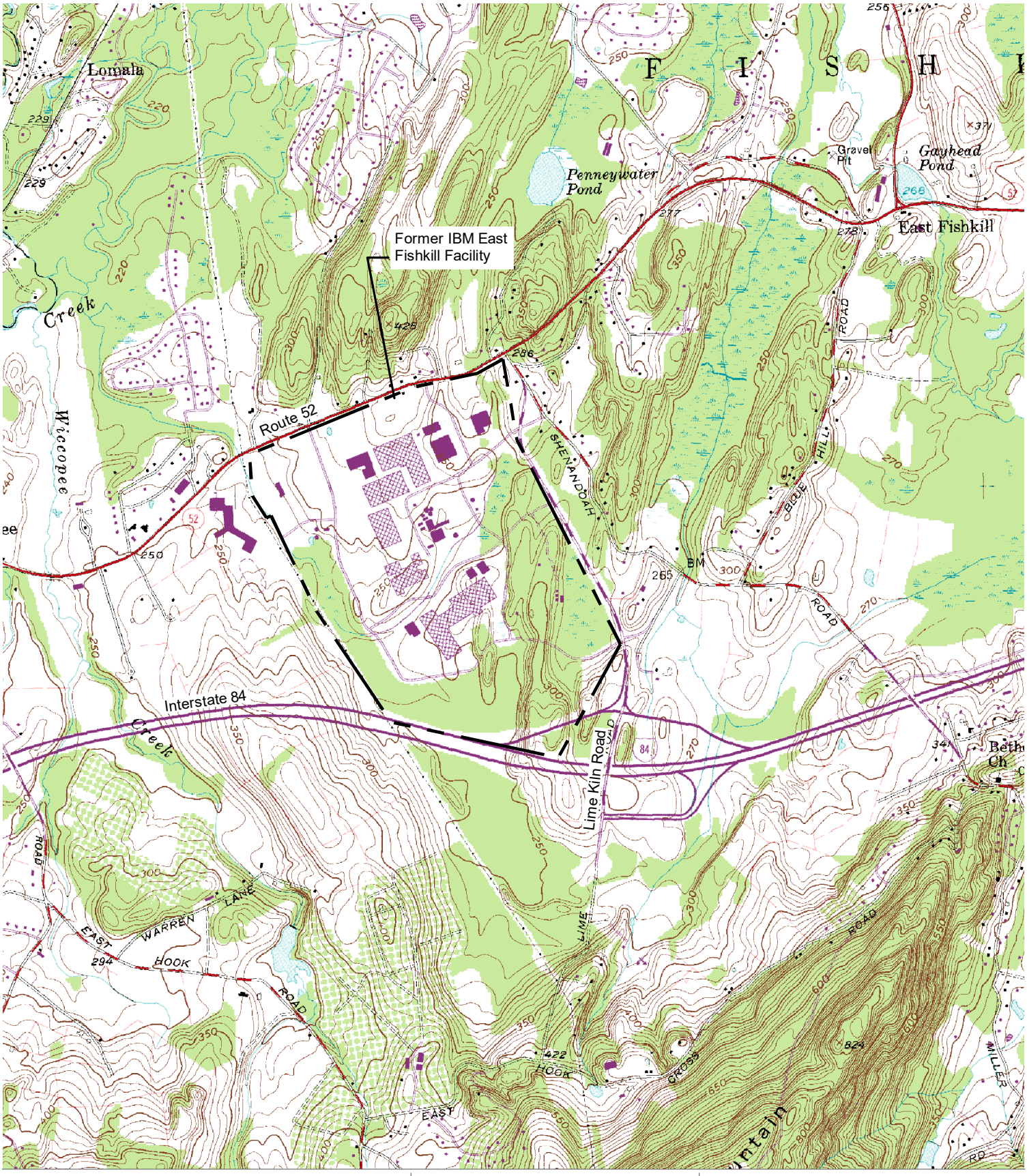
Sample Location	Building Floor	Sample Matrix	Canister Number	Sample Height (ft above floor)	Start Time (hours)	Start Pressure (mm Hg)	Stop Time (hours)	Stop Pressure (mm Hg)	Temperature (°F)	Location Description	Chemicals Observed Near Sample Location
Collection Date: August 17, 2020											
AA-02	Roof	Ambient Air	1456	5	5:50	-29.5	13:50	-5	75	AC-58 intake	None observed
EB-02	Roof	Nitrogen	1743	-	5:50	-29.5	13:50	-10	75	AC-58 intake	None observed
IA0489	Ground	Indoor Air	2412	4	6:00	-28.5	14:00	-4.5	70	More Good Expansion Area	None observed
IA0417	Ground	Indoor Air	2082	5	6:01	-29	14:01	-5.5	70	Vacant Office	None observed
FD-02	Ground	Indoor Air	1960	3	6:04	-30	14:05	-6.5	65	eMagin Lab	None observed
IA0404	Ground	Indoor Air	2092	3	6:04	-29	14:05	-6	65	eMagin Lab	None observed
IA0436	Ground	Indoor Air	0760	4	6:13	-29	14:56	-7	65	eMagin Lab	None observed
IA0400	Ground	Indoor Air	2355	3	6:14	-29	14:10	-3.5	70	Break Room	None observed
IA0401	Ground	Indoor Air	2336	5	6:16	-28	14:16	-5.5	65	eMagin Lab	None observed
IA0472	Ground	Indoor Air	0495	3	6:18	-28.5	14:18	-6	65	eMagin Office	None observed
IA0405	Ground	Indoor Air	1192	4	6:26	-30	14:56	-5.5	70	Clean Office	None observed
IA0438	Ground	Indoor Air	2085	5	6:33	-29	14:37	-4.5	70	Cozzini	None observed
IA0416	Ground	Indoor Air	0472	3	6:35	-28	14:38	-6	70	Cozzini	None observed
IA0470	Ground	Indoor Air	2815	4	6:47	-28	14:47	-5	70	Lab	None observed
IA0458	Ground	Indoor Air	1063	4	6:52	-28	14:52	-6	70	Office	None observed
IA0469	Ground	Indoor Air	1778	4	7:08	-27.5	15:08	-4	70	Global Foundries Lab	None observed
IA0455	Ground	Indoor Air	2497	4	7:22	-26.5	15:23	-6	70	More Good Break Room	None observed
IA0488	Ground	Indoor Air	2802	3	7:25	-30	15:25	-7	70	More Good Production Floor	None observed
IA0402	Ground	Indoor Air	0799	3	7:42	-29	17:49	-7	70	IBM Lab	None observed
IA0468	Ground	Indoor Air	2834	4	8:23	-26	16:10	-5	70	IBM Office	None observed

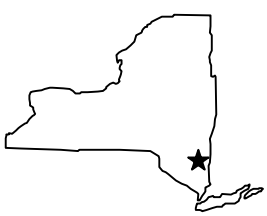
Notes:

1. Samples were collected by Sanborn, Head Engineering, PC on August 17, 2020.

2. Samples were collected into 6-liter, stainless steel, pre-evacuated SUMMA® canisters using 8-hour metering regulators. Each canister and regulator was laboratory-certified clean (100% certification). The samples were submitted to Eurofins/Air Toxics of Folsom, California for analysis of 22 project-specific analytes using modified USEPA Method TO-15 and Method TO-15 in selective ion monitoring (SIM) mode.

FIGURES





N
W E
S

Notes:
Base map taken from 7.5 minute USGS Quadrangle Maps: Hopewell Junction, New York, Dated 1957, Photorevised in 1981.

Drawn By: E. Wright
Designed By: C. Murphy
Reviewed By: D. Shea
Project No: 2999.04
Date: October 2020

1,000' 0 2,000' Feet

SANBORN HEAD ENGINEERING

Figure 1

Site Location Plan

Subslab Depressurization Completion and Startup Report (Phase II) - Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Figure 2

B330C Location Plan

Subslab Depressurization Completion and Startup Report (Phase II) - Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: C. Murphy
Reviewed By: D. Shea
Project No: 2999.04
Date: October 2020

Figure Narrative

This figure shows the buildings at the former IBM East Fishkill facility. Building B330C is highlighted.

Legend

— - - — Property Line

Unlabeled features include wastewater treatment tanks, pump houses, trailers, and other structures and features not intended for human occupancy

B330C Indicates building number

Indicates the location of B330C

GlobalFoundries	
Lot 1	GlobalFoundries U.S 2 LLC
Lot 5	GlobalFoundries U.S 2 LLC

i.Park	
Lot 2	i.Park East Fishkill I LLC
Lot 3	i.Park East Fishkill I LLC
Lot 4	i.Park East Fishkill LLC
Lot 6	i.Park East Fishkill LLC
Lot 7	i.Park East Fishkill LLC
Lot 8	i.Park East Fishkill LLC

- Subdivision (GlobalFoundries U.S. 2 LLC)
- Subdivision (i.Park East Fishkill LLC)
- Subdivision (i.Park East Fishkill I LLC)

N
W E
S

200' 100' 0 200' 400' Feet

SANBORN HEAD ENGINEERING

File:P:\2900s\2999.00\Graphics Files\CAD\B330C\REV B330C_LocationPlan.dwg Plot Date: 6-26-20

Last Edited By: ewright

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Approximate area of influence for proposed SSD system in Sloop Brewing based on Figure 3 of GZA's "Full Scale SSDS Design Report - Sloop Brewery", dated June 18, 2019.

Former Baseline Area

EP3015

EP3020

EP3016

EP3018

EP3006

EP3021

EP3019

EP3007

Global Foundries

Country Produce

Cozzini Brothers

IBM

eMagin

Sloop Brewing

eMagin Future Expansion Area

B330C

Country Produce Future Expansion Area

MoreGood Future Expansion Areas

MoreGood

MoreGood Future Expansion Areas

SSD System VE-8

SSD System VE-7

B335

B338

Figure 3

Occupancy and Subslab Depressurization System Summary Figure

Subslab Depressurization Completion and Startup Report (Phase II) - Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Sanborn
Reviewed By:	D. Shea
Project No:	2999.04
Date:	October 2020

Figure Narrative

This figure shows the subslab depressurization (SSD) systems installed by IBM. In addition, the building owner (iPark) has submitted a design report for an SSD system in the Sloop Brewing tenant space.

Tenant spaces are based on a figure provided by iPark dated 8/26/2019. IBM is to be notified by the building owner when tenants vacate or occupy spaces within the building.

Legend

- Cozzini Brothers
- IBM
- Country Produce
- Global Foundries
- MoreGood
- Sloop Brewing
- eMagin
- Unoccupied
- Existing SSDS piping installed by IBM (Phase I)
- EP3007 — Extraction ports connected to an operating SSD system
- Existing SSDS piping installed by IBM (Phase II)

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

Last Edited By: ewright

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EP3015
Applied Vacuum: 63 in. wc.
Flow Rate: 45 scfm
TVOC: 2,400 µg/m^3

EP3020
Applied Vacuum: 63 in. wc.
Flow Rate: 60 scfm
TVOC: 17,200 µg/m^3

EP3021
Applied Vacuum: 62 in. wc.
Flow Rate: 32 scfm
TVOC: 90,200 µg/m^3

EP3018
Applied Vacuum: 62 in. wc.
Flow Rate: 80 scfm

EP3016
Applied Vacuum: 63 in. wc.
Flow Rate: 47 scfm
TVOC: 58,700 µg/m^3

EP3006
Applied Vacuum: 62 in. wc.
Flow Rate: 40 scfm
TVOC: 2,500 µg/m^3

EP3007
Applied Vacuum: 61 in. wc.
Flow Rate: 175 scfm

EP3019
Applied Vacuum: 9 in. wc.
Flow Rate: 215 scfm

-0.005 SS3018 | -0.008 SS3042 | EP3014 | EP3015 | 0.000 SS3043 | -0.004 | SS3017 -0.009 | EP3003 | 0 SS3044 | SS3016 -0.008 | SP3001 | EP3017 | EP3013 | -0.003 SS3045 | EP3012 | EP3020 | SS3046 -0.009 | EP3011 | 0.000 SS3019 | SS3021 | EP3005 | SS3049 | SS3048 | SS3024 | SS3025 | EP3004 | SS3047 | SS3026 | 0 SS3020 | 0.000 SS3022 | 0.000 SS3023 | SS3027 | SS3035 | -0.004 | EP3016 -1.6 | SS3015 | -0.017 SS3014 | -0.024 SS3053 | EP3006 | SS3033 | SS3034 | -0.006 SS3036 | SS3012 | -0.44 SS3013 | SS3052 | -0.009 SS3051 | -0.021 SS3031 | EP3001 | EP3021 | SS3030 -0.87 | SS3028 | EP3010 | -1.8 EP3018 | -0.19 SS3061 | SS3062 | SS3060 | EP3009 | -0.36 SS3059 | SS3011 | SS3063 | SS3009 | -0.013 SS3054 | SS3008 -0.012 | -0.024 SS3032 | SS3057 | -0.007 SS3007 | -0.008 SS3029 | SS3058 | SS3055 | SS3041 -0.015 | -0.009 SS3010 | -0.46 SS3006 | EP3002 | SS3040 -0.11 | SS3050 | SS3056 | EP3019 | SS3002 | -0.11 SS3003 | SS3037 -0.10 | EP3007 | SS3005 -0.18 | EP3008 -0.34 | SS3038 | -0.10 SS3004 | -0.099 SS3039 | -0.11 SS3001 | -0.004

PCE Concentrations in Subslab Vapor (µg/m^3)

- <1,000
- 1,000 - 10,000
- 10,000 - 50,000
- 50,000 - 100,000
- 100,000 - 500,000
- >500,000

Figure 4

Subslab Pressure Response to Vapor Extraction

Subslab Depressurization System South Startup (Phase II) - B330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Flood
Reviewed By:	J. Sanborn
Project No:	2999.04
Date:	October 2020

Figure Narrative

This figure shows the inferred subslab pressure response from the subslab depressurization (SSD) system extracting vapor from EP3006, EP3007, EP3015, EP3016, EP3018, EP3019, EP3020, and EP3021, and the measurements recorded at those extraction ports upon startup. The subslab pressure response footprint represents the outer limit of the -0.004 inches of water column differential pressure based on measurements recorded on August 17, 2020. Other interpretations are possible.

The differential pressure contours overlay the inferred subslab vapor tetrachloroethene (PCE) concentration isopleths based on subslab vapor screening conducted using a portable gas chromatograph/mass spectrometer (GC/MC) in April and May 2015.

Legend

- Subslab Vapor Monitoring Port
- Subslab Vapor Extraction Port
- Subslab vapor extraction port (inactive)
- Subslab Vapor Suction Pit (Inactive)
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- EP-224 — Extraction port
- in. wc — Applied vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow rate (std. cu. ft. per min.)
- µg/m^3 — µg/m^3 total VOC concentration (micrograms per cubic meter)
- -0.006 — Observed pressure differential between the subslab and room (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

30 15 0 30 60 Feet

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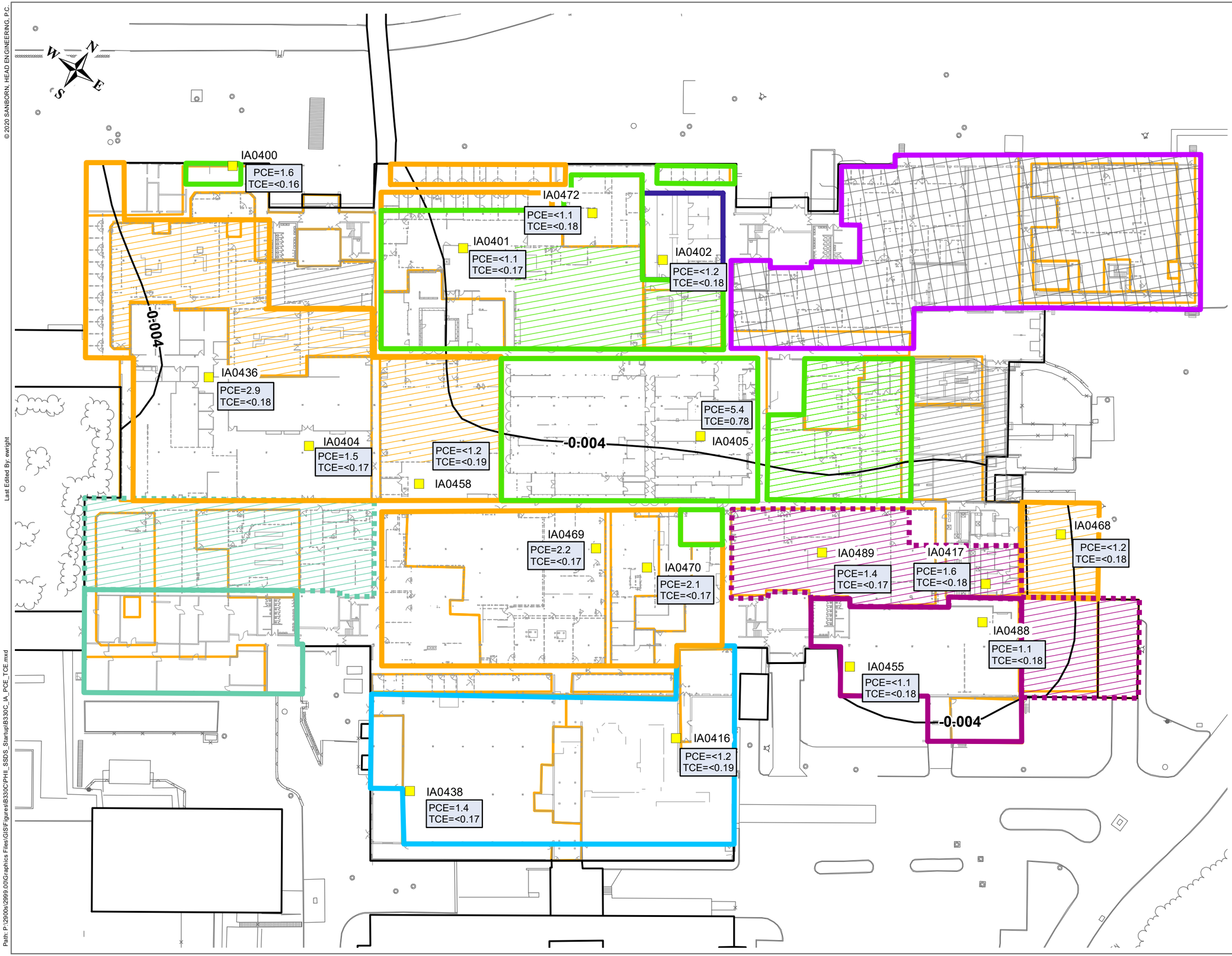

Figure 5

Summary of PCE and TCE Concentrations for 8-Hour Indoor Air Samples

Subslab Depressurization Completion and Startup Report (Phase II) - Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.04
Date:	October 2020

Figure Narrative

This figure shows tetrachloroethene (PCE) and trichloroethene (TCE) results for indoor air samples collected in Building 330C on August 17, 2020 while the SSD system was operating. The samples were collected as approximately 8-hour time-weighted average samples using 6-L SUMMA canisters. Results are shown in micrograms per cubic meter (ug/m3). Refer to Appendix C of this report for the full list of sampling results.

Refer to previous figures for additional notes and legend.

Legend

- Indoor air sample location
- PCE = 1.6 / TCE = <0.16 — Tetrachlorethene (PCE) sample result (ug/m3); Trichloroethene (TCE) sample result (ug/m3)
- () Indicates field duplicate

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

APPENDIX A

LIMITATIONS

APPENDIX A
SHPC LIMITATIONS

1. The observations and conclusions described in this report are based in part on the data obtained from a finite number of samples from widely spaced locations. The figures are intended to depict inferred conditions during a given period of time, consistent with available information. The actual conditions will vary from that shown, both spatially and temporally. Other interpretations are possible. The nature and extent of variations between sampling locations may not become evident until further investigation is initiated. If variations or other latent conditions then appear evident, it may be necessary to re-evaluate the conclusions of this report.

2. The conclusions contained in this report are based in part upon various types of chemical data as well as historical and hydrogeologic information developed by previous investigators. While SHPC has reviewed that data available to us at the time the report was prepared and information as stated in this report, any of SHPC's interpretations and conclusions that have relied on that information will be contingent on its validity. SHPC has not performed an independent assessment of the reliability of the data; should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by SHPC and the interpretations and conclusions presented herein may be modified accordingly.

3. Sampling and quantitative laboratory testing was performed by others as part of the investigation as noted within the report. Where such analyses have been conducted by an outside laboratory, unless otherwise stated in the report, SHPC has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data. It must be noted that additional compounds not searched for during the current study may be present in vapor and indoor air at the site. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their distribution within the vapor and indoor air may occur due to the passage of time, seasonal water table fluctuations, recharge events, and other factors.

4. This report has been prepared for the use of the IBM Corporation for specific application to the former IBM East Fishkill facility in accordance with generally accepted hydrogeologic and engineering practices. No warranty, expressed or implied, is made. The contents of this report should not be relied on by any other party without the express written consent of SHPC.

5. In preparing this report, SHPC has endeavored to conform to generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area. SHPC has attempted to observe a degree of care and skill generally exercised by the technical community under similar circumstances and conditions.

APPENDIX B

SUMMARY OF HVAC OPERATING CONDITIONS

Appendix B
Summary of HVAC Settings - B330C
Former IBM East Fishkill Facility
Hopewell Junction, NY

HVAC Unit	Area Served	Operating Conditions		
		ON/OFF	OA Damper Position (% Open)	RA Damper Position
AC-1	Offices/Corridors	ON	10%	NA
AC-4	South Shop/labs	OFF	NA	
AC-6	Labs/corridors	OFF	NA	
AC-7(A)	NEXX Tool Lab	ON	15%	
AB-7(B)	Unoccupied	OFF	NA	
AC-9	"Laser" Labs/corridors/offices	Unable to locate on sampling date		
AC-10(A)	Hydrogen tanks room (Unoccupied)	OFF	NA	
AC-11	Emagin Lab	ON	Fed from AC-13	
AC-13	Emagin Cleanroom	ON	35%	
HVAC-15	Unoccupied	Unable to locate on sampling date		
AC-26	Unoccupied	OFF	NA	
AC-40	Unoccupied	OFF	NA	
AC-41	IBM Lab	ON	5%	
AC-42/RCU-111	Breakroom/lab	ON	75%	
AC-50	Baseline (Unoccupied)	OFF	NA	
AC-51	Unoccupied	Unable to locate on sampling date		
AC-58	Reliability Lab	ON	100%	
AC-90	Emagin Lab	ON	15%	
AC-91	Emagin / GF Labs	ON	15%	
AC-93	Unoccupied	OFF	NA	
RTU-1-C (MoreGood)	Fermentation Room	ON	0%	100%
RTU-2-C (MoreGood)	Break room/Office	ON	0%	100%
RTU-3-C (MoreGood)	Production Floor	ON	0%	100%
RTU-4-C (MoreGood)	Small Storage Room	OFF	0%	100%
RTU-5-C (MoreGood)	High Storage Room	OFF	0%	100%
RTU-1 (Cozzini)	Production Area - West	ON	0%	100%
RTU-2 (Cozzini)	Production Area - West	ON	0%	100%
RTU-3 (Cozzini)	Production Area - West	ON	0%	100%
RTU-4 (Cozzini)	Production Area - West	OFF	0%	100%
RTU-5 (Cozzini)	Production Area - East	ON	0%	100%
RTU-6 (Cozzini)	Production Area - East	Unable to locate RTU on sampling date		
RTU-7 (Cozzini)	Production Area - East	OFF	0%	100%
RTU-8 (Cozzini)	Storage/Stockroom	Unable to locate RTU on sampling date		
RTU-9 (Cozzini)	Break Room/Restrooms	ON	0%	100%
RTU-10 (Cozzini)	Offices/Conference room	ON	0%	100%

Notes:
1. HVAC operating conditions were observed by Sanborn Head on August 17, 2020. Damper positions should be considered approximate.
2. Abbreviations
   OA = Outside air
   RA = Return air
   NA = Not applicable
   RTU = Rooftop unit
3. Refer to Figure B.1 for HVAC zone locations.

Last Edited By: ewright

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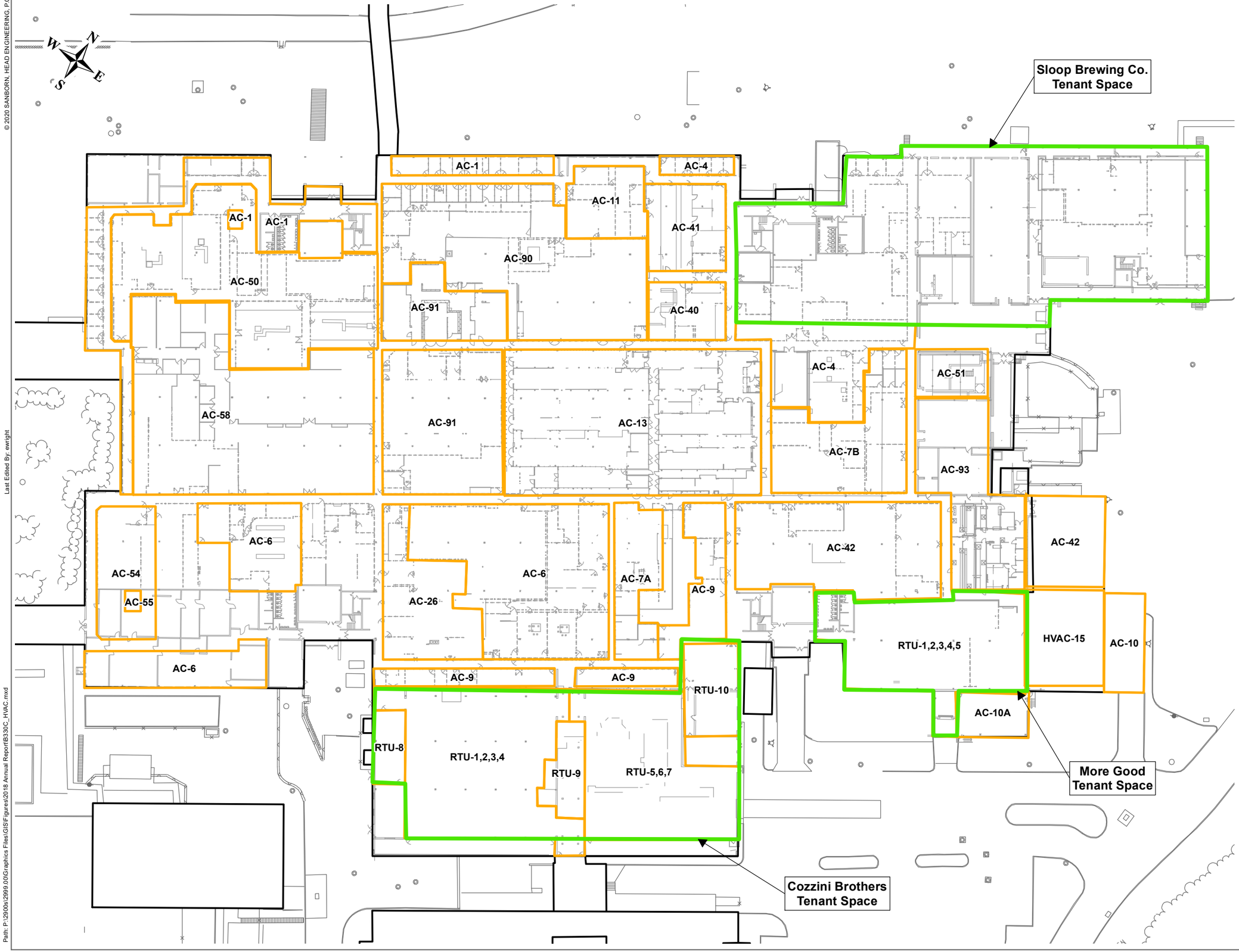

Figure B.1

HVAC Zones

Subslab Depressurization Completion and Startup Report (Phase II) - Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	E. Wright
Designed By:	J. Corsello
Reviewed By:	D. Shea
Project No:	2999.04
Date:	October 2020

Figure Narrative

This figure shows the approximate layout of the heating, ventilation, and air conditioning (HVAC) zones and units.

Legend

HVAC Zone

30 15 0 30 60 Feet

SANBORN HEAD ENGINEERING

APPENDIX C

ANALYTICAL LABORATORY REPORTS

eurofins | Air Toxics

9/1/2020
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.04
Workorder #: 2008480A

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 8/19/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 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 Inc. 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

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WORK ORDER #: 2008480A

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	**P.O. #**	
FAX:	603-229-1919	**PROJECT #**	2999.04 EFK
DATE RECEIVED:	08/19/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	09/01/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	AA-02_20200817	Modified TO-15	5.1 "Hg	4.8 psi
01B	AA-02_20200817	Modified TO-15	5.1 "Hg	4.8 psi
02A	EB-02_20200817	Modified TO-15	10.4 "Hg	5.4 psi
02B	EB-02_20200817	Modified TO-15	10.4 "Hg	5.4 psi
03A	IA0489_20200817	Modified TO-15	4.5 "Hg	5.2 psi
03B	IA0489_20200817	Modified TO-15	4.5 "Hg	5.2 psi
04A	IA0417_20200817	Modified TO-15	5.3 "Hg	5.2 psi
04B	IA0417_20200817	Modified TO-15	5.3 "Hg	5.2 psi
05A	FD-02_20200817	Modified TO-15	5.1 "Hg	4.7 psi
05B	FD-02_20200817	Modified TO-15	5.1 "Hg	4.7 psi
06A	IA0404_20200817	Modified TO-15	5.3 "Hg	4.9 psi
06B	IA0404_20200817	Modified TO-15	5.3 "Hg	4.9 psi
07A	IA0436_20200817	Modified TO-15	5.9 "Hg	4.8 psi
07B	IA0436_20200817	Modified TO-15	5.9 "Hg	4.8 psi
08A	IA0400_20200817	Modified TO-15	3.7 "Hg	4.8 psi
08B	IA0400_20200817	Modified TO-15	3.7 "Hg	4.8 psi
09A	IA0401_20200817	Modified TO-15	5.1 "Hg	5 psi
09B	IA0401_20200817	Modified TO-15	5.1 "Hg	5 psi
10A	IA0472_20200817	Modified TO-15	5.5 "Hg	5 psi
10B	IA0472_20200817	Modified TO-15	5.5 "Hg	5 psi
11A	IA0405_20200817	Modified TO-15	4.5 "Hg	4.9 psi
11B	IA0405_20200817	Modified TO-15	4.5 "Hg	4.9 psi
12A	IA0438_20200817	Modified TO-15	4.5 "Hg	5 psi

Continued on next page

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WORK ORDER #: 2008480A

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	**P.O. #**	
FAX:	603-229-1919	**PROJECT #**	2999.04 EFK
DATE RECEIVED:	08/19/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	09/01/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
12B	IA0438_20200817	Modified TO-15	4.5 "Hg	5 psi
13A	Lab Blank	Modified TO-15	NA	NA
13B	Lab Blank	Modified TO-15	NA	NA
13C	Lab Blank	Modified TO-15	NA	NA
13D	Lab Blank	Modified TO-15	NA	NA
14A	CCV	Modified TO-15	NA	NA
14B	CCV	Modified TO-15	NA	NA
14C	CCV	Modified TO-15	NA	NA
14D	CCV	Modified TO-15	NA	NA
15A	LCS	Modified TO-15	NA	NA
15AA	LCSD	Modified TO-15	NA	NA
15B	LCS	Modified TO-15	NA	NA
15BB	LCSD	Modified TO-15	NA	NA
15C	LCS	Modified TO-15	NA	NA
15CC	LCSD	Modified TO-15	NA	NA
15D	LCS	Modified TO-15	NA	NA
15DD	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 09/01/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 2008480A

Twelve 6 Liter Summa Canister (100% SIM Ambient) samples were received on August 19, 2020. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

A revised Chain of Custody (COC) was provided by the client on 8/20/20.

Analytical Notes

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

Definition of Data Qualifying Flags

Nine qualifiers may have been used on the data analysis sheets and indicates 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.
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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: AA-02_20200817

Lab ID#: 2008480A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.25	0.90	1.4
Acetone	1.6	3.4	3.8	8.0

Client Sample ID: AA-02_20200817

Lab ID#: 2008480A-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.070	0.20	0.44

Client Sample ID: EB-02_20200817

Lab ID#: 2008480A-02A

No Detections Were Found.

Client Sample ID: EB-02_20200817

Lab ID#: 2008480A-02B

No Detections Were Found.

Client Sample ID: IA0489_20200817

Lab ID#: 2008480A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	2.4	0.89	14
Acetone	1.6	7.1	3.8	17
Toluene	0.16	0.18	0.60	0.69
Tetrachloroethene	0.16	0.21	1.1	1.4

Client Sample ID: IA0489_20200817

Lab ID#: 2008480A-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.068	0.20	0.43

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0417_20200817

Lab ID#: 2008480A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	2.3	0.92	13
Acetone	1.6	3.7	3.9	8.9
Toluene	0.16	0.17	0.62	0.65
Tetrachloroethene	0.16	0.24	1.1	1.6

Client Sample ID: IA0417_20200817

Lab ID#: 2008480A-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.070	0.21	0.44

Client Sample ID: FD-02_20200817

Lab ID#: 2008480A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	1.5	0.89	8.7
Acetone	1.6	5.0	3.8	12
Toluene	0.16	0.17	0.60	0.64
Tetrachloroethene	0.16	0.24	1.1	1.6

Client Sample ID: FD-02_20200817

Lab ID#: 2008480A-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.068	0.20	0.43

Client Sample ID: IA0404_20200817

Lab ID#: 2008480A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	1.6	0.91	8.8
Acetone	1.6	5.6	3.8	13

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0404_20200817

Lab ID#: 2008480A-06A

Tetrachloroethene	0.16	0.22	1.1	1.5

Client Sample ID: IA0404_20200817

Lab ID#: 2008480A-06B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.068	0.20	0.43

Client Sample ID: IA0436_20200817

Lab ID#: 2008480A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	2.0	0.93	11
Acetone	1.6	5.5	3.9	13
Tetrachloroethene	0.16	0.42	1.1	2.9

Client Sample ID: IA0436_20200817

Lab ID#: 2008480A-07B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.069	0.21	0.43

Client Sample ID: IA0400_20200817

Lab ID#: 2008480A-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.15	1.1	0.85	6.2
Acetone	1.5	7.2	3.6	17
Toluene	0.15	0.18	0.57	0.67
Tetrachloroethene	0.15	0.23	1.0	1.6

Client Sample ID: IA0400_20200817

Lab ID#: 2008480A-08B

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0400_20200817

Lab ID#: 2008480A-08B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.030	0.068	0.19	0.42

Client Sample ID: IA0401_20200817

Lab ID#: 2008480A-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	1.1	0.90	6.2
Acetone	1.6	67 E	3.8	160 E
m,p-Xylene	0.16	0.17	0.70	0.72

Client Sample ID: IA0401_20200817

Lab ID#: 2008480A-09B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.066	0.20	0.41

Client Sample ID: IA0472_20200817

Lab ID#: 2008480A-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	1.1	0.92	6.1
Acetone	1.6	8.2	3.9	20

Client Sample ID: IA0472_20200817

Lab ID#: 2008480A-10B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.067	0.21	0.42

Client Sample ID: IA0405_20200817

Lab ID#: 2008480A-11A

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0405_20200817

Lab ID#: 2008480A-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.84	0.88	4.7
Acetone	1.6	9.6	3.7	23
Toluene	0.16	0.16	0.59	0.61
Tetrachloroethene	0.16	0.80	1.1	5.4

Client Sample ID: IA0405_20200817

Lab ID#: 2008480A-11B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.031	0.26	0.12	1.0
Carbon Tetrachloride	0.031	0.12	0.20	0.79
Trichloroethene	0.031	0.15	0.17	0.78

Client Sample ID: IA0438_20200817

Lab ID#: 2008480A-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	5.4	0.89	30
Acetone	1.6	7.0	3.8	17
Toluene	0.16	0.27	0.60	1.0
Tetrachloroethene	0.16	0.21	1.1	1.4

Client Sample ID: IA0438_20200817

Lab ID#: 2008480A-12B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.094	0.20	0.59

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Client Sample ID: AA-02_20200817

Lab ID#: 2008480A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082407**	**Date of Collection:**	**8/17/20 1:50:00 PM**
Dil. Factor:	**1.60**	**Date of Analysis:**	**8/24/20 01:17 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	0.25	0.90	1.4
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.4	3.8	8.0
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	Not Detected	0.60	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.69	Not Detected
m,p-Xylene	0.16	Not Detected	0.69	Not Detected
o-Xylene	0.16	Not Detected	0.69	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	5.9	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: AA-02_20200817

Lab ID#: 2008480A-01B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082407sim**	**Date of Collection:**	**8/17/20 1:50:00 PM**
Dil. Factor:	**1.60**	**Date of Analysis:**	**8/24/20 01:17 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.070	0.20	0.44
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: EB-02_20200817

Lab ID#: 2008480A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082408**	**Date of Collection:**	**8/17/20 1:50:00 PM**
Dil. Factor:	**2.09**	**Date of Analysis:**	**8/24/20 01:57 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.0	Not Detected	5.2	Not Detected
Freon 11	0.21	Not Detected	1.2	Not Detected
Freon 113	0.21	Not Detected	1.6	Not Detected
Acetone	2.1	Not Detected	5.0	Not Detected
Methylene Chloride	0.42	Not Detected	1.4	Not Detected
1,1,1-Trichloroethane	0.21	Not Detected	1.1	Not Detected
Benzene	0.21	Not Detected	0.67	Not Detected
Toluene	0.21	Not Detected	0.79	Not Detected
Tetrachloroethene	0.21	Not Detected	1.4	Not Detected
Chlorobenzene	0.21	Not Detected	0.96	Not Detected
Ethyl Benzene	0.21	Not Detected	0.91	Not Detected
m,p-Xylene	0.21	Not Detected	0.91	Not Detected
o-Xylene	0.21	Not Detected	0.91	Not Detected
1,3-Dichlorobenzene	0.21	Not Detected	1.2	Not Detected
1,4-Dichlorobenzene	0.21	Not Detected	1.2	Not Detected
1,2-Dichlorobenzene	0.21	Not Detected	1.2	Not Detected
1,2,4-Trichlorobenzene	1.0	Not Detected	7.8	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: EB-02_20200817

Lab ID#: 2008480A-02B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082408sim**	**Date of Collection:**	**8/17/20 1:50:00 PM**
Dil. Factor:	**2.09**	**Date of Analysis:**	**8/24/20 01:57 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.021	Not Detected	0.053	Not Detected
1,1-Dichloroethene	0.021	Not Detected	0.083	Not Detected
cis-1,2-Dichloroethene	0.042	Not Detected	0.16	Not Detected
Carbon Tetrachloride	0.042	Not Detected	0.26	Not Detected
Trichloroethene	0.042	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA0489_20200817

Lab ID#: 2008480A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082409**	**Date of Collection:**	**8/17/20 2:00:00 PM**
Dil. Factor:	**1.59**	**Date of Analysis:**	**8/24/20 02:37 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	3.9	Not Detected
Freon 11	0.16	2.4	0.89	14
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	7.1	3.8	17
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	0.18	0.60	0.69
Tetrachloroethene	0.16	0.21	1.1	1.4
Chlorobenzene	0.16	Not Detected	0.73	Not Detected
Ethyl Benzene	0.16	Not Detected	0.69	Not Detected
m,p-Xylene	0.16	Not Detected	0.69	Not Detected
o-Xylene	0.16	Not Detected	0.69	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	5.9	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0489_20200817

Lab ID#: 2008480A-03B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082409sim**	**Date of Collection: 8/17/20 2:00:00 PM**	
Dil. Factor:	**1.59**	**Date of Analysis: 8/24/20 02:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.068	0.20	0.43
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

eurofins | Air Toxics

Client Sample ID: IA0417_20200817

Lab ID#: 2008480A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082410**	**Date of Collection:**	**8/17/20 2:01:00 PM**
Dil. Factor:	**1.64**	**Date of Analysis:**	**8/24/20 03:16 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.0	Not Detected
Freon 11	0.16	2.3	0.92	13
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	3.7	3.9	8.9
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	0.17	0.62	0.65
Tetrachloroethene	0.16	0.24	1.1	1.6
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.71	Not Detected
m,p-Xylene	0.16	Not Detected	0.71	Not Detected
o-Xylene	0.16	Not Detected	0.71	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: IA0417_20200817

Lab ID#: 2008480A-04B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082410sim**	**Date of Collection:**	**8/17/20 2:01:00 PM**
Dil. Factor:	**1.64**	**Date of Analysis:**	**8/24/20 03:16 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.070	0.21	0.44
Trichloroethene	0.033	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: FD-02_20200817

Lab ID#: 2008480A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082411**	**Date of Collection:**	**8/17/20 2:05:00 PM**
Dil. Factor:	**1.59**	**Date of Analysis:**	**8/24/20 03:56 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	3.9	Not Detected
Freon 11	0.16	1.5	0.89	8.7
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	5.0	3.8	12
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	0.17	0.60	0.64
Tetrachloroethene	0.16	0.24	1.1	1.6
Chlorobenzene	0.16	Not Detected	0.73	Not Detected
Ethyl Benzene	0.16	Not Detected	0.69	Not Detected
m,p-Xylene	0.16	Not Detected	0.69	Not Detected
o-Xylene	0.16	Not Detected	0.69	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	5.9	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: FD-02_20200817

Lab ID#: 2008480A-05B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082411sim**	**Date of Collection: 8/17/20 2:05:00 PM**	
Dil. Factor:	**1.59**	**Date of Analysis: 8/24/20 03:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.068	0.20	0.43
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0404_20200817

Lab ID#: 2008480A-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082412**	**Date of Collection:**	**8/17/20 2:05:00 PM**
Dil. Factor:	**1.62**	**Date of Analysis:**	**8/24/20 04:36 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.81	Not Detected	4.0	Not Detected
Freon 11	0.16	1.6	0.91	8.8
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	5.6	3.8	13
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	Not Detected	0.61	Not Detected
Tetrachloroethene	0.16	0.22	1.1	1.5
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	Not Detected	0.70	Not Detected
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.81	Not Detected	6.0	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: IA0404_20200817

Lab ID#: 2008480A-06B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082412sim**	**Date of Collection:**	**8/17/20 2:05:00 PM**
Dil. Factor:	**1.62**	**Date of Analysis:**	**8/24/20 04:36 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.068	0.20	0.43
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0436_20200817

Lab ID#: 2008480A-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082416**	**Date of Collection:**	**8/17/20 2:56:00 PM**
Dil. Factor:	**1.65**	**Date of Analysis:**	**8/24/20 07:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.1	Not Detected
Freon 11	0.16	2.0	0.93	11
Freon 113	0.16	Not Detected	1.3	Not Detected
Acetone	1.6	5.5	3.9	13
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.90	Not Detected
Benzene	0.16	Not Detected	0.53	Not Detected
Toluene	0.16	Not Detected	0.62	Not Detected
Tetrachloroethene	0.16	0.42	1.1	2.9
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.72	Not Detected
m,p-Xylene	0.16	Not Detected	0.72	Not Detected
o-Xylene	0.16	Not Detected	0.72	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0436_20200817

Lab ID#: 2008480A-07B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082416sim**	**Date of Collection: 8/17/20 2:56:00 PM**	
Dil. Factor:	**1.65**	**Date of Analysis: 8/24/20 07:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.069	0.21	0.43
Trichloroethene	0.033	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA0400_20200817

Lab ID#: 2008480A-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082414**	**Date of Collection:**	**8/17/20 2:10:00 PM**
Dil. Factor:	**1.51**	**Date of Analysis:**	**8/24/20 05:56 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.76	Not Detected	3.7	Not Detected
Freon 11	0.15	1.1	0.85	6.2
Freon 113	0.15	Not Detected	1.2	Not Detected
Acetone	1.5	7.2	3.6	17
Methylene Chloride	0.30	Not Detected	1.0	Not Detected
1,1,1-Trichloroethane	0.15	Not Detected	0.82	Not Detected
Benzene	0.15	Not Detected	0.48	Not Detected
Toluene	0.15	0.18	0.57	0.67
Tetrachloroethene	0.15	0.23	1.0	1.6
Chlorobenzene	0.15	Not Detected	0.70	Not Detected
Ethyl Benzene	0.15	Not Detected	0.66	Not Detected
m,p-Xylene	0.15	Not Detected	0.66	Not Detected
o-Xylene	0.15	Not Detected	0.66	Not Detected
1,3-Dichlorobenzene	0.15	Not Detected	0.91	Not Detected
1,4-Dichlorobenzene	0.15	Not Detected	0.91	Not Detected
1,2-Dichlorobenzene	0.15	Not Detected	0.91	Not Detected
1,2,4-Trichlorobenzene	0.76	Not Detected	5.6	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: IA0400_20200817

Lab ID#: 2008480A-08B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082414sim**	**Date of Collection: 8/17/20 2:10:00 PM**	
Dil. Factor:	**1.51**	**Date of Analysis: 8/24/20 05:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	Not Detected	0.038	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.060	Not Detected
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Carbon Tetrachloride	0.030	0.068	0.19	0.42
Trichloroethene	0.030	Not Detected	0.16	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA0401_20200817

Lab ID#: 2008480A-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082417**	**Date of Collection:**	**8/17/20 2:16:00 PM**
Dil. Factor:	**1.61**	**Date of Analysis:**	**8/24/20 07:55 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.80	Not Detected	4.0	Not Detected
Freon 11	0.16	1.1	0.90	6.2
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	67 E	3.8	160 E
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Benzene	0.16	Not Detected	0.51	Not Detected
Toluene	0.16	Not Detected	0.61	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	0.17	0.70	0.72
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected

E = Exceeds instrument calibration range.

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: IA0401_20200817

Lab ID#: 2008480A-09B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082417sim**	**Date of Collection:**	**8/17/20 2:16:00 PM**
Dil. Factor:	**1.61**	**Date of Analysis:**	**8/24/20 07:55 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.066	0.20	0.41
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA0472_20200817

Lab ID#: 2008480A-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082418**	**Date of Collection:**	**8/17/20 2:18:00 PM**
Dil. Factor:	**1.64**	**Date of Analysis:**	**8/24/20 08:49 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.82	Not Detected	4.0	Not Detected
Freon 11	0.16	1.1	0.92	6.1
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	8.2	3.9	20
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.89	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	Not Detected	0.62	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	Not Detected	0.71	Not Detected
m,p-Xylene	0.16	Not Detected	0.71	Not Detected
o-Xylene	0.16	Not Detected	0.71	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA0472_20200817

Lab ID#: 2008480A-10B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082418sim**	**Date of Collection: 8/17/20 2:18:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 8/24/20 08:49 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.067	0.21	0.42
Trichloroethene	0.033	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: IA0405_20200817

Lab ID#: 2008480A-11A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082508**	**Date of Collection:**	**8/17/20 2:56:00 PM**
Dil. Factor:	**1.57**	**Date of Analysis:**	**8/25/20 12:28 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.78	Not Detected	3.9	Not Detected
Freon 11	0.16	0.84	0.88	4.7
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	9.6	3.7	23
Methylene Chloride	0.31	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.86	Not Detected
Benzene	0.16	Not Detected	0.50	Not Detected
Toluene	0.16	0.16	0.59	0.61
Tetrachloroethene	0.16	0.80	1.1	5.4
Chlorobenzene	0.16	Not Detected	0.72	Not Detected
Ethyl Benzene	0.16	Not Detected	0.68	Not Detected
m,p-Xylene	0.16	Not Detected	0.68	Not Detected
o-Xylene	0.16	Not Detected	0.68	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.94	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.94	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.94	Not Detected
1,2,4-Trichlorobenzene	0.78	Not Detected	5.8	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA0405_20200817

Lab ID#: 2008480A-11B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082508sim**	**Date of Collection: 8/17/20 2:56:00 PM**	
Dil. Factor:	**1.57**	**Date of Analysis: 8/25/20 12:28 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.062	Not Detected
cis-1,2-Dichloroethene	0.031	0.26	0.12	1.0
Carbon Tetrachloride	0.031	0.12	0.20	0.79
Trichloroethene	0.031	0.15	0.17	0.78

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: IA0438_20200817

Lab ID#: 2008480A-12A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082514**	**Date of Collection:**	**8/17/20 2:37:00 PM**
Dil. Factor:	**1.58**	**Date of Analysis:**	**8/25/20 05:02 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.79	Not Detected	3.9	Not Detected
Freon 11	0.16	5.4	0.89	30
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	7.0	3.8	17
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.86	Not Detected
Benzene	0.16	Not Detected	0.50	Not Detected
Toluene	0.16	0.27	0.60	1.0
Tetrachloroethene	0.16	0.21	1.1	1.4
Chlorobenzene	0.16	Not Detected	0.73	Not Detected
Ethyl Benzene	0.16	Not Detected	0.69	Not Detected
m,p-Xylene	0.16	Not Detected	0.69	Not Detected
o-Xylene	0.16	Not Detected	0.69	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.95	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.95	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.95	Not Detected
1,2,4-Trichlorobenzene	0.79	Not Detected	5.9	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA0438_20200817

Lab ID#: 2008480A-12B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082514sim**	**Date of Collection: 8/17/20 2:37:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 8/25/20 05:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Carbon Tetrachloride	0.032	0.094	0.20	0.59
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480A-13A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082406**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 12:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480A-13B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082406sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 12:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480A-13C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082506a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 10:31 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480A-13D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082506sima**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 10:31 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 2008480A-14A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 09:32 AM**	

Compound	%Recovery
Freon 12	104
Freon 11	109
Freon 113	93
Acetone	95
Methylene Chloride	97
1,1,1-Trichloroethane	97
Benzene	94
Toluene	99
Tetrachloroethene	95
Chlorobenzene	98
Ethyl Benzene	98
m,p-Xylene	100
o-Xylene	101
1,3-Dichlorobenzene	84
1,4-Dichlorobenzene	85
1,2-Dichlorobenzene	88
1,2,4-Trichlorobenzene	96

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV

Lab ID#: 2008480A-14B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082402sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 09:32 AM**	

Compound	%Recovery
Vinyl Chloride	105
1,1-Dichloroethene	99
cis-1,2-Dichloroethene	98
Carbon Tetrachloride	98
Trichloroethene	89

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV

Lab ID#: 2008480A-14C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 07:32 AM**	

Compound	%Recovery
Freon 12	98
Freon 11	108
Freon 113	92
Acetone	94
Methylene Chloride	91
1,1,1-Trichloroethane	94
Benzene	100
Toluene	104
Tetrachloroethene	98
Chlorobenzene	98
Ethyl Benzene	99
m,p-Xylene	99
o-Xylene	98
1,3-Dichlorobenzene	87
1,4-Dichlorobenzene	87
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	92

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: CCV

Lab ID#: 2008480A-14D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082502sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 07:32 AM**	

Compound	%Recovery
Vinyl Chloride	96
1,1-Dichloroethene	94
cis-1,2-Dichloroethene	94
Carbon Tetrachloride	95
Trichloroethene	91

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2008480A-15A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 10:16 AM**	

Compound	%Recovery	Method Limits
Freon 12	102	70-130
Freon 11	112	70-130
Freon 113	98	70-130
Acetone	99	70-130
Methylene Chloride	96	70-130
1,1,1-Trichloroethane	103	70-130
Benzene	100	70-130
Toluene	104	70-130
Tetrachloroethene	104	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	102	70-130
m,p-Xylene	108	70-130
o-Xylene	107	70-130
1,3-Dichlorobenzene	91	70-130
1,4-Dichlorobenzene	94	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	103	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480A-15AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 10:55 AM**	

Compound	%Recovery	Method Limits
Freon 12	103	70-130
Freon 11	115	70-130
Freon 113	101	70-130
Acetone	102	70-130
Methylene Chloride	98	70-130
1,1,1-Trichloroethane	106	70-130
Benzene	97	70-130
Toluene	104	70-130
Tetrachloroethene	100	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	107	70-130
o-Xylene	105	70-130
1,3-Dichlorobenzene	91	70-130
1,4-Dichlorobenzene	94	70-130
1,2-Dichlorobenzene	93	70-130
1,2,4-Trichlorobenzene	107	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCS

Lab ID#: 2008480A-15B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082403sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 10:16 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	100	70-130
1,1-Dichloroethene	100	70-130
cis-1,2-Dichloroethene	100	70-130
Carbon Tetrachloride	101	60-140
Trichloroethene	94	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480A-15BB

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082404sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/24/20 10:55 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	100	70-130
1,1-Dichloroethene	101	70-130
cis-1,2-Dichloroethene	100	70-130
Carbon Tetrachloride	103	60-140
Trichloroethene	94	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCS

Lab ID#: 2008480A-15C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:11 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 11	110	70-130
Freon 113	97	70-130
Acetone	93	70-130
Methylene Chloride	93	70-130
1,1,1-Trichloroethane	101	70-130
Benzene	102	70-130
Toluene	104	70-130
Tetrachloroethene	103	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	99	70-130
o-Xylene	93	70-130
1,3-Dichlorobenzene	83	70-130
1,4-Dichlorobenzene	86	70-130
1,2-Dichlorobenzene	86	70-130
1,2,4-Trichlorobenzene	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480A-15CC

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:59 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 11	112	70-130
Freon 113	98	70-130
Acetone	91	70-130
Methylene Chloride	93	70-130
1,1,1-Trichloroethane	100	70-130
Benzene	102	70-130
Toluene	107	70-130
Tetrachloroethene	103	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	104	70-130
o-Xylene	102	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	94	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2008480A-15D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082503sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:11 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	99	70-130
cis-1,2-Dichloroethene	99	70-130
Carbon Tetrachloride	101	60-140
Trichloroethene	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480A-15DD

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082504sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:59 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	98	70-130
cis-1,2-Dichloroethene	98	70-130
Carbon Tetrachloride	101	60-140
Trichloroethene	96	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130

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9/1/2020
Ms. Jennifer Sanborn
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: EFK
Project #: 2999.04
Workorder #: 2008480B

Dear Ms. Jennifer Sanborn

The following report includes the data for the above referenced project for sample(s) received on 8/19/2020 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 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 Inc. 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

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WORK ORDER #: 2008480B

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	**P.O. #**	
FAX:	603-229-1919	**PROJECT #**	2999.04 EFK
DATE RECEIVED:	08/19/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	09/01/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
13A	IA0416_20200817	Modified TO-15	7.3 "Hg	5.2 psi
13B	IA0416_20200817	Modified TO-15	7.3 "Hg	5.2 psi
14A	IA0470_20200817	Modified TO-15	4.9 "Hg	5.2 psi
14B	IA0470_20200817	Modified TO-15	4.9 "Hg	5.2 psi
15A	IA0458_20200817	Modified TO-15	6.5 "Hg	5.6 psi
15B	IA0458_20200817	Modified TO-15	6.5 "Hg	5.6 psi
16A	IA0469_20200817	Modified TO-15	3.7 "Hg	5.3 psi
16B	IA0469_20200817	Modified TO-15	3.7 "Hg	5.3 psi
17A	IA0455_20200817	Modified TO-15	6.1 "Hg	4.7 psi
17B	IA0455_20200817	Modified TO-15	6.1 "Hg	4.7 psi
18A	IA0488_20200817	Modified TO-15	5.7 "Hg	5.3 psi
18B	IA0488_20200817	Modified TO-15	5.7 "Hg	5.3 psi
19A	IA0402_20200817	Modified TO-15	6.9 "Hg	4.6 psi
19B	IA0402_20200817	Modified TO-15	6.9 "Hg	4.6 psi
20A	IA0468_20200817	Modified TO-15	6.7 "Hg	5 psi
20B	IA0468_20200817	Modified TO-15	6.7 "Hg	5 psi
21A	Lab Blank	Modified TO-15	NA	NA
21B	Lab Blank	Modified TO-15	NA	NA
21C	Lab Blank	Modified TO-15	NA	NA
21D	Lab Blank	Modified TO-15	NA	NA
22A	CCV	Modified TO-15	NA	NA
22B	CCV	Modified TO-15	NA	NA
22C	CCV	Modified TO-15	NA	NA

Continued on next page

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WORK ORDER #: 2008480B

Work Order Summary

CLIENT:	Ms. Jennifer Sanborn Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	603-229-1900	**P.O. #**	
FAX:	603-229-1919	**PROJECT #**	2999.04 EFK
DATE RECEIVED:	08/19/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	09/01/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
22D	CCV	Modified TO-15	NA	NA
23A	LCS	Modified TO-15	NA	NA
23AA	LCSD	Modified TO-15	NA	NA
23B	LCS	Modified TO-15	NA	NA
23BB	LCSD	Modified TO-15	NA	NA
23C	LCS	Modified TO-15	NA	NA
23CC	LCSD	Modified TO-15	NA	NA
23D	LCS	Modified TO-15	NA	NA
23DD	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 09/01/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332019-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 2008480B

Eight 6 Liter Summa Canister (100% SIM Ambient) samples were received on August 19, 2020. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the EATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

A revised Chain of Custody (COC) was provided by the client on 8/20/20.

Analytical Notes

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

Definition of Data Qualifying Flags

Nine qualifiers may have been used on the data analysis sheets and indicates 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.
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

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0416_20200817

Lab ID#: 2008480B-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.18	5.6	1.0	32
Acetone	1.8	5.9	4.2	14
Toluene	0.18	0.35	0.67	1.3

Client Sample ID: IA0416_20200817

Lab ID#: 2008480B-13B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.036	0.076	0.22	0.48

Client Sample ID: IA0470_20200817

Lab ID#: 2008480B-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	1.8	0.91	10
Acetone	1.6	7.2	3.8	17
Toluene	0.16	0.21	0.61	0.81
Tetrachloroethene	0.16	0.31	1.1	2.1

Client Sample ID: IA0470_20200817

Lab ID#: 2008480B-14B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.13	0.20	0.79

Client Sample ID: IA0458_20200817

Lab ID#: 2008480B-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.18	1.3	0.99	7.2
Acetone	1.8	16	4.2	38
Toluene	0.18	0.18	0.66	0.66

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0458_20200817

Lab ID#: 2008480B-15A

m,p-Xylene	0.18	0.22	0.76	0.96
o-Xylene	0.18	0.18	0.76	0.77

Client Sample ID: IA0458_20200817

Lab ID#: 2008480B-15B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.035	0.068	0.22	0.43

Client Sample ID: IA0469_20200817

Lab ID#: 2008480B-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	2.5	0.87	14
Acetone	1.6	11	3.7	26
Toluene	0.16	0.16	0.58	0.61
Tetrachloroethene	0.16	0.33	1.0	2.2
m,p-Xylene	0.16	0.17	0.67	0.75

Client Sample ID: IA0469_20200817

Lab ID#: 2008480B-16B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.031	0.070	0.20	0.44

Client Sample ID: IA0455_20200817

Lab ID#: 2008480B-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	3.5	0.93	20
Acetone	1.7	9.4	3.9	22
Toluene	0.17	0.25	0.62	0.93

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0455_20200817

Lab ID#: 2008480B-17B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.083	0.21	0.52

Client Sample ID: IA0488_20200817

Lab ID#: 2008480B-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	2.0	0.94	11
Acetone	1.7	12	4.0	30
Toluene	0.17	0.52	0.63	2.0
Tetrachloroethene	0.17	0.17	1.1	1.1

Client Sample ID: IA0488_20200817

Lab ID#: 2008480B-18B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.11	0.21	0.71

Client Sample ID: IA0402_20200817

Lab ID#: 2008480B-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	2.6	0.96	14
Acetone	1.7	9.3	4.1	22

Client Sample ID: IA0402_20200817

Lab ID#: 2008480B-19B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.069	0.22	0.43

Client Sample ID: IA0468_20200817

Lab ID#: 2008480B-20A

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

Client Sample ID: IA0468_20200817

Lab ID#: 2008480B-20A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	1.4	0.97	7.8
Acetone	1.7	10	4.1	25

Client Sample ID: IA0468_20200817

Lab ID#: 2008480B-20B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.035	0.067	0.22	0.42

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Client Sample ID: IA0416_20200817

Lab ID#: 2008480B-13A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082510**	**Date of Collection:**	**8/17/20 2:38:00 PM**
Dil. Factor:	**1.79**	**Date of Analysis:**	**8/25/20 02:00 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.90	Not Detected	4.4	Not Detected
Freon 11	0.18	5.6	1.0	32
Freon 113	0.18	Not Detected	1.4	Not Detected
Acetone	1.8	5.9	4.2	14
Methylene Chloride	0.36	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	0.98	Not Detected
Benzene	0.18	Not Detected	0.57	Not Detected
Toluene	0.18	0.35	0.67	1.3
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
Chlorobenzene	0.18	Not Detected	0.82	Not Detected
Ethyl Benzene	0.18	Not Detected	0.78	Not Detected
m,p-Xylene	0.18	Not Detected	0.78	Not Detected
o-Xylene	0.18	Not Detected	0.78	Not Detected
1,3-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,4-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.1	Not Detected
1,2,4-Trichlorobenzene	0.90	Not Detected	6.6	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0416_20200817

Lab ID#: 2008480B-13B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082510sim**	**Date of Collection: 8/17/20 2:38:00 PM**	
Dil. Factor:	**1.79**	**Date of Analysis: 8/25/20 02:00 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.046	Not Detected
1,1-Dichloroethene	0.018	Not Detected	0.071	Not Detected
cis-1,2-Dichloroethene	0.036	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.036	0.076	0.22	0.48
Trichloroethene	0.036	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA0470_20200817

Lab ID#: 2008480B-14A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082607**	**Date of Collection:**	**8/17/20 2:47:00 PM**
Dil. Factor:	**1.62**	**Date of Analysis:**	**8/26/20 12:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.81	Not Detected	4.0	Not Detected
Freon 11	0.16	1.8	0.91	10
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	7.2	3.8	17
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Benzene	0.16	Not Detected	0.52	Not Detected
Toluene	0.16	0.21	0.61	0.81
Tetrachloroethene	0.16	0.31	1.1	2.1
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected
m,p-Xylene	0.16	Not Detected	0.70	Not Detected
o-Xylene	0.16	Not Detected	0.70	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected
1,2,4-Trichlorobenzene	0.81	Not Detected	6.0	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: IA0470_20200817

Lab ID#: 2008480B-14B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082607sim**	**Date of Collection:**	**8/17/20 2:47:00 PM**
Dil. Factor:	**1.62**	**Date of Analysis:**	**8/26/20 12:05 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.032	0.13	0.20	0.79
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0458_20200817

Lab ID#: 2008480B-15A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082512**	**Date of Collection:**	**8/17/20 2:52:00 PM**
Dil. Factor:	**1.76**	**Date of Analysis:**	**8/25/20 03:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.88	Not Detected	4.4	Not Detected
Freon 11	0.18	1.3	0.99	7.2
Freon 113	0.18	Not Detected	1.3	Not Detected
Acetone	1.8	16	4.2	38
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	0.96	Not Detected
Benzene	0.18	Not Detected	0.56	Not Detected
Toluene	0.18	0.18	0.66	0.66
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
Chlorobenzene	0.18	Not Detected	0.81	Not Detected
Ethyl Benzene	0.18	Not Detected	0.76	Not Detected
m,p-Xylene	0.18	0.22	0.76	0.96
o-Xylene	0.18	0.18	0.76	0.77
1,3-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.18	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.88	Not Detected	6.5	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA0458_20200817

Lab ID#: 2008480B-15B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082512sim**	**Date of Collection: 8/17/20 2:52:00 PM**	
Dil. Factor:	**1.76**	**Date of Analysis: 8/25/20 03:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
1,1-Dichloroethene	0.018	Not Detected	0.070	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.035	0.068	0.22	0.43
Trichloroethene	0.035	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA0469_20200817

Lab ID#: 2008480B-16A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082513**	**Date of Collection:**	**8/17/20 3:08:00 PM**
Dil. Factor:	**1.55**	**Date of Analysis:**	**8/25/20 04:22 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.78	Not Detected	3.8	Not Detected
Freon 11	0.16	2.5	0.87	14
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	1.6	11	3.7	26
Methylene Chloride	0.31	Not Detected	1.1	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.84	Not Detected
Benzene	0.16	Not Detected	0.50	Not Detected
Toluene	0.16	0.16	0.58	0.61
Tetrachloroethene	0.16	0.33	1.0	2.2
Chlorobenzene	0.16	Not Detected	0.71	Not Detected
Ethyl Benzene	0.16	Not Detected	0.67	Not Detected
m,p-Xylene	0.16	0.17	0.67	0.75
o-Xylene	0.16	Not Detected	0.67	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.93	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.93	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.93	Not Detected
1,2,4-Trichlorobenzene	0.78	Not Detected	5.8	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: IA0469_20200817

Lab ID#: 2008480B-16B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082513sim**	**Date of Collection: 8/17/20 3:08:00 PM**	
Dil. Factor:	**1.55**	**Date of Analysis: 8/25/20 04:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.061	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Carbon Tetrachloride	0.031	0.070	0.20	0.44
Trichloroethene	0.031	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA0455_20200817

Lab ID#: 2008480B-17A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082515**	**Date of Collection:**	**8/17/20 3:23:00 PM**
Dil. Factor:	**1.66**	**Date of Analysis:**	**8/25/20 05:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.83	Not Detected	4.1	Not Detected
Freon 11	0.17	3.5	0.93	20
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	9.4	3.9	22
Methylene Chloride	0.33	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.90	Not Detected
Benzene	0.17	Not Detected	0.53	Not Detected
Toluene	0.17	0.25	0.62	0.93
Tetrachloroethene	0.17	Not Detected	1.1	Not Detected
Chlorobenzene	0.17	Not Detected	0.76	Not Detected
Ethyl Benzene	0.17	Not Detected	0.72	Not Detected
m,p-Xylene	0.17	Not Detected	0.72	Not Detected
o-Xylene	0.17	Not Detected	0.72	Not Detected
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.83	Not Detected	6.2	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: IA0455_20200817

Lab ID#: 2008480B-17B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082515sim**	**Date of Collection: 8/17/20 3:23:00 PM**	
Dil. Factor:	**1.66**	**Date of Analysis: 8/25/20 05:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.042	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.066	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.033	0.083	0.21	0.52
Trichloroethene	0.033	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA0488_20200817

Lab ID#: 2008480B-18A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082516**	**Date of Collection:**	**8/17/20 3:25:00 PM**
Dil. Factor:	**1.68**	**Date of Analysis:**	**8/25/20 06:22 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.84	Not Detected	4.2	Not Detected
Freon 11	0.17	2.0	0.94	11
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	12	4.0	30
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.92	Not Detected
Benzene	0.17	Not Detected	0.54	Not Detected
Toluene	0.17	0.52	0.63	2.0
Tetrachloroethene	0.17	0.17	1.1	1.1
Chlorobenzene	0.17	Not Detected	0.77	Not Detected
Ethyl Benzene	0.17	Not Detected	0.73	Not Detected
m,p-Xylene	0.17	Not Detected	0.73	Not Detected
o-Xylene	0.17	Not Detected	0.73	Not Detected
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.84	Not Detected	6.2	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: IA0488_20200817

Lab ID#: 2008480B-18B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082516sim**	**Date of Collection: 8/17/20 3:25:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 8/25/20 06:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Carbon Tetrachloride	0.034	0.11	0.21	0.71
Trichloroethene	0.034	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: IA0402_20200817

Lab ID#: 2008480B-19A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082517**	**Date of Collection:**	**8/17/20 5:49:00 PM**
Dil. Factor:	**1.71**	**Date of Analysis:**	**8/25/20 07:02 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.86	Not Detected	4.2	Not Detected
Freon 11	0.17	2.6	0.96	14
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	9.3	4.1	22
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Benzene	0.17	Not Detected	0.55	Not Detected
Toluene	0.17	Not Detected	0.64	Not Detected
Tetrachloroethene	0.17	Not Detected	1.2	Not Detected
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	Not Detected	0.74	Not Detected
m,p-Xylene	0.17	Not Detected	0.74	Not Detected
o-Xylene	0.17	Not Detected	0.74	Not Detected
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA0402_20200817

Lab ID#: 2008480B-19B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082517sim**	**Date of Collection: 8/17/20 5:49:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 8/25/20 07:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.068	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.034	0.069	0.22	0.43
Trichloroethene	0.034	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA0468_20200817

Lab ID#: 2008480B-20A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082608**	**Date of Collection:**	**8/17/20 4:10:00 PM**
Dil. Factor:	**1.73**	**Date of Analysis:**	**8/26/20 12:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.86	Not Detected	4.3	Not Detected
Freon 11	0.17	1.4	0.97	7.8
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	1.7	10	4.1	25
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
1,1,1-Trichloroethane	0.17	Not Detected	0.94	Not Detected
Benzene	0.17	Not Detected	0.55	Not Detected
Toluene	0.17	Not Detected	0.65	Not Detected
Tetrachloroethene	0.17	Not Detected	1.2	Not Detected
Chlorobenzene	0.17	Not Detected	0.80	Not Detected
Ethyl Benzene	0.17	Not Detected	0.75	Not Detected
m,p-Xylene	0.17	Not Detected	0.75	Not Detected
o-Xylene	0.17	Not Detected	0.75	Not Detected
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.86	Not Detected	6.4	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: IA0468_20200817

Lab ID#: 2008480B-20B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082608sim**	**Date of Collection: 8/17/20 4:10:00 PM**	
Dil. Factor:	**1.73**	**Date of Analysis: 8/26/20 12:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.068	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
Carbon Tetrachloride	0.035	0.067	0.22	0.42
Trichloroethene	0.035	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (100% SIM Ambient)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480B-21A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082506a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 10:31 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480B-21B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082506sima**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 10:31 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480B-21C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082606a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 11:02 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
Acetone	1.0	Not Detected	2.4	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008480B-21D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082606sima**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 11:02 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 2008480B-22A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 07:32 AM**	

Compound	%Recovery
Freon 12	98
Freon 11	108
Freon 113	92
Acetone	94
Methylene Chloride	91
1,1,1-Trichloroethane	94
Benzene	100
Toluene	104
Tetrachloroethene	98
Chlorobenzene	98
Ethyl Benzene	99
m,p-Xylene	99
o-Xylene	98
1,3-Dichlorobenzene	87
1,4-Dichlorobenzene	87
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	92

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: CCV

Lab ID#: 2008480B-22B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082502sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 07:32 AM**	

Compound	%Recovery
Vinyl Chloride	96
1,1-Dichloroethene	94
cis-1,2-Dichloroethene	94
Carbon Tetrachloride	95
Trichloroethene	91

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: CCV

Lab ID#: 2008480B-22C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 08:12 AM**	

Compound	%Recovery
Freon 12	94
Freon 11	104
Freon 113	91
Acetone	88
Methylene Chloride	89
1,1,1-Trichloroethane	93
Benzene	98
Toluene	101
Tetrachloroethene	98
Chlorobenzene	95
Ethyl Benzene	99
m,p-Xylene	98
o-Xylene	96
1,3-Dichlorobenzene	87
1,4-Dichlorobenzene	88
1,2-Dichlorobenzene	90
1,2,4-Trichlorobenzene	90

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 2008480B-22D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082602sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 08:12 AM**	

Compound	%Recovery
Vinyl Chloride	93
1,1-Dichloroethene	94
cis-1,2-Dichloroethene	94
Carbon Tetrachloride	95
Trichloroethene	93

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2008480B-23A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:11 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 11	110	70-130
Freon 113	97	70-130
Acetone	93	70-130
Methylene Chloride	93	70-130
1,1,1-Trichloroethane	101	70-130
Benzene	102	70-130
Toluene	104	70-130
Tetrachloroethene	103	70-130
Chlorobenzene	101	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	99	70-130
o-Xylene	93	70-130
1,3-Dichlorobenzene	83	70-130
1,4-Dichlorobenzene	86	70-130
1,2-Dichlorobenzene	86	70-130
1,2,4-Trichlorobenzene	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480B-23AA

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:59 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 11	112	70-130
Freon 113	98	70-130
Acetone	91	70-130
Methylene Chloride	93	70-130
1,1,1-Trichloroethane	100	70-130
Benzene	102	70-130
Toluene	107	70-130
Tetrachloroethene	103	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	99	70-130
m,p-Xylene	104	70-130
o-Xylene	102	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	94	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	111	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2008480B-23B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082503sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:11 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	99	70-130
cis-1,2-Dichloroethene	99	70-130
Carbon Tetrachloride	101	60-140
Trichloroethene	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480B-23BB

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082504sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/25/20 08:59 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	92	70-130
1,1-Dichloroethene	98	70-130
cis-1,2-Dichloroethene	98	70-130
Carbon Tetrachloride	101	60-140
Trichloroethene	96	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2008480B-23C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 08:57 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 11	108	70-130
Freon 113	97	70-130
Acetone	87	70-130
Methylene Chloride	92	70-130
1,1,1-Trichloroethane	98	70-130
Benzene	98	70-130
Toluene	104	70-130
Tetrachloroethene	102	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	105	70-130
m,p-Xylene	107	70-130
o-Xylene	105	70-130
1,3-Dichlorobenzene	94	70-130
1,4-Dichlorobenzene	95	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	105	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCSD

Lab ID#: 2008480B-23CC

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 09:43 AM**	

Compound	%Recovery	Method Limits
Freon 12	98	70-130
Freon 11	110	70-130
Freon 113	99	70-130
Acetone	89	70-130
Methylene Chloride	90	70-130
1,1,1-Trichloroethane	98	70-130
Benzene	97	70-130
Toluene	102	70-130
Tetrachloroethene	106	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	106	70-130
o-Xylene	102	70-130
1,3-Dichlorobenzene	93	70-130
1,4-Dichlorobenzene	93	70-130
1,2-Dichlorobenzene	94	70-130
1,2,4-Trichlorobenzene	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2008480B-23D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 08:57 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	90	70-130
1,1-Dichloroethene	97	70-130
cis-1,2-Dichloroethene	97	70-130
Carbon Tetrachloride	100	60-140
Trichloroethene	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	105	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2008480B-23DD

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**v082604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/26/20 09:43 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	90	70-130
1,1-Dichloroethene	97	70-130
cis-1,2-Dichloroethene	97	70-130
Carbon Tetrachloride	101	60-140
Trichloroethene	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	103	70-130

APPENDIX D

DATA USABILITY SUMMARY REPORT

Data Usability Summary Report (DUSR)

Client:	Sanborn, Head & Associates, Inc., Concord, New Hampshire (SHA)
Site:	Former IBM East Fishkills Facility, Hopewell Junction, New York Building 330C
Laboratory:	Eurofins Air Toxics, Inc. (EATL), Folsom, California
Lab SDG / Work Order:	2008480 (reported in Work Orders 2008480A & 2008480B)
Date(s) of Collection:	August 17, 2020
Number and type Samples & analyses:	18 Indoor Air, 1 Ambient Air, and 1 Field Blank sample for twenty-two project-specific VOCs by Method TO-15 Hi/Lo
Senior Data Reviewers:	Dr. Nancy C. Rothman, New Environmental Horizons, Inc. Susan D. Chapnick, New Environmental Horizons, Inc.
Date Completed:	September 22, 2020

This Data Usability Summary Report (DUSR) is based on guidance developed by the New York State Department of Conservation (NYSDEC), June 1999, for technical review of analytical data and consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010). The objective of the DUSR is to determine whether or not the data as presented meet the Work Plan or EPA method QC acceptance criteria.

2 Farmers Circle, Arlington, Massachusetts 02474 781-643-4294 schapnick@neh-inc.com
34 Pheasant Run Drive, Skillman, New Jersey 08558 908-874-5686 nrothman@neh-inc.com

I. Required DUSR Questions

1. ***Is the data package complete as defined under the requirements for the most current NYSDEC ASP Category B or USEPA CLP deliverables?***

   Yes.

2. ***Have all holding times been met?***

   Yes.

3. ***Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?***

   Yes, in general except one QC exception resulted in qualification of data as noted in the Data Validation Checklist (DV Checklist).

4. ***Have all of the data been generated using established and agreed upon analytical protocols?***

   Yes. Analytical data were generated using established EPA Methods (see analytical references in Section II below). Deviations from EPA and NYSDEC ASP 2005 QC protocols are discussed in the DV Checklists of this DUSR.

5. ***Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?***

   Yes. The raw data were checked to verify that detected results met retention time and mass spectral criteria, where applicable, for qualitative identification. A spot check was performed to verify quantitative accuracy for reporting of all results (see the DV Checklists).

6. ***Have the correct data qualifiers been used and are they consistent with the most current NYSDEC ASP?***

   Yes. The laboratory used the correct data qualifiers in reporting of results.

7. ***Have any quality control (QC) exceedances been specifically noted in the DUSR and have the corresponding QC summary sheets from the data package been attached to the DUSR?***

   Yes. QC exceedances are specified in the DV Checklists. QC summary sheets from the data package have not been attached; however, all QC exceedances that required data qualification are summarized in Table 2 of the DUSR and flagged in the validated electronic data deliverable (EDD).

II. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification of quality control (QC) samples, if applicable, and the analytical parameters reviewed in this DUSR are listed in Table 1. Any deviations noted for sample collection or receipt (*e.g.*, temperature or preservation issues) are included in Section III, below.

Table 1. Sample Descriptions and Analytical Parameters

Sample ID	Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
AA-02_20200817	2008480A-01	8/17/2020	Ambient Air	VOCs	Field Sample
EB-02_20200817	2008480A-02	8/17/2020	Air	VOCs	Field Blank
IA0489_20200817	2008480A-03	8/17/2020	Indoor Air	VOCs	Field Sample
IA0417_20200817	2008480A-04	8/17/2020	Indoor Air	VOCs	Field Sample
FD-02_20200817	2008480A-05	8/17/2020	Indoor Air	VOCs	Field Duplicate of IA0404_20200817
IA0404_20200817	2008480A-06	8/17/2020	Indoor Air	VOCs	Field Sample
IA0436_20200817	2008480A-07	8/17/2020	Indoor Air	VOCs	Field Sample
IA0400_20200817	2008480A-08	8/17/2020	Indoor Air	VOCs	Field Sample
IA0401_20200817	2008480A-09	8/17/2020	Indoor Air	VOCs	Field Sample
IA0472_20200817	2008480A-10	8/17/2020	Indoor Air	VOCs	Field Sample
IA0405_20200817	2008480A-11	8/17/2020	Indoor Air	VOCs	Field Sample
IA0438_20200817	2008480A-12	8/17/2020	Indoor Air	VOCs	Field Sample
IA0416_20200817	2008480B-13	8/17/2020	Indoor Air	VOCs	Field Sample
IA0470_20200817	2008480B-14	8/17/2020	Indoor Air	VOCs	Field Sample
IA0458_20200817	2008480B-15	8/17/2020	Indoor Air	VOCs	Field Sample

Table 1. Sample Descriptions and Analytical Parameters - *continued*

Sample ID	Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
IA0469_20200817	2008480B-16	8/17/2020	Indoor Air	VOCs	Field Sample
IA0455_20200817	2008480B-17	8/17/2020	Indoor Air	VOCs	Field Sample
IA0488_20200817	2008480B-18	8/17/2020	Indoor Air	VOCs	Field Sample
IA0402_20200817	2008480B-19	8/17/2020	Indoor Air	VOCs	Field Sample
IA0468_20200817	2008480B-20	8/17/2020	Indoor Air	VOCs	Field Sample

Analytical method reference:

VOC: TO-15 Hi/Lo – Method TO-15 with simultaneous Full Scan and Selected Ion Monitoring (SIM) analysis for twenty-two project-specific VOCs (see Table in the DV Checklist for complete list of VOCs).

III. Data Deficiencies, Analytical Protocol Deviations, and Quality Control Problems

The following QC elements, as applicable to the analytical methods, were reviewed during this validation:

- Data package completeness and reporting protocols
- Sample receipt, holding times, and canister condition
- Calibration criteria (instrument tuning, initial and continuing calibration verifications)
- Method and field blank results
- Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) and Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries and Precision
- Internal Standard (IS) and Surrogate Recoveries
- Sample/Laboratory Duplicate (LD) or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)
- Sample result reporting (including reporting limits and units)
- Other method-specific QC if applicable and reported
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

During this review of VOCs one result was estimated (J) due to a QC issue. Table 2 summarizes the action taken during this review. NEH generated validated data spreadsheets based on the electronic project database files received from SHA for these Work Orders. All results were considered acceptable compared to QAPP and method criteria and usable for project decisions with the understanding of the potential uncertainty (bias) in the qualified results.

The attached Data Review Checklists document the method and matrix-specific QC reviewed and the issues that required action (as listed in Table 2) or affected the data certainty in terms of data quality objectives (DQO) of accuracy, precision, and sensitivity.

The laboratory reported results for 22 project-specific VOCs from a single analysis with two mass spectrometer (MS) detectors, each operated in a different detection mode: one operated in the full scan electron impact mode and the other operated in the Selected Ion Monitoring (SIM) mode. This analysis, called TO-15 Hi/Lo by ATL, allowed the sensitivity requirements of the project, unless otherwise discussed in this report, to be met for all of the compounds. The Data Review Checklist indicates the compounds reported from each of the two modes of MS operation. The full scan analysis was reported with an “A” suffix and the SIM analysis with a “B” suffix appended to the laboratory sample ID.

All non-detects were reported at levels below the Project required RLs (as shown in Table B.1 of the QAPP) except for Freon 12 in all samples due to calibration issues causing project sensitivity requirements to not be met for these compounds. The data users will need to evaluate the Freon 12 non-detects above project sensitivity criteria for project uses.

All other quality control information associated with accuracy, precision, and sensitivity for the VOCs reported met method and QAPP criteria for the samples in these Work Orders with the exceptions included in Table 2.

Table 2. Summary of Data Validation Actions

Field Sample ID	Analyte	Qualifier	Bias	Validation Comments
IA0401_20200817	Acetone	J	I	Result uncertain above the calibration range

Qualifiers: *U = analyte is non-detect at the sample-specific Reporting Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; JN = the analyte has been "tentatively identified" and the result is usable as an estimated value with indeterminate bias; R = result is rejected due to severe QC exceedance and unusable for project decisions.*

Bias: *L = Low; H = High; I = Indeterminate*

Lab: Eurofins-Air Toxics

Air Data Review Checklist - Method TO-15

Work Order# 2008480A

Former IBM B330C - East Fishkill Facility, Hopewell Junction, New York

Date Sampled: 8/17/2020

No. Samples 9IA + 1FD + 1AA + 1FB

Method of Analysis: TO-15 SIM

Data Element Acceptable	Canister Receipt	HT	GC/MS Tunes + Calibrations	Internal Stds + Surrogates	LCS	Lab Dup (LCS and LD)	Field Duplicates	RL & Quant.
Yes	√	√	√	√	√	√	√	
No								Freon 12 RLs > Proj. Req. RLs

Other Issues :

Blank Action: none

Qualifier Action: 1 "E" lab qualifier accepted as a "J" result

A combined Full Scan and SIM Analysis was performed for each sample for 22 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on the second to last page of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

Data usability review was performed on Quality Control forms associated with this data package, which involved evaluation of the following (where applicable): agreement of analyses conducted with COC requests; Holding times and sample preservation; Laboratory blanks/equipment blanks/ field blanks results compared to field sample results; Field duplicate results; Quantitation limits and sample results; Surrogate and Internal Standard recoveries; LCS/LCSD results; Laboratory duplicate results; instrument tuning and calibration information; sample chromatograms; and laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that were not reported in the QC previously evaluated. This review is consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010).

Data Package Completeness: All required forms (results, summary QC, COC), as needed to validate the data in accordance with NYSDEC ASP and the Work Plan were present in the data package. The laboratory provided the equivalent of the Category B deliverable. The laboratory received 20 samples for B330C and split these samples into 2 Work Orders: 2008480A and 2008480B. This DV Checklist reviews the first 12 samples received at the lab and reported in Work Order 2008480A.

Sample receipt: The 12 6-L canisters were received intact and in good condition on 8/9/2020. The sample IDs on the original COC did not contain the date of sample collection (e.g., sample identified as FD-02); however, SHA provided the lab a revised COC on 8/20/2020 that contained the date of collection appended to the original ID (e.g., FD-02_20200817). There were no issues noted with sample receiving.

Date: ***9/16/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

New Environmental Horizons, Inc.

Associated Blanks: Method Blanks: v082406/v082406sim & v082506a/v082506sima

FB = EB-02_20200817

Blank ID	Contaminant / Level (µg/m^3)		Action Level DF=		Sample and reported result (µg/m3)	Corrected Database Result
v082406	None				No Blank Action Required	
v082406sim	None				No Blank Action Required	
v082506a	None				No Blank Action Required	
v082506sima	None				No Blank Action Required	
EB-02_20200817	None				No Blank Action Required	

Additional Notes:

Certification: Canisters were each Certified pre-cleaned on 6/30/2020 - 7/3/2020 prior to shipment to the field indicating all 22 target VOCs were non-detect prior to use.

Sample Integrity: All samples were collected for about 8 hours on 8/17/2020. The field receipt vacuums (28.5 - 30 ”Hg), field final vacuums (3.50-10 "Hg) and lab receipt vacuums (3.7-10.4 "Hg) were acceptable. All canisters were over-pressurized prior to analysis (final pressures ranged from 4.7 to 5.2 psi). No Action required.

Holding Time (HT): Samples were analyzed on 8/25/2020; therefore HT was met. No Action required.

BFB Tunes: Instrument MSDV tunes (1 ICAL + 2 CCV). Method TO-15 tune criteria used and tunes were acquired properly (average of 3 scans across BFB peak with background subtraction). All criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

ICALs : Instrument MSDV Full Scan and SIM performed on 8/20/2020. Full Scan = 6- to 9-level calibration from 0.05, 0.1, 0.5, or 1.0 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 11-level calibration from 0.005 to 20 ppbV for 3 Targets shown in the Table on page 5 plus 1,1-dichloroethene and cis-1,2-dichloroethene plus several other compounds not reported by SIM. %RSD ≤ 30% for all 22 Target Compounds - Valid ICALs, No Action required.

CCVs: v082402/v082402sim & v082502/v082502sim - % Recovery 70-130% for all 22 Target compounds - No Action required.

Additional Notes:

***Surrogates & Internal Standards* :** Surrogates (1,2-Dichloroethane-d4, Toluene-d8, and 4-Bromofluorobenzene) had %Recovery within criteria and all 3 IS' (Chlorobenzene-d5, 1,4-Difluorobenzene, and Bromochloromethane) had areas and RTs within criteria in all analyses; therefore, No Action Required.

LCS/LCSD : v082403/v082404 & v082403sim/v082404sim and v082503/v082504 & v082503sim/v082504sim - %Recovery acceptable for all 22 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 22 VOCs by full scan and SIM analysis. No Action required.

LD: Not performed for these samples since LCS/LCSD and FD performed allowing precision evaluation.

Compound Reporting: The lab reported results for 22 Target VOCs, as requested in Table B.1 of the Work Plan. 17 compounds were reported from the Full Scan analysis and 5 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: Acetone in sample IA0401_20200817 was reported at a level exceeding the calibration range and was qualified "E" by the lab. All other data were either detect or qualified "U" to indicate the result was non-detect at the sample-specific RL.
****ACTION: 1 "E" lab qualified result estimated (J) with indeterminate bias due to uncertainty in reporting at a level above the instrument calibration range.***

Compound Reporting & Sensitivity: All non-detects were at or below the Project required RL (as shown in Table B.1, which is reproduced on the second to last page of this Checklist) except: Freon 12 in all samples due to a calibration issues causing project sensitivity requirements to not be met. The data users will need to evaluate these non-detects above project sensitivity criteria for project uses.

Narrative: The narrative did not raise any issues not already addressed or that would affect data quality.

Calculation Verification Checks:

Initial Calibration : Verification MSDV Full Scan ICAL on 7/23/20 for Freon 11 with IS Bromochloromethane

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Std Conc.	0.05	0.1	0.5	1	5	10	15
Cpd Resp	2586	8496	39091	72181	522890	958140	1349790
IS Conc.	5	5	5	5	5	5	5
IS Resp	108261	131012	117966	110394	131234	136538	133545
RRF	2.3887	3.2425	3.3138	3.2692	3.9844	3.5087	3.3691

	Level 8	Level 9	Avg. RRF	%RSD
Std Conc.	20	40		
Cpd Resp	1782192	3755350		
IS Conc.	5	5		
IS Resp	131606	139963		
RRF	3.3855	3.3539	3.3129	12.45%

√

ICAL verified, no action required

CCV : Verification MSDV 8/25/20 for 10 ppbV Standard of Freon 11: Response for Compound = 945456; IS (Bromochloromethane) Response = 132435@5 ppbV; RRF from ICAL = 3.3129

$$\text{Concentration} = \frac{945456 \times 5}{132435 \times 3.3129} = 10.82\text{ppb}$$ √

$$\%\text{Recovery} = \frac{100 \times 10.8}{10} = 108\%$$

QL & Result Verification: IA0438_20200817; Freon 11

Normal 250 mL analyzed (same as for Method Blank) but since canister was over-pressurize, effective DF = 1.58; MWt = 137.38

Sample Response = 248332; IS Response = 109867@ 5; RRF ICAL = 3.3539

Lowest-level ICAL Std = 0.05 ppbV; QL based on 0.10 ppbV level

$$\text{Conc.} = \frac{248332 \times 5 \times 1.58}{109867 \times 3.3129} = 5.39\text{ ppbV}$$

QL = 0.10 x 1.58 = 0.16 ppbV or 0.89 µg/m3 √

$\mu g/m^3$ = (ppbv x Mwt x DF) / 24.45 = (5.395 x 137.38 x 1)/24.45 = 30 $\mu g/m^3$ √

The sample chromatograms, mass spectra of detects and quantitation reports were scanned and data appeared to have been reported correctly. Although TICs were not requested, some samples contained peaks that are not target compounds.

Date: ***9/16/2020***

Data Reviewer: ***Nancy C. Rothman, Ph.D.***

FD : IA0404_20200817 /FD-02_20200817. A comparison of results for the 22 target compounds is shown below

Field Duplicate Evaluation_ Sample IDs: Sample = IA0404_20200817 FD = FD-02_20200817

Analyte Name	DF= 1.62* RL (µg/m^3)	Sample µg/m^3	Q	Sample Result Level	FD µg/m^3	Q	FD Result Level	RPD	Action **
Freon 12	4	4	U	RL	3.9	U	RL	NC	None
Freon 11	0.91	8.8		> 5 x RL	8.7		> 5 x RL	1.1%	None
Freon 113	1.2	1.2	U	RL	1.2	U	RL	NC	None
Acetone	3.8	13		< 5 x RL	12		< 5 x RL	8.0%	None
Methylene Chloride	1.1	1.1	U	RL	1.1	U	RL	NC	None
1,1,1-Trichloroethane	0.88	0.88	U	RL	0.87	U	RL	NC	None
Benzene	0.52	0.52	U	RL	0.51	U	RL	NC	None
Toluene	0.61	0.61	U	RL	0.64		RL	NC	None
Tetrachloroethene	1.1	1.5		< 5 x RL	1.6		< 5 x RL	6.5%	None
Chlorobenzene	0.74	0.74	U	RL	0.73	U	RL	NC	None
Ethyl Benzene	0.7	0.7	U	RL	0.69	U	RL	NC	None
m,p-Xylene	0.7	0.7	U	RL	0.69	U	RL	NC	None
o-Xylene	0.7	0.7	U	RL	0.69	U	RL	NC	None
1,3-Dichlorobenzene	0.97	0.97	U	RL	0.96	U	RL	NC	None
1,4-Dichlorobenzene	0.97	0.97	U	RL	0.96	U	RL	NC	None
1,2-Dichlorobenzene	0.97	0.97	U	RL	0.96	U	RL	NC	None
1,2,4-Trichlorobenzene	6	6	U	RL	5.9	U	RL	NC	None
Vinyl Chloride	0.041	0.041	U	RL	0.041	U	RL	NC	None
1,1-Dichloroethene	0.064	0.064	U	RL	0.063	U	RL	NC	None
cis-1,2-Dichloroethene	0.13	0.13	U	RL	0.13	U	RL	NC	None
Carbon Tetrachloride	0.2	0.43		< 5 x RL	0.43		< 5 x RL	0.0%	None
Trichloroethene	0.17	0.17	U	RL	0.17	U	RL	NC	None

* FD DF was 1.59 so RLs for FD are the Sample RLs x 1.59/1.62

**Action only taken if RPD > 20% and one or both samples report values > 5 x RL; Q = Validator Qualifier; NC = Not Calculated

FD precision was acceptable for all 22 project-specific VOCs in the FD pair IA0404_20200817 and FD-02_20200817 indicating acceptable precision and representativeness of the samples to the site location for all compounds - No Action required.

Date: ***9/16/2020***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Method of Analysis: TO-15 Hi/Lo

Compound List and Project-required Reporting Limits (RL): Table B-1 of Work Plan

Target Analyte Name		Full Scan (Full) or SIM		RL ($\mu g/m^3$)	
Tetrachloroethene (PCE)		Full		1.4	
Trichloroethene (TCE)		SIM		0.22	
cis-1,2-Dichloroethene (cDCE)		Full		0.8	*Reported by SIM for this Work Order*
1,1-Dichloroethene (DCE)		Full		0.8	*Reported by SIM for this Work Order*
Vinyl chloride (VC)		SIM		0.06	
1,1,1-Trichloroethane (TCA)		Full		1.1	
Carbon Tetrachloride		SIM		0.2	
Methylene chloride (MeCl)		Full		1.4	
Chlorobenzene		Full		0.92	
1,2,4-Trichlorobenzene		Full		7.4	
1,2-Dichlorobenzene		Full		1.2	
1,3-Dichlorobenzene		Full		1.2	
1,4-Dichlorobenzene		Full		1.2	
Acetone		Full		2.4	
Benzene		Full		0.64	
Ethylbenzene		Full		0.86	
m, p-Xylene		Full		0.86	
o-Xylene		Full		0.86	
Toluene		Full		0.77	
Trichlorofluoromethane (Freon 11)		Full		1.1	
Dichlorodifluoromethane (Freon 12)		Full		1	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)		Full		1.5	

Actions continued (see references below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples; if Flow controller RPD > 20% for pre- and post-flow calibrations, J detect/UJ non-detects
Canister Vacuum (Vac):	Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Sample-specific Blank Action Level = Blank Level x (Sample DF/Blank DF)
	Method Blank (MB): ***If MB < RL*** : and sample < RL, negate (U) result in sample RL; if sample is > RL but < 2 x RL (or 4 x RL for acetone, 2-butanone, and methylene chloride), negate (U) result at level found in sample. ***If MB > RL*** : and sample < RL, negate (U) result in sample RL; if sample is > RL but < Sample-Specific Blank Action Level, negate (U) the sample at the Sample-Specific Blank Action Level.
	Equipment Blank (EB): Result<Blank Action, EB result at level reported in sample
BFB Tune:	SW-846 method 8260B or TO-15 tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results
LCS and CCV:	Percent Recovery (%Rec) <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Initial Calibration (ICAL):	%RSD > 30%, J/UJ associated results
Internal Standard (IS):	RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results;
	Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25%< Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects
Surrogates:	%Rec <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Laboratory Duplicates:	LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
Field Duplicates:	RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
RLs + Quant:	Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above)
DV Qualifier Definitions:	U = analyte is non-detect at the sample-specific Quantitation Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; NJ = the analyte has been "tentatively identified" and the result is usable as an estimated value with indeterminate bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	*Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment IBM East Fishkill Facility, Hopewell Junction, New York,* prepared by Sanborn, Head & Associates, June 2009; *NYSDEC Analytical Services Protocol,* June 2005 *with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria,* February 2008*; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15,* Rev. 6, June 2014; *and Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS),* Publication EPA/625/R-96/010b, January 1999

Lab: Eurofins-Air Toxics

Air Data Review Checklist - Method TO-15

Work Order# 2008480B

Former IBM B330C - East Fishkill Facility, Hopewell Junction, New York

Date Sampled: 8/17/2020

No. Samples 8IA

Method of Analysis: TO-15 SIM

Data Element Acceptable	Canister Receipt	HT	GC/MS Tunes + Calibrations	Internal Stds + Surrogates	LCS	Lab Dup (LCS and LD)	Field Duplicates	RL & Quant.
Yes	√	√	√	√	√	√	NA	
No								Freon 12 RLs > Proj. Req. RLs

Other Issues :

Blank Action: none

Qualifier Action: none

A combined Full Scan and SIM Analysis was performed for each sample for 22 Project-specific VOCs listed in Table B.1 of the Work Plan, as shown on the second to last page of this checklist. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

Data usability review was performed on Quality Control forms associated with this data package, which involved evaluation of the following (where applicable): agreement of analyses conducted with COC requests; Holding times and sample preservation; Laboratory blanks/equipment blanks/ field blanks results compared to field sample results; Field duplicate results; Quantitation limits and sample results; Surrogate and Internal Standard recoveries; LCS/LCSD results; Laboratory duplicate results; instrument tuning and calibration information; sample chromatograms; and laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that were not reported in the QC previously evaluated. This review is consistent with the requirements set forth in NYSDEC Technical Guidance for Site Investigation and Remediation, DER-10, Appendix 2B (May 2010).

Data Package Completeness: All required forms (results, summary QC, COC), as needed to validate the data in accordance with NYSDEC ASP and the Work Plan were present in the data package. The laboratory provided the equivalent of the Category B deliverable. The laboratory received 20 samples for B330C and split these samples into 2 Work Orders: 2008480A and 2008480B. This DV Checklist reviews the last 8 samples received at the lab and reported in Work Order 2008480B.

Sample receipt: The 8 6-L canisters were received intact and in good condition on 8/9/2020. The sample IDs on the original COC did not contain the date of sample collection (e.g., sample identified as IA0416); however, SHA provided the lab a revised COC on 8/20/2020 that contained the date of collection appended to the original ID (e.g., IA0416_20200817). There were no issues noted with sample receiving.

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Associated Blanks: Method Blanks: v082506a/v082506sima & v082606a/v082606sima

FB = EB-02_20200817 (reported in WO# 2008480A)

Blank ID	Contaminant / Level (µg/m^3)		Action Level DF=		Sample and reported result (µg/m3)	Corrected Database Result
v082506a	None				No Blank Action Required	
v082506sima	None				No Blank Action Required	
v082606a	None				No Blank Action Required	
v082606sima	None				No Blank Action Required	
EB-02_20200817	None				No Blank Action Required	

Additional Notes:

Certification: Canisters were each Certified pre-cleaned on 7/1/2020 - 7/8/2020 prior to shipment to the field indicating all 22 target VOCs were non-detect prior to use.

Sample Integrity: All samples were collected for about 8 hours on 8/17/2020 except for IA0402_20200817, which was collected for about 10 hours. The field receipt vacuums (26.0 - 30 ”Hg), field final vacuums (4.0-7.0 "Hg) and lab receipt vacuums (3.7-7.3 "Hg) were acceptable. All canisters were over-pressurized prior to analysis (final pressures ranged from 4.6 to 5.3 psi). No Action required.

Holding Time (HT): Samples were analyzed on 8/26/2020; therefore HT was met. No Action required.

BFB Tunes: Instrument MSDV tunes (1 ICAL + 2 CCV). Method TO-15 tune criteria used and tunes were acquired properly (average of 3 scans across BFB peak with background subtraction). All criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

ICALs : Instrument MSDV Full Scan and SIM performed on 8/20/2020. Full Scan = 6- to 9-level calibration from 0.05, 0.1, 0.5, or 1.0 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 11-level calibration from 0.005 to 20 ppbV for 3 Targets shown in the Table on page 5 plus 1,1-dichloroethene and cis-1,2-dichloroethene plus several other compounds not reported by SIM. %RSD ≤ 30% for all 22 Target Compounds - Valid ICALs, No Action required.

CCVs: v082502/v082502sim & v082602/v082602sim - % Recovery 70-130% for all 22 Target compounds - No Action required.

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Additional Notes:

Surrogates & Internal Standards **:** Surrogates (1,2-Dichloroethane-d4, Toluene-d8, and 4-Bromofluorobenzene) had %Recovery within criteria and all 3 IS' (Chlorobenzene-d5, 1,4-Difluorobenzene, and Bromochloromethane) had areas and RTs within criteria in all analyses; therefore, No Action Required.

LCS/LCSD : v082503/v082504 & v082503sim/v082504sim and v082603/v082604 & v082603sim/v082604sim - %Recovery acceptable for all 22 Targets in both LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 22 VOCs by full scan and SIM analysis. No Action required.

LD: Not performed for these samples since LCS/LCSD and FD performed allowing precision evaluation.

Compound Reporting: The lab reported results for 22 Target VOCs, as requested in Table B.1 of the Work Plan. 17 compounds were reported from the Full Scan analysis and 5 from the SIM analysis as shown on the second to last page of this DV Checklist.

Qualifier Action: All data were either detect or qualified "U" to indicate the result was non-detect at the sample-specific RL. No qualifier action required.

Compound Reporting & Sensitivity: All non-detects were at or below the Project required RL (as shown in Table B.1, which is reproduced on the second to last page of this Checklist) except: Freon 12 in all samples due to a calibration issues causing project sensitivity requirements to not be met. The data users will need to evaluate these non-detects above project sensitivity criteria for project uses.

Narrative: The narrative did not raise any issues not already addressed or that would affect data quality.

Calculation Verification Checks: See DV Checklist for 2008480A for Calculation verification. This Work Order used the same instrument calibrations as were used in Work Order 2008480A.

The sample chromatograms, mass spectra of detects and quantitation reports were scanned and data appeared to have been reported correctly. Although TICs were not requested, some samples contained peaks that are not target compounds.

FD: See DV Checklist for 2008480A for FD evaluation.

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Method of Analysis: TO-15 Hi/Lo

Compound List and Project-required Reporting Limits (RL): Table B-1 of Work Plan

Target Analyte Name		Full Scan (Full) or SIM		RL ($\mu g/m^3$)	
Tetrachloroethene (PCE)		Full		1.4	
Trichloroethene (TCE)		SIM		0.22	
cis-1,2-Dichloroethene (cDCE)		Full		0.8	*Reported by SIM for this Work Order*
1,1-Dichloroethene (DCE)		Full		0.8	*Reported by SIM for this Work Order*
Vinyl chloride (VC)		SIM		0.06	
1,1,1-Trichloroethane (TCA)		Full		1.1	
Carbon Tetrachloride		SIM		0.2	
Methylene chloride (MeCl)		Full		1.4	
Chlorobenzene		Full		0.92	
1,2,4-Trichlorobenzene		Full		7.4	
1,2-Dichlorobenzene		Full		1.2	
1,3-Dichlorobenzene		Full		1.2	
1,4-Dichlorobenzene		Full		1.2	
Acetone		Full		2.4	
Benzene		Full		0.64	
Ethylbenzene		Full		0.86	
m, p-Xylene		Full		0.86	
o-Xylene		Full		0.86	
Toluene		Full		0.77	
Trichlorofluoromethane (Freon 11)		Full		1.1	
Dichlorodifluoromethane (Freon 12)		Full		1	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)		Full		1.5	

Actions continued (see references below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples; if Flow controller RPD > 20% for pre- and post-flow calibrations, J detect/UJ non-detects
Canister Vacuum (Vac):	Initial Field Vac < 25" Hg, J/UJ all results; Lab Receipt Vac > 15" Hg, J/UJ results; Lab Receipt Vac > ± 5" Hg of Final Field Vac, J/UJ results
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Sample-specific Blank Action Level = Blank Level x (Sample DF/Blank DF)
	Method Blank (MB): ***If MB < RL*** : and sample < RL, negate (U) result in sample RL; if sample is > RL but < 2 x RL (or 4 x RL for acetone, 2-butanone, and methylene chloride), negate (U) result at level found in sample. ***If MB > RL*** : and sample < RL, negate (U) result in sample RL; if sample is > RL but < Sample-Specific Blank Action Level, negate (U) the sample at the Sample-Specific Blank Action Level.
	Equipment Blank (EB): Result<Blank Action, EB result at level reported in sample
BFB Tune:	SW-846 method 8260B or TO-15 tune criteria not met, professional judgment on R of all data; samples analyzed > 12-hours after tune; professional judgment on J/UJ or R of results
LCS and CCV:	Percent Recovery (%Rec) <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Initial Calibration (ICAL):	%RSD > 30%, J/UJ associated results
Internal Standard (IS):	RT > ±0.33 min of IS RT in daily CCV, J/UJ associated results;
	Area < 25% Area in CCV, J detects, R non-detects (or professional judgment); 25%< Area < 60% of CCV Area, J/UJ associated results; Area > 140% of CCV Area, J detects, no action for non-detects
Surrogates:	%Rec <10%, J detects, R non-detects; 10% < %Rec <70%; J/UJ all associated data; %Rec >130%, J detects - no action for non-detects
Laboratory Duplicates:	LCS/LCSD RPD or Sample/LD RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
Field Duplicates:	RPD > 20% for detects > 5x RL, J associated data; professional judgment for results < 5 x RL
RLs + Quant:	Compound reported outside calibration range (< RL or at ppbV level > sample-specific highest ICAL standard for compound), J data. Note if RL > expected RL from Table B.1 of Work Plan (see above)
DV Qualifier Definitions:	U = analyte is non-detect at the sample-specific Quantitation Limit (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value with indeterminate bias; J+ = result is usable as an estimated value with possible high bias; J- = result is usable as an estimated value with possible low bias; NJ = the analyte has been "tentatively identified" and the result is usable as an estimated value with indeterminate bias; and R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate.
References:	*Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment IBM East Fishkill Facility, Hopewell Junction, New York,* prepared by Sanborn, Head & Associates, June 2009; *NYSDEC Analytical Services Protocol,* June 2005 *with NYSDEC Modifications to the EPA Region 9 TO-15 QA/QC Criteria,* February 2008*; USEPA Region II SOP HW-31, Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15,* Rev. 6, June 2014; *and Method TO-15, Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS),* Publication EPA/625/R-96/010b, January 1999

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