8976 Wellington Road
Manassas, VA 20109

January 23, 2019

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

Re: Indoor Air Quality Testing Results
Building 330C – More Good Tenant Space
Former IBM East Fishkill Facility
Hopewell Junction, New York
EPA ID No. NYD000707901, NYSDEC Site No. 314054

Dear Ms. LaClair:

The enclosed report presents the results of the November 2018 indoor air quality (IAQ) testing conducted in a portion of Building 330C (More Good tenant space) at the Former IBM East Fishkill Facility in Hopewell Junction, New York. B330C is owned by iPark East Fishkill LLC. IAQ testing was conducted in accordance with IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan dated June 15, 2009.

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

Sincerely yours,

Dean W Chartrand

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Encl: Indoor Air Quality Testing Results
Building 330C – More Good Tenant Space

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 Corporation
8976 Wellington Road
Manassas, VA 20109

January 23, 2019
File No. 2999.06

Re: Indoor Air Quality Testing Results
Building 330C – More Good Tenant Space
Former IBM East Fishkill Facility
Hopewell Junction, NY
EPA ID No. NYD000797901, NYSDEC Site No. 314054

Dear Mr. Chartrand:

This letter transmits the results of indoor air quality (IAQ) testing that was conducted in a portion of Building 330C (B330C) on November 7, 2018 at the former IBM East Fishkill facility.

B330C is currently owned by iPark East Fishkill LLC, also referred to as National Resources (NR). IAQ testing was conducted in the More Good tenant space, a beverage syrup and flavoring manufacturing and bottling operation, which is housed on the southeast side of B330C. The purpose of the testing was to assess whether the building modifications made to accommodate the tenant's occupancy and operations have affected the potential for soil vapor intrusion and resulting IAQ. The testing was commissioned by IBM Corporation and conducted by Sanborn, Head Engineering P.C. (SHPC).

The services conducted, and this letter report, are subject to the standard limitations for this type of work described in Attachment 1.

Summary of HVAC Operating Conditions

The More Good area of B330C is served by five rooftop air handling units (RTUs) that were installed as part of the renovation of this tenant space. Exhibit 1 provides a summary of the rooms served, and outside air (OA) and return air (RA) damper position observed during sampling on November 7, 2018. The RTUs were found to be running on the day of sampling; however, the RTUs are thermostat controlled, and switch on and off depending on the temperature in the building.

Exhibit 1 – Summary of HVAC Operating Conditions on November 7, 2018

Rooftop Air Handling Unit	Area Served	Observed OA Damper Position (Approximate)	Observed RA Damper Position (Approximate)
RTU-1-C	Fermentation Room	0% Open	100% Open
RTU-2-C	Break room/Office	0% Open	100% Open
RTU-3-C	Production Floor	0% Open	100% Open
RTU-4-C	Small Storage Room	0% Open	100% Open
RTU-5-C	High Storage Room	0% Open	100% Open

Summary of Indoor Air Quality Testing

IAQ testing was conducted in conformance with the procedures described in IBM's RCRA Facility Investigation (RFI) Work Plan, which was approved by the New York State Department of Environmental Conservation and Department of Health. IAQ samples were collected using 6-liter, pre-evacuated, stainless-steel canisters (Summa® canisters) equipped with flow controllers to obtain 8-hour time-averaged samples[1]. Indoor air samples were collected from a height of 2 to 4 feet above the floor at the two locations shown on Figure 1. These locations are identified as follows:

IA0455: Break room/office
IA0488: Production floor

Sample location IA0455 was previously sampled in November 2015 as part of IBM's RFI VI assessment program as documented in a prior report.[2]

In addition, one outdoor ambient air sample (AA-2) was collected at the intake to RTU-3-C to assess for the presence of background conditions that could impact IAQ. In addition, a field blank (FB-1) was collected for quality assurance/quality control (QA/QC) purposes by transferring laboratory-supplied nitrogen from one SUMMA canister into another.

A photographic log of sampling locations is provided as Attachment 2, and a summary of field sampling information is provided in Table 1.

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 sample results are presented in Table 2, and the laboratory report is included as Attachment 3.

Tetrachloroethene (PCE) was detected in each of the two samples at concentrations of 2.6 and 2.7 µg/m^3, which is similar to the PCE concentration detected during the last round of indoor air sampling conducted in this area in November 2015, prior to building renovations. The November 2015 PCE concentration at IA0455 was 3.6 µg/m^3 (IA0488

[1] The flow controller for sample IA0488 was inadvertently set to fill at a higher rate than required, therefore that sample was collected for a period of about 4.3 hours rather than 8 hours.

[2] IBM and 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, NY*, February 12, 2016.

was not sampled in November 2015). Trichloroethene (TCE) was not detected above the laboratory reporting limit (RL) in either of the indoor air samples. Similarly, TCE was not detected in November 2015 at IA0455.

Other compounds detected in indoor air include acetone (20 to 32 µg/m^3), carbon tetrachloride at a similar level as outside air (0.45 to 0.46 µg/m^3), toluene (0.59 to 0.98 µg/m^3), and trichlorofluoromethane (CFC11) (7.3 to 9.7 µg/m^3).

Quality Assurance/Quality Control

The analytical data were provided to New Environmental Horizons, Inc. (NEH) of Skillman, NJ for an independent, third-party data usability review (i.e., data validation) in accordance with the RFI Work Plan. The data usability summary report (DUSR) is provided in Attachment 4. The review found that all results were considered usable for project objectives/decisions, with the following qualification:

- Dichlorodifluoromethane (Freon 12) was non-detect in each of the samples, with RLs that exceeded the project-specific requirements due to an instrument calibration issue. This is not considered a significant issue since Freon 12 is not a primary contaminant of VI concern at the site, and the reporting limits were still relatively low (4.0 to 4.2 µg/m^3).

Tenant Notifications

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

Please contact us if you have any questions.

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

David Shea, P.E.
President

Jennifer H. Sanborn
Sanborn, Head & Associates, Inc.

Encl. Figure 1 – Summary of 8-Hour Indoor Air Sampling Results (PCE and TCE)
Table 1 – Summary of Indoor Air Sample Information
Table 2 – Summary of 8-Hour Indoor Air Sampling Results
Attachment 1 – Limitations
Attachment 2 – Photograph Log
Attachment 3 – Analytical Laboratory Report
Attachment 4 – Data Usability Summary Report

Last Edited By: ewright

Path: P:\2900s\2999.00\Graphics Files\GIS\Figures\B330C\HVAC\20190110_B330C_IA_Quality_Rpt.mxd

N
W E
S

B330C Roof

RTU-3-C Outside Air Intake

AA-2
<1.1 / <0.18

B330C

IA0488
2.7 / <0.18

RTU-1,2,3,4,5

More Good Tenant Space

IA0455
2.6 / <0.18

B338

Figure 1

Summary of 8-Hour Indoor Air Sampling Results (PCE and TCE)

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:	2999.06
Date:	January 2019

Figure Narrative

This figure shows tetrachloroethene (PCE) and trichloroethene (TCE) results for indoor air sampling completed in the More Good tenant space of B330C on November 7, 2018. The samples were collected as 8-hour time-weighted-average samples using 6-L SUMMA canisters. Results are shown in micrograms per cubic meter (µg/m3).

Legend

- Indoor Air Location
- Ambient Air Location
- IA0455 <1.2 / <0.18 — Control Point Name; PCE/TCE November 7, 2018 indoor air confirmatory sample
- HVAC Zone
- Occupied area
- New tenant spaces

40 20 0 40 80 Feet

SANBORN HEAD ENGINEERING

Table 1
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: November 7, 2018											
AA-2	B330C Roof	Ambient Air	362	1	8:20	-30	16:20	-7.5	55	B330C RTU-3-C intake	None observed
FB-1	B330C Roof	Nitrogen	124	1	8:20	-28.5	14:30	-5	55	B330C RTU-3-C intake	None observed
IA0455	Ground	Indoor Air	6489	4	8:10	-30	16:10	-7.5	65	Break room	None observed
IA0488	Ground	Indoor Air	6447	2	8:12	-30	12:27	-2.5	65	Production floor	None observed

Notes:

1. Samples were collected by Sanborn, Head Engineering, PC on November 7, 2018.

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.

Table 2
Summary of 8-Hour Indoor Air Sampling Results
Building 330C
Former IBM East Fishkill Facility
Hopewell Junction, New York

Analyte	Field Sample Name	AA-2			IA0455			IA0488			FB-1		
	Collection Date	11/7/2018			11/7/2018			11/7/2018			11/7/2018		
	Units	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias	Result	Qual.	Bias
Acetone	µg/m3	13			32			20			4.2		
Benzene	µg/m3	0.61			0.54	U		0.52	U		0.54	U	
Carbon tetrachloride	µg/m3	0.41			0.46			0.45			0.21	U	
Chlorobenzene (Monochlorobenzene)	µg/m3	0.76	U		0.77	U		0.76	U		0.77	U	
Dichlorobenzene (1,2-)	µg/m3	1.0	U		1.0	U		0.99	U		1.0	U	
Dichlorobenzene (1,3-)	µg/m3	1.0	U		1.0	U		0.99	U		1.0	U	
Dichlorobenzene (1,4-)	µg/m3	1.0	U		1.0	U		0.99	U		1.0	U	
Dichlorodifluoromethane (CFC12)	µg/m3	4.0	U		4.2	U		4.0	U		4.2	U	
Dichloroethene (1,1-)	µg/m3	0.065	U		0.067	U		0.065	U		0.067	U	
Dichloroethene (cis-1,2-)	µg/m3	0.13	U		0.13	U		0.13	U		0.13	U	
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	µg/m3	1.2	U		1.3	U		1.2	U		1.3	U	
Ethylbenzene	µg/m3	0.71	U		0.73	U		0.71	U		0.73	U	
Methylene Chloride (Dichloromethane)	µg/m3	1.1	U		1.2	U		1.1	U		1.2	U	
Tetrachloroethene (PCE)	µg/m3	1.1	U		2.6			2.7			1.1	U	
Toluene	µg/m3	0.62	U		0.98			0.59	J	I	0.63	U	
Trichlorobenzene (1,2,4-)	µg/m3	6.1	U		6.2	U		6.1	U		6.2	U	
Trichloroethane (1,1,1-)	µg/m3	0.89	U		0.92	U		0.89	U		0.92	U	
Trichloroethene (TCE)	µg/m3	0.18	U		0.18	U		0.18	U		0.18	U	
Trichlorofluoromethane (CFC11)	µg/m3	1.8			9.7			7.3			1.1		
Vinyl chloride	µg/m3	0.042	U		0.043	U		0.042	U		0.043	U	
Xylene (m,p-)	µg/m3	0.71	U		0.73	U		0.71	U		0.73	U	
Xylene (o-)	µg/m3	0.71	U		0.73	U		0.71	U		0.73	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. 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. Results are presented in micrograms per cubic meter ($\mu g/m^3$).

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

4. Results are displayed with two significant figures.

5. A data usability review (DUR) 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 DUR 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.

ATTACHMENT 1
SHPC LIMITATIONS

1. The findings 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. Quantitative laboratory testing was performed by others as part of the investigation as noted within the report. It must be noted that additional compounds not searched for during the current study may be present in 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 indoor air may occur due to the passage of time, seasonal fluctuations, and other factors.

3. This report has been prepared for the exclusive 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.

4. 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.

ATTACHMENT 2
B330C 8-Hour Indoor Air Sampling Photograph Log

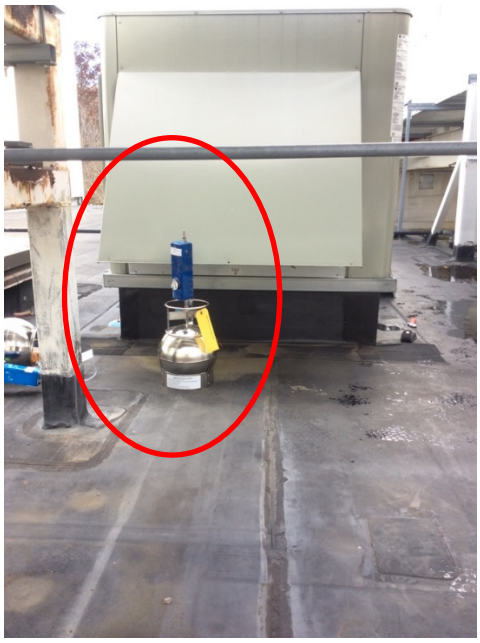

Photo 1: Sample AA-2, located at RTU-3-C intake

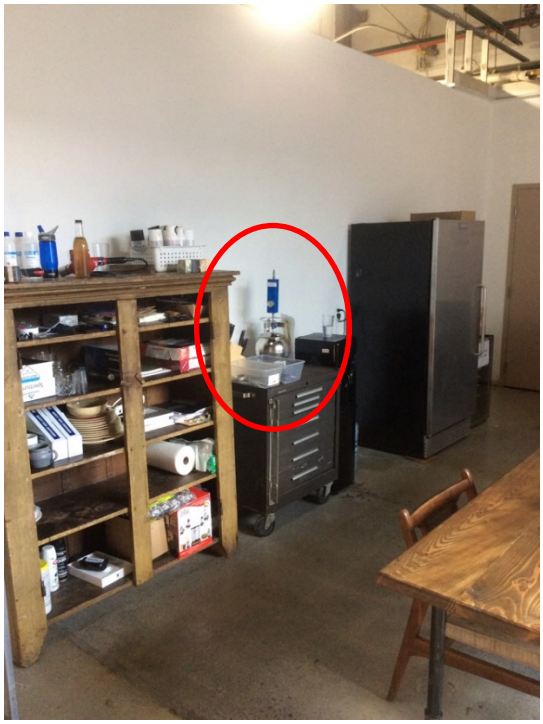

Photo 2: Sample IA0455, located in More Good breakroom

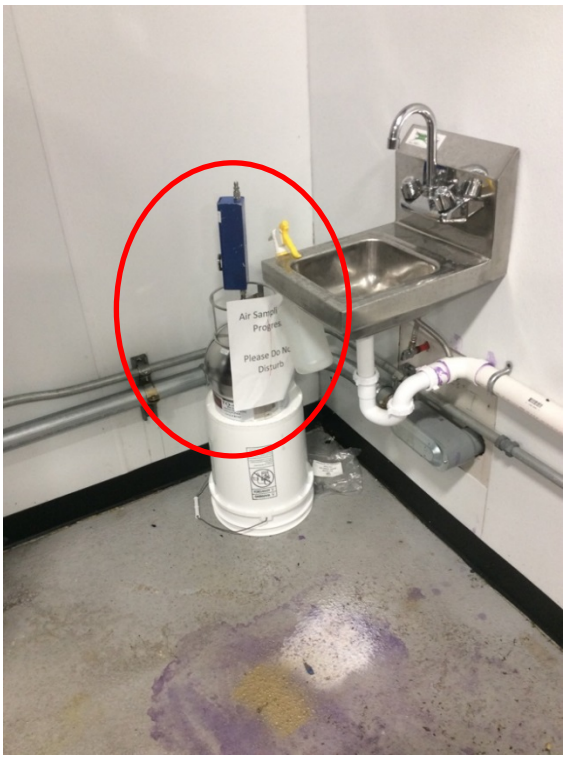

Photo 3: Sample IA0488 located in More Good production floor

ATTACHMENT 3

Analytical Laboratory Report

eurofins | Air Toxics

11/27/2018
Ms. Erica Bosse
Sanborn, Head & Associates
24 Wade Road

Latham NY

Project Name: IBM - EFK
Project #: 2999.00
Workorder #: 1811230C

Dear Ms. Erica Bosse

The following report includes the data for the above referenced project for sample(s) received on 11/12/2018 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: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Ausha Scott

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1811230C

Work Order Summary

CLIENT:	Ms. Erica Bosse Sanborn, Head & Associates 24 Wade Road Latham, NY	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	518-207-0769	**P.O. #**	
FAX:		**PROJECT #**	2999.00 IBM - EFK
DATE RECEIVED:	11/12/2018	**CONTACT:**	Ausha Scott
DATE COMPLETED:	11/26/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
05A	IA0455_20181107	Modified TO-15	6.0 "Hg	5 psi
05B	IA0455_20181107	Modified TO-15	6.0 "Hg	5 psi
06A	IA0488_20181107	Modified TO-15	5.5 "Hg	5 psi
06B	IA0488_20181107	Modified TO-15	5.5 "Hg	5 psi
07A	Lab Blank	Modified TO-15	NA	NA
07B	Lab Blank	Modified TO-15	NA	NA
08A	CCV	Modified TO-15	NA	NA
08B	CCV	Modified TO-15	NA	NA
09A	LCS	Modified TO-15	NA	NA
09AA	LCSD	Modified TO-15	NA	NA
09B	LCS	Modified TO-15	NA	NA
09BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 11/26/18

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
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) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 1811230C

Two 6 Liter Summa Canister (SIM Certified) samples were received on November 12, 2018. 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.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

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

There were no receiving discrepancies.

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: IA0455_20181107

Lab ID#: 1811230C-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	1.7	0.94	9.7
Acetone	0.84	13	2.0	32
Toluene	0.17	0.26	0.63	0.98
Tetrachloroethene	0.17	0.39	1.1	2.6

Client Sample ID: IA0455_20181107

Lab ID#: 1811230C-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.073	0.21	0.46

Client Sample ID: IA0488_20181107

Lab ID#: 1811230C-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	1.3	0.92	7.3
Acetone	0.82	8.6	1.9	20
Toluene	0.16	0.16 J	0.62	0.59 J
Tetrachloroethene	0.16	0.40	1.1	2.7

Client Sample ID: IA0488_20181107

Lab ID#: 1811230C-06B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.072	0.21	0.45

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Client Sample ID: IA0455_20181107

Lab ID#: 1811230C-05A

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

File Name:	**21111611**	**Date of Collection:**	**11/7/18 16:10:00**
Dil. Factor:	**1.68**	**Date of Analysis:**	**11/16/18 02:37 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	1.7	0.94	9.7
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	0.84	13	2.0	32
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	0.26	0.63	0.98
Tetrachloroethene	0.17	0.39	1.1	2.6
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	120	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	97	70-130

eurofins | Air Toxics

Client Sample ID: IA0455_20181107

Lab ID#: 1811230C-05B

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

File Name:	**21111611sim**	**Date of Collection:**	**11/7/18 16:10:00**
Dil. Factor:	**1.68**	**Date of Analysis:**	**11/16/18 02:37 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	0.073	0.21	0.46
Trichloroethene	0.034	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	112	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA0488_20181107

Lab ID#: 1811230C-06A

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

File Name:	**21111612**	**Date of Collection: 11/7/18 12:27:00**	
Dil. Factor:	**1.64**	**Date of Analysis: 11/16/18 03:13 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	1.3	0.92	7.3
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	0.82	8.6	1.9	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	0.16 J	0.62	0.59 J
Tetrachloroethene	0.16	0.40	1.1	2.7
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

J = Estimated value.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	120	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: IA0488_20181107

Lab ID#: 1811230C-06B

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

File Name:	**21111612sim**	**Date of Collection:**	**11/7/18 12:27:00**
Dil. Factor:	**1.64**	**Date of Analysis:**	**11/16/18 03:13 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	0.072	0.21	0.45
Trichloroethene	0.033	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1811230C-07A

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

File Name:	**21111606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 11:12 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	0.50	Not Detected	1.2	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	119	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1811230C-07B

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

File Name:	**21111606sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 11:12 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	114	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: CCV

Lab ID#: 1811230C-08A

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

File Name:	**21111602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 08:44 AM**	

Compound	%Recovery
Freon 12	94
Freon 11	100
Freon 113	97
Acetone	95
Methylene Chloride	98
1,1,1-Trichloroethane	102
Benzene	101
Toluene	100
Tetrachloroethene	99
Chlorobenzene	96
Ethyl Benzene	99
m,p-Xylene	100
o-Xylene	100
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	96
1,2-Dichlorobenzene	96
1,2,4-Trichlorobenzene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: CCV

Lab ID#: 1811230C-08B

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

File Name:	**21111602sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 08:44 AM**	

Compound	%Recovery
Vinyl Chloride	86
1,1-Dichloroethene	80
cis-1,2-Dichloroethene	86
Carbon Tetrachloride	87
Trichloroethene	85

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1811230C-09A

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

File Name:	**21111603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:23 AM**	

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Freon 11	101	70-130
Freon 113	95	70-130
Acetone	96	70-130
Methylene Chloride	98	70-130
1,1,1-Trichloroethane	101	70-130
Benzene	102	70-130
Toluene	102	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	104	70-130
o-Xylene	107	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	105	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCSD

Lab ID#: 1811230C-09AA

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

File Name:	**21111604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:59 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 11	103	70-130
Freon 113	97	70-130
Acetone	100	70-130
Methylene Chloride	101	70-130
1,1,1-Trichloroethane	103	70-130
Benzene	102	70-130
Toluene	101	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	104	70-130
m,p-Xylene	101	70-130
o-Xylene	103	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 1811230C-09B

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

File Name:	**21111603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:23 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	86	70-130
1,1-Dichloroethene	79	70-130
cis-1,2-Dichloroethene	80	70-130
Carbon Tetrachloride	90	60-140
Trichloroethene	87	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1811230C-09BB

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

File Name:	**21111604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:59 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	88	70-130
1,1-Dichloroethene	79	70-130
cis-1,2-Dichloroethene	80	70-130
Carbon Tetrachloride	91	60-140
Trichloroethene	87	70-130

Container Type: NA - Not Applicable

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

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11/27/2018
Ms. Erica Bosse
Sanborn, Head & Associates
24 Wade Road

Latham NY

Project Name: IBM - EFK
Project #: 2999.00
Workorder #: 1811230D

Dear Ms. Erica Bosse

The following report includes the data for the above referenced project for sample(s) received on 11/12/2018 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: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Ausha Scott

Project Manager

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WORK ORDER #: 1811230D

Work Order Summary

CLIENT:	Ms. Erica Bosse Sanborn, Head & Associates 24 Wade Road Latham, NY	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	518-207-0769	**P.O. #**	
FAX:		**PROJECT #**	2999.00 IBM - EFK
DATE RECEIVED:	11/12/2018	**CONTACT:**	Ausha Scott
DATE COMPLETED:	11/26/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07A	AA-2_20181107	Modified TO-15	5.3 "Hg	5.1 psi
07B	AA-2_20181107	Modified TO-15	5.3 "Hg	5.1 psi
08A	FB-1_20181107	Modified TO-15	5.9 "Hg	5.1 psi
08B	FB-1_20181107	Modified TO-15	5.9 "Hg	5.1 psi
09A	Lab Blank	Modified TO-15	NA	NA
09B	Lab Blank	Modified TO-15	NA	NA
10A	CCV	Modified TO-15	NA	NA
10B	CCV	Modified TO-15	NA	NA
11A	LCS	Modified TO-15	NA	NA
11AA	LCSD	Modified TO-15	NA	NA
11B	LCS	Modified TO-15	NA	NA
11BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:  DATE: 11/26/18

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
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) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 1811230D

Two 6 Liter Summa Canister (SIM Certified) samples were received on November 12, 2018. 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.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

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

There were no receiving discrepancies.

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-2_20181107

Lab ID#: 1811230D-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.16	0.33	0.92	1.8
Acetone	0.82	5.3	1.9	13
Benzene	0.16	0.19	0.52	0.61

Client Sample ID: AA-2_20181107

Lab ID#: 1811230D-07B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.066	0.21	0.41

Client Sample ID: FB-1_20181107

Lab ID#: 1811230D-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.17	0.20	0.94	1.1
Acetone	0.84	1.8	2.0	4.2

Client Sample ID: FB-1_20181107

Lab ID#: 1811230D-08B

No Detections Were Found.

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Client Sample ID: AA-2_20181107

Lab ID#: 1811230D-07A

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

File Name:	**21111613**	**Date of Collection:**	**11/7/18 16:20:00**
Dil. Factor:	**1.64**	**Date of Analysis:**	**11/16/18 03:49 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	0.33	0.92	1.8
Freon 113	0.16	Not Detected	1.2	Not Detected
Acetone	0.82	5.3	1.9	13
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	0.19	0.52	0.61
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: AA-2_20181107

Lab ID#: 1811230D-07B

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

File Name:	**21111613sim**	**Date of Collection:**	**11/7/18 16:20:00**
Dil. Factor:	**1.64**	**Date of Analysis:**	**11/16/18 03:49 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	0.066	0.21	0.41
Trichloroethene	0.033	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: FB-1_20181107

Lab ID#: 1811230D-08A

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

File Name:	**21111614**	**Date of Collection:**	**11/7/18 14:30:00**
Dil. Factor:	**1.68**	**Date of Analysis:**	**11/16/18 04:25 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	0.20	0.94	1.1
Freon 113	0.17	Not Detected	1.3	Not Detected
Acetone	0.84	1.8	2.0	4.2
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	Not Detected	0.63	Not Detected
Tetrachloroethene	0.17	Not Detected	1.1	Not Detected
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: FB-1_20181107

Lab ID#: 1811230D-08B

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

File Name:	**21111614sim**	**Date of Collection:**	**11/7/18 14:30:00**
Dil. Factor:	**1.68**	**Date of Analysis:**	**11/16/18 04:25 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	Not Detected	0.21	Not Detected
Trichloroethene	0.034	Not Detected	0.18	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1811230D-09A

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

File Name:	**21111606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 11:12 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	0.50	Not Detected	1.2	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	119	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	92	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1811230D-09B

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

File Name:	**21111606sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 11:12 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	114	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	97	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1811230D-10A

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

File Name:	**21111602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 08:44 AM**	

Compound	%Recovery
Freon 12	94
Freon 11	100
Freon 113	97
Acetone	95
Methylene Chloride	98
1,1,1-Trichloroethane	102
Benzene	101
Toluene	100
Tetrachloroethene	99
Chlorobenzene	96
Ethyl Benzene	99
m,p-Xylene	100
o-Xylene	100
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	96
1,2-Dichlorobenzene	96
1,2,4-Trichlorobenzene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	100	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1811230D-10B

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

File Name:	**21111602sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 08:44 AM**	

Compound	%Recovery
Vinyl Chloride	86
1,1-Dichloroethene	80
cis-1,2-Dichloroethene	86
Carbon Tetrachloride	87
Trichloroethene	85

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1811230D-11A

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

File Name:	**21111603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:23 AM**	

Compound	%Recovery	Method Limits
Freon 12	94	70-130
Freon 11	101	70-130
Freon 113	95	70-130
Acetone	96	70-130
Methylene Chloride	98	70-130
1,1,1-Trichloroethane	101	70-130
Benzene	102	70-130
Toluene	102	70-130
Tetrachloroethene	99	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	103	70-130
m,p-Xylene	104	70-130
o-Xylene	107	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	105	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	106	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	103	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1811230D-11AA

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

File Name:	**21111604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:59 AM**	

Compound	%Recovery	Method Limits
Freon 12	97	70-130
Freon 11	103	70-130
Freon 113	97	70-130
Acetone	100	70-130
Methylene Chloride	101	70-130
1,1,1-Trichloroethane	103	70-130
Benzene	102	70-130
Toluene	101	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	104	70-130
m,p-Xylene	101	70-130
o-Xylene	103	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	109	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1811230D-11B

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

File Name:	**21111603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:23 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	86	70-130
1,1-Dichloroethene	79	70-130
cis-1,2-Dichloroethene	80	70-130
Carbon Tetrachloride	90	60-140
Trichloroethene	87	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	105	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1811230D-11BB

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

File Name:	**21111604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/16/18 09:59 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	88	70-130
1,1-Dichloroethene	79	70-130
cis-1,2-Dichloroethene	80	70-130
Carbon Tetrachloride	91	60-140
Trichloroethene	87	70-130

Container Type: NA - Not Applicable

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

ATTACHMENT 4

Data Usability Summary Report

SANBORN HEAD ENGINEERING

Data Usability Review
Method TO-15 Hi/Lo Analysis

Client:	Sanborn, Head & Associates, Inc., Concord, New Hampshire (SHA)
Site:	IBM East Fishkills Facility, Hopewell Junction, New York Building 330C
Laboratory:	Eurofins Air Toxics, Inc. (EATL), Folsom, California
SDG / Work Order:	1811230C & 1811230D
Date(s) of Collection:	November 7, 2018
Number and type Samples & analyses:	2 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:	December 17, 2018

This Data Usability Report was performed on the Work Order identified with the following intentions: 1) to determine if the data were generated and reported in accordance with the *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 9, *Volatile Organic Compounds (VOCs) in Air (Ambient Air/Soil Vapor/Stack Gas) Samples Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS), EPA Method TO-15* (January 1999), 01/21/2000 revision; 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; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to update the project database with appropriate data quality qualifiers.

I. 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 In-Depth data usability review are listed in Table 1. Any deviations noted for sample collection and receipt (*e.g.*, temperature or preservation issues) are included in Section III, below.

Table 1. Sample Descriptions and Analytical Parameters

Sample ID	Lab Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
IA0455_20181107	1811230C-05	11/7/2018	Indoor Air	VOCs	Field Sample
IA0488_20181107	1811230C-06	11/7/2018	Indoor Air	VOCs	Field Sample
AA-2_20181107	1811230D-07	11/7/2018	Ambient Air	VOCs	Field Sample
FB-1_20181107	1811230D-08	11/7/2018	Air	VOCs	Field Blank

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

II. 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) recoveries
- Internal Standard (IS) 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.

The Chain-of-Custody (COC) contained all samples collected on 11/7/18; however, only 2 Indoor Air samples, which are associated with Building 330C; were reported in Work Order 1811230C. Work Order 1811230D contained the results for the Field Blank, FB-1_20181107, which is associated with the collection of these samples, and an Ambient Air sample that is also associated with Building 330C.

There were no Field Duplicate samples associated with the samples collected in Building 330C; therefore, precision from sample collection through analysis could not be evaluated.

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 a calibration issue causing project sensitivity requirements to not be met for this compound. 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
IA0488_20181107	Toluene	J	I	Result uncertain below the calibration range

Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated; EB = Analyte was also present in a Field Equipment Blank; R = Result is rejected and is unusable for project decisions.

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

Date Sampled: 11/7/18 No. Samples 2 IA
Method of Analysis: TO-15 Hi/Lo

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								Sensitivity not met for Freon 12

Other Issues : ***Qualifier Action:*** 1 "J" result reported by the lab accepted as a "J" value

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 page 4 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.

DV Summary: All quality control information associated with accuracy, precision, and sensitivity for the project-specific list of 22 VOCs reported met project criteria for the samples in this Work Order except 1 result was estimated (J) with indeterminate bias due to reporting at a level below the instrument calibration range and the Freon 12 non-detects in both samples were reported at levels above the project-required RL. The data user will need to evaluate the elevated non-detects for project use.

A limited data checklist review (Tier 2) 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 summaries; and evaluation of laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that weren't reported in the QC previously evaluated. No raw data was reviewed nor were any re-calculations of data performed.

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 COC contained all samples collected on 11/7/18; however, only 2 Indoor Air samples, which are associated with Building 330C; were reported in this Work Order. The field blank, FB-1_20181107, and Ambient Air Sample AA-2_20181107, which are associated with the collection of these samples, is reported in Work Order 1811230D.

Date: ***12/11/18***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

New Environmental Horizons, Inc.

Associated Blanks: Method Blank: 21111606 /21111606sim
FB: FB-1_20181107 (reported in WO# 1811230D)

Blank ID	Contaminant / Level (µg/m^3)		Action Level FB DF = 1.68		Sample and reported result (µg/m^3)		Corrected Database Result
21111606	None				No Blank Action Required		
21111606sim	None				No Blank Action Required		
FB-1_20181107	Acetone 4.2		4.2		IA0455_20181107	32	No Action
			4.1		IA0488_20181107	20	No Action
FB-1_20181107	Freon 11 1.1		1.1		IA0455_20181107	9.7	No Action
			1.1		IA0488_20181107	7.3	No Action

Additional Notes:

Sample Receipt: Samples were collected in 6 L Summa Canisters. Sample IA0455_20181107 was all collected for about 8 hours while IA0488_20181107 was only collected for 4.25 hours. The flow controller on sample IA0488 must have had a higher flow rate than the flow controllers for samples collected for 8 hours since the final field vacuum for this sample was acceptable. The vacuums for all canisters were > 25" Hg in field prior to sample collection. The samples were received intact at Eurofins - Air Toxics on 11/12/18. There were no COC issues noted.

Canister Certification: Canisters were Certified pre-cleaned - certificates of analysis were reported in the data package for the 1 grab sample, Work Order 1811230A. Certificates verified that all Target compounds were non-detect in the canisters used for collection of the samples validated in this Work Order prior to being sent to the field.

Sample Integrity: The canister vacuums (field initial, field final and lab receipt) were acceptable for all samples. All canisters were over-pressurized to 5 psi prior to analysis. Sample integrity acceptable - no action required.

Holding Time (HT): Samples were analyzed on 11/16/18; therefore HT was met. No Action required.

Date: ***12/11/18***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Additional Notes:

BFB Tunes: Instrument 21 Tunes (1 for ICAL + 1 for CCAL) - all criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

ICALs : Instrument 21 Full Scan and SIM performed on 11/13/18. Full Scan = 7- to 8-level calibration from 0.1 or 0.5 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 9- to 10-level calibration from 0.01 or 0.02 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 non-target compounds. %RSD ≤ 30% for all 22 Target Compounds. RLs reported (as indicated in the table at the end of this checklist for DF=2 analysis) were supported by the ICALs. NOTE: 1,1-dichloroethene and cis-1,2-dichloroethene were reported by SIM analysis even though RLs by full scan met project sensitivity requirements. No Action required

CCALs: 21111602/21111602sim - % Recovery 70-130% for all 22 Target compounds - No Action required.

Surrogates & Internal Standards **:** All 3 Surrogates had %Recovery within criteria and all IS' had Areas and RTs within criteria in all analyses; therefore, No Action Required.

LCS/LCSD : 21111603/21111604 & 21111603sim/21111604sim - %Recovery acceptable for all 22 Targets in LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 22 VOCs by Full Scan + SIM analysis.

LD: LD analysis not performed for the samples in this Work Order. LCS/LCSD reported instead, which reported acceptable precision except as listed above.

FD: there were no field duplicates collected at this location; therefore, precision from field collection through analysis could not be assessed.

Qualifier Action: there was 1 result qualified "J" by the laboratory since the value was < RL. This "J" was accepted with indeterminate bias due to uncertainty of quantitation below the instrument calibration range. There were no other qualifiers other than "U" placed on the data (i.e., no "J" results reported).
****ACTION: 1 "J" accepted as an estimated (J) value***

Compound Reporting & Sensitivity: All reporting limits were at a level below the Project required RL (as shown in Table B.1, which is reproduced on page 4 of this Checklist) except for Carbon Tetrachloride in both samples, which had RLs exceeding the expected RL; however, as carbon tetrachloride was detected in these samples, sensitivity for the data is considered acceptable. All Freon 12 RLs were higher than required due to a calibration issue causing project sensitivity requirements to not be met (data were non-detect in all samples). The data users will need to evaluate these Freon 12 non-detects above project sensitivity criteria for project uses.

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

Date: ***12/11/18***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Method of Analysis: TO-15 Hi/Lo

Compound List and Project-required Reporting Limits (RL)

Target Analyte Name		Full Scan (Full) or SIM		RL (µg/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 (see References below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples
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 = Level in the Blank x (Sample DF/Blank DF) Method Blank (MB): Result < RL, U result at RL; RL<Result<Blank Action, U result at level reported Equipment Blank (EB): Result<Blank Action, EB result at level reported
BFB Tune:	SW-846 method 8260B 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)

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

Date Sampled: 11/7/18 No. Samples 1 AA + 1FB
Method of Analysis: TO-15 Hi/Lo

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								Sensitivity not met for Freon 12

Other Issues :

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 page 4 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.

DV Summary: All quality control information associated with accuracy, precision, and sensitivity for the project-specific list of 22 VOCs reported met project criteria for the samples in this Work Order except Freon 12 non-detects in both samples were reported at levels above the project-required RL. The data user will need to evaluate the elevated non-detects for project use.

A limited data checklist review (Tier 2) 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 summaries; and evaluation of laboratory qualifiers applied to the dataset. The project narrative was also reviewed to determine whether additional issues were found that weren't reported in the QC previously evaluated. No raw data was reviewed nor were any re-calculations of data performed.

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 COC contained all samples collected on 11/7/18; however, only 1 Ambient Air sample, which is associated with Buildings 330C and 338, and 1 Field Blank, assocaited with collection of all samples, are reported in this Work Order.

Date: ***12/10/18***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

New Environmental Horizons, Inc.

Associated Blanks: Method Blank: 21111606 /21111606sim
FB: FB-1_20181107

Blank ID	Contaminant / Level (µg/m^3)		Action Level FB DF = 1.68		Sample and reported result (µg/m^3)		Corrected Database Result
21111606	None				No Blank Action Required		
21111606sim	None				No Blank Action Required		
FB-1_20181107	Freon 11 1.1		1.1		AA-2_20181107	1.8	No Action
FB-1_20181107	Acetone 4.2		4.1		AA-2_20181107	13	No Action

Additional Notes:

Sample Receipt: Samples were collected in 6 L Summa Canisters. Ambient air sample was collected for about 8 hours whiel Field Blank was collected for 6 hours. The vacuums for all canisters were > 25" Hg in field prior to sample collection. The samples were received intact at Eurofins - Air Toxics on 11/12/18. There were no COC issues noted.

Canister Certification: Canisters were Certified pre-cleaned - certificates of analysis were reported in the data package for the 1 grab sample, Work Order 1811230A. Certificates verified that all Target compounds were non-detect in the canisters used for collection of the samples validated in this Work Order prior to being sent to the field.

Sample Integrity: The canister vacuums (field initial, field final and lab receipt) were acceptable for both samples. Canisters were over-pressurized to 5.1 psi prior to analysis. Sample integrity acceptable - no action required.

Holding Time (HT): Samples were analyzed on 11/16/18; therefore HT was met. No Action required.

BFB Tunes: Instrument 21 Tunes (1 for ICAL + 1 for CCAL) - all criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

Date: ***12/10/18***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Additional Notes:

ICALs : Instrument 21 Full Scan and SIM performed on 11/13/18. Full Scan = 7- to 8-level calibration from 0.1 or 0.5 to 40 ppbV for all 22 Target compounds plus several non-target compounds. SIM = 9- to 10-level calibration from 0.01 or 0.02 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 non-target compounds. %RSD ≤ 30% for all 22 Target Compounds. RLs reported (as indicated in the table at the end of this checklist for DF=2 analysis) were supported by the ICALs. NOTE: 1,1-dichloroethene and cis-1,2-dichloroethene were reported by SIM analysis even though RLs by full scan met project sensitivity requirements. No Action required

CCALs: 21111602/21111602sim - % Recovery 70-130% for all 22 Target compounds - No Action required.

Surrogates & Internal Standards **:** All 3 Surrogates had %Recovery within criteria and all IS' had Areas and RTs within criteria in all analyses; therefore, No Action Required.

LCS/LCSD : 21111603/21111604 & 21111603sim/21111604sim - %Recovery acceptable for all 22 Targets in LCS and LCSD and LCS/LCSD RPDs all OK; therefore, acceptable accuracy and precision demonstrated for analysis of the 22 VOCs by Full Scan + SIM analysis.

LD: LD analysis not performed for the samples in this Work Order. LCS/LCSD reported instead, which reported acceptable precision except as listed above.

FD: there were no field duplicates collected at this location; therefore, precision from field collection through analysis could not be assessed.

Qualifier Action: There were no qualifiers other than "U" placed on the data (i.e., no "J" results reported). All data were reported within the instrument calibration range.

Compound Reporting & Sensitivity: All reporting limits were at a level below the Project required RL (as shown in Table B.1, which is reproduced on page 4 of this Checklist) except for Freon 12 RLs were higher than required due to a calibration issue causing project sensitivity requirements to not be met (data were non-detect in all samples). The data users will need to evaluate these Freon 12 non-detects above project sensitivity criteria for project uses.

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

Method of Analysis: TO-15 Hi/Lo

Compound List and Project-required Reporting Limits (RL)

Target Analyte Name		Full Scan (Full) or SIM		RL (µg/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 (see References below):

Canister Integrity:	If certification forms indicate issues, J/U or UJ results in samples
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 = Level in the Blank x (Sample DF/Blank DF) Method Blank (MB): Result < RL, U result at RL; RL<Result<Blank Action, U result at level reported Equipment Blank (EB): Result<Blank Action, EB result at level reported
BFB Tune:	SW-846 method 8260B 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)

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