Hudson Valley Research Park
2070 Route 52
Hopewell Junction, NY 12533-6531
D.E. Speed Zip 65A

May 20, 2013

Alex G. Czuhanich
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E
625 Broadway, 12th Floor
Albany, NY 12233-7017

Re: Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
RFI Work Plan Implementation
IBM East Fishkill Facility, Hopewell Junction, New York
EPA ID No. NYD000707901

Dear Mr. Czuhanich:

The enclosed report presents the results of performance monitoring and confirmatory sampling associated with the startup of a subslab vapor extraction system to address the presence of volatile organic compounds (VOCs) beneath an area of Building 310 at the IBM East Fishkill facility. The scope of this work and progress updates have been communicated to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) (collectively, the Agencies) through regular correspondence and meetings.

If you wish to further discuss this report or have questions, please contact me at (845) 892-3176.

Sincerely,

David E. Speed , Ph.D.

Systems and Technology Group
International Business Machines Corporation

cc: N. Walz (NYSDOH)
S. Hawkins (IBM)

SANBORN HEAD ENGINEERING

Building Trust. Engineering Success.

PERFORMANCE MONITORING AND CONFIRMATORY SAMPLING RESULTS

BUILDING 310 VOC SOURCE ASSESSMENT

IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for IBM Corporation
File No. 2999.00
May 2013

Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents the results of performance monitoring and confirmatory sampling associated with source remediation measures to address the presence of volatile organic compounds (VOCs), principally tetrachloroethene (PCE), beneath the floor slab of Building 310 at the IBM East Fishkill facility (the Site). A Site locus plan is provided as Figure 1, and the Building 310 location on the Site is shown on Figure 2.

As documented in previous reports[1,2], PCE was found in the indoor air within certain areas of Building 310 at concentrations that could not be explained by present occupational use or storage, nor by ambient (outdoor) air conditions. The PCE presence in indoor air was centered on, and found to originate from a source area beneath the central-eastern area of the building, as evidenced by subslab PCE vapor concentrations indicative of residual solvent presence. IBM implemented measures to reduce PCE migration from the subslab source to indoor air, including adjusting heating, ventilating, and air conditioning (HVAC) operations to increase air exchange and pressurization in certain areas. These measures successfully reduced indoor PCE concentrations.

Additionally, IBM has installed a subslab vapor extraction system as a means of VOC source reduction, and conducted a performance assessment of the system, including building-wide confirmatory sampling following startup of the system. This report documents the results of those actions.

Sanborn, Head Engineering P.C. (Sanborn Head), with assistance from IBM personnel, conducted this performance assessment and sampling work consistent with the objectives and procedures described in IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation Work Plan[3] (the Work Plan), approved by New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) (collectively, the Agencies). The assessment and this report are subject to the standard limitations of this type of work, as provided in Appendix A.

This report is organized into the following sections:

Section 2 presents an overview of the subslab vapor extraction system and summarizes the performance monitoring results.

Section 3 describes the field activities and results of building-wide confirmatory sampling in Building 310.

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1 IBM Corporation and Sanborn, Head Engineering P.C., *Report of Findings, Building 310 VOC Source Investigation and Implemented Measures, IBM East Fishkill Facility, Hopewell Junction, New York*, April 7, 2010

2 IBM Corporation and Sanborn, Head Engineering P.C., *Report of Findings, Building 310 VOC Source Assessment, Supplemental Investigations and Testing, IBM East Fishkill Facility, Hopewell Junction, New York*, May 13, 2011

3 IBM Corporation and Sanborn, Head Engineering P.C., *Work Plan, RCRA Facility Investigation (RFI), VOC Source Assessment, IBM East Fishkill Facility, Hopewell Junction, New York*, June 15, 2009.

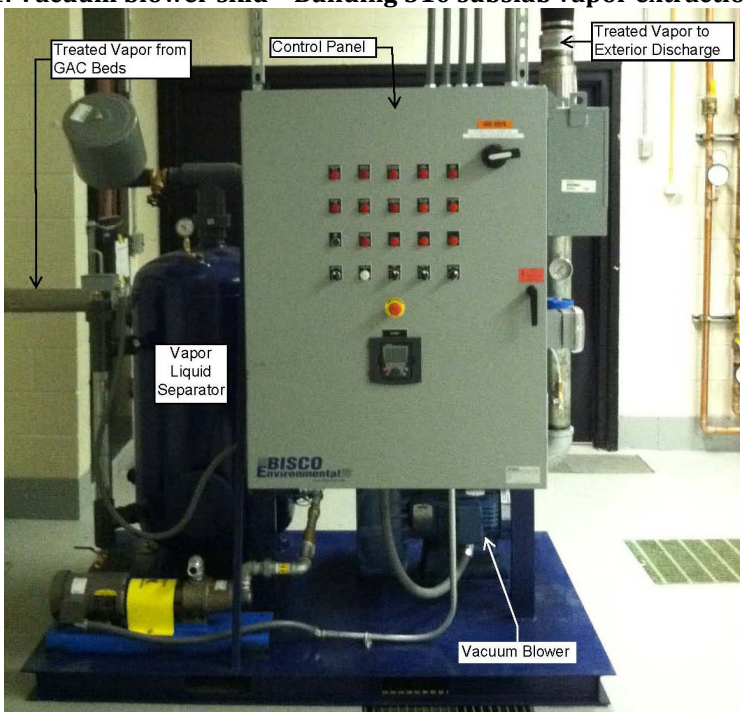
Section 4 presents a summary of the quality assurance/quality control review associated with the confirmatory sampling results.

2.0 SUBSLAB VAPOR EXTRACTION SYSTEM PERFORMANCE

A subslab vapor extraction and treatment system was installed within the central-eastern area of the building and put into operation on February 22, 2012. The system is intended to address the confirmed source of PCE below the building slab beneath a former manufacturing area. The design basis for the system was communicated to the Agencies in the May 2011 report, with additional details provided in a February 22, 2012 letter. The Agencies approved the design basis in a February 28, 2012 letter to IBM.

Figure 3 shows a schematic/flow diagram of the system. The system consists of seven subslab vapor extraction ports designated EP-203, EP-204, EP-205, EP-207, EP-208, EP-209, and EP-210 (shown on Figure 4). The extraction ports are connected to a skid-mounted vacuum blower (Exhibit 1) installed in a dedicated room (the SVE equipment room) adjacent to the former manufacturing area (Figure 4). The extracted vapor is treated through vapor-phase granular activated carbon (GAC) units connected in a lead-lag series configuration. The vacuum blower is located downstream of the GAC beds such that the VOC-containing vapors and the GAC beds are maintained under a vacuum state during operation. The treated vapor is exhausted to the suction intake of a continuously operated, roof-mounted exhaust fan for exterior discharge.

Exhibit 1: Vacuum blower skid – Building 310 subslab vapor extraction system



The system was designed conservatively in terms of the number of extraction points and total extraction flow rate needed to depressurize the subslab in the source area. Upon startup, performance monitoring indicated that extraction from 5 points was sufficient to achieve operating objectives, as further described in the sections below.

2.1 Indoor Air and Subslab Differential Pressure Monitoring Results

Figure 5 shows the PCE indoor air concentrations before and after the startup of the subslab vapor extraction system. The PCE data shown in the pink boxes on Figure 5 are the results of the initial building-wide sampling event in February 2009 prior to any remediation. The PCE data shown in the green boxes represent the most recent sampling results after remediation. Review of Figure 5 indicates that PCE levels have decreased from about one to three orders of magnitude throughout the building, and PCE was not detected during the most recent sampling at most locations. The maximum PCE detection post-remediation was 9.6 micrograms per cubic meter (µg/m^3) at location IA 2002.

A few locations on Figure 5 without posted data were not sampled after vapor extraction startup because pre-remediation samples were not collected at those locations, and because they were sufficiently close to another representative post-remediation sampling location. Table 1 presents all the indoor air VOC data for all sampling locations in the building.

The subslab vapor extraction system has achieved subslab depressurization beneath an area of the building of at least 33,000 square feet where PCE presence in subslab vapor was greater than about 100,000 µg/m^3. This area, shown on Figure 6, is centered below the vacant former manufacturing areas and represents the primary source of anomalous PCE concentrations previously observed in indoor air.

Figure 6 also shows the differential pressure between the subslab and indoor air recorded after startup in February 2012, including the inferred extent of depressurization as defined by a pressure differential isopleth of at least 0.02 inches water column (in. wc), which is equivalent to 5 Pascals. The United States Environmental Protection Agency's (USEPA) guidance[4] considers this value or greater as indication that vapor extraction has influence at a given subslab monitoring location; however, recent reports suggest that 5 Pascals is conservative and any measureable depressurization (i.e., 1 Pascal, the approximate accuracy limit of digital manometers) should be sufficient to intercept subslab vapor.

Figure 6 also shows the applied vacuum, airflow, and photo-ionization detector (PID) screening results of a vapor sample drawn from each extraction port riser.

2.2 PCE Source Mass Removal and Treatment

The subslab vapor extraction system has successfully removed PCE source mass from below the floor slab. To estimate the PCE mass removed by the system and monitor the performance of the GAC treatment system, routine samples have been collected from the

[4] USEPA, *Engineering Issue: Indoor Air Vapor Intrusion Mitigation Approaches*, EPA/600/R-08-115, October 2008

influent, midpoint, and effluent of the GAC vessels on an approximate bi-monthly schedule. These process vapor samples were collected in 1-Liter Summa canisters and analyzed by Eurofins Air Toxics, Inc. of Folsom, California in accordance with USEPA Method TO-15. IBM plans to continue to conduct a routine sampling program to monitor PCE source mass recovery and the performance of the GAC treatment system.

Exhibit 2 below shows the PCE concentrations versus time at the influent, midpoint, and effluent of the GAC units, from system startup through April 2013. The PCE concentration in samples collected from the vapor stream entering the lead GAC vessel (GAC influent) exhibit a general decline over time. Samples collected from the vapor stream leaving the lag GAC vessel (GAC effluent) exhibited PCE concentrations that were consistently close to, or less than the laboratory reporting limit, which demonstrates the effectiveness of the GAC treatment system. The midpoint PCE concentrations were also below the laboratory reporting limit until about late-April 2012, when breakthrough of PCE from the lead GAC vessel is observed. A change-out of both lead and lag GAC vessels occurred in early-July 2012. Another change-out of both vessels was conducted in January 2013.

Exhibit 2: PCE Concentrations at GAC Monitoring Locations vs. Time

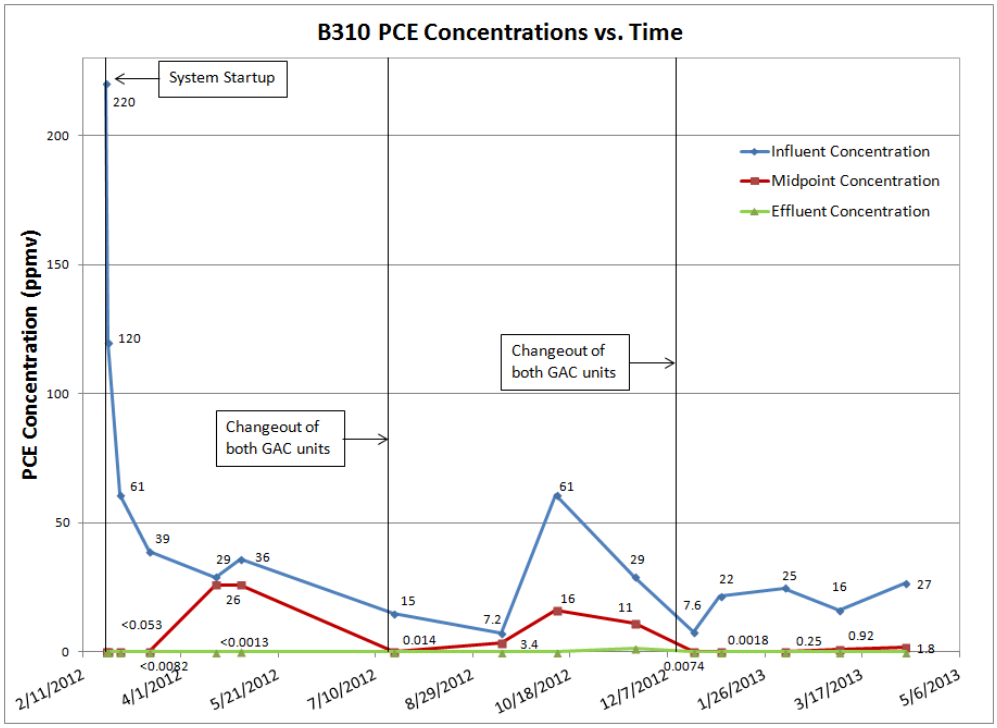
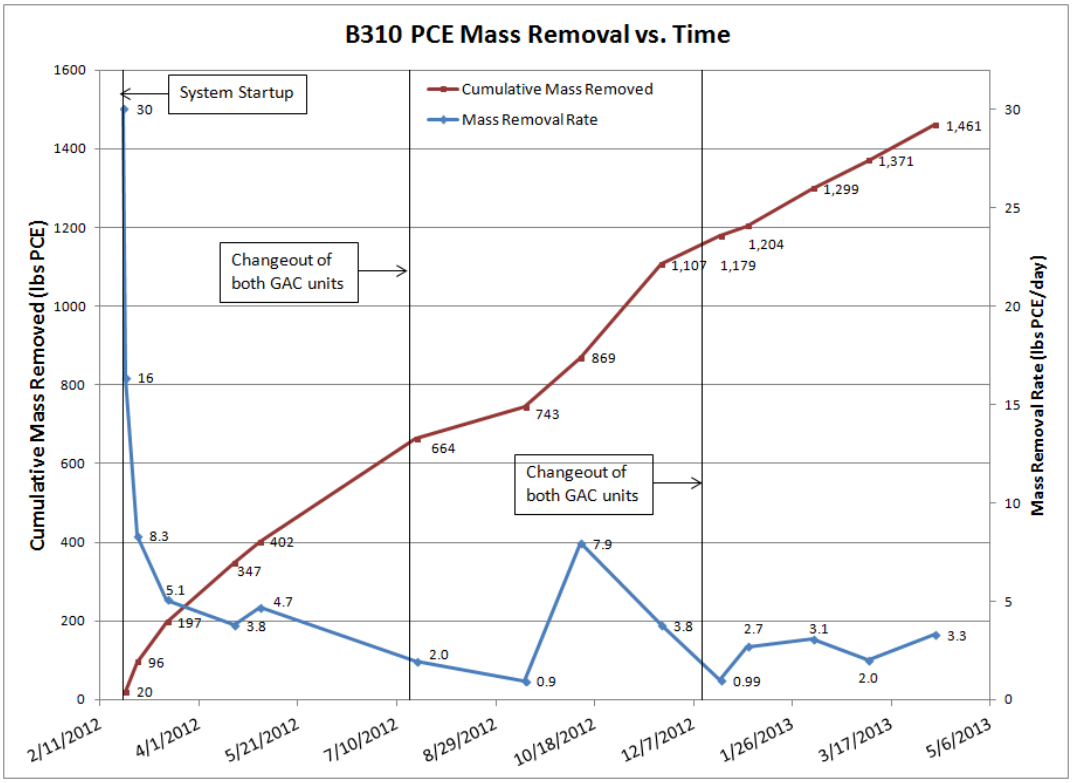


Exhibit 3 below shows the PCE mass removal rate and cumulative mass removed, from system startup through April 2013. Approximately 1,461 lbs of PCE have been removed by the system over the period shown.[5] As expected, the mass removal rate shows a gradual decline similar to the PCE influent concentration.

[5] Mass removed is calculated based on the influent PCE concentration, flow rate, and hours of operation.

Exhibit 3: PCE Mass Removal vs. Time



Operating at a vapor extraction rate of about 210 standard cubic feet per minute (scfm), and assuming full penetration of the vacuum/flow field to a depth of 8 feet over an area of about 33,000 square feet with an air-filled porosity of 0.25, the vapor extraction system has been exchanging about 4.6 air-filled pore volumes per day, or about 1,900 pore volume exchanges since startup through April 2013 – a quantity that has resulted in substantial removal of VOC source mass.

3.0 BUILDING-WIDE CONFIRMATORY SAMPLING OF OCTOBER 2012

To evaluate the influence of subslab vapor extraction system operation on indoor air VOC levels, a building-wide confirmatory sampling event was conducted on October 10, 2012. Indoor and ambient outdoor air samples were collected at the locations shown on Figure 7. The ambient outdoor air samples were collected from the intake plenums of two roof-mounted HVAC air handling units serving the building. For quality assurance/quality control (QA/QC) purposes, one field blank and two field duplicate samples were also collected.[6] Information regarding the sample locations is summarized in the table provided below as Exhibit 4.

[6] A field blank is a canister that is certified clean by the laboratory and filled in the field with ultra-high purity nitrogen. The purpose of a field blank is to assess for the presence of target compounds that could be due to equipment preparation and transportation of equipment to and from the field. A field duplicate sample is collected at the same time and location as another sample. Collection and analysis of field duplicate samples is intended to assess the precision (repeatability) of the sampling and analysis process. The field blank and duplicate samples are submitted to the analytical laboratory for analysis with the other samples.

Exhibit 4: Summary of Sample Locations

Building	General Building Uses	Areas Targeted for Sampling	# of Samples
310	Offices, storage, laboratories, limited manufacturing, and vacant areas.	Vacant clean room manufacturing areas, storage spaces, hallways adjacent to offices.	(20) indoor, (2) ambient outdoor

During sampling, Sanborn Head personnel observed the vicinity of each location for general use (e.g., offices, warehousing), floor condition (e.g., sumps, trenches, drains, cracks, staining), chemicals used/stored, and other features. Photographs of sample locations are provided in Appendix B, and field observations for each sample location are provided in Table 2.

3.1 HVAC Settings During Sampling

Building 310 is divided into multiple HVAC zones as shown on Figure 7. As presented on Table 2 and Figure 7, Sanborn Head collected ambient outdoor air samples proximate to the air intakes for zones served by AC-30 and AC-32.

The air handling units (AHUs) for Building 310 are equipped with outdoor air intake dampers that either remain in a fixed position, or automatically modulate position to vary outdoor air intake to achieve set points for air temperature or relative humidity. For the AHUs with modulating outdoor air dampers, the outdoor air intake and air changes per hour (ACH) vary across a defined range, for the zones served by these units. To obtain samples under conservative HVAC operating conditions (i.e., the low end of the ACH range), the outdoor air dampers on the AHUs that normally modulate were set at their minimum open position and not allowed to vary. For the AHUs whose outdoor air dampers do not typically modulate, dampers were not changed from their fixed position.
Table C-1 provided in Appendix C summarizes the outdoor air damper settings of the AHUs during sampling. Where adjusted, AHU outdoor air dampers were set at minimum positions at least 24 hours prior to sampling to allow equilibration prior to sample collection.

For AHUs with modulating outdoor air dampers, IBM locked the dampers in the minimum position through the HVAC control system. Sanborn Head installed nylon wire ties and masking tape, which were designed to break if the damper positions changed. Sanborn Head periodically visually observed the damper positions and also monitored the HVAC control system read-out during sampling for any indication of position change. The damper positions for all units remained unchanged during the sampling period. Table C-2 in Appendix C presents observations of AHU damper positions during the sampling event.

3.2 Sample Collection and Analysis

Samples were collected as 8-hour, time-integrated samples using Summa® canisters (6 liters) in accordance with the procedures described in the approved Work Plan, Appendix

A.1. Sample canisters were deployed approximately simultaneously and were set at heights ranging from 3.3 to 5.5 feet above the floor. The samples were submitted to Eurofins Air Toxics, Inc. of Folsom, California, a New York-certified laboratory[7], for laboratory analysis of the site-specific list of 22 VOCs by USEPA Method TO-15 Hi\Lo[8]. Additional sampling information, including sample collection times, initial and final canister pressures, canister identification numbers, and field screening values, is provided in Table 2.

Analytical data were provided to New Environmental Horizons (NEH) for independent, third-party, data validation evaluation. NEH's data validation report is included as Appendix E. NEH found the data to be useable in accordance with the project data quality objectives (DQOs), subject to a few qualifications discussed in Section 4.

3.3 Summary of Field Observations

Sanborn Head's field observations during sampling related to building features and chemical use/presence are summarized below, and in Table 2, to provide context for the results. A summary of validated analytical results is provided in Table 3. The data for compounds detected above laboratory reporting limits are depicted on Figure 7. Analytical laboratory data reports and third-party data validation reports are provided as Appendices D and E, respectively.

Building 310 was IBM's first manufacturing building at the Site and has a long history of chemical use associated with the production of microelectronics. Currently, the building is used for warehousing, offices, laboratories, and limited manufacturing in certain areas. Significant portions of the building are vacant, including former manufacturing areas which primarily occupy the center of the building.

Past chemical use in Building 310 involved a variety of solvents, including PCE, trichloroethene, methylene chloride, acetone, xylenes, isopropyl alcohol, and chlorofluorocarbon 113 (also known as Freon 113/TF or 1,1,2-trichloro–1,2,2-trifluoroethane). PCE was historically used in bulk quantities as a solvent for manufacturing operations, but has not been used or stored on Site since 1997. No bulk storage or use of PCE or related chlorinated ethenes were observed during the sampling program.

Historical building plans indicate a network of subslab pipelines for acids, solvents, and fluoride, which have been closed in place and were observed during sampling. In addition, floor trenches, sumps, lift stations, and overhead pipelines were observed. Sample locations included rooms and areas containing this former utility infrastructure.

[7] New York - National Environmental Laboratory Accreditation Program (NELAC) Number 11291

[8] Samples were analyzed using gas chromatograph/mass spectrometry (GC/MS) techniques. Trichloroethene (TCE), vinyl chloride, and carbon tetrachloride were also analyzed in Selective Ion Monitoring (SIM) mode.

3.4 Summary of Analytical Data

As shown on Figure 7 and summarized in Table 3, the following analytes were detected in the indoor air samples at concentrations similar to, or only slightly greater than, those recorded for concurrent ambient outdoor air samples: carbon tetrachloride, acetone, toluene, Freon 11, and Freon 12; however, these analytes were detected at concentrations typically on the order of a few micrograms per cubic meter or less, with a maximum of 14 µg/m^3 (acetone at IA 2008).

PCE was detected in 8 out of 20 indoor air samples at concentrations ranging from 1.2 to 9.6 µg/m^3, with a median concentration of 2.1 µg/m^3 among the detections. The highest PCE level was observed in a sample (IA-2002) from a storage area in the northeast portion of the building within the AC-15.

Trichloroethene (TCE) was detected in 7 out of the 20 indoor air samples at concentrations ranging from 0.18 to 1.2 µg/m^3. The highest TCE concentration of 1.2 µg/m^3 was observed in the sample from the northeast storage area that exhibited the highest PCE concentration (IA 2002).

Vinyl chloride and m,p-xylene were detected in one indoor air sample (IA-2008) at concentrations less than 1 µg/m^3. Freon 113 was detected in one indoor air sample (IA-2002) at a concentration of 4.7 µg/m^3, and methylene chloride was detected in five indoor air samples at concentrations ranging from 1.1 to 1.8 µg/m^3.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

Analytical data from the October 2012 confirmatory sampling round were provided to NEH for third-party independent data validation. NEH's data validation report is presented as Appendix E.

NEH's evaluation included a review of sample data, including raw data, to verify that the laboratory performed the analyses in compliance with the analytical methods required, laboratory procedures, consistency with the Work Plan QA/QC requirements, and USEPA and NYSDEC guidelines for data validation of organic data. NEH prepared a Data Usability Report that summarized the quality control (QC) issues that required action (qualification of data) and compared QA/QC criteria to the DQOs described in the approved Work Plan.

In summary and as stated above, NEH found the data to be useable in accordance with the project data quality objectives subject to a few minor qualifications. The following QA/QC considerations were noted by NEH:

- The laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) associated with seven (7) samples were outside the method acceptance criteria for 1,2,4-trichlorobenzene; however, 1,2,4-trichlorobenzene was not recorded above laboratory reporting limits in any of the samples. NEH qualified these non-detect results as estimated (i.e. "J" flagged), with an indeterminate bias.

- Due to the difference in acetone, toluene, and vinyl chloride concentrations in the primary and duplicate samples (greater than 20%) collected from IA2008, NEH qualified the results for the three analytes in both samples as estimated (i.e., "J" flagged), with an indeterminate bias.

- 1,3-dichlorobenzene, 1,2-dichlorobenzene, and carbon tetrachloride results for 10 samples were reported by the laboratory outside the initial calibration criteria. NEH qualified these results as estimated (i.e. "J" flagged), with an indeterminate bias. The laboratory reporting limits (including J-flagged results) were all 1 µg/m^3 or less.

- Methylene chloride in sample IA2015 was reported at a value below the sample-specific reporting limit and flagged as an estimated value by the analytical laboratory. NEH qualified this result as estimated (i.e., "J" flagged), with an indeterminate bias. The reported concentration of methylene chloride was 1.1 µg/m^3 compared to a reporting limit of 1.1 µg/m^3.

In summary and as stated above, the data were found to be useable in accordance with the project data quality objectives and subject to only minor qualifications.

5.0 CONCLUSIONS

The installation and operation of the subslab vapor extraction system in Building 310 is successfully meeting its design objectives of reducing PCE source mass below the floor slab and preventing PCE vapor migration. Since the startup of the vapor extraction system, more than 1,400 pounds of residual PCE source mass have been removed.

Building-wide indoor air sampling indicates that the remediation measures have reduced VOC concentrations throughout the building. By intercepting residual mass at the source, indoor PCE concentration reductions have been attained within and beyond the remediation area.

TABLES

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³														
	Ambient Air											Indoor Air			
	AA2012	AA2018		AA2019	AA2020	AA2021				AA2022	AA2023	IA2001			
	02/17/09	02/17/09	10/10/12	02/17/09	02/17/09	02/17/09	08/26/09	11/20/09	10/10/12	02/17/09	02/17/09	02/17/09	07/08/09	11/20/09	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**1.2**	**0.98**	<1.2	<1.0	**1.1**	<1.2	<1.3	**2.4**	<1.2	<1.1	<1.1	**68**	<1.1	**16**	<1.1
Trichloroethene (TCE)	<0.88	<0.77	<0.18	<0.83	<0.83	<0.92	<0.20	<0.17	<0.18	<0.88	<0.88	**1.1**	<0.18	**0.89**	<0.18
cis-1,2-Dichloroethene (cDCE)	<0.65	<0.57	<0.68	<0.61	<0.61	<0.68	<0.76	<0.61	<0.68	<0.65	<0.65	<0.69	<0.65	<0.68	<0.67
1,1-Dichloroethene (DCE)	<0.65	<0.57	<0.68	<0.61	<0.61	<0.68	<0.76	<0.61	<0.68	<0.65	<0.65	<0.69	<0.65	<0.68	<0.67
Vinyl chloride (VC)	<0.42	<0.37	<0.044	<0.40	<0.40	<0.44	<0.049	**0.74**	<0.044	<0.42	<0.42	<0.45	<0.042	<0.044	<0.043
1,1,1-Trichloroethane (TCA)	<0.89	<0.78	<0.93	<0.84	<0.84	<0.93	<1.0	<0.84	<0.93	<0.89	<0.89	<0.95	<0.89	<0.93	<0.92
Carbon tetrachloride	<1.0	<0.91	**0.54**	<0.98	<0.98	<1.1	**0.80**	**0.67**	**0.58**	<1.0	<1.0	<1.1	**0.42**	**0.48**	**0.46**
Methylene chloride (MeCI)	<1.1	<1.0	<1.2	<1.1	<1.1	<1.2	<1.3	<1.1	<1.2	<1.1	<1.1	<1.2	<1.1	<1.2	<1.2
Chlorobenzene	<0.76	<0.66	<0.79	<0.71	<0.71	<0.79	<0.88	<0.71	<0.79	<0.76	<0.76	<0.80	<0.76	<0.79	<0.77
1,2,4-Trichlorobenzene	<6.1	<5.3	<6.3	<5.8	<5.8	<6.3	<7.1	<5.8	<6.3	<6.1	<6.1	<6.5	<6.1	<6.3	<6.2
1,2-Dichlorobenzene	<0.99	<0.86	<1	<0.93	<0.93	<1.0	<1.1	<0.93	<1	<0.99	<0.99	<1.0	<0.99	<1.0	<1
1,3-Dichlorobenzene	<0.99	<0.86	<1	<0.93	<0.93	<1.0	<1.1	<0.93	<1	<0.99	<0.99	<1.0	<0.99	<1.0	<1
1,4-Dichlorobenzene	<0.99	<0.86	<1	<0.93	<0.93	<1.0	<1.1	<0.93	<1	<0.99	<0.99	<1.0	<0.99	<1.0	<1
Acetone	**7.8**	**3.7**	**8.6**	**3.3**	**9.0**	**7.0**	**5.1**	**5.0**	**10**	**6.8**	<1.9	**13**	**14**	**10**	**6.4**
Benzene	**0.56**	**0.48**	<0.55	**0.60**	**0.57**	<0.55	<0.61	**1.0**	<0.55	<0.52	<0.52	**0.71**	<0.52	**0.88**	<0.54
Ethylbenzene	<0.71	<0.62	<0.74	<0.67	<0.67	<0.74	<0.83	<0.67	<0.74	<0.71	<0.71	<0.76	<0.71	<0.74	<0.73
m,p-Xylene	<0.71	<0.62	<0.74	<0.67	<0.67	<0.74	<0.83	**0.82**	<0.74	<0.71	<0.71	<0.76	<0.71	<0.74	<0.73
o-Xylene	<0.71	<0.62	<0.74	<0.67	<0.67	<0.74	<0.83	<0.67	<0.74	<0.71	<0.71	<0.76	<0.71	<0.74	<0.73
Toluene	**0.79**	<0.54	<0.64	**1.1**	<0.58	<0.64	<0.72	**2.0**	**0.65**	<0.62	<0.62	**11**	**1.0**	**1.4**	**0.93**
Trichlorofluoromethane (Freon 11)	**1.6**	**1.8**	**1.8**	**2.1**	**1.8**	**1.6**	<1.1	<0.87	**1.5**	**1.9**	**1.5**	**10**	**15**	**7.8**	**5**
Dichlorodifluoromethane (Freon 12)	**2.5**	**2.7**	**2.6**	**3.1**	**2.5**	**2.8**	**1.7**	**3.1**	**3.0**	**2.6**	**2.5**	**3.0**	**2.0**	**4.7**	**1.8**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.2	<1.1	<1.3	<1.2	<1.2	<1.3	<1.5	<1.2	<1.3	<1.2	<1.2	**9.7**	<1.2	**4.8**	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
   "J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
   Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
   No shading indicates intermediate sampling data.

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³												
	Indoor Air												
	IA2002					IA2003			IA2004				
	02/17/09	07/08/09	11/20/09	12/17/09	10/10/12	02/17/09	08/26/09	10/10/12	02/17/09	08/26/09	11/20/09	12/17/09	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**13**	<1.2	**44**	**4.6**	**9.6**	**4.1**	**8.8**	<1.1	**16**	**36**	**25**	**9.0**	<1.1
Trichloroethene (TCE)	**1.4**	**1.1**	**2.6**	<0.18	**1.2**	<0.92	**0.65**	**0.18**	<0.85	**2.7**	**1.6**	**0.52**	<0.17
cis-1,2-Dichloroethene (cDCE)	<0.69	<0.68	<0.68	<0.65	<0.68	<0.68	<0.68	<0.65	<0.63	<0.71	<0.69	<0.65	<0.64
1,1-Dichloroethene (DCE)	<0.69	<0.68	<0.68	<0.65	<0.68	<0.68	<0.68	<0.65	<0.63	<0.71	<0.69	<0.65	<0.64
Vinyl chloride (VC)	<0.45	<0.044	<0.044	<0.042	<0.044	<0.44	<0.044	<0.042	<0.40	<0.046	<0.045	<0.042	<0.041
1,1,1-Trichloroethane (TCA)	<0.95	<0.93	**13**	<0.89	<0.93	<0.93	<0.93	<0.89	<0.86	<0.98	<0.95	<0.89	<0.88
Carbon tetrachloride	<1.1	**0.45**	**0.43**	**0.49**	**0.40**	<1.1	**0.49**	**0.55**	<0.99	**0.51**	**0.61**	**0.49**	**0.51**
Methylene chloride (MeCI)	<1.2	<1.2	<1.2	<1.1	<1.2	<1.2	<1.2	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1
Chlorobenzene	<0.80	<0.79	<0.79	<0.76	<0.79	<0.79	<0.79	<0.76	<0.73	<0.82	<0.80	<0.76	<0.74
1,2,4-Trichlorobenzene	<6.5	<6.3	<6.3	<6.1	<6.3	<6.3	<6.3	<6.1	<5.9	<6.6	<6.5	<6.1	<6
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<0.99	<1	<1.0	<1.0	<0.99	<0.95	<1.1	<1.0	<0.99	<0.97
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<0.99	<1	<1.0	<1.0	<0.99	<0.95	<1.1	<1.0	<0.99	<0.97
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<0.99	<1	<1.0	<1.0	<0.99	<0.95	<1.1	<1.0	<0.99	<0.97
Acetone	**6.0**	**10**	**4.7**	**2.4**	**5.2**	**3.6**	**9.2**	**7.6**	**4.8**	**36**	**8.4**	**3.9**	**5.1**
Benzene	<0.56	**0.68**	<0.55	<0.52	<0.55	**0.55**	<0.55	<0.52	**0.55**	<0.57	**1.1**	<0.52	<0.51
Ethylbenzene	<0.76	<0.74	<0.74	<0.71	<0.74	<0.74	<0.74	<0.71	<0.69	<0.78	<0.76	<0.71	<0.7
m,p-Xylene	<0.76	<0.74	<0.74	<0.71	<0.74	<0.74	<0.74	<0.71	<0.69	<0.78	<0.76	<0.71	<0.7
o-Xylene	<0.76	<0.74	<0.74	<0.71	<0.74	<0.74	<0.74	<0.71	<0.69	<0.78	<0.76	<0.71	<0.7
Toluene	**1.2**	**1.6**	**0.83**	<0.62	<0.64	**<0.64**	**0.86**	1.2	**2.5**	**1.0**	**1.7**	<0.62	<0.61
Trichlorofluoromethane (Freon 11)	**4.2**	**4.8**	**4.8**	**2.0**	**1.8**	**3.3**	**7.9**	**2.4**	**3.3**	**17**	**3.9**	**1.9**	**2.3**
Dichlorodifluoromethane (Freon 12)	**2.7**	**2.0**	**9.1**	**2.3**	**2.3**	**2.9**	**2.2**	**2.6**	**2.6**	**2.2**	**8.1**	**2.9**	**2.7**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**7.0**	<1.3	**16**	<1.2	**4.7**	**2.3**	**6.0**	<1.2	**2.8**	**21**	**8.5**	**1.8**	<1.2

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
"J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
No shading indicates intermediate sampling data.

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³															
	Indoor Air															
	IA2005							IA2006					IA2007			
	02/17/09	06/08/09	07/08/09	11/20/09	12/17/09	03/15/12	10/10/12	02/17/09	08/26/09	11/20/09	03/15/12	10/10/12	02/17/09	07/08/09	11/20/09	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**13**	**23**	**1.6**	**49**	**3.9**	**1.2**	<1.1	**67**	**55**	**38**	**2.2**	<1.2	**48**	<1.2	**3.3**	<1.2
Trichloroethene (TCE)	**2.1**	**2.0**	**0.19**	**5.0**	**0.58**	<0.18	**0.19**	**1.3**	**2.8**	**1.8**	<0.18	**0.37**	<0.94	<0.18	**0.46**	<0.19
cis-1,2-Dichloroethene (cDCE)	**0.69**	<0.71	<0.68	**1.1**	<0.65	<0.68	<0.65	<0.69	<0.72	<0.60	<0.68	<0.68	<0.69	<0.68	<0.67	<0.69
1,1-Dichloroethene (DCE)	<0.68	<0.71	<0.68	<0.68	<0.65	<0.68	<0.65	<0.69	<0.72	<0.60	<0.68	<0.68	<0.69	<0.68	<0.67	<0.69
Vinyl chloride (VC)	<0.44	<0.046	<0.044	<0.044	<0.042	<0.044	<0.042	<0.45	<0.047	<0.039	<0.044	<0.044	<0.45	<0.044	<0.043	<0.045
1,1,1-Trichloroethane (TCA)	<0.93	<0.98	<0.93	<0.93	<0.89	<0.93	<0.89	<0.95	<1.0	<0.83	<0.93	<0.93	<0.95	<0.93	<0.92	<0.95
Carbon tetrachloride	<1.1	**0.43**	**0.44**	**0.50**	**0.55**	**0.41**	**0.48**	<1.1	**0.50**	**0.52**	**0.43**	**0.49**	<1.1	**0.43**	**0.58**	**0.58**
Methylene chloride (MeCl)	<1.2	<1.2	<1.2	<1.2	<1.1	<1.2	<1.1	<1.2	<1.3	<1.0	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Chlorobenzene	<0.79	<0.82	<0.79	<0.79	<0.76	<0.79	<0.76	<0.80	<0.84	<0.70	<0.79	<0.79	<0.80	<0.79	<0.77	<0.8
1,2,4-Trichlorobenzene	<6.3	<6.6	<6.3	<6.3	<6.1	<6.3	<6.1	<6.5	<6.8	<5.6	<6.3	<6.3	<6.5	<6.3	<6.2	<6.5
1,2-Dichlorobenzene	<1.0	<1.1	<1.0	<1.0	<0.99	<1.0	<0.99	<1.0	<1.1	<0.91	<1.0	<1	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.1	<1.0	<1.0	<0.99	<1.0	<0.99	<1.0	<1.1	<0.91	<1.0	<1	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.1	<1.0	<1.0	<0.99	<1.0	<0.99	<1.0	<1.1	<0.91	<1.0	<1	<1.0	<1.0	<1.0	<1.0
Acetone	**5.3**	**9.7**	**5.4**	**13**	**8.9**	**4.8**	**5.9**	**7.7**	**13**	**12**	**7.2**	**10**	**7.1**	**9.8**	**7.0**	**7.3**
Benzene	<0.55	<0.57	**0.73**	**0.56**	<0.52	<0.55	<0.52	<0.56	<0.58	**0.53**	<0.55	<0.55	<0.56	<0.55	**0.59**	<0.56
Ethylbenzene	<0.74	<0.78	<0.74	<0.74	<0.71	<0.74	<0.71	<0.76	<0.79	<0.66	<0.74	<0.74	<0.76	<0.74	<0.73	<0.76
m,p-Xylene	<0.74	<0.78	<0.74	<0.74	<0.71	<0.74	<0.71	<0.76	<0.79	<0.66	<0.74	<0.74	<0.76	<0.74	**0.97**	<0.76
o-Xylene	<0.74	<0.78	<0.74	<0.74	<0.71	<0.74	<0.71	<0.76	<0.79	<0.66	<0.74	<0.74	<0.76	<0.74	<0.73	<0.76
Toluene	<0.64	<0.67	**1.1**	**0.79**	<0.62	<0.64	<0.62	**8.2**	**1.8**	**1.2**	**0.84**	**0.95**	**7.4**	<0.64	**0.71**	<0.66
Trichlorofluoromethane (Freon 11)	**3.5**	**11**	**3.3**	**4.8**	**1.8**	**2.4**	**1.8**	**7.9**	**18**	**6.0**	**4.5**	**5.9**	**3.8**	**4.3**	**2.8**	**2.3**
Dichlorodifluoromethane (Freon 12)	**2.5**	**2.5**	**2.0**	**7.3**	**2.4**	**2.6**	**2.4**	**2.8**	**2.4**	**18**	**2.5**	**2.7**	**2.5**	**2.0**	**3.8**	**2.6**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**21**	**25**	**2.0**	**50**	**2.1**	**1.8**	<1.2	**9.7**	**24**	**8.0**	<1.3	<1.3	**2.1**	<1.3	**1.4**	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
"J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
No shading indicates intermediate sampling data.

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³													
	Indoor Air													
	IA2008						IA2009							
	02/17/09	07/08/09	11/20/09	03/15/12	10/10/12	10/10/12 Dup.	02/17/09	05/13/09	06/08/09	07/08/09	11/20/09	12/17/09	03/15/12	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**21**	**2.4**	**44**	**2.2**	<1.1	<1.1	**370**	**7.4**	**21**	**9.7**	**74**	**28**	**5.1**	**1.5**
Trichloroethene (TCE)	<1.0	<0.19	**2.0**	<0.19	<0.18	<0.18	**5.1**	<0.19	**0.67**	**0.28**	**1.9**	**0.81**	<0.18	<0.18
cis-1,2-Dichloroethene (cDCE)	<0.74	<0.69	<0.68	<0.71	<0.65	<0.67	**0.89**	<0.69	<0.67	<0.68	<0.64	<0.65	<0.67	<0.67
1,1-Dichloroethene (DCE)	<0.74	<0.69	<0.68	<0.71	<0.65	<0.67	<0.69	<0.69	<0.67	<0.68	<0.64	<0.65	<0.67	<0.67
Vinyl chloride (VC)	<0.48	<0.045	<0.044	<0.046	**0.42**	<0.043	<0.45	<0.045	<0.043	<0.044	<0.041	<0.042	<0.043	<0.043
1,1,1-Trichloroethane (TCA)	<1.0	<0.95	<0.93	<0.98	<0.89	<0.92	<0.95	<0.95	<0.92	<0.93	<0.88	<0.89	<0.92	<0.92
Carbon tetrachloride	<1.2	**0.44**	**0.54**	**0.49**	**0.45**	**0.45**	<1.1	**0.41**	**0.47**	**0.41**	**0.54**	**0.45**	**0.49**	**0.51**
Methylene chloride (MeCI)	<1.3	<1.2	<1.2	<1.2	**1.8**	<1.2	<1.2	<1.2	<1.2	<1.2	<1.1	<1.1	**1.4**	<1.2
Chlorobenzene	<0.86	<0.80	<0.79	<0.82	<0.76	<0.77	<0.80	<0.80	<0.77	<0.79	<0.74	<0.76	<0.77	<0.77
1,2,4-Trichlorobenzene	<6.9	<6.5	<6.3	<6.6	<6.1	<6.2	<6.5	<6.5	<6.2	<6.3	<6.0	<6.1	<6.2	<6.2
1,2-Dichlorobenzene	<1.1	<1.0	<1.0	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.97	<0.99	<1.0	<1.0
1,3-Dichlorobenzene	<1.1	<1.0	<1.0	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.97	<0.99	<1.0	<1.0
1,4-Dichlorobenzene	<1.1	<1.0	<1.0	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0	<0.97	<0.99	<1.0	<1.0
Acetone	**12**	**7.1**	**7.6**	**9.1**	**14**	**5.6**	**25**	**5.4**	**12**	**12**	**6.4**	**9.9**	**25**	**6.3**
Benzene	**0.68**	**0.73**	**0.57**	<0.57	<0.52	<0.54	**0.70**	<0.56	**0.74**	<0.55	**0.88**	<0.52	**0.81**	<0.54
Ethylbenzene	<0.81	<0.76	<0.74	<0.78	<0.71	<0.73	<0.76	<0.76	<0.73	<0.74	<0.70	<0.71	<0.73	<0.73
m,p-Xylene	**0.98**	<0.76	<0.74	<0.78	**0.87**	<0.73	**1.0**	<0.76	<0.73	<0.74	<0.70	<0.71	**0.76**	<0.73
o-Xylene	<0.81	<0.76	<0.74	<0.78	<0.71	<0.73	<0.76	<0.76	<0.73	<0.74	<0.70	<0.71	<0.73	<0.73
Toluene	**3.9**	**20**	**1.1**	**0.90**	**5**	**1.2**	**34**	**1.0**	**2.3**	**1.4**	**2.0**	**0.94**	**2.7**	**1.3**
Trichlorofluoromethane (Freon 11)	**6.2**	**12**	**6.3**	**4.9**	**5.3**	**4.8**	**8.9**	**5.0**	**14**	**12**	**2.8**	**1.8**	**2.4**	**2.9**
Dichlorodifluoromethane (Freon 12)	**2.9**	**2.1**	**18**	**2.7**	**2.6**	**1.6**	**3.1**	**2.4**	**2.7**	**2.1**	**38**	**4.9**	**2.9**	**2.4**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**3.7**	<1.3	**9.3**	<1.4	<1.2	<1.3	**65**	<1.3	**7.6**	**1.6**	**5.6**	**1.4**	<1.3	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

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No shading indicates intermediate sampling data.

TABLE 1
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Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³																
	Indoor Air																
	IA2010										IA2011						
	02/17/09	04/27/09	05/13/09	06/08/09	07/08/09	08/26/09	11/20/09	12/17/09	03/15/12	10/10/12	02/17/09	05/13/09	08/26/09	11/20/09	03/15/12	04/18/12	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**630**	**4.4**	**3.6**	**5.0**	**3.9**	**7.0**	**85**	**37**	**1.8**	<1.2	**2,800**	**11**	**6.4**	**58**	**18**	<1.2	**3.7**
Trichloroethene (TCE)	**3.1**	<0.26	<0.19	**0.26**	<0.17	**0.30**	**2.6**	**1.3**	<0.18	<0.18	**13**	**0.23**	**0.26**	**1.3**	**0.27**	<0.18	**0.24**
cis-1,2-Dichloroethene (cDCE)	<1.8	<0.97	<0.69	<0.68	<0.63	<0.71	<0.65	<0.68	<0.68	<0.68	<4.5	<0.68	<0.67	<0.68	<0.69	<0.67	<0.68
1,1-Dichloroethene (DCE)	<1.8	<0.97	<0.69	<0.68	<0.63	<0.71	<0.65	<0.68	<0.68	<0.68	<4.5	<0.68	<0.67	<0.68	<0.69	<0.67	<0.68
Vinyl chloride (VC)	<1.1	<0.062	<0.045	<0.044	<0.040	<0.046	<0.042	<0.044	<0.044	<0.044	<2.9	<0.044	<0.043	<0.044	<0.045	<0.043	<0.044
1,1,1-Trichloroethane (TCA)	<2.4	<1.3	<0.95	<0.93	<0.86	<0.98	<0.89	<0.93	<0.93	<0.93	<6.2	<0.93	<0.92	<0.93	<0.95	<0.93	<0.93
Carbon tetrachloride	<2.8	**0.51**	**0.40**	**0.41**	**0.45**	**0.50**	**0.53**	**0.56**	**0.47**	**0.49**	<7.2	**0.41**	**0.51**	**0.52**	**0.53**	**0.53**	**0.56**
Methylene chloride (MeCI)	<3.1	<1.7	<1.2	<1.2	<1.1	<1.2	<1.1	<1.2	<1.2	<1.2	<7.9	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Chlorobenzene	<2.1	<1.1	<0.80	<0.79	<0.73	<0.82	<0.76	<0.79	<0.79	<0.79	<5.2	<0.79	<0.77	<0.79	<0.80	<0.78	<0.79
1,2,4-Trichlorobenzene	<17	<9.0	<6.5	<6.3	<5.9	<6.6	<6.1	<6.3	<6.3	<6.3	<42	<6.3	<6.2	<6.3	<6.5	<6.3	<6.3
1,2-Dichlorobenzene	<2.7	<1.5	<1.0	<1.0	<0.95	<1.1	<0.99	<1.0	<1.0	<1.0	<6.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<2.7	<1.5	<1.0	<1.0	<0.95	<1.1	<0.99	<1.0	<1.0	<1.0	<6.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<2.7	<1.5	<1.0	<1.0	<0.95	<1.1	<0.99	<1.0	<1.0	<1.0	<6.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	**37**	**34**	**9.4**	**9.1**	**7.5**	**30**	**8.7**	**6.8**	**5.8**	**7.8**	**200**	**18**	**12**	**14**	**11**	**6.2**	**9.0**
Benzene	<1.4	**1.2**	<0.56	**0.66**	**0.63**	<0.57	<0.52	<0.55	<0.55	<0.55	<3.6	**0.61**	<0.54	<0.55	**0.56**	<0.54	<0.55
Ethylbenzene	<1.9	<1.0	<0.76	<0.74	<0.69	<0.78	<0.71	<0.74	<0.74	<0.74	<4.9	<0.74	<0.73	<0.74	<0.76	<0.74	<0.74
m,p-Xylene	**2.4**	<1.0	<0.76	<0.74	<0.69	<0.78	<0.71	<0.74	<0.74	<0.74	**7.7**	<0.74	<0.73	<0.74	<0.76	<0.74	<0.74
o-Xylene	<1.9	<1.0	<0.76	<0.74	<0.69	<0.78	<0.71	<0.74	<0.74	<0.74	<5.0	<0.74	<0.73	<0.74	<0.76	<0.74	<0.74
Toluene	**99**	**7.4**	**2.0**	**2.6**	**5.0**	**4.7**	**2.4**	**2.2**	**2.1**	**2**	**540**	**1.7**	**3.1**	**1.6**	**1.9**	<0.64	**1.0**
Trichlorofluoromethane (Freon 11)	**7.1**	**4.4**	**3.1**	**8.3**	**5.7**	**6.2**	**2.7**	**2.0**	**1.7**	**1.5**	<6.4	**5.9**	**8.0**	**2.5**	**2.0**	**4.3**	**3.0**
Dichlorodifluoromethane (Freon 12)	**3.3**	**3.2**	**2.5**	**2.4**	**2.0**	**2.8**	**150**	**5.4**	**2.6**	**2.8**	<5.6	**2.6**	**2.2**	**7.2**	**3.2**	**2.8**	**2.5**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**36**	<1.9	<1.3	**2.5**	**2.5**	**6.3**	**8.7**	**3.6**	<1.3	<1.3	**100**	<1.3	**5.1**	**1.7**	<1.3	<1.3	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
"J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
No shading indicates intermediate sampling data.

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³															
	Indoor Air															
	IA2013			IA2014				IA2015						IA2016		
	02/17/09	08/26/09	10/10/12	02/17/09	08/26/09	11/20/09	10/10/12	02/17/09	07/08/09	07/30/09	08/26/09	11/20/09	10/10/12	02/17/09	08/26/09	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**44**	<1.1	<1.1	**32**	<1.2	**1.5**	<1.1	**72**	**9.4**	<1.2	<1.2	**2.0**	**2.1**	**44**	<1.2	<1.1
Trichloroethene (TCE)	2.8	<0.18	<0.18	<0.94	<0.19	**1.1**	**0.19**	**4.8**	**12**	**0.30**	<0.20	**3.1**	**0.81**	**3.9**	<0.19	<0.18
cis-1,2-Dichloroethene (cDCE)	<0.67	<0.65	<0.67	<0.69	<0.71	<0.64	<0.65	<0.63	<0.67	<0.69	<0.72	<0.68	<0.65	<0.84	<0.71	<0.67
1,1-Dichloroethene (DCE)	<0.67	<0.65	<0.67	<0.69	<0.71	<0.64	<0.65	<0.63	<0.67	<0.69	<0.72	<0.68	<0.65	<0.84	<0.71	<0.67
Vinyl chloride (VC)	<0.43	<0.042	<0.043	<0.45	<0.046	<0.041	<0.042	<0.40	<0.043	<0.045	<0.047	<0.044	<0.042	<0.54	<0.046	<0.043
1,1,1-Trichloroethane (TCA)	<0.92	<0.89	<0.92	<0.95	<0.98	<0.88	<0.89	<0.86	<0.92	<0.95	<1.0	<0.93	<0.89	<1.2	<0.98	<0.92
Carbon tetrachloride	<1.0	**0.49**	**0.58**	<1.1	**0.49**	**0.55**	**0.64**	<0.99	**0.47**	**0.42**	**0.52**	**0.52**	**0.67**	<1.3	**0.53**	**0.52**
Methylene chloride (MeCl)	<1.2	<1.1	<1.2	<1.2	<1.2	<1.1	**1.3**	<1.1	<1.2	<1.2	<1.3	<1.2	**1.1**	<1.5	<1.2	**1.8**
Chlorobenzene	<0.77	<0.76	<0.77	<0.80	<0.82	<0.74	<0.76	<0.73	<0.77	<0.80	<0.84	<0.79	<0.76	<0.98	<0.82	<0.77
1,2,4-Trichlorobenzene	<6.2	<6.1	<6.2	<6.5	<6.6	<6.0	<6.1	<5.9	<6.2	<6.5	<6.8	<6.3	<6.1	<7.9	<6.6	<6.2
1,2-Dichlorobenzene	<1.0	<0.99	<1.0	<1.0	<1.1	<0.97	<0.99	<0.95	<1.0	<1.0	<1.1	<1.0	<0.99	<1.3	<1.1	<1.0
1,3-Dichlorobenzene	<1.0	<0.99	<1.0	<1.0	<1.1	<0.97	<0.99	<0.95	<1.0	<1.0	<1.1	<1.0	<0.99	<1.3	<1.1	<1.0
1,4-Dichlorobenzene	<1.0	<0.99	<1.0	<1.0	<1.1	<0.97	<0.99	<0.95	<1.0	<1.0	<1.1	<1.0	<0.99	<1.3	<1.1	<1.0
Acetone	**14**	**10**	**9.5**	**16**	**8.9**	**6.3**	**8.3**	**22**	**6.3**	**9.8**	**7.2**	**65**	**7.2**	**20**	**22**	**7.9**
Benzene	**<0.54**	<0.52	<0.54	**0.61**	<0.57	**0.90**	<0.52	**0.58**	<0.54	<0.56	<0.58	**0.78**	<0.52	<0.68	<0.57	<0.54
Ethylbenzene	<0.73	<0.71	<0.73	<0.76	<0.78	<0.70	<0.71	<0.69	<0.73	<0.76	<0.79	**2.0**	<0.71	<0.92	<0.78	<0.73
m,p-Xylene	<0.73	<0.71	<0.73	<0.76	<0.78	<0.70	<0.71	<0.69	<0.73	<0.76	<0.79	**11**	<0.71	<0.92	<0.78	<0.73
o-Xylene	<0.73	<0.71	<0.73	<0.76	<0.78	<0.70	<0.71	<0.69	<0.73	<0.76	<0.79	**2.6**	<0.71	<0.92	<0.78	<0.73
Toluene	**9.4**	**0.74**	**0.84**	**6.2**	**0.75**	**3.8**	**0.82**	**15**	<0.63	<0.66	**0.86**	**2.8**	**1.8**	**9.0**	**0.77**	**0.78**
Trichlorofluoromethane (Freon 11)	**6.2**	**2.4**	**1.9**	**7.5**	**12**	**4.9**	**2.4**	**7.3**	**19**	**2.0**	**2.3**	**2.2**	**2**	**10**	**16**	**3.4**
Dichlorodifluoromethane (Freon 12)	**2.6**	**1.8**	**2.8**	**2.7**	**2.2**	**2.8**	**2.9**	**2.6**	**2.3**	**2.2**	**1.6**	**2.6**	**2.4**	**2.9**	**2.6**	**2.8**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**4.3**	<1.2	<1.3	**4.0**	<1.4	**1.5**	<1.2	**4.1**	**16**	<1.3	<1.4	**1.7**	<1.2	**3.4**	<1.4	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
"J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
No shading indicates intermediate sampling data.

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³														
	Indoor Air														
	IA2017					IA2024				IA2025					
	02/17/09	07/08/09	11/20/09	10/10/12	10/10/12 Dup.	02/17/09	08/26/09	11/20/09	10/10/12	04/01/09	08/26/09	09/29/09	11/20/09	12/17/09	03/15/12	10/10/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**55**	<1.1	<1.2	**1.4**	<1.2	**42**	**8.8**	**12**	<1.2	**140**	**81**	**21**	**63**	**75**	**4.5**	**2.5**
Trichloroethene (TCE)	**4.2**	**1.1**	**1.4**	<0.17	<0.18	<0.82	**0.50**	**0.73**	<0.19	**5.8**	**4.0**	**0.81**	**2.6**	**1.8**	<0.18	<0.18
cis-1,2-Dichloroethene (cDCE)	<0.69	<0.67	<0.69	<0.63	<0.68	<0.60	<0.71	<0.72	<0.69	<0.71	<0.65	<0.67	<0.67	<0.67	<0.67	<0.67
1,1-Dichloroethene (DCE)	<0.69	<0.67	<0.69	<0.63	<0.68	<0.60	<0.71	<0.72	<0.69	<0.71	<0.65	<0.67	<0.67	<0.67	<0.67	<0.67
Vinyl chloride (VC)	<0.45	<0.043	<0.045	<0.04	<0.044	<0.39	<0.046	<0.047	<0.045	<0.046	<0.042	<0.043	<0.043	<0.043	<0.043	<0.043
1,1,1-Trichloroethane (TCA)	<0.95	<0.92	<0.95	<0.86	<0.93	<0.83	<0.98	<1.0	<0.95	<0.98	<0.89	<0.92	<0.92	<0.92	<0.92	<0.92
Carbon tetrachloride	<1.1	**0.45**	**0.56**	**0.55**	**0.64**	<0.96	**0.52**	**0.54**	**0.54**	**0.40**	**0.50**	**0.55**	**0.53**	**0.56**	**0.47**	**0.59**
Methylene chloride (MeCl)	<1.2	<1.2	<1.2	<1.1	<1.2	<1.0	<1.2	<1.3	<1.2	<1.2	<1.1	<1.2	<1.2	<1.2	**1.3**	<1.2
Chlorobenzene	<0.80	<0.77	<0.80	<0.73	<0.79	<0.70	<0.82	<0.84	<0.80	<0.82	<0.76	<0.77	<0.77	<0.77	<0.77	<0.77
1,2,4-Trichlorobenzene	<6.5	<6.2	<6.5	<5.9	<6.3	<5.6	<6.6	<6.8	<6.5	<6.6	<6.1	<6.2	<6.2	<6.2	<6.2	<6.2
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<0.95	<1.0	<0.91	<1.1	<1.1	<1.0	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<0.95	<1.0	<0.91	<1.1	<1.1	<1.0	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<0.95	<1.0	<0.91	<1.1	<1.1	<1.0	<1.1	<0.99	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	**54**	**15**	**16**	**9.2**	**6.6**	**8.5**	**15**	**17**	**6.9**	**11**	**15**	**5.6**	**11**	**13**	**12**	**9.7**
Benzene	**0.67**	<0.54	<0.56	<0.50	<0.55	**0.77**	<0.57	**0.90**	<0.56	<0.57	<0.52	<0.54	**0.87**	<0.54	<0.54	<0.54
Ethylbenzene	<0.76	<0.73	<0.76	<0.69	<0.74	<0.66	<0.78	<0.79	<0.76	<0.78	<0.71	<0.73	<0.73	<0.73	<0.73	<0.73
m,p-Xylene	<0.76	<0.73	<0.76	<0.69	<0.74	**1.0**	<0.78	<0.79	<0.76	<0.78	<0.71	<0.73	<0.73	<0.73	**0.78**	<0.73
o-Xylene	<0.76	<0.73	<0.76	<0.69	<0.74	<0.66	<0.78	<0.79	<0.76	<0.78	<0.71	<0.73	<0.73	<0.73	<0.73	<0.73
Toluene	**12**	<0.63	<0.66	**0.71**	**0.80**	**7.0**	**0.84**	**1.9**	**0.86**	**1.2**	**4.0**	**0.84**	**2.1**	**2.1**	**2.8**	**0.90**
Trichlorofluoromethane (Freon 11)	**10**	**14**	**4.8**	**3.2**	**2.9**	**16**	**31**	**11**	**7**	**2.7**	**12**	**4.4**	**3.4**	**1.7**	**2.2**	**2.6**
Dichlorodifluoromethane (Freon 12)	**3.4**	**3.2**	**3.7**	**2.3**	**2.4**	**2.6**	**2.4**	**4.6**	**2.2**	**2.3**	**2.0**	**2.7**	**41**	**9.3**	**10**	**2.7**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**4.0**	**1.6**	<1.3	<1.2	<1.3	**4.1**	**4.5**	**3.8**	<1.3	**58**	**33**	**14**	**6.7**	**2.2**	<1.3	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

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IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³														
	Indoor Air														
	IA2026	IA2027					IA2028		IA2029		IA2030		IA2031		
	04/01/09	04/27/09	05/13/09	06/08/09	03/15/12	10/10/12	04/27/09	05/13/09	04/27/09	03/15/12	05/13/09	06/08/09	05/13/09	06/08/09	03/15/12
	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	**95**	**26**	**7.7**	**12**	**8.1**	**2.1**	**<1.1**	<1.1	**2.9**	<1.1	**7.1**	**2.2**	**4.3**	**20**	**4.1**
Trichloroethene (TCE)	**3.3**	**1.4**	**0.19**	**1.1**	<0.19	<0.18	**<0.18**	<0.18	<0.18	<0.18	**0.88**	**0.31**	<0.18	**1.9**	<0.18
cis-1,2-Dichloroethene (cDCE)	<0.68	<0.71	<0.64	<0.67	<0.69	<0.68	<0.65	<0.65	<0.65	<0.67	<0.65	<0.71	<0.67	<0.69	<0.68
1,1-Dichloroethene (DCE)	<0.68	<0.71	<0.64	<0.67	<0.69	<0.68	<0.65	<0.65	<0.65	<0.67	<0.65	<0.71	<0.67	<0.69	<0.68
Vinyl chloride (VC)	<0.044	<0.046	<0.041	<0.043	<0.045	<0.044	<0.042	<0.042	<0.042	<0.043	<0.042	<0.046	<0.043	<0.045	<0.044
1,1,1-Trichloroethane (TCA)	<0.93	<0.98	<0.88	<0.92	<0.95	<0.93	<0.89	<0.89	<0.89	<0.92	<0.89	<0.98	<0.92	<0.95	<0.93
Carbon tetrachloride	**0.43**	**0.50**	**0.46**	**0.46**	**0.47**	**0.57**	**0.51**	**0.45**	**0.59**	**0.42**	**0.44**	**0.48**	**0.41**	**0.43**	**0.46**
Methylene chloride (MeCl)	<1.2	<1.2	<1.1	**1.4**	<1.2	<1.2	<1.1	<1.1	<1.1	<1.2	<1.1	<1.2	<1.2	<1.2	<1.2
Chlorobenzene	<0.79	<0.82	<0.74	<0.77	<0.80	<0.79	<0.76	<0.76	<0.76	<0.77	<0.76	<0.82	<0.77	<0.80	<0.79
1,2,4-Trichlorobenzene	<6.3	<6.6	<6.0	<6.2	<6.5	<6.3	<6.1	<6.1	<6.1	<6.2	<6.1	<6.6	<6.2	<6.5	<6.3
1,2-Dichlorobenzene	<1.0	<1.1	<0.97	<1.0	<1.0	<1.0	<0.99	<0.99	<0.99	<1.0	<0.99	<1.1	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.1	<0.97	<1.0	<1.0	<1.0	<0.99	<0.99	<0.99	<1.0	<0.99	<1.1	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.1	<0.97	<1.0	<1.0	<1.0	<0.99	<0.99	<0.99	<1.0	<0.99	<1.1	<1.0	<1.0	<1.0
Acetone	**5.5**	**13**	**7.5**	**15**	**7.7**	**8.2**	**12**	**6.6**	**42**	**37**	**9.5**	**8.3**	**9.4**	**8.6**	**12**
Benzene	<0.55	**0.94**	<0.51	<0.54	<0.56	<0.55	**0.85**	<0.52	**1.4**	**0.76**	**1.8**	<0.57	<0.54	<0.56	**0.62**
Ethylbenzene	<0.74	<0.78	<0.70	<0.73	<0.76	<0.74	<0.71	<0.71	<0.71	<0.73	<0.71	<0.78	<0.73	<0.76	<0.74
m,p-Xylene	**0.83**	<0.78	<0.70	<0.73	<0.76	<0.74	<0.71	<0.71	**1.2**	<0.73	**0.80**	<0.78	<0.73	<0.76	<0.74
o-Xylene	<0.74	<0.78	<0.70	<0.73	<0.76	<0.74	<0.71	<0.71	<0.71	<0.73	<0.71	<0.78	<0.73	<0.76	<0.74
Toluene	**1.2**	**1.3**	**1.0**	**2.6**	**1.4**	**1.0**	**1.0**	<0.62	**37**	**8.8**	**1.4**	<0.67	**1.0**	**1.2**	**1.2**
Trichlorofluoromethane (Freon 11)	**1.9**	**5.5**	**5.3**	**13**	**2.5**	**3.8**	**3.3**	**2.3**	**6.3**	**2.1**	**9.2**	**4.3**	**6.3**	**14**	**3.0**
Dichlorodifluoromethane (Freon 12)	**2.6**	**3.0**	**2.4**	**3.0**	**2.8**	**2.7**	**3.1**	**2.6**	**4.7**	**3.1**	**2.5**	**2.1**	**2.6**	**2.7**	**2.6**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	**33**	**8.2**	<1.2	**4.1**	<1.3	<1.3	**<1.2**	<1.2	**1.6**	<1.3	**4.7**	**4.0**	<1.3	**11**	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
"J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
No shading indicates intermediate sampling data.

TABLE 1
Summary of Indoor and Ambient (Outdoor) Air Sampling Data
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³				
	Indoor Air				
	IA2034	IA2035		IA2036	IA2037
	07/30/09	03/15/12	10/10/12	04/18/12	04/18/12
	Result	Result	Result	Result	Result
Tetrachloroethene (PCE)	<1.2	**4.3**	**1.2**	<1.1	**1.2**
Trichloroethene (TCE)	<0.19	<0.19	<0.18	<0.18	<0.18
cis-1,2-Dichloroethene (cDCE)	<0.69	<0.69	<0.67	<0.66	<0.67
1,1-Dichloroethene (DCE)	<0.69	<0.69	<0.67	<0.66	<0.67
Vinyl chloride (VC)	<0.045	<0.045	<0.043	<0.042	<0.043
1,1,1-Trichloroethane (TCA)	<0.95	<0.95	<0.92	<0.90	<0.92
Carbon tetrachloride	**0.44**	**0.48**	**0.51**	**0.61**	**0.63**
Methylene chloride (MeCl)	<1.2	<1.2	<1.2	<1.2	<1.2
Chlorobenzene	<0.80	<0.80	<0.77	<0.76	<0.78
1,2,4-Trichlorobenzene	<6.5	<6.5	<6.2	<6.2	<6.3
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	**9.7**	**9.2**	**5.6**	**5.2**	**5.3**
Benzene	<0.56	**0.57**	<0.54	<0.53	<0.54
Ethylbenzene	<0.76	<0.76	<0.73	<0.72	<0.73
m,p-Xylene	<0.76	<0.76	<0.73	<0.72	<0.73
o-Xylene	<0.76	<0.76	<0.73	<0.72	<0.73
Toluene	<0.66	**1.4**	**0.91**	**1.1**	**0.66**
Trichlorofluoromethane (Freon 11)	**2.1**	**2.9**	**4.1**	**4.3**	**3.9**
Dichlorodifluoromethane (Freon 12)	**2.3**	**2.8**	**2.5**	**3.0**	**2.8**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.3	<1.3	<1.3	<1.3	<1.3

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 5 for sample locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.
"J" indicates the laboratory flagged the result as estimated.

4. **Bold** values indicate the analyte was detected above reporting limits.

5. Pink shading indicates pre-remediation sampling data.
Green shading indicates sampling data collected after installation and operation of the sub-slab vapor extraction system.
No shading indicates intermediate sampling data.

TABLE 2
Summary of October 2012 Confirmatory Sample Information
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Sample ID	Building Floor	Sample Matrix	Canister Number	Sample Height (ft. above floor)	Start Time (hrs)	Start Pressure (in. Hg)	Stop Time (hrs)	Stop Pressure (in. Hg)	PID (ppbv)	Temperature (°F)	Location Description	Chemicals Observed Near Sample Location	Other Observations
Building 310 - October 10, 2012													
IA2001	Ground	Indoor Air	34433	3.3	938	30	1740	8.0	0	65	Records Archives	None observed	Subsurface utility penetration, floor drain, and subslab monitoring port SS-19 observed.
IA2002	Ground	Indoor Air	14877	3.3	815	31	1615	7.0	0	70	Storage Room	None observed	Subsurface utility penetration and floor drain observed.
IA2003	Ground	Indoor Air	932	3.3	811	32	1706	7.0	0	70	2nd Source Area	None observed	Former lab space that is currently empty.
IA2004	Ground	Indoor Air	5552	3.3	809	30	1658	7.0	0	70	MTC Resale Showroom	Natpack-x, chromium titanium mix, glass powder, polyvinyl buter silica frit	Currently used as storage area for chemicals observed.
IA2005	Ground	Indoor Air	12953	3.3	820	30	1711	7	0	70	Former Manufacuring Area	Equipment labeled solvent, fluoride, and acid	Subsurface penetrations for equipment, multiple floor drains, pump stations, trenches, and sumps observed.
IA2006	Ground	Indoor Air	25236	3.3	843	32	1643	7.0	0	65	Mechanical Room/DI Water	None observed	Trenches and sump for deionized water observed.
IA2007	Ground	Indoor Air	33782	3.3	850	30	1650	6.0	0	70	Storage Area for Crates	None observed	
IA2008	Ground	Indoor Air	5563	3.3	929	30	1740	7	0	75	Office adjacent to Laboratory Space	None observed	Floor drain cleanout observed.
DUP34200 (IA2008 DUP)	Ground	Indoor Air	34200	3.3	929	30	1740	6.0	0	75			
IA2009	Ground	Indoor Air	4175	3.3	823	30	1719	7.5	0	75	Former Manufacturing/Clean Room	None observed	Closed sumps covered with steel plates observed.
IA2010	Ground	Indoor Air	1700	5.5	820	30	1622	6.0	0	75	Maintenance shop office	White board markers, white board cleaner, lenox paste	Subsurface penetration for a subslab monitoring port observed.
IA2011	Ground	Indoor Air	5693	3.3	805	30	1605	6.0	0	75	Storage Room	None observed	
IA2013	Ground	Indoor Air	23927	3.3	905	32	1705	6.5	0	75	Wafer Warehouse	None observed	Floor drain cleanouts observed.
IA2014	Ground	Indoor Air	12672	3.3	850	30	1653	6.0	0	70	Machine Shop - DCAP Tooling	Oil squirt bottles, grease, step can for oil and isopropyl alcohol rags, markers, welding gases, fantastik cleaner, and acid line	Acid and vent lines from floor, subsurface penetration for an eyewash station, and a floor drain cleanout observed.
IA2015	Ground	Indoor Air	34238	3.3	913	30	1735	6.5	0	70	Storage Room	None observed	Currently used as storage area for computers and old equipment.
IA2016	Ground	Indoor Air	35151	5.0	853	33	1655	7.0	0	65	Break Room	None observed	
IA2017	Ground	Indoor Air	35243	5.1	858	32	1658	5.0	0	70	Machine Shop	Cutting and machine oils	Slight petroleum odor from machines and small spills with "speedi-dry" observed.
DUP34392 (IA2017 DUP)	Ground	Indoor Air	34392	5.1	858	32	1658	7.0	0	70			
IA2024	Ground	Indoor Air	34409	3.3	945	30	1745	7.0	0	65	Archives	None observed	Concrete joints between columns and cracks in the concrete floor between joints observed.
IA2025	Ground	Indoor Air	94603	3.3	806	30	1606	6.5	0	75	North MER	Solid waste drums	Concrete collection trench, roof drain floor penetrations, and a subslab monitoring port observed.
IA2027	Ground	Indoor Air	12951	4.8	829	29.5	1635	7.0	0	65	Utility Core Area	Isopropyl alcohol,	Pits for flouride and acid pump stations, and subslab monitoring port observed.

TABLE 2
Summary of October 2012 Confirmatory Sample Information
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Sample ID	Building Floor	Sample Matrix	Canister Number	Sample Height (ft. above floor)	Start Time (hrs)	Start Pressure (in. Hg)	Stop Time (hrs)	Stop Pressure (in. Hg)	PID (ppbv)	Temperature (°F)	Location Description	Chemicals Observed Near Sample Location	Other Observations
IA2035	Ground	Indoor Air	5636	4.8	826	31	1626	6.0	0	65	Former Manufacturing/Clean Room	Skimcrete bags, bags of insulation, and acid lines	Concrete expansion joint in flooring observed.
AA2018	Roof	Ambient Air	11870	N/A	933	29	1740	7.0	0	60	AC-30 Outdoor Air Intake	None observed	
AA2021	Roof	Ambient Air	22497	N/A	938	31	1745	7.5	0	60	AC-32 Outdoor Air Intake	None observed	
FB1	Ground	Field Blank	24217	N/A	1002	32	1725	5.5	0	60	Outside NE Entrance	None observed	

Notes:

1. Samples were collected on October10, 2012 by Sanborn, Head & Associates, Inc. (SH) personnel.
2. Samples were collected into 6-liter, stainless steel, pre-evacuated Summa® canisters using 8-hour metering regulators and inline 2-micron filters.?Canisters and regulators were laboratory-certified clean (100% certification).
3. PID screening was conducted using a ppbRAE, calibrated to a 10 parts per million by volume (ppmv) isobutylene-in-air standard.
4. NA - Information is not available.

TABLE 3
October 2012 Confirmatory Sampling Results
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m^3																														
	Field Blank			Ambient Air						Indoor Air																					
	FB1			AA2018			AA2021			IA2001			IA2002			IA2003			IA2004			IA2005			IA2006			IA2007		
	10/10/2012			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12		
	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias
Tetrachloroethene (PCE)	<1.1	U		<1.2	U		<1.2	U		<1.1	U		**9.6**			<1.1	U		<1.1	U		<1.1	U		<1.2	U		<1.2	U	
Trichloroethene (TCE)	<0.17	U		<0.18	U		<0.18	U		<0.18	U		**1.2**			**0.18**			<0.17	U		**0.19**			**0.37**			<0.19	U	
cis-1,2-Dichloroethene (cDCE)	<0.63	U		<0.68	U		<0.68	U		<0.67	U		<0.68	U		<0.65	U		<0.64	U		<0.65	U		<0.68	U		<0.69	U	
1,1-Dichloroethene (DCE)	<0.63	U		<0.68	U		<0.68	U		<0.67	U		<0.68	U		<0.65	U		<0.64	U		<0.65	U		<0.68	U		<0.69	U	
Vinyl chloride (VC)	<0.040	U		<0.044	U		<0.044	U		<0.043	U		<0.044	U		<0.042	U		<0.041	U		<0.042	U		<0.044	U		0.045	U	
1,1,1-Trichloroethane (TCA)	<0.86	U		<0.93	U		<0.93	U		<0.92	U		<0.93	U		<0.89	U		<0.88	U		<0.89	U		<0.93	U		<0.95	U	
Carbon tetrachloride	<0.20	U		**0.54**			**0.58**			**0.46**			**0.40**			**0.55**			**0.51**			**0.48**			**0.49**			**0.58**		
Methylene chloride (MeCl)	<1.1	U		<1.2	U		<1.2	U		<1.2	U		<1.2	U		<1.1	U		<1.1	U		<1.1	U		<1.2	U		<1.2	U	
Chlorobenzene	<0.73	U		<0.79	U		<0.79	U		<0.77	U		<0.79	U		<0.76	U		<0.74	U		<0.76	U		<0.79	U		<0.8	U	
1,2,4-Trichlorobenzene	<5.9	U		<6.3	U		<6.3	U		<6.2	UJ	I	<6.3	UJ	I	<6.1	UJ	I	<6.0	UJ	I	<6.1	UJ	I	<6.3	UJ	I	<6.5	UJ	I
1,2-Dichlorobenzene	<0.95	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<0.99	U		<0.97	U		<0.99	U		<1.0	U		<1.0	U	
1,3-Dichlorobenzene	<0.95	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<0.99	U		<0.97	U		<0.99	U		<1.0	U		<1.0	U	
1,4-Dichlorobenzene	<0.95	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<0.99	U		<0.97	U		<0.99	U		<1.0	U		<1.0	U	
Acetone	<1.9	U		**8.6**			**10**			**6.4**			**5.2**			**7.6**			**5.1**			**5.9**			**10**			**7.3**		
Benzene	<0.50	U		<0.55	U		<0.55	U		<0.54	U		<0.55	U		<0.52	U		<0.51	U		<0.52	U		<0.55	U		<0.56	U	
Ethylbenzene	<0.69	U		<0.74	U		<0.74	U		<0.73	U		<0.74	U		<0.71	U		<0.70	U		<0.71	U		<0.74	U		<0.76	U	
m,p-Xylene	<0.69	U		<0.74	U		<0.74	U		<0.73	U		<0.74	U		<0.71	U		<0.70	U		<0.71	U		<0.74	U		<0.76	U	
o-Xylene	<0.69	U		<0.74	U		<0.74	U		<0.73	U		<0.74	U		<0.71	U		<0.70	U		<0.71	U		<0.74	U		<0.76	U	
Toluene	<0.60	U		<0.64	U		**0.65**			**0.93**			<0.64	U		1.2			<0.61	U		<0.62	U		**0.95**			<0.66	U	
Trichlorofluoromethane (Freon 11)	<0.89	U		**1.8**			**1.5**			**5.0**			**1.8**			**2.4**			**2.3**			**1.8**			**5.9**			**2.3**		
Dichlorodifluoromethane (Freon 12)	<0.78	U		**2.6**			**3.0**			**1.8**			**2.3**			**2.6**			**2.7**			**2.4**			**2.7**			**2.6**		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113	<1.2	U		<1.3	U		<1.3	U		<1.3	U		**4.7**			<1.2	U		<1.2	U		<1.2	U		<1.3	U		<1.3	U	

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 7 for sampling locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.

4. New Environmental Horizons, Inc (NEH) performed an independent validation of the analytical data, as described in their Data Usability Report, dated November 19, 2012 and provided as Appendix E. 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:
"U" - Indicates Analyte is non-detect at or above the sample specific practical quantification limit (PQL).
"J" - Indicates Result is an estimated value.
"UJ" - Indicates non-detect is estimated at the PQL.
"I" - Indicates Indeterminate bias.

5. **Bold** values indicate the analyte was detected above reporting limits.

6. "Max" indicates the maximum detected concentration in the indoor air samples. For those analytes that were not detected in any of the samples, the maximum reporting limit value is presented.
"Min" indicates the minimum detected concentration in the indoor air samples. For those analytes that were not detected in any of the samples, the minimum reporting limit value is presented. For those analytes that were detected, the reporting limit values were not considered when calculating the minimum values.
"Median" indicates the median detected concentration in the indoor air samples.
"ND" indicates that the analyte was not detected above laboratory reporting limits in any of the indoor air samples.

TABLE 3
October 2012 Confirmatory Sampling Results
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m^3																											
	Indoor Air																											
	IA2008						IA2009			IA2010			IA2011			IA2013			IA2014			IA2015			IA2016		
	10/10/12			10/10/12 Dup.			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12			10/10/12		
	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias
Tetrachloroethene (PCE)	<1.1	U		<1.1	U		**1.5**			<1.2	U		**3.7**			<1.1	U		<1.1	U		**2.1**			<1.1	U	
Trichloroethene (TCE)	<0.18	U		<0.18	U		<0.18	U		<0.18	U		**0.24**			<0.18	U		**0.19**			**0.81**			<0.18	U	
cis-1,2-Dichloroethene (cDCE)	<0.65	U		<0.67	U		<0.67	U		<0.68	U		<0.68	U		<0.67	U		<0.65	U		<0.65	U		<0.67	U	
1,1-Dichloroethene (DCE)	<0.65	U		<0.67	U		<0.67	U		<0.68	U		<0.68	U		<0.67	U		<0.65	U		<0.65	U		<0.67	U	
Vinyl chloride (VC)	**0.42**	J	I	<0.043	UJ	I	<0.043	U		<0.044	U		<0.044	U		<0.043	U		<0.042	U		<0.042	U		<0.043	U	
1,1,1-Trichloroethane (TCA)	<0.89	U		<0.92	U		<0.92	U		<0.93	U		<0.93	U		<0.92	U		<0.89	U		<0.89	U		<0.92	U	
Carbon tetrachloride	**0.45**			**0.45**			**0.51**			**0.49**	J	I	**0.56**	J	I	**0.58**	J	I	**0.64**	J	I	**0.67**	J	I	**0.52**	J	I
Methylene chloride (MeCl)	**1.8**			<1.2	U		<1.2	U		<1.2	U		<1.2	U		<1.2	U		**1.3**			**1.1**	J	I	**1.8**		
Chlorobenzene	<0.76	U		<0.77	U		<0.77	U		<0.79	U		<0.79	U		<0.77	U		<0.76	U		<0.76	U		<0.77	U	
1,2,4-Trichlorobenzene	<6.1	U		<6.2	U		<6.2	U		<6.3	U		<6.3	U		<6.2	U		<6.1	U		<6.1	U		<6.2	U	
1,2-Dichlorobenzene	<0.99	U		<1.0	U		<1.0	U		<1.0	UJ	I	<1.0	UJ	I	<1.0	UJ	I	<0.99	UJ	I	<0.99	UJ	I	<1.0	UJ	I
1,3-Dichlorobenzene	<0.99	U		<1.0	U		<1.0	U		<1.0	UJ	I	<1.0	UJ	I	<1.0	UJ	I	<0.99	UJ	I	<0.99	UJ	I	<1.0	UJ	I
1,4-Dichlorobenzene	<0.99	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<0.99	U		<0.99	U		<1.0	U	
Acetone	**14**	J	I	**5.6**	J	I	**6.3**			**7.8**			**9.0**			**9.5**			**8.3**			**7.2**			**7.9**		
Benzene	<0.52	U		<0.54	U		<0.54	U		<0.55	U		<0.55	U		<0.54	U		<0.52	U		<0.52	U		<0.54	U	
Ethylbenzene	<0.71	U		<0.73	U		<0.73	U		<0.74	U		<0.74	U		<0.73	U		<0.71	U		<0.71	U		<0.73	U	
m,p-Xylene	**0.87**			<0.73	U		<0.73	U		<0.74	U		<0.74	U		<0.73	U		<0.71	U		<0.71	U		<0.73	U	
o-Xylene	<0.71	U		<0.73	U		<0.73	U		<0.74	U		<0.74	U		<0.73	U		<0.71	U		<0.71	U		<0.73	U	
Toluene	**5.0**	J	I	**1.2**	J	I	**1.3**			**2.0**			**1.0**			**0.84**			**0.82**			**1.8**			**0.78**		
Trichlorofluoromethane (Freon 11)	**5.3**			**4.8**			**2.9**			**1.5**			**3.0**			**1.9**			**2.4**			**2.0**			**3.4**		
Dichlorodifluoromethane (Freon 12)	**2.6**			**1.6**			**2.4**			**2.8**			**2.5**			**2.8**			**2.9**			**2.4**			**2.8**		
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113	<1.2	U		<1.3	U		<1.3	U		<1.3	U		<1.3	U		<1.3	U		<1.2	U		<1.2	U		<1.3	U	

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 7 for sampling locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

3. "<" indicates a non-detection at the reporting limit shown.

4. New Environmental Horizons, Inc (NEH) performed an independent validation of the analytical data, as described in their Data Usability Report, dated November 19, 2012 and provided as Appendix E. 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:
"U" - Indicates Analyte is non-detect at or above the sample specific practical quantification limit (PQL).
"J" - Indicates Result is an estimated value.
"UJ" - Indicates non-detect is estimated at the PQL.
"I" - Indicates Indeterminate bias.

5. **Bold** values indicate the analyte was detected above reporting limits.

6. "Max" indicates the maximum detected concentration in the indoor air samples. For those analytes that were not detected in any of the samples, the maximum reporting limit value is presented.
"Min" indicates the minimum detected concentration in the indoor air samples. For those analytes that were not detected in any of the samples, the minimum reporting limit value is presented. For those analytes that were detected, the reporting limit values were not considered when calculating the minimum values.
"Median" indicates the median detected concentration in the indoor air samples.
"ND" indicates that the analyte was not detected above laboratory reporting limits in any of the indoor air samples.

TABLE 3
October 2012 Confirmatory Sampling Results
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Analyte Name	Concentrations in µg/m³																		Indoor Air		
	Indoor Air																				
	IA2017						IA2024			IA2025			IA2027			IA2035					
	10/10/12			10/10/12 Dup.			10/10/12			10/10/12			10/10/12			10/10/12			Max	Min	Median
	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias	Result	Qualifier	Bias			
Tetrachloroethene (PCE)	**1.4**			<1.2	U		<1.2	U		**2.5**			**2.1**			**1.2**			**9.6**	**1.2**	**2.1**
Trichloroethene (TCE)	<0.17	U		<0.18	U		<0.19	U		<0.18	U		<0.18	U		<0.18	U		**1.2**	**0.18**	**0.24**
cis-1,2-Dichloroethene (cDCE)	<0.63	U		<0.68	U		<0.69	U		<0.67	U		<0.68	U		<0.67	U		<0.69	<0.63	ND
1,1-Dichloroethene (DCE)	<0.63	U		<0.68	U		<0.69	U		<0.67	U		<0.68	U		<0.67	U		<0.69	<0.63	ND
Vinyl chloride (VC)	<0.04	U		<0.044	U		<0.045	U		<0.043	U		<0.044	U		<0.043	U		**0.42**	**0.045**	**0.233**
1,1,1-Trichloroethane (TCA)	<0.86	U		<0.93	U		<0.95	U		<0.92	U		<0.93	U		<0.92	U		<0.95	<0.86	ND
Carbon tetrachloride	**0.55**	J	I	**0.64**	J	I	**0.54**	J	I	**0.59**	J	I	**0.57**			**0.51**			**0.67**	**0.40**	**0.53**
Methylene chloride (MeCl)	<1.1	U		<1.2	U		<1.2	U		<1.2	U		<1.2	U		<1.2	U		**1.8**	**1.1**	**1.55**
Chlorobenzene	<0.73	U		<0.79	U		<0.80	U		<0.77	U		<0.79	U		<0.77	U		<0.80	<0.73	ND
1,2,4-Trichlorobenzene	<5.9	U		<6.3	U		<6.5	U		<6.2	U		<6.3	U		<6.2	U		<6.5	<5.9	ND
1,2-Dichlorobenzene	<0.95	UJ	I	<1.0	UJ	I	<1.0	UJ	I	<1.0	UJ	I	<1.0	U		<1.0	U		<1.0	<0.95	ND
1,3-Dichlorobenzene	<0.95	UJ	I	<1.0	UJ	I	<1.0	UJ	I	<1.0	UJ	I	<1.0	U		<1.0	U		<1.0	<0.95	ND
1,4-Dichlorobenzene	<0.95	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<1.0	U		<1.0	<0.95	ND
Acetone	**9.2**			**6.6**			**6.9**			**9.7**			**8.2**			**5.6**			**14**	**5.1**	**7.45**
Benzene	<0.50	U		<0.55	U		<0.56	U		<0.54	U		<0.55	U		<0.54	U		<0.56	<0.50	ND
Ethylbenzene	<0.69	U		<0.74	U		<0.76	U		<0.73	U		<0.74	U		<0.73	U		<0.76	<0.69	ND
m,p-Xylene	<0.69	U		<0.74	U		<0.76	U		<0.73	U		<0.74	U		<0.73	U		**0.87**	**0.87**	**0.9**
o-Xylene	<0.69	U		<0.74	U		<0.76	U		<0.73	U		<0.74	U		<0.73	U		<0.76	<0.69	ND
Toluene	**0.71**			**0.80**			**0.86**			**0.90**			**1.0**			**0.91**			**5.0**	**0.71**	**0.94**
Trichlorofluoromethane (Freon 11)	**3.2**			**2.9**			**7.0**			**2.6**			**3.8**			**4.1**			**7.0**	**1.5**	**2.9**
Dichlorodifluoromethane (Freon 12)	**2.3**			**2.4**			**2.2**			**2.7**			**2.7**			**2.5**			**2.9**	**1.6**	**2.55**
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113	<1.2	U		<1.3	U		<1.3	U		<1.3	U		<1.3	U		<1.3	U		**4.7**	**4.7**	**4.7**

Notes:

1. Samples were collected by Sanborn Head personnel on the dates indicated using 6-liter summa canisters equipped with 8-hour flow controllers. Refer to Figure 7 for sampling locations.

2. Sample analysis was completed by Eurofins Air Toxics, Inc. of Folsom, California using United States Environmental Protection Agency (USEPA) Method TO-15 (Hi/Lo). Trichloroethene, vinyl chloride, and carbon tetrachloride were analyzed in Selective Ion Monitoring (SIM) mode.

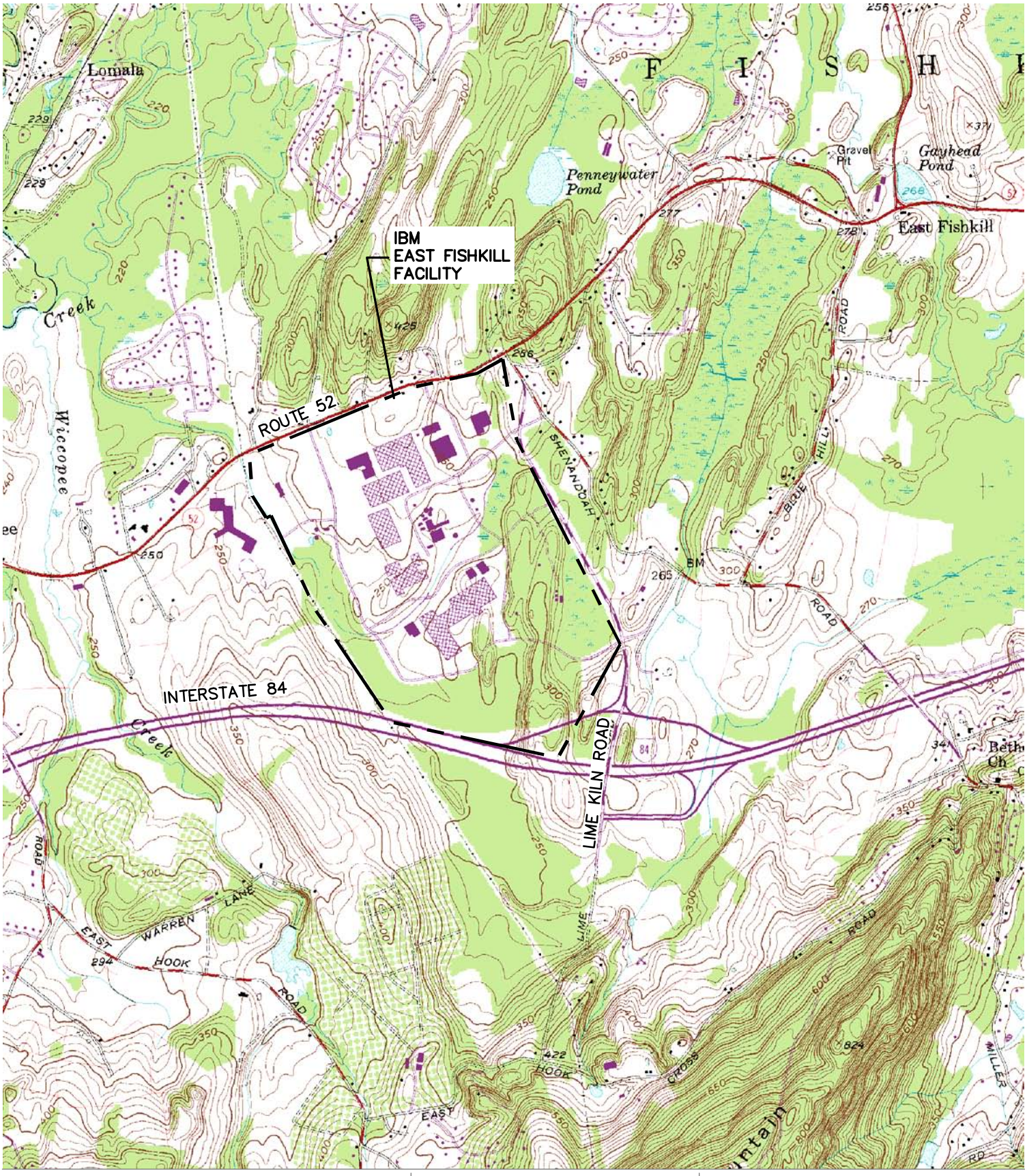
3. "<" indicates a non-detection at the reporting limit shown.

4. New Environmental Horizons, Inc (NEH) performed an independent validation of the analytical data, as described in their Data Usability Report, dated November 19, 2012 and provided as Appendix E. 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:
"U" - Indicates Analyte is non-detect at or above the sample specific practical quantification limit (PQL).
"J" - Indicates Result is an estimated value.
"UJ" - Indicates non-detect is estimated at the PQL.
"I" - Indicates Indeterminate bias.

5. **Bold** values indicate the analyte was detected above reporting limits.

6. "Max" indicates the maximum detected concentration in the indoor air samples. For those analytes that were not detected in any of the samples, the maximum reporting limit value is presented.
"Min" indicates the minimum detected concentration in the indoor air samples. For those analytes that were not detected in any of the samples, the minimum reporting limit value is presented. For those analytes that were detected, the reporting limit values were not considered when calculating the minimum values.
"Median" indicates the median detected concentration in the indoor air samples.
"ND" indicates that the analyte was not detected above laboratory reporting limits in any of the indoor air samples.

FIGURES



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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: B. Green
Reviewed By: D. Shea
Project No: 2999.00
Date: May 2013

1000' 0 2000' Feet

SANBORN HEAD ENGINEERING

Figure 1

Locus Plan

Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill Facility
Hopewell Junction, New York

Figure 2

Building Location Plan

Performance Monitoring and
Confirmatory Sampling Results
Building 310 VOC Source Assessment

IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: P. Malone
Reviewed By: D. Shea
Project No: 2999.00
Date: May 2013

Figure Narrative

This figure shows the buildings at the IBM East Fishkill facility. Building 310 is highlighted.

Legend

— – – — IBM Property Line

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

B310 Indicates building number

Indicates the location of Building 310

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200' 100' 0 200' 400' Feet

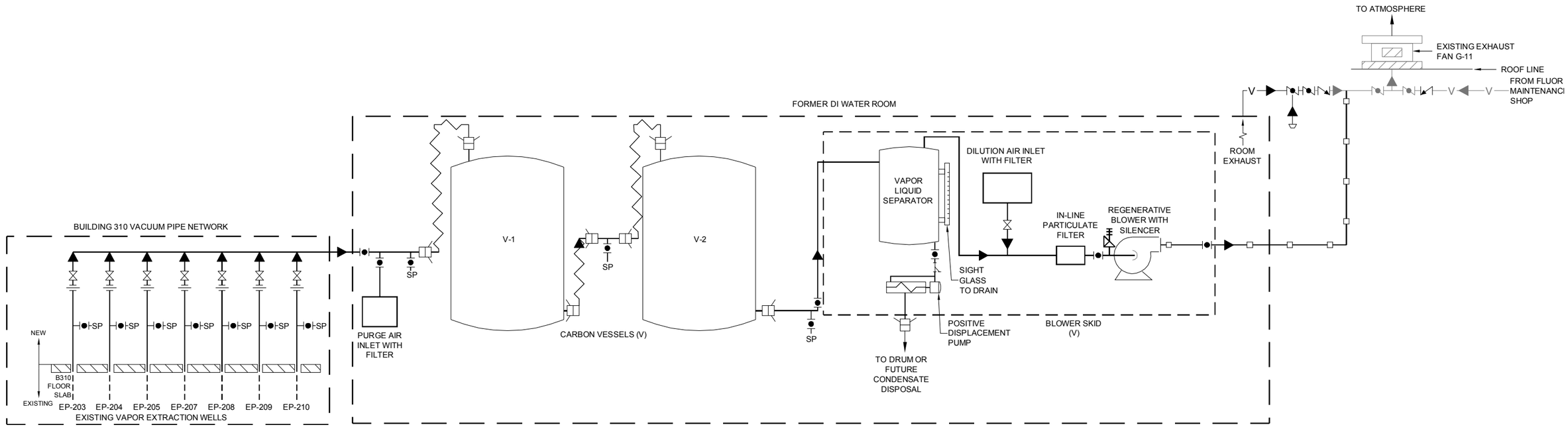
SANBORN HEAD ENGINEERING

NOTES:

1. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. REFER TO OTHER DRAWINGS FOR ALL REQUIRED COMPONENTS.
2. ALL BLOWER SKID-MOUNTED PIPE AND INSTRUMENTATION TO BE PRE-INSTALLED BY THE CONSTRUCTION MANAGER'S VENDOR.

LEGEND:

- BALL VALVE
- GATE VALVE
- VACUUM RELIEF VALVE
- BLADE DAMPER
- ACTUATED BLADE DAMPER
- BACK DRAFT DAMPER
- Y-STRAINER
- FLEXIBLE CONVEYANCE HOSE
- CAM LOCK QUICK CONNECT
- RIGID CONVEYANCE PIPE
- EXISTING EXHAUST VENTILATION DUCT
- PROPOSED EXHAUST VENTILATION DUCT
- RIGID CONVEYANCE PIPE WITH INSULATION AND INSULATION JACKET
- UNION
- SP — SAMPLE PORT
- (V) — CONSTRUCTION MANAGER'S VENDOR FURNISHED FOR CONTRACTOR INSTALLATION



SANBORN HEAD ENGINEERING

NOT TO SCALE

NO.	DATE	DESCRIPTION	BY

DRAWN BY: R.HIRTLE
DESIGNED BY: P.MALONE
REVIEWED BY: S.SOOS
PROJECT MGR: S.SOOS
PIC: D.SHEA
DATE: MAY 2013

BUILDING 310
IBM EAST FISHKILL
HOPEWELL JUNCTION, NEW YORK

PROJECT NUMBER: 2999.00

PROCESS FLOW DIAGRAM
SUBSLAB VAPOR EXTRACTION AND TREATMENT SYSTEM

FIGURE: 3

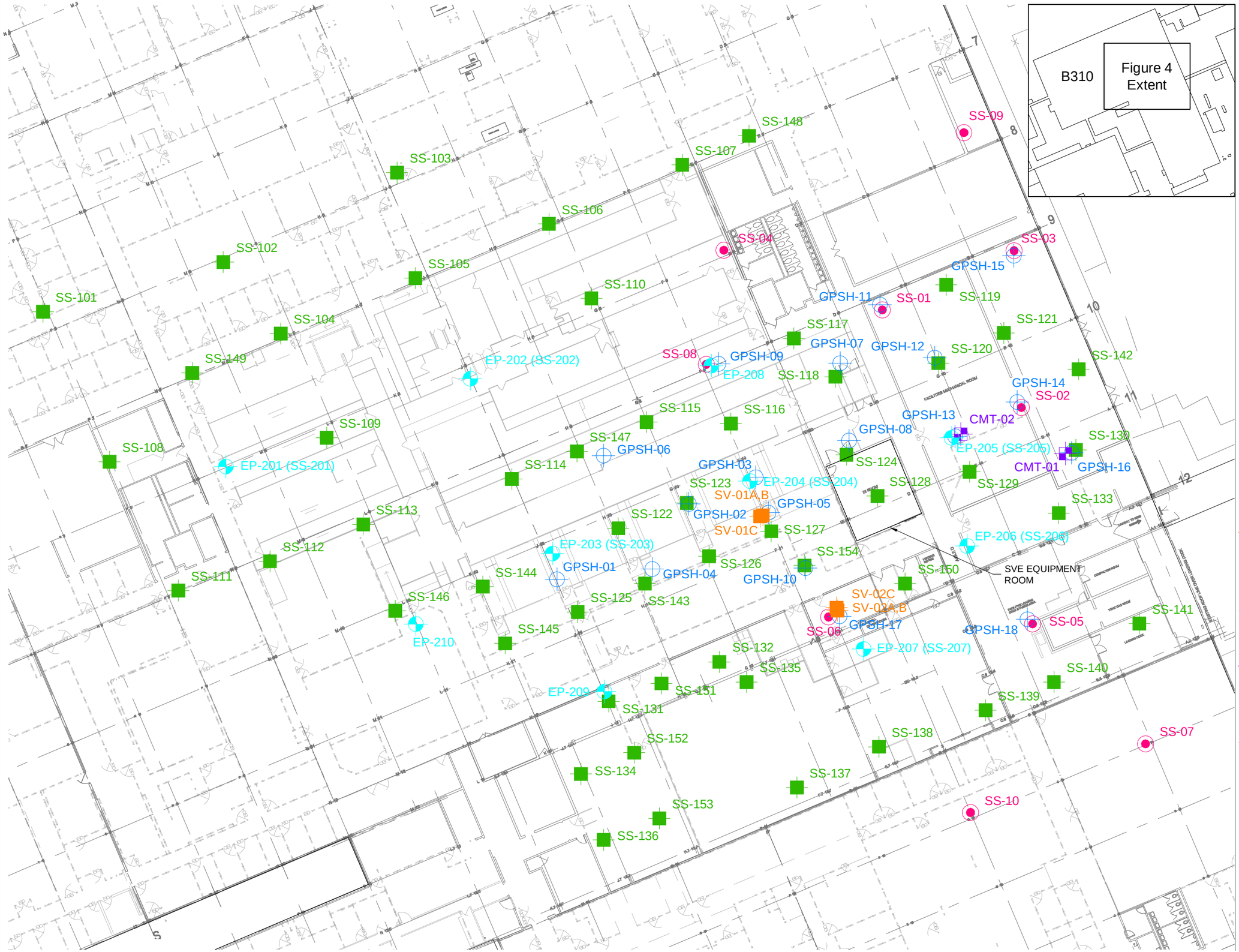


Figure 4

Subslab Extraction and Monitoring Port Layout

Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment

IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: J. Prellwitz
Reviewed By: B. Green
Project No: 2999.00 220
Date: May 2013

Figure Narrative

This figure shows the location and designation of subsurface explorations in and around Building 310.

Sanborn Head installed subslab sample and/or extraction ports SS-01 through SS-22 in May 2009. Subslab sample ports SS-101 through SS-154; subslab extraction ports SS-201 through SS-207; soil borings GPSH-01 through GPSH-18; multilevel soil vapor implants SV-01 and SV-02; and multilevel soil vapor/groundwater implants CMT-01 and CMT-2 were installed in September through December 2010. Subslab extraction ports EP-208 through EP-210 were installed in August 2011

Legend

- SS-119 — Subslab sample port
- SS-01 — Subslab extraction test port
- EP-201 (SS-201) — Subslab extraction port (parenthesis denotes prior naming)
- CMT-02 — Multilevel soil vapor and groundwater monitoring implant
- SV-02C — Soil vapor monitoring implant
- GPSH-14 — Soil boring

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15' 7.5' 0 15' 30' Feet

SANBORN HEAD ENGINEERING

Figure 5

Pre- and Post-Remediation Indoor Air PCE Results

Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment

IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: P. Malone
Reviewed By: B. Green
Project No: 2999.00
Date: May 2013

Figure Narrative

This figure shows the PCE concentrations in indoor air before and after the startup of the subslab vapor extraction system in February 2012.

The indoor air samples were collected using 6-liter summa canisters equipped with 8-hour flow controllers on the dates indicated. The samples were analyzed for a site specific list of volatile organic compounds (VOCs) by Eurofins Air Toxics Inc. of Folsom, CA using USEPA Method TO-15 Hi/Lo.

Legend

IA2026 — Indoor air sample location

AC-30 — HVAC zone (approximate)

Indoor Air Sampling Results Pre-Remediation

630 — PCE results for 2/17/2009 in µg/m^3 initial pre-remediation

95 — PCE results for 4/01/2009 in µg/m^3 initial pre-remediation

Indoor Air Sampling Results Post-Remediation

2.2 — PCE results for 3/15/2012 in µg/m^3 post subslab extraction system startup

16 — PCE results for 4/18/2012 in µg/m^3 post subslab extraction system startup

2.4 — PCE results for 10/10/2012 in µg/m^3 post subslab extraction system startup

Refer to Table 1 for all sample analytical data at each location.

N W E S

40' 20' 0 40' 80' Feet

SANBORN HEAD ENGINEERING

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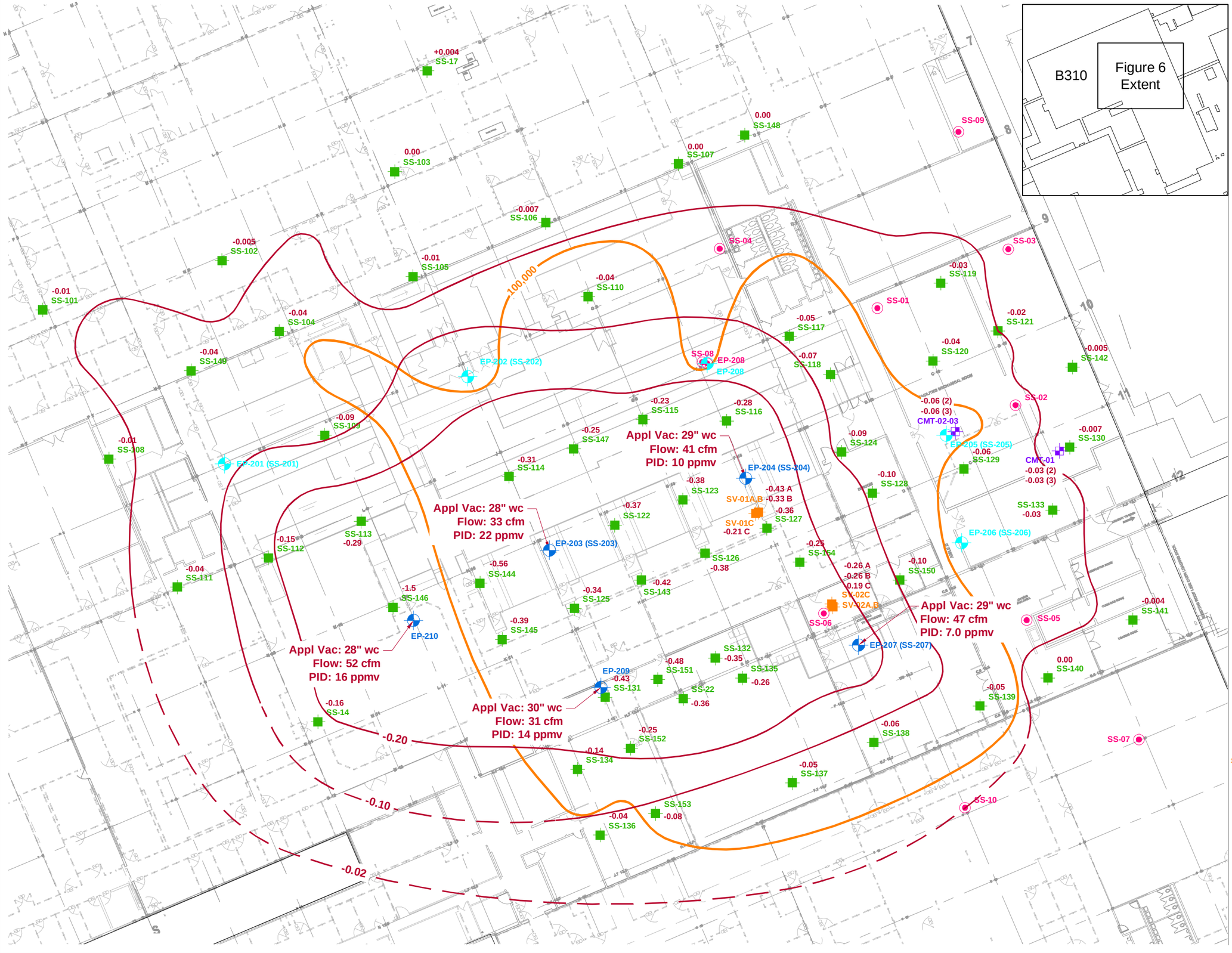

Figure 6

Subslab Pressure Response to Vapor Extraction - February 2012

Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment

IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: P. Malone
Reviewed By: B. Green
Project No: 2999.00
Date: May 2013

Figure Narrative

This figure shows the inferred subslab pressure field (measured in inches of water column [in. wc]) in response to subslab vapor extraction. Differential pressure measurements between room air and subslab pressures were collected on February 29, 2012, approximately one week after the subslab vapor extraction system was put into operation on February 22, 2012. Differential pressure was measured using a Dwyer Series 475 digital manometer. Extracted vapor flow was measured using a TSI 9555 Air Velocity Meter, and screening for the presence of volatile organic compounds (VOCs) within extracted vapor was conducted using a MiniRAE 2000 photoionization detector (PID).

Legend

- SS-119 — 1/2 inch subslab monitoring port
- SS-03 — Subslab extraction test port
- EP-201 (SS-201) — Non-operating extraction port (parenthesis denotes prior naming)
- SV-02C — Multilevel soil vapor implant location
- CMT-02 — Multilevel soil vapor and groundwater monitoring implant location
- EP-204 (SS-204) — Operating subslab extraction port (parenthesis denotes prior naming)
- -0.007 — Subslab pressure (in. wc) relative to room pressure
- -0.20 — Subslab pressure contour relative to indoor air (dashed where less constrained)
- scfm — Standard cubic feet per minute
- ppmv — Gross VOCs (parts per million by volume)
- 100,000 — Concentration contour of PCE in subslab vapor in units of µg/m^3 Based on October 2010 sampling event

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15' 7.5' 0 15' 30' Feet

SANBORN HEAD ENGINEERING

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IA2001	10/10/2012
Acetone	6.4
Carbon Tet	0.46
Freon 12	1.8
Toluene	0.93
Freon 11	5.0

IA2002	10/10/2012
Freon 113	4.7
Acetone	5.2
Carbon Tet	0.40
Freon 12	2.3
PCE	9.6
TCE	1.2
Freon 11	1.8

IA2003	10/10/2012
Acetone	7.6
Carbon Tet	0.55
Freon 12	2.6
Toluene	1.2
TCE	0.18
Freon 11	2.4

IA2004	10/10/2012
Acetone	5.1
Carbon Tet	0.51
Freon 12	2.7
Freon 11	2.3

IA2005	10/10/2012
Acetone	5.9
Carbon Tet	0.48
Freon 12	2.4
TCE	0.19
Freon 11	1.8

IA2006	10/10/2012
Acetone	10
Carbon Tet	0.49
Freon 12	2.7
Toluene	0.95
TCE	0.37
Freon 11	5.9

IA2007	10/10/2012
Acetone	7.3
Carbon Tet	0.58
Freon 12	2.6
Freon 11	2.3

IA2008	10/10/2012
Acetone	14 / 5.6
Carbon Tet	0.45 / 0.45
Freon 12	2.6 / 1.6
MeCl	1.8 / ND
Toluene	5.0 / 1.2
Freon 11	5.3 / 4.8
Vinyl chloride	0.42 / ND
Xylene (m,p-)	0.87 / ND

IA2009	10/10/2012
Acetone	6.3
Carbon Tet	0.51
Freon 12	2.4
PCE	1.5
Toluene	1.3
Freon 11	2.9

IA2010	10/10/2012
Acetone	7.8
Carbon Tet	0.49
Freon 12	2.8
Toluene	2.0
Freon 11	1.5

IA2011	10/10/2012
Acetone	9.0
Carbon Tet	0.56
Freon 12	2.5
PCE	3.7
Toluene	1.0
TCE	0.24
Freon 11	3.0

IA2013	10/10/2012
Acetone	9.5
Carbon Tet	0.58
Freon 12	2.8
Toluene	0.84
Freon 11	1.9

IA2014	10/10/2012
Acetone	8.3
Carbon Tet	0.64
Freon 12	2.9
MeCl	1.3
Toluene	0.82
TCE	0.19
Freon 11	2.4

IA2015	10/10/2012
Acetone	7.2
Carbon Tet	0.67
Freon 12	2.4
MeCl	1.1 J
PCE	2.1
Toluene	1.8
TCE	0.81
Freon 11	2.0

IA2016	10/10/2012
Acetone	7.9
Carbon Tet	0.52
Freon 12	2.8
MeCl	1.8
Toluene	0.78
Freon 11	3.4

IA2017	10/10/2012
Acetone	9.2 / 6.6
Carbon Tet	0.55 / 0.64
Freon 12	2.3 / 2.4
PCE	1.4 / ND
Toluene	0.71 / 0.80
Freon 11	3.2 / 2.9

IA2024	10/10/2012
Acetone	6.9
Carbon Tet	0.54
Freon 12	2.2
Toluene	0.86
Freon 11	7.0

IA2025	10/10/2012
Acetone	9.7
Carbon Tet	0.59
Freon 12	2.7
PCE	2.5
Toluene	0.90
Freon 11	2.6

IA2027	10/10/2012
Acetone	8.2
Carbon Tet	0.57
Freon 12	2.7
PCE	2.1
Toluene	1.0
Freon 11	3.8

IA2035	10/10/2012
Acetone	5.6
Carbon Tet	0.51
Freon 12	2.5
PCE	1.2
Toluene	0.91
Freon 11	4.1

AA2018	10/10/2012
Acetone	8.6
Carbon Tet	0.54
Freon 12	2.6
Freon 11	1.8

AA2021	10/10/2012
Acetone	10
Carbon Tet	0.58
Freon 12	3.0
Toluene	0.65
Freon 11	1.5

AC-40 AC-27 AC-15 AC-13 AC-11 AC-24 SubStation AC Units AC-39 AC-35/ AC-36 AC-37 AC-4 AC-34 AC-7 AC-32 AC-29 AC-30 AC-31 AC-26 AC-38 AC-23 AC-21 Old AC-25/AC-33

IA2001 IA2002 IA2003 IA2004 IA2005 IA2006 IA2007 IA2008 IA2009 IA2010 IA2011 IA2013 IA2014 IA2015 IA2016 IA2017 IA2024 IA2025 IA2026 IA2027 IA2028 IA2029 IA2030 IA2034 IA2035 IA2036 IA2037

Ambient Air Sample Locations

Not to Scale

Figure 7

Building 310 Confirmatory Sampling Results

Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment

IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: P. Malone
Reviewed By: B. Green
Project No: 2999.00
Date: May 2013

Figure Narrative

This figure shows the results of indoor and ambient air sampling conducted at Building 310 on October 10, 2012. Air samples were collected into 6-liter Summa canisters equipped with 8-hour flow controllers. Indoor air samples were collected from approximately 3 ft above the floor, while ambient air samples were collected proximate to HVAC outdoor air intakes located on the roof. The samples were analyzed for a site specific list of volatile organic compounds (VOCs) by Eurofins Air Toxics Inc. of Folsom, CA using USEPA Method TO-15 Hi/Lo. The data are presented in units of micrograms per cubic meter (µg/m3).

Legend

- IA2026 — Indoor air sample location
- AA2018 — Ambient air sample location
- AC-30 — HVAC zone (approximate)

Refer to Table 1 for all sample analytical data at each location.

N W E S

40' 20' 0 40' 80' Feet

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APPENDIX A

LIMITATIONS

APPENDIX A
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. 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 groundwater at the site. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their distribution within the groundwater and vapor 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 exclusive use of IBM for specific application to Building 310 at the East Fishkill facility in accordance with generally accepted engineering and scientific 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

PHOTOGRAPH LOG

APPENDIX B
PHOTOGRAPH LOG

Photo #1: Sample IA-2001, located in the Records Archives.

Photo #2: Sample IA-2002, located in a storage room near column F3.

Photo #3: Sample IA-2003, located in the former 2nd Source Area (currently vacant).

Photo #4: Sample IA-2004, located in the former MTC Resale Showroom.
Blue barrel is for catching a roof leak.

Photo #5: Sample IA-2005, located in the former manufacturing area.

Photo #6: Sample IA-2006, located in a Mechanical Room used for deionized water treatment.

Photos #7: Sample IA-2007, located in an area currently used for the storage of crates.

Photo #8: Sample IA-2008 and DUP-34200, located in an office area adjacent to a laboratory.

Photo #9: Sample IA-2009, located in the former manufacturing/clean room area (currently vacant).

Photo #10: Sample IA-2010, located in the maintenance shop office.

Photo #11: Sample IA-2011, located in a storage room.

Photo #12: Sample IA-2013, located in the Wafer Warehouse.

Photo #13: Sample IA-2014, located in the DCAP-Tooling Machine Shop.

Photo #14: Sample IA-2015, located in a storage room currently used for the storage of computers and equipment.

Photo #15: Sample IA-2016, located in a break room.

Photo #16: Sample IA-2017 and DUP-34392, located in the Machine Shop at the southern end of the building.

Photo #17: Sample IA-2024, located in Archives.

Photo #18: Sample IA-2025, located in the North Mechanical Equipment Room (MER).

Photos #19: Sample IA-2027, located in a utility Core Area.

Photos #20: Sample IA-2035, located in the former manufacturing/clean room (currently vacant).

Photo #21: Sample AA-2018, located in the plenum outdoor air intake for AC-30.

Photos #22: Sample AA-2021, located in the plenum outdoor air intake for AC-32.

APPENDIX C

HVAC OPERATION DURING SAMPLING

TABLE C-1
Summary of HVAC Unit Outside Air Damper Positions
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill
Hopewell Junction, New York

HVAC Unit	Outside Air Damper - Normal Operating Position	Outside Air Damper Minimum Position (% Open)	Source of Information Regarding Minimum Position
Building 310			
AC-4	Auto - variable	20	Control System
AC-7	Auto - variable	20	
AC-11	Auto - variable	20	
AC-13	Fixed - no variation	80	Observed
AC-15	Fixed - no variation	50	Control System
AC-21	Fixed - no variation	0	Observed
AC-23	Auto - variable	20	Control System
AC-24	OFF	OFF	Observed
AC-25/33	OFF	OFF	
AC-26	Fixed - no variation	80	
AC-27	Fixed - no variation	0	
AC-29	Fixed - no variation	0	
AC-30	Fixed - no variation	80	
AC-32	Fixed - no variation	100	Control System
AC-34	Auto - variable	20	
AC-35/36	OFF	OFF	Observed
AC-37	OFF	OFF	
AC-38	OFF	OFF	
AC-39	OFF	OFF	

Notes:

1. This table summarizes the normal operating configration for the outside air dampers for each heating, ventilation, and air conditioning (HVAC) unit serving Building 310. For dampers that automatically modulate, these dampers were set and fixed in their minimum position at least 24 hours prior to and during sampling.

TABLE C-2
Summary of Damper Position Survey During Sampling
Performance Monitoring and Confirmatory Sampling Results
Building 310 VOC Source Assessment
IBM East Fishkill
Hopewell Junction, New York

HVAC Unit	Assessment Type	Date and Time of Inspection						
		10/8/2012	10/9/2012		10/10/2012			
		1330 hrs	0800 hrs	1400 hrs	0630 hrs	1030 hrs	1400 hrs	1730 hrs
AC-4	Fusible Link	-	Installed Link	**X**	✓	✓	✓	✓
	Visual	✓	✓	**X**	✓	✓	✓	✓
	Control System	✓	✓	**X**	✓	✓	✓	✓
AC-7	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-11	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-13	Fusible Link	-	-	-	-	-	-	-
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	-	-	-	-	-	-	-
AC-15	Fusible Link	-	-	-	-	-	-	-
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-21	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-23	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-26	Fusible Link	-	-	-	-	-	-	-
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	-	-	-	-	-	-	-
AC-27	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	-	-	-	-	-	-	-
AC-29	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	-	-	-	-	-	-	-
AC-30	Fusible Link	-	-	-	-	-	-	-
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	-	-	-	-	-	-	-
AC-32	Fusible Link	-	-	-	-	-	-	-
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-34	Fusible Link	-	Installed Link	✓	✓	✓	✓	✓
	Visual	✓	✓	✓	✓	✓	✓	✓
	Control System	✓	✓	✓	✓	✓	✓	✓
AC-24	OFF							
AC-25/33								
AC-35/36								
AC-37								
AC-38								
AC-39								

Notes:
1. Fusible links were constructed from nylon zip ties and masking tape; visual assessment was performed by visually observing the outside air damper positions; control system observations were made by checking the outside air damper postions on the HVAC control system. Dampers were inspected several times during sampling to determine if outside air dampers changed positions.

2. The outside air dampers on air handling units that automatically modulate were set and locked in their minimum positions on October 8, 2012. Air handling units with fixed position dampers were not adjusted.

3. "✓" indicates that during inspection, the damper positions were observed to be in the position set prior to sampling.

4. "-" indicates that a fusible link was not installed or that the unit is not available on the HVAC control system.

5. "X" indicates that the fusible link was broken or that the damper postition was observed to have changed. For AC-4, the outside air damper position was observed to have changed and the fusible link was broken during the check on October 9, 2012. The outside air damper was reset to the minimum position and locked within the control system software. No changes to the damper position at AC-4 were observed during the duration of indoor air sampling.

APPENDIX D

ANALYTICAL LABORATORY DATA RESULTS

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10/29/2012
Mr. Brad Green
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: IBM East Fishkill
Project #: 2999.00
Workorder #: 1210308A

Dear Mr. Brad Green

The following report includes the data for the above referenced project for sample(s) received on 10/15/2012 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1210308A

Work Order Summary

CLIENT:	Mr. Brad Green 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 #**	2999.00 IBM East Fishkill
DATE RECEIVED:	10/15/2012	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/29/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	IA2001	Modified TO-15	6.0 "Hg	5 psi
01B	IA2001	Modified TO-15	6.0 "Hg	5 psi
02A	IA2002	Modified TO-15	6.5 "Hg	5 psi
02B	IA2002	Modified TO-15	6.5 "Hg	5 psi
03A	IA2003	Modified TO-15	5.5 "Hg	5 psi
03B	IA2003	Modified TO-15	5.5 "Hg	5 psi
04A	IA2004	Modified TO-15	5.0 "Hg	5 psi
04B	IA2004	Modified TO-15	5.0 "Hg	5 psi
05A	IA2005	Modified TO-15	5.5 "Hg	5 psi
05B	IA2005	Modified TO-15	5.5 "Hg	5 psi
06A	IA2006	Modified TO-15	6.5 "Hg	5 psi
06B	IA2006	Modified TO-15	6.5 "Hg	5 psi
07A	IA2007	Modified TO-15	7.0 "Hg	5 psi
07B	IA2007	Modified TO-15	7.0 "Hg	5 psi
08A	IA2008	Modified TO-15	5.5 "Hg	5 psi
08B	IA2008	Modified TO-15	5.5 "Hg	5 psi
09A	DUP34200	Modified TO-15	6.0 "Hg	5 psi
09B	DUP34200	Modified TO-15	6.0 "Hg	5 psi
10A	IA2009	Modified TO-15	6.0 "Hg	5 psi
10B	IA2009	Modified TO-15	6.0 "Hg	5 psi
11A	Lab Blank	Modified TO-15	NA	NA
11B	Lab Blank	Modified TO-15	NA	NA
11C	Lab Blank	Modified TO-15	NA	NA

Continued on next page

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WORK ORDER #: 1210308A

Work Order Summary

CLIENT:	Mr. Brad Green 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 #**	2999.00 IBM East Fishkill
DATE RECEIVED:	10/15/2012	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/29/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
11D	Lab Blank	Modified TO-15	NA	NA
12A	CCV	Modified TO-15	NA	NA
12B	CCV	Modified TO-15	NA	NA
12C	CCV	Modified TO-15	NA	NA
12D	CCV	Modified TO-15	NA	NA
13A	LCS	Modified TO-15	NA	NA
13AA	LCSD	Modified TO-15	NA	NA
13B	LCS	Modified TO-15	NA	NA
13BB	LCSD	Modified TO-15	NA	NA
13C	LCS	Modified TO-15	NA	NA
13CC	LCSD	Modified TO-15	NA	NA
13D	LCS	Modified TO-15	NA	NA
13DD	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 10/29/12

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 1210308A

Ten 6 Liter Summa Canister (SIM Certified) samples were received on October 15, 2012. 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.

The Relative Percent Difference (RPD) of the LCS/LCSD performed on 10/17/12 exceeded

acceptance limits for 1,2,4-Trichlorobenzene.

Definition of Data Qualifying Flags

Eight 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 and/or LCS.

N - The identification is based on presumptive evidence.

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: IA2001

Lab ID#: 1210308A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.37	0.83	1.8
Freon 11	0.17	0.89	0.94	5.0
Acetone	0.84	2.7	2.0	6.4
Toluene	0.17	0.25	0.63	0.93

Client Sample ID: IA2001

Lab ID#: 1210308A-01B

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: IA2002

Lab ID#: 1210308A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.46	0.84	2.3
Freon 11	0.17	0.32	0.96	1.8
Freon 113	0.17	0.61	1.3	4.7
Acetone	0.86	2.2	2.0	5.2
Tetrachloroethene	0.17	1.4	1.2	9.6

Client Sample ID: IA2002

Lab ID#: 1210308A-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.064	0.22	0.40
Trichloroethene	0.034	0.22	0.18	1.2

Client Sample ID: IA2003

Lab ID#: 1210308A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)

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

Client Sample ID: IA2003

Lab ID#: 1210308A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.53	0.81	2.6
Freon 11	0.16	0.43	0.92	2.4
Acetone	0.82	3.2	1.9	7.6
Toluene	0.16	0.31	0.62	1.2

Client Sample ID: IA2003

Lab ID#: 1210308A-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.088	0.21	0.55
Trichloroethene	0.033	0.033	0.18	0.18

Client Sample ID: IA2004

Lab ID#: 1210308A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.54	0.80	2.7
Freon 11	0.16	0.41	0.90	2.3
Acetone	0.80	2.2	1.9	5.1

Client Sample ID: IA2004

Lab ID#: 1210308A-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.082	0.20	0.51

Client Sample ID: IA2005

Lab ID#: 1210308A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.48	0.81	2.4
Freon 11	0.16	0.33	0.92	1.8

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

Client Sample ID: IA2005

Lab ID#: 1210308A-05A

Acetone	0.82	2.5	1.9	5.9

Client Sample ID: IA2005

Lab ID#: 1210308A-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.076	0.21	0.48
Trichloroethene	0.033	0.036	0.18	0.19

Client Sample ID: IA2006

Lab ID#: 1210308A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.54	0.84	2.7
Freon 11	0.17	1.0	0.96	5.9
Acetone	0.86	4.2	2.0	10
Toluene	0.17	0.25	0.64	0.95

Client Sample ID: IA2006

Lab ID#: 1210308A-06B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.078	0.22	0.49
Trichloroethene	0.034	0.069	0.18	0.37

Client Sample ID: IA2007

Lab ID#: 1210308A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.18	0.52	0.86	2.6
Freon 11	0.18	0.41	0.98	2.3
Acetone	0.88	3.1	2.1	7.3

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

Client Sample ID: IA2007

Lab ID#: 1210308A-07B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.035	0.092	0.22	0.58

Client Sample ID: IA2008

Lab ID#: 1210308A-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.53	0.81	2.6
Freon 11	0.16	0.94	0.92	5.3
Acetone	0.82	5.7	1.9	14
Methylene Chloride	0.33	0.53	1.1	1.8
Toluene	0.16	1.3	0.62	5.0
m,p-Xylene	0.16	0.20	0.71	0.87

Client Sample ID: IA2008

Lab ID#: 1210308A-08B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	0.16	0.042	0.42
Carbon Tetrachloride	0.033	0.072	0.21	0.45

Client Sample ID: DUP34200

Lab ID#: 1210308A-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.32	0.83	1.6
Freon 11	0.17	0.85	0.94	4.8
Acetone	0.84	2.3	2.0	5.6
Toluene	0.17	0.31	0.63	1.2

Client Sample ID: DUP34200

Lab ID#: 1210308A-09B

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

Client Sample ID: DUP34200

Lab ID#: 1210308A-09B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.072	0.21	0.45

Client Sample ID: IA2009

Lab ID#: 1210308A-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.50	0.83	2.4
Freon 11	0.17	0.52	0.94	2.9
Acetone	0.84	2.7	2.0	6.3
Toluene	0.17	0.34	0.63	1.3
Tetrachloroethene	0.17	0.22	1.1	1.5

Client Sample ID: IA2009

Lab ID#: 1210308A-10B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.081	0.21	0.51

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Client Sample ID: IA2001

Lab ID#: 1210308A-01A

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

File Name:	**v101709**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/17/12 02:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.37	0.83	1.8
Freon 11	0.17	0.89	0.94	5.0
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	2.7	2.0	6.4
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.25	0.63	0.93
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	96	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	92	70-130

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Client Sample ID: IA2001

Lab ID#: 1210308A-01B

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

File Name:	**v101709sim**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/17/12 02:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	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	100	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: IA2002

Lab ID#: 1210308A-02A

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

File Name:	**v101710**	**Date of Collection: 10/10/12 4:15:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/17/12 03:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.46	0.84	2.3
Freon 11	0.17	0.32	0.96	1.8
Freon 113	0.17	0.61	1.3	4.7
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	2.2	2.0	5.2
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	1.4	1.2	9.6
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	112	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: IA2002

Lab ID#: 1210308A-02B

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

File Name:	**v101710sim**	**Date of Collection: 10/10/12 4:15:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/17/12 03:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.064	0.22	0.40
Trichloroethene	0.034	0.22	0.18	1.2

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	113	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: IA2003

Lab ID#: 1210308A-03A

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

File Name:	**v101711**	**Date of Collection: 10/10/12 5:06:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/17/12 04:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.53	0.81	2.6
Freon 11	0.16	0.43	0.92	2.4
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Acetone	0.82	3.2	1.9	7.6
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	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	0.31	0.62	1.2
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	100	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2003

Lab ID#: 1210308A-03B

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

File Name:	**v101711sim**	**Date of Collection: 10/10/12 5:06:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/17/12 04:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Carbon Tetrachloride	0.033	0.088	0.21	0.55
Trichloroethene	0.033	0.033	0.18	0.18

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2004

Lab ID#: 1210308A-04A

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

File Name:	**v101712**	**Date of Collection: 10/10/12 4:58:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/17/12 04:54 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.54	0.80	2.7
Freon 11	0.16	0.41	0.90	2.3
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Acetone	0.80	2.2	1.9	5.1
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.64	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	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	0.80	Not Detected	6.0	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: IA2004

Lab ID#: 1210308A-04B

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

File Name:	**v101712sim**	**Date of Collection: 10/10/12 4:58:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 10/17/12 04:54 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Carbon Tetrachloride	0.032	0.082	0.20	0.51
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: IA2005

Lab ID#: 1210308A-05A

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

File Name:	**v101713**	**Date of Collection: 10/10/12 5:11:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/17/12 05:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.48	0.81	2.4
Freon 11	0.16	0.33	0.92	1.8
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Acetone	0.82	2.5	1.9	5.9
Methylene Chloride	0.33	Not Detected	1.1	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: IA2005

Lab ID#: 1210308A-05B

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

File Name:	**v101713sim**	**Date of Collection: 10/10/12 5:11:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/17/12 05:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Carbon Tetrachloride	0.033	0.076	0.21	0.48
Trichloroethene	0.033	0.036	0.18	0.19

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: IA2006

Lab ID#: 1210308A-06A

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

File Name:	**v101714**	**Date of Collection: 10/10/12 4:43:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/17/12 06:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.54	0.84	2.7
Freon 11	0.17	1.0	0.96	5.9
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	4.2	2.0	10
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	0.25	0.64	0.95
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2006

Lab ID#: 1210308A-06B

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

File Name:	**v101714sim**	**Date of Collection: 10/10/12 4:43:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/17/12 06:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.078	0.22	0.49
Trichloroethene	0.034	0.069	0.18	0.37

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: IA2007

Lab ID#: 1210308A-07A

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

File Name:	**v101715**	**Date of Collection: 10/10/12 4:50:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 10/17/12 07:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.18	0.52	0.86	2.6
Freon 11	0.18	0.41	0.98	2.3
Freon 113	0.18	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.18	Not Detected	0.69	Not Detected
Acetone	0.88	3.1	2.1	7.3
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	0.95	Not Detected
Benzene	0.18	Not Detected	0.56	Not Detected
Toluene	0.18	Not Detected	0.66	Not Detected
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
Chlorobenzene	0.18	Not Detected	0.80	Not Detected
Ethyl Benzene	0.18	Not Detected	0.76	Not Detected
m,p-Xylene	0.18	Not Detected	0.76	Not Detected
o-Xylene	0.18	Not Detected	0.76	Not Detected
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: IA2007

Lab ID#: 1210308A-07B

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

File Name:	**v101715sim**	**Date of Collection: 10/10/12 4:50:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 10/17/12 07:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
Carbon Tetrachloride	0.035	0.092	0.22	0.58
Trichloroethene	0.035	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: IA2008

Lab ID#: 1210308A-08A

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

File Name:	**v101807**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/18/12 11:47 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.53	0.81	2.6
Freon 11	0.16	0.94	0.92	5.3
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Acetone	0.82	5.7	1.9	14
Methylene Chloride	0.33	0.53	1.1	1.8
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	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	1.3	0.62	5.0
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	0.20	0.71	0.87
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	99	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	90	70-130

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Client Sample ID: IA2008

Lab ID#: 1210308A-08B

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

File Name:	**v101807sim**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/18/12 11:47 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	0.16	0.042	0.42
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	105	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: DUP34200

Lab ID#: 1210308A-09A

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

File Name:	**v101808**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 12:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.32	0.83	1.6
Freon 11	0.17	0.85	0.94	4.8
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	2.3	2.0	5.6
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.31	0.63	1.2
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	92	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: DUP34200

Lab ID#: 1210308A-09B

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

File Name:	**v101808sim**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 12:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Carbon Tetrachloride	0.034	0.072	0.21	0.45
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	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: IA2009

Lab ID#: 1210308A-10A

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

File Name:	**v101809**	**Date of Collection: 10/10/12 5:19:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 01:20 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.50	0.83	2.4
Freon 11	0.17	0.52	0.94	2.9
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	2.7	2.0	6.3
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.34	0.63	1.3
Tetrachloroethene	0.17	0.22	1.1	1.5
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	102	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: IA2009

Lab ID#: 1210308A-10B

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

File Name:	**v101809sim**	**Date of Collection: 10/10/12 5:19:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 01:20 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Carbon Tetrachloride	0.034	0.081	0.21	0.51
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	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308A-11A

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

File Name:	**v101708**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 01:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	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	94	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308A-11B

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

File Name:	**v101708sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 01:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	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	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308A-11C

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

File Name:	**v101806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 10:57 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	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	98	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308A-11D

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

File Name:	**v101806sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 10:57 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	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	107	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: CCV

Lab ID#: 1210308A-12A

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

File Name:	**v101702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 08:06 AM**	

Compound	%Recovery
Freon 12	100
Freon 11	100
Freon 113	92
1,1-Dichloroethene	85
Acetone	86
Methylene Chloride	86
cis-1,2-Dichloroethene	86
1,1,1-Trichloroethane	94
Benzene	87
Toluene	82
Tetrachloroethene	97
Chlorobenzene	86
Ethyl Benzene	88
m,p-Xylene	88
o-Xylene	91
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	93
1,2-Dichlorobenzene	98
1,2,4-Trichlorobenzene	118

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: CCV

Lab ID#: 1210308A-12B

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

File Name:	**v101702sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 08:06 AM**	

Compound	**%Recovery**
Vinyl Chloride	76
Carbon Tetrachloride	103
Trichloroethene	88

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: CCV

Lab ID#: 1210308A-12C

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

File Name:	**v101802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 07:49 AM**	

Compound	%Recovery
Freon 12	96
Freon 11	86
Freon 113	85
1,1-Dichloroethene	82
Acetone	83
Methylene Chloride	84
cis-1,2-Dichloroethene	86
1,1,1-Trichloroethane	87
Benzene	100
Toluene	87
Tetrachloroethene	91
Chlorobenzene	88
Ethyl Benzene	90
m,p-Xylene	92
o-Xylene	95
1,3-Dichlorobenzene	91
1,4-Dichlorobenzene	85
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	109

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1210308A-12D

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

File Name:	**v101802sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 07:49 AM**	

Compound	**%Recovery**
Vinyl Chloride	82
Carbon Tetrachloride	94
Trichloroethene	84

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 1210308A-13A

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

File Name:	**v101705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 10:19 AM**	

Compound	%Recovery
Freon 12	94
Freon 11	93
Freon 113	89
1,1-Dichloroethene	89
Acetone	82
Methylene Chloride	80
cis-1,2-Dichloroethene	83
1,1,1-Trichloroethane	93
Benzene	87
Toluene	80
Tetrachloroethene	91
Chlorobenzene	84
Ethyl Benzene	84
m,p-Xylene	84
o-Xylene	88
1,3-Dichlorobenzene	94
1,4-Dichlorobenzene	85
1,2-Dichlorobenzene	92
1,2,4-Trichlorobenzene	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308A-13AA

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

File Name:	**v101706**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 11:05 AM**	

Compound	%Recovery
Freon 12	94
Freon 11	93
Freon 113	89
1,1-Dichloroethene	88
Acetone	81
Methylene Chloride	80
cis-1,2-Dichloroethene	83
1,1,1-Trichloroethane	92
Benzene	83
Toluene	76
Tetrachloroethene	88
Chlorobenzene	83
Ethyl Benzene	83
m,p-Xylene	84
o-Xylene	88
1,3-Dichlorobenzene	94
1,4-Dichlorobenzene	88
1,2-Dichlorobenzene	95
1,2,4-Trichlorobenzene	128

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCS

Lab ID#: 1210308A-13B

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

File Name:	**v101705sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 10:19 AM**	

Compound	**%Recovery**
Vinyl Chloride	76
Carbon Tetrachloride	110
Trichloroethene	84

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308A-13BB

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

File Name:	**v101706sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/17/12 11:05 AM**	

Compound	**%Recovery**
Vinyl Chloride	74
Carbon Tetrachloride	106
Trichloroethene	82

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCS

Lab ID#: 1210308A-13C

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

File Name:	**v101803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 08:32 AM**	

Compound	%Recovery
Freon 12	99
Freon 11	91
Freon 113	86
1,1-Dichloroethene	92
Acetone	88
Methylene Chloride	89
cis-1,2-Dichloroethene	86
1,1,1-Trichloroethane	89
Benzene	93
Toluene	80
Tetrachloroethene	89
Chlorobenzene	83
Ethyl Benzene	85
m,p-Xylene	86
o-Xylene	87
1,3-Dichlorobenzene	85
1,4-Dichlorobenzene	79
1,2-Dichlorobenzene	84
1,2,4-Trichlorobenzene	99

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1210308A-13CC

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

File Name:	**v101804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 09:17 AM**	

Compound	%Recovery
Freon 12	104
Freon 11	94
Freon 113	91
1,1-Dichloroethene	97
Acetone	92
Methylene Chloride	92
cis-1,2-Dichloroethene	91
1,1,1-Trichloroethane	93
Benzene	97
Toluene	84
Tetrachloroethene	90
Chlorobenzene	85
Ethyl Benzene	86
m,p-Xylene	86
o-Xylene	89
1,3-Dichlorobenzene	85
1,4-Dichlorobenzene	80
1,2-Dichlorobenzene	83
1,2,4-Trichlorobenzene	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: LCS

Lab ID#: 1210308A-13D

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

File Name:	**v101803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 08:32 AM**	

Compound	**%Recovery**
Vinyl Chloride	87
Carbon Tetrachloride	99
Trichloroethene	81

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308A-13DD

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

File Name:	**v101804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 09:17 AM**	

Compound	**%Recovery**
Vinyl Chloride	94
Carbon Tetrachloride	105
Trichloroethene	85

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	98	70-130

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10/29/2012
Mr. Brad Green
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: IBM East Fishkill
Project #: 2999.00
Workorder #: 1210308B

Dear Mr. Brad Green

The following report includes the data for the above referenced project for sample(s) received on 10/15/2012 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1210308B

Work Order Summary

CLIENT:	Mr. Brad Green 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 #**	2999.00 IBM East Fishkill
DATE RECEIVED:	10/15/2012	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/29/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
11A	IA2010	Modified TO-15	6.5 "Hg	5 psi
11B	IA2010	Modified TO-15	6.5 "Hg	5 psi
12A	IA2011	Modified TO-15	6.5 "Hg	5 psi
12B	IA2011	Modified TO-15	6.5 "Hg	5 psi
13A	IA2013	Modified TO-15	6.0 "Hg	5 psi
13B	IA2013	Modified TO-15	6.0 "Hg	5 psi
14A	IA2014	Modified TO-15	5.5 "Hg	5 psi
14B	IA2014	Modified TO-15	5.5 "Hg	5 psi
15A	IA2015	Modified TO-15	5.5 "Hg	5 psi
15B	IA2015	Modified TO-15	5.5 "Hg	5 psi
16A	IA2016	Modified TO-15	6.0 "Hg	5 psi
16B	IA2016	Modified TO-15	6.0 "Hg	5 psi
17A	IA2017	Modified TO-15	4.5 "Hg	5 psi
17B	IA2017	Modified TO-15	4.5 "Hg	5 psi
18A	DUP34392	Modified TO-15	6.5 "Hg	5 psi
18B	DUP34392	Modified TO-15	6.5 "Hg	5 psi
19A	IA2024	Modified TO-15	7.0 "Hg	5 psi
19B	IA2024	Modified TO-15	7.0 "Hg	5 psi
20A	IA2025	Modified TO-15	6.0 "Hg	5 psi
20B	IA2025	Modified TO-15	6.0 "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

Continued on next page

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WORK ORDER #: 1210308B

Work Order Summary

CLIENT:	Mr. Brad Green 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 #**	2999.00 IBM East Fishkill
DATE RECEIVED:	10/15/2012	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/29/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
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
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 Mayo DATE: 10/29/12

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 1210308B

Ten 6 Liter Summa Canister (SIM Certified) samples were received on October 15, 2012. 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

Eight 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 and/or LCS.

N - The identification is based on presumptive evidence.

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: IA2010

Lab ID#: 1210308B-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.56	0.84	2.8
Freon 11	0.17	0.26	0.96	1.5
Acetone	0.86	3.3	2.0	7.8
Toluene	0.17	0.52	0.64	2.0

Client Sample ID: IA2010

Lab ID#: 1210308B-11B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.078	0.22	0.49

Client Sample ID: IA2011

Lab ID#: 1210308B-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.50	0.84	2.5
Freon 11	0.17	0.54	0.96	3.0
Acetone	0.86	3.8	2.0	9.0
Toluene	0.17	0.28	0.64	1.0
Tetrachloroethene	0.17	0.54	1.2	3.7

Client Sample ID: IA2011

Lab ID#: 1210308B-12B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.089	0.22	0.56
Trichloroethene	0.034	0.044	0.18	0.24

Client Sample ID: IA2013

Lab ID#: 1210308B-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)

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

Client Sample ID: IA2013

Lab ID#: 1210308B-13A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.56	0.83	2.8
Freon 11	0.17	0.33	0.94	1.9
Acetone	0.84	4.0	2.0	9.5
Toluene	0.17	0.22	0.63	0.84

Client Sample ID: IA2013

Lab ID#: 1210308B-13B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.092	0.21	0.58

Client Sample ID: IA2014

Lab ID#: 1210308B-14A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.59	0.81	2.9
Freon 11	0.16	0.43	0.92	2.4
Acetone	0.82	3.5	1.9	8.3
Methylene Chloride	0.33	0.38	1.1	1.3
Toluene	0.16	0.22	0.62	0.82

Client Sample ID: IA2014

Lab ID#: 1210308B-14B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.10	0.21	0.64
Trichloroethene	0.033	0.036	0.18	0.19

Client Sample ID: IA2015

Lab ID#: 1210308B-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)

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

Client Sample ID: IA2015

Lab ID#: 1210308B-15A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.48	0.81	2.4
Freon 11	0.16	0.36	0.92	2.0
Acetone	0.82	3.0	1.9	7.2
Methylene Chloride	0.33	0.32 J	1.1	1.1 J
Toluene	0.16	0.49	0.62	1.8
Tetrachloroethene	0.16	0.31	1.1	2.1

Client Sample ID: IA2015

Lab ID#: 1210308B-15B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.033	0.11	0.21	0.67
Trichloroethene	0.033	0.15	0.18	0.81

Client Sample ID: IA2016

Lab ID#: 1210308B-16A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.58	0.83	2.8
Freon 11	0.17	0.60	0.94	3.4
Acetone	0.84	3.3	2.0	7.9
Methylene Chloride	0.34	0.52	1.2	1.8
Toluene	0.17	0.20	0.63	0.78

Client Sample ID: IA2016

Lab ID#: 1210308B-16B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.083	0.21	0.52

Client Sample ID: IA2017

Lab ID#: 1210308B-17A

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

Client Sample ID: IA2017

Lab ID#: 1210308B-17A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.47	0.78	2.3
Freon 11	0.16	0.56	0.89	3.2
Acetone	0.79	3.9	1.9	9.2
Toluene	0.16	0.19	0.60	0.71
Tetrachloroethene	0.16	0.20	1.1	1.4

Client Sample ID: IA2017

Lab ID#: 1210308B-17B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.032	0.087	0.20	0.55

Client Sample ID: DUP34392

Lab ID#: 1210308B-18A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.49	0.84	2.4
Freon 11	0.17	0.52	0.96	2.9
Acetone	0.86	2.8	2.0	6.6
Toluene	0.17	0.21	0.64	0.80

Client Sample ID: DUP34392

Lab ID#: 1210308B-18B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.10	0.22	0.64

Client Sample ID: IA2024

Lab ID#: 1210308B-19A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.18	0.45	0.86	2.2

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

Client Sample ID: IA2024

Lab ID#: 1210308B-19A

Freon 11	0.18	1.2	0.98	7.0
Acetone	0.88	2.9	2.1	6.9
Toluene	0.18	0.23	0.66	0.86

Client Sample ID: IA2024

Lab ID#: 1210308B-19B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.035	0.086	0.22	0.54

Client Sample ID: IA2025

Lab ID#: 1210308B-20A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.54	0.83	2.7
Freon 11	0.17	0.46	0.94	2.6
Acetone	0.84	4.1	2.0	9.7
Toluene	0.17	0.24	0.63	0.90
Tetrachloroethene	0.17	0.36	1.1	2.5

Client Sample ID: IA2025

Lab ID#: 1210308B-20B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.093	0.21	0.59

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Client Sample ID: IA2010

Lab ID#: 1210308B-11A

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

File Name:	**a101808**	**Date of Collection: 10/10/12 4:22:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 05:05 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.56	0.84	2.8
Freon 11	0.17	0.26	0.96	1.5
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	3.3	2.0	7.8
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	0.52	0.64	2.0
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA2010

Lab ID#: 1210308B-11B

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

File Name:	**a101808sim**	**Date of Collection: 10/10/12 4:22:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 05:05 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.078	0.22	0.49
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	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA2011

Lab ID#: 1210308B-12A

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

File Name:	**a101809**	**Date of Collection: 10/10/12 4:05:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 05:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.50	0.84	2.5
Freon 11	0.17	0.54	0.96	3.0
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	3.8	2.0	9.0
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	0.28	0.64	1.0
Tetrachloroethene	0.17	0.54	1.2	3.7
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 (SIM Certified)

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

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Client Sample ID: IA2011

Lab ID#: 1210308B-12B

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

File Name:	**a101809sim**	**Date of Collection: 10/10/12 4:05:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 05:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.089	0.22	0.56
Trichloroethene	0.034	0.044	0.18	0.24

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2013

Lab ID#: 1210308B-13A

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

File Name:	**a101810**	**Date of Collection: 10/10/12 5:05:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 06:22 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.56	0.83	2.8
Freon 11	0.17	0.33	0.94	1.9
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	4.0	2.0	9.5
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.22	0.63	0.84
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	112	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2013

Lab ID#: 1210308B-13B

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

File Name:	**a101810sim**	**Date of Collection: 10/10/12 5:05:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 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
Carbon Tetrachloride	0.034	0.092	0.21	0.58
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	101	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2014

Lab ID#: 1210308B-14A

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

File Name:	**a101811**	**Date of Collection: 10/10/12 4:53:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/18/12 06:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.59	0.81	2.9
Freon 11	0.16	0.43	0.92	2.4
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Acetone	0.82	3.5	1.9	8.3
Methylene Chloride	0.33	0.38	1.1	1.3
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	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	0.22	0.62	0.82
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	104	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA2014

Lab ID#: 1210308B-14B

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

File Name:	**a101811sim**	**Date of Collection: 10/10/12 4:53:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/18/12 06:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Carbon Tetrachloride	0.033	0.10	0.21	0.64
Trichloroethene	0.033	0.036	0.18	0.19

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA2015

Lab ID#: 1210308B-15A

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

File Name:	**a101815**	**Date of Collection: 10/10/12 5:35:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/18/12 10:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.48	0.81	2.4
Freon 11	0.16	0.36	0.92	2.0
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Acetone	0.82	3.0	1.9	7.2
Methylene Chloride	0.33	0.32 J	1.1	1.1 J
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	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	0.49	0.62	1.8
Tetrachloroethene	0.16	0.31	1.1	2.1
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	105	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA2015

Lab ID#: 1210308B-15B

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

File Name:	**a101815sim**	**Date of Collection: 10/10/12 5:35:00 PM**	
Dil. Factor:	**1.64**	**Date of Analysis: 10/18/12 10:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Carbon Tetrachloride	0.033	0.11	0.21	0.67
Trichloroethene	0.033	0.15	0.18	0.81

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA2016

Lab ID#: 1210308B-16A

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

File Name:	**a101813**	**Date of Collection: 10/10/12 4:55:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 08:43 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.58	0.83	2.8
Freon 11	0.17	0.60	0.94	3.4
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	3.3	2.0	7.9
Methylene Chloride	0.34	0.52	1.2	1.8
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.20	0.63	0.78
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	104	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA2016

Lab ID#: 1210308B-16B

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

File Name:	**a101813sim**	**Date of Collection: 10/10/12 4:55:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 08:43 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Carbon Tetrachloride	0.034	0.083	0.21	0.52
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	110	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2017

Lab ID#: 1210308B-17A

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

File Name:	**a101814**	**Date of Collection: 10/10/12 4:58:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 10/18/12 09:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.47	0.78	2.3
Freon 11	0.16	0.56	0.89	3.2
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Acetone	0.79	3.9	1.9	9.2
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.63	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	0.19	0.60	0.71
Tetrachloroethene	0.16	0.20	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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA2017

Lab ID#: 1210308B-17B

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

File Name:	**a101814sim**	**Date of Collection: 10/10/12 4:58:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 10/18/12 09:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Carbon Tetrachloride	0.032	0.087	0.20	0.55
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: DUP34392

Lab ID#: 1210308B-18A

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

File Name:	**a101816**	**Date of Collection: 10/10/12 4:58:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 10:53 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.49	0.84	2.4
Freon 11	0.17	0.52	0.96	2.9
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	2.8	2.0	6.6
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	0.21	0.64	0.80
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: DUP34392

Lab ID#: 1210308B-18B

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

File Name:	**a101816sim**	**Date of Collection: 10/10/12 4:58:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 10:53 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.10	0.22	0.64
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	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: IA2024

Lab ID#: 1210308B-19A

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

File Name:	**a101908**	**Date of Collection: 10/10/12 5:45:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 10/19/12 04:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.18	0.45	0.86	2.2
Freon 11	0.18	1.2	0.98	7.0
Freon 113	0.18	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.18	Not Detected	0.69	Not Detected
Acetone	0.88	2.9	2.1	6.9
Methylene Chloride	0.35	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.18	Not Detected	0.69	Not Detected
1,1,1-Trichloroethane	0.18	Not Detected	0.95	Not Detected
Benzene	0.18	Not Detected	0.56	Not Detected
Toluene	0.18	0.23	0.66	0.86
Tetrachloroethene	0.18	Not Detected	1.2	Not Detected
Chlorobenzene	0.18	Not Detected	0.80	Not Detected
Ethyl Benzene	0.18	Not Detected	0.76	Not Detected
m,p-Xylene	0.18	Not Detected	0.76	Not Detected
o-Xylene	0.18	Not Detected	0.76	Not Detected
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA2024

Lab ID#: 1210308B-19B

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

File Name:	**a101908sim**	**Date of Collection: 10/10/12 5:45:00 PM**	
Dil. Factor:	**1.75**	**Date of Analysis: 10/19/12 04:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
Carbon Tetrachloride	0.035	0.086	0.22	0.54
Trichloroethene	0.035	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	115	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: IA2025

Lab ID#: 1210308B-20A

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

File Name:	**a101909**	**Date of Collection: 10/10/12 4:06:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/19/12 05:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.54	0.83	2.7
Freon 11	0.17	0.46	0.94	2.6
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	4.1	2.0	9.7
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.24	0.63	0.90
Tetrachloroethene	0.17	0.36	1.1	2.5
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	109	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: IA2025

Lab ID#: 1210308B-20B

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

File Name:	**a101909sim**	**Date of Collection: 10/10/12 4:06:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/19/12 05:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Carbon Tetrachloride	0.034	0.093	0.21	0.59
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	118	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308B-21A

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

File Name:	**a101807**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 04:00 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	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	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308B-21B

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

File Name:	**a101807sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 04:00 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	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	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308B-21C

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

File Name:	**a101907**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 03:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	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	97	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308B-21D

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

File Name:	**a101907sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 03:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	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	98	70-130

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Client Sample ID: CCV

Lab ID#: 1210308B-22A

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

File Name:	**a101802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 11:42 AM**	

Compound	%Recovery
Freon 12	97
Freon 11	90
Freon 113	94
1,1-Dichloroethene	94
Acetone	83
Methylene Chloride	94
cis-1,2-Dichloroethene	88
1,1,1-Trichloroethane	90
Benzene	92
Toluene	95
Tetrachloroethene	97
Chlorobenzene	100
Ethyl Benzene	101
m,p-Xylene	92
o-Xylene	99
1,3-Dichlorobenzene	80
1,4-Dichlorobenzene	83
1,2-Dichlorobenzene	78
1,2,4-Trichlorobenzene	99

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: CCV

Lab ID#: 1210308B-22B

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

File Name:	**a101802sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 11:42 AM**	

Compound	**%Recovery**
Vinyl Chloride	93
Carbon Tetrachloride	119
Trichloroethene	92

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: CCV

Lab ID#: 1210308B-22C

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

File Name:	**a101902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 11:32 AM**	

Compound	%Recovery
Freon 12	106
Freon 11	100
Freon 113	100
1,1-Dichloroethene	100
Acetone	86
Methylene Chloride	93
cis-1,2-Dichloroethene	94
1,1,1-Trichloroethane	95
Benzene	98
Toluene	100
Tetrachloroethene	97
Chlorobenzene	100
Ethyl Benzene	102
m,p-Xylene	96
o-Xylene	102
1,3-Dichlorobenzene	83
1,4-Dichlorobenzene	87
1,2-Dichlorobenzene	84
1,2,4-Trichlorobenzene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: CCV

Lab ID#: 1210308B-22D

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

File Name:	**a101902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 11:32 AM**	

Compound	**%Recovery**
Vinyl Chloride	99
Carbon Tetrachloride	125
Trichloroethene	94

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 1210308B-23A

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

File Name:	**a101803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 12:39 PM**	

Compound	%Recovery
Freon 12	87
Freon 11	82
Freon 113	91
1,1-Dichloroethene	98
Acetone	73
Methylene Chloride	86
cis-1,2-Dichloroethene	80
1,1,1-Trichloroethane	81
Benzene	84
Toluene	86
Tetrachloroethene	83
Chlorobenzene	89
Ethyl Benzene	87
m,p-Xylene	85
o-Xylene	90
1,3-Dichlorobenzene	74
1,4-Dichlorobenzene	76
1,2-Dichlorobenzene	72
1,2,4-Trichlorobenzene	95

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	89	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308B-23AA

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

File Name:	**a101804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 01:23 PM**	

Compound	**%Recovery**
Freon 12	90
Freon 11	84
Freon 113	93
1,1-Dichloroethene	102
Acetone	76
Methylene Chloride	83
cis-1,2-Dichloroethene	82
1,1,1-Trichloroethane	84
Benzene	84
Toluene	85
Tetrachloroethene	81
Chlorobenzene	85
Ethyl Benzene	86
m,p-Xylene	83
o-Xylene	86
1,3-Dichlorobenzene	71
1,4-Dichlorobenzene	74
1,2-Dichlorobenzene	71
1,2,4-Trichlorobenzene	94

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1210308B-23B

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

File Name:	**a101803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 12:39 PM**	

Compound	**%Recovery**
Vinyl Chloride	82
Carbon Tetrachloride	104
Trichloroethene	81

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308B-23BB

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

File Name:	**a101804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 01:23 PM**	

Compound	**%Recovery**
Vinyl Chloride	82
Carbon Tetrachloride	104
Trichloroethene	81

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 1210308B-23C

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

File Name:	**a101903**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 12:14 PM**	

Compound	%Recovery
Freon 12	92
Freon 11	87
Freon 113	93
1,1-Dichloroethene	101
Acetone	77
Methylene Chloride	90
cis-1,2-Dichloroethene	84
1,1,1-Trichloroethane	87
Benzene	84
Toluene	85
Tetrachloroethene	85
Chlorobenzene	88
Ethyl Benzene	88
m,p-Xylene	85
o-Xylene	85
1,3-Dichlorobenzene	72
1,4-Dichlorobenzene	74
1,2-Dichlorobenzene	71
1,2,4-Trichlorobenzene	94

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1210308B-23CC

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

File Name:	**a101904**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 12:59 PM**	

Compound	%Recovery
Freon 12	96
Freon 11	87
Freon 113	88
1,1-Dichloroethene	94
Acetone	75
Methylene Chloride	84
cis-1,2-Dichloroethene	84
1,1,1-Trichloroethane	89
Benzene	82
Toluene	84
Tetrachloroethene	84
Chlorobenzene	88
Ethyl Benzene	88
m,p-Xylene	85
o-Xylene	89
1,3-Dichlorobenzene	72
1,4-Dichlorobenzene	75
1,2-Dichlorobenzene	72
1,2,4-Trichlorobenzene	95

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCS

Lab ID#: 1210308B-23D

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

File Name:	**a101903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 12:14 PM**	

Compound	**%Recovery**
Vinyl Chloride	86
Carbon Tetrachloride	110
Trichloroethene	81

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308B-23DD

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

File Name:	**a101904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/19/12 12:59 PM**	

Compound	**%Recovery**
Vinyl Chloride	85
Carbon Tetrachloride	109
Trichloroethene	80

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	105	70-130

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10/29/2012
Mr. Brad Green
Sanborn, Head & Associates
20 Foundry Street

Concord NH 03301

Project Name: IBM East Fishkill
Project #: 2999.00
Workorder #: 1210308C

Dear Mr. Brad Green

The following report includes the data for the above referenced project for sample(s) received on 10/15/2012 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 Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. 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 #: 1210308C

Work Order Summary

CLIENT:	Mr. Brad Green 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 #**	2999.00 IBM East Fishkill
DATE RECEIVED:	10/15/2012	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/29/2012		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
21A	IA2027	Modified TO-15	6.5 "Hg	5 psi
21B	IA2027	Modified TO-15	6.5 "Hg	5 psi
22A	IA2035	Modified TO-15	6.0 "Hg	5 psi
22B	IA2035	Modified TO-15	6.0 "Hg	5 psi
23A	FB1	Modified TO-15	4.5 "Hg	5 psi
23B	FB1	Modified TO-15	4.5 "Hg	5 psi
24A	AA2018	Modified TO-15	6.5 "Hg	5 psi
24B	AA2018	Modified TO-15	6.5 "Hg	5 psi
25A	AA2021	Modified TO-15	6.5 "Hg	5 psi
25B	AA2021	Modified TO-15	6.5 "Hg	5 psi
26A	Lab Blank	Modified TO-15	NA	NA
26B	Lab Blank	Modified TO-15	NA	NA
27A	CCV	Modified TO-15	NA	NA
27B	CCV	Modified TO-15	NA	NA
28A	LCS	Modified TO-15	NA	NA
28AA	LCSD	Modified TO-15	NA	NA
28B	LCS	Modified TO-15	NA	NA
28BB	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 10/29/12

Technical Director

Certfication numbers: AZ Licensure AZ0775, CA NELAP - 12282CA, NY NELAP - 11291,
TX NELAP - T104704434-12-5, UT NELAP CA009332012-3, WA NELAP - C935
Name of Accrediting Agency: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2011, Expiration date: 10/17/2012.
Eurofins Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
Sanborn, Head & Associates
Workorder# 1210308C

Five 6 Liter Summa Canister (SIM Certified) samples were received on October 15, 2012. 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

Eight 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 and/or LCS.

N - The identification is based on presumptive evidence.

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: IA2027

Lab ID#: 1210308C-21A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.55	0.84	2.7
Freon 11	0.17	0.68	0.96	3.8
Acetone	0.86	3.4	2.0	8.2
Toluene	0.17	0.26	0.64	1.0
Tetrachloroethene	0.17	0.30	1.2	2.1

Client Sample ID: IA2027

Lab ID#: 1210308C-21B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.090	0.22	0.57

Client Sample ID: IA2035

Lab ID#: 1210308C-22A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.50	0.83	2.5
Freon 11	0.17	0.73	0.94	4.1
Acetone	0.84	2.4	2.0	5.6
Toluene	0.17	0.24	0.63	0.91
Tetrachloroethene	0.17	0.17	1.1	1.2

Client Sample ID: IA2035

Lab ID#: 1210308C-22B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.082	0.21	0.51

Client Sample ID: FB1

Lab ID#: 1210308C-23A

No Detections Were Found.

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

Client Sample ID: FB1

Lab ID#: 1210308C-23B

No Detections Were Found.

Client Sample ID: AA2018

Lab ID#: 1210308C-24A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.53	0.84	2.6
Freon 11	0.17	0.32	0.96	1.8
Acetone	0.86	3.6	2.0	8.6

Client Sample ID: AA2018

Lab ID#: 1210308C-24B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.086	0.22	0.54

Client Sample ID: AA2021

Lab ID#: 1210308C-25A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.60	0.84	3.0
Freon 11	0.17	0.27	0.96	1.5
Acetone	0.86	4.3	2.0	10
Toluene	0.17	0.17	0.64	0.65

Client Sample ID: AA2021

Lab ID#: 1210308C-25B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Carbon Tetrachloride	0.034	0.093	0.22	0.58

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Client Sample ID: IA2027

Lab ID#: 1210308C-21A

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

File Name:	**v101810**	**Date of Collection: 10/10/12 4:35:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 01:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.55	0.84	2.7
Freon 11	0.17	0.68	0.96	3.8
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	3.4	2.0	8.2
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	0.26	0.64	1.0
Tetrachloroethene	0.17	0.30	1.2	2.1
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: IA2027

Lab ID#: 1210308C-21B

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

File Name:	**v101810sim**	**Date of Collection: 10/10/12 4:35:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 01:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.090	0.22	0.57
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	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: IA2035

Lab ID#: 1210308C-22A

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

File Name:	**v101811**	**Date of Collection: 10/10/12 4:26:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 02:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.50	0.83	2.5
Freon 11	0.17	0.73	0.94	4.1
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.67	Not Detected
Acetone	0.84	2.4	2.0	5.6
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.67	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	0.24	0.63	0.91
Tetrachloroethene	0.17	0.17	1.1	1.2
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	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: IA2035

Lab ID#: 1210308C-22B

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

File Name:	**v101811sim**	**Date of Collection: 10/10/12 4:26:00 PM**	
Dil. Factor:	**1.68**	**Date of Analysis: 10/18/12 02:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Carbon Tetrachloride	0.034	0.082	0.21	0.51
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	107	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: FB1

Lab ID#: 1210308C-23A

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

File Name:	**v101812**	**Date of Collection: 10/10/12 5:25:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 10/18/12 03:09 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	Not Detected	0.78	Not Detected
Freon 11	0.16	Not Detected	0.89	Not Detected
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Acetone	0.79	Not Detected	1.9	Not Detected
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.63	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	Not Detected	0.60	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: FB1

Lab ID#: 1210308C-23B

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

File Name:	**v101812sim**	**Date of Collection: 10/10/12 5:25:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 10/18/12 03:09 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Carbon Tetrachloride	0.032	Not Detected	0.20	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: AA2018

Lab ID#: 1210308C-24A

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

File Name:	**v101813**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 04:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.53	0.84	2.6
Freon 11	0.17	0.32	0.96	1.8
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	3.6	2.0	8.6
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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 (SIM Certified)

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

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Client Sample ID: AA2018

Lab ID#: 1210308C-24B

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

File Name:	**v101813sim**	**Date of Collection: 10/10/12 5:40:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 04:12 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.086	0.22	0.54
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	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: AA2021

Lab ID#: 1210308C-25A

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

File Name:	**v101814**	**Date of Collection: 10/10/12 5:45:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 05:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.17	0.60	0.84	3.0
Freon 11	0.17	0.27	0.96	1.5
Freon 113	0.17	Not Detected	1.3	Not Detected
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	4.3	2.0	10
Methylene Chloride	0.34	Not Detected	1.2	Not Detected
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	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	0.17	0.64	0.65
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 (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: AA2021

Lab ID#: 1210308C-25B

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

File Name:	**v101814sim**	**Date of Collection: 10/10/12 5:45:00 PM**	
Dil. Factor:	**1.71**	**Date of Analysis: 10/18/12 05:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.044	Not Detected
Carbon Tetrachloride	0.034	0.093	0.22	0.58
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	109	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308C-26A

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

File Name:	**v101806**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 10:57 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	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	98	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	91	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1210308C-26B

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

File Name:	**v101806sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 10:57 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	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	107	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: CCV

Lab ID#: 1210308C-27A

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

File Name:	**v101802**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 07:49 AM**	

Compound	%Recovery
Freon 12	96
Freon 11	86
Freon 113	85
1,1-Dichloroethene	82
Acetone	83
Methylene Chloride	84
cis-1,2-Dichloroethene	86
1,1,1-Trichloroethane	87
Benzene	100
Toluene	87
Tetrachloroethene	91
Chlorobenzene	88
Ethyl Benzene	90
m,p-Xylene	92
o-Xylene	95
1,3-Dichlorobenzene	91
1,4-Dichlorobenzene	85
1,2-Dichlorobenzene	91
1,2,4-Trichlorobenzene	109

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1210308C-27B

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

File Name:	**v101802sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 07:49 AM**	

Compound	**%Recovery**
Vinyl Chloride	82
Carbon Tetrachloride	94
Trichloroethene	84

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 1210308C-28A

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

File Name:	**v101803**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 08:32 AM**	

Compound	%Recovery
Freon 12	99
Freon 11	91
Freon 113	86
1,1-Dichloroethene	92
Acetone	88
Methylene Chloride	89
cis-1,2-Dichloroethene	86
1,1,1-Trichloroethane	89
Benzene	93
Toluene	80
Tetrachloroethene	89
Chlorobenzene	83
Ethyl Benzene	85
m,p-Xylene	86
o-Xylene	87
1,3-Dichlorobenzene	85
1,4-Dichlorobenzene	79
1,2-Dichlorobenzene	84
1,2,4-Trichlorobenzene	99

Container Type: NA - Not Applicable

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

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Client Sample ID: LCSD

Lab ID#: 1210308C-28AA

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

File Name:	**v101804**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 09:17 AM**	

Compound	**%Recovery**
Freon 12	104
Freon 11	94
Freon 113	91
1,1-Dichloroethene	97
Acetone	92
Methylene Chloride	92
cis-1,2-Dichloroethene	91
1,1,1-Trichloroethane	93
Benzene	97
Toluene	84
Tetrachloroethene	90
Chlorobenzene	85
Ethyl Benzene	86
m,p-Xylene	86
o-Xylene	89
1,3-Dichlorobenzene	85
1,4-Dichlorobenzene	80
1,2-Dichlorobenzene	83
1,2,4-Trichlorobenzene	99

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: LCS

Lab ID#: 1210308C-28B

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

File Name:	**v101803sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 08:32 AM**	

Compound	**%Recovery**
Vinyl Chloride	87
Carbon Tetrachloride	99
Trichloroethene	81

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	107	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: LCSD

Lab ID#: 1210308C-28BB

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

File Name:	**v101804sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 10/18/12 09:17 AM**	

Compound	**%Recovery**
Vinyl Chloride	94
Carbon Tetrachloride	105
Trichloroethene	85

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	98	70-130

APPENDIX E

DATA VALIDATION REPORT

environmental chemistry consultants

Data Usability Report

Method TO-15 Hi/Lo Analysis

Client/Company:	Sanborn, Head, & Associates, Inc., Concord, New Hampshire (SHA)
Site/Project Name:	IBM – East Fishkill Facility, Hopewell Junction, New York
Laboratory:	Air Toxics Ltd, Folsom, California (ATL)
Work Orders:	1210308A, 1210308B & 1210308C
Date(s) of Collection:	October 10, 2012
Number and Type Samples & Analyses:	22 Indoor Air, 2 Ambient Air, and 1 Field Blank samples 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:	November 19, 2012

This Data Usability Report was performed on the Work Orders 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 II SOP HW-31, *Validating Air Samples, Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15*, Rev. 4, October 2006; 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; and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*; Publication USEPA540/R-07/003, July 2007; 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.

34 Pheasant Run Drive, Skillman, NJ 08558 2 Farmer's Circle, Arlington, MA 02474
Phone: (908) 874-5686 (781) 643-4294
Email: nrothman@neh-inc.com schapnick@neh-inc.com
www.neh-inc.com

I. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification of Matrix Spike (MS), Matrix Spike Duplicate (MSD), Matrix Duplicate (MD), Field Duplicate (FD), Field Equipment Blank (EB), and Trip Blank (TB), if applicable and the analytical parameters reviewed are listed in Table 1.

Table 1. Sample Descriptions and Analytical Parameters

Sample ID	Lab Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
IA2001	1210308A-01A	10/10/12	Indoor Air	VOCs	Field Sample
IA2002	1210308A-02A	10/10/12	Indoor Air	VOCs	Field Sample
IA2003	1210308A-03A	10/10/12	Indoor Air	VOCs	Field Sample
IA2004	1210308A-04A	10/10/12	Indoor Air	VOCs	Field Sample
IA2005	1210308A-05A	10/10/12	Indoor Air	VOCs	Field Sample
IA2006	1210308A-06A	10/10/12	Indoor Air	VOCs	Field Sample
IA2007	1210308A-07A	10/10/12	Indoor Air	VOCs	Field Sample
IA2008	1210308A-08A	10/10/12	Indoor Air	VOCs	Field Sample
DUP34200	1210308A-09A	10/10/12	Indoor Air	VOCs	Field Duplicate of IA2008
IA2009	1210308A-10A	10/10/12	Indoor Air	VOCs	Field Sample
IA2010	1210308B-11A	10/10/12	Indoor Air	VOCs	Field Sample
IA2011	1210308B-12A	10/10/12	Indoor Air	VOCs	Field Sample
IA2013	1210308B-13A	10/10/12	Indoor Air	VOCs	Field Sample
IA2014	1210308B-14A	10/10/12	Indoor Air	VOCs	Field Sample
IA2015	1210308B-15A	10/10/12	Indoor Air	VOCs	Field Sample
IA2016	1210308B-16A	10/10/12	Indoor Air	VOCs	Field Sample
IA2017	1210308B-17A	10/10/12	Indoor Air	VOCs	Field Sample
DUP34392	1210308B-18A	10/10/12	Indoor Air	VOCs	Field Duplicate of IA2017
IA2024	1210308B-19A	10/10/12	Indoor Air	VOCs	Field Sample
IA2025	1210308B-20A	10/10/12	Indoor Air	VOCs	Field Sample

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

Sample ID	Lab Sample ID	Collection Date	Matrix	Analytical Parameters	Sample Type
IA2027	1210308C-21A	10/10/12	Indoor Air	VOCs	Field Sample
IA2035	1210308C-22A	10/10/12	Indoor Air	VOCs	Field Sample
FB1	1210308C-23A	10/10/12	Air	VOCs	Field Blank
AA2018	1210308C-24A	10/10/12	Ambient Air	VOCs	Field Sample
AA2021	1210308C-25A	10/10/12	Ambient 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

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

This Data Usability Report represents a review of sample results and summary QC (method and matrix) only for an evaluation of accuracy, precision, and sensitivity. A full In-Depth Review of results, QC, and raw data was performed for this project for Work Orders 0907203AR1 and 0907203BR1 (NEH, 08/13/09).

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

- 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
- Surrogate 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, several results were estimated (J or UJ) due to QC issues. Table 2 summarizes the actions taken during this review. NEH generated validated data spreadsheets based on the electronic project database files received from ATL for these Work Orders. There

were no rejected results; therefore, all results were considered acceptable compared to QAPP and method criteria, with the understanding of the potential uncertainty (bias) in the qualified results.

A single Chain-of-Custody (COC) was submitted to ATL; however, the laboratory split the samples into three Work Orders: 1210308A, 1210308B, and 1210308C.

The laboratory reported results for all 22 compounds listed in Table B.1 of the Work Plan 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. All compounds except trichloroethene, vinyl chloride, and carbon tetrachloride were reported using the full scan detector, while SIM analysis was used for these three compounds. The full scan analysis was reported with an "A" suffix and the SIM analysis with a "B" suffix appended to the laboratory sample ID.

There were two Field duplicate (FD) pairs: IA2008 / DUP34200 and IA2017 / DUP34392. FD precision was acceptable for all 22 Target VOCs in the FD pair IA2008 / DUP34200 except for acetone, toluene, and vinyl chloride, which were estimated (J or UJ) with indeterminate bias in this FD pair due to the observed imprecision as shown in Table 2. FD precision was acceptable for all 22 Target VOCs in the FD pair IA2017 / DUP34392. The FD results are an indication of variable precision for field collection through analysis for these air samples.

Sensitivity requirements compared to the Reporting Limits (RLs) defined in Table B.1 of the Workplan were met for all samples in these Work Orders.

All other quality control information associated with accuracy, precision, and sensitivity for the project-specific list of VOCs reported met project 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
IA2001 IA2002 IA2003 IA2004 IA2005 IA2006 IA2007	1,2,4-Trichlorobenzene	UJ	I	LCS/LCSD imprecision
IA2008 DUP34200	Acetone Toluene Vinyl Chloride	J / UJ	I	FD imprecision

Table 2. Summary of Data Validation Actions - *continued*

Field Sample ID	Analyte	Qualifier	Bias	Validation Comments
IA2010 IA2011 IA2013 IA2014 IA2015 IA2016 IA2017 DUP34392 IA2024 IA2025	1,3-Dichlorobenzene 1,2-Dichlorobenzene Carbon Tetrachloride	J / UJ	I	Initial Calibration outside criteria
IA2015	Methylene Chloride	J	I	Result uncertain below the calibration range

Qualifiers: U = Analyte is non-detect at or above the sample-specific practical quantitation limit (PQL); UJ = Non-detect is estimated at the PQL; J = Result is estimated; EB = Analyte was also present in a non-matrix matched Field Equipment Blank; TB = Analyte was also present in a non-matrix matched Trip Blank; N = there is presumptive evidence for the TIC identification; R = Result is rejected and is unusable for project decisions.

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

Abbreviations used in Table 2:
LCS = Laboratory Control Sample
LCSD = Laboratory Control Sample Duplicate
FD = Field Duplicate

The attached Data Review Checklists, completed for each Work Order reviewed, 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.

Lab: eurofins/Air Toxics Ltd.
Date Sampled: 10/10/2012
Method of Analysis: TO-15 Hi/Lo

No. Samples 9 Indoor Air + 1 FD

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						Estimate (UJ) 7 results	Estimate (J or UJ) 6 results	

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.

The samples were received intact on 10/15/2012. The samples received were separated into three Work Orders (1210308A, 1210308B, and 1210308C). A single report will be written, at the clients request, for all three Work Orders.

Canisters were Certified pre-cleaned - certificates of analysis are within data package and all Target compounds were non-detect in the canisters prior to being sent to the field.

The canister vacuums (field initial, field final and lab receipt) were all acceptable; therefore, no action required. There were no COC issues noted by lab upon sample receipt.

Samples were analyzed on 10/17/12 & 10/18/12 (within 8 days of collection); therefore HT was met. No Action required.

ICALs : Instrument V Full Scan and SIM performed on 9/15-9/26/12. Full Scan = 6- to 8-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for 19 Target compounds (see page 5). SIM = 9- to 10-level calibration from 0.003 or 0.01 to 20 ppbV for 3 Targets. %RSD ≤ 30% for all 22 Target Compounds. RLs reported (0.1 ppbV for all 19 Full Scan Targets except Acetone and 1,2,4-Trichlorobenzene at 0.5 ppbV and Methylene Chloride at 0.2 ppbV; and 0.01 ppbV for Vinyl Chloride and 0.02 ppbV for Carbon Tetrachloride and Trichloroethene by SIM for DF=1 analysis) were supported by the ICALs.

CCALs : v101702 / v101702sim and v101802 / v101802sim - % Recovery 70-130% for all 22 Target compounds - no action required.

Date: ***11/16/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

Associated Blanks: Method Blank: v101708 & v101806 (Full Scan and SIM)

Field Blanks: FB1 (reported in Work Order # 1210308C)

Blank ID	Contaminant / Level (µg/m^3)		Action Level DF=		Sample and reported result (µg/m3)	Corrected Database Result
v101708	None				No Blank Action Required	
v101806	None				No Blank Action Required	
FB1	None				No Blank Action Required	

Additional Notes:

BFB Tunes: Instrument V 5 Tunes (3 for ICAL + 2 for CCAL) - all criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

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

LCS/LCSD : v101705/v101706 & v101705sim/v101706sim and v101803/v101804 & v101803sim/v101804sim - %Recovery acceptable for all 22 Targets in LCS and LCSD; therefore, acceptable accuracy for method demonstrated. LCS/LCSD precision (RPD) acceptable for all 22 targets except 1,2,4-Trichlorobenzene RPD high (26%) in v101705/v101706. This affects 7 samples analyzed on 10/17/12.

**ACTION: 1,2,4-Trichlorobenzene estimated (UJ) in samples IA2001, IA2002, IA2003, IA2004, IA2005, IA2006, and IA2007 with indeterminate bias due to LCS/LCSD imprecision.*

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

There were no results reported at < RL and qualified "J" by the lab. There were no other data qualifiers which need to be addressed.

All reporting limits were at a level below the Project required RL (as shown in Table 4); therefore, all results are considered usable as reported.

The narrative did not raise any additional issues that may affect data quality.

Date: ***11/16/12***

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

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

Field Duplicate Evaluation_ Sample IDs: Sample = IA2008 FD = DUP34200

Analyte Name	CAS No.	DF = 1.64* RL ($\mu g/m^3$)	Sample Result $\mu g/m^3$	Q	FD Level	FD Result $\mu g/m^3$	Q	Level	RPD	Action
Freon 12	75-71-8	0.81	2.6		< 5xRL	1.6		< 5xRL	47.6	None
Freon 11	75-69-4	0.92	5.3		> 5xRL	4.8		> 5xRL	9.9	None
Freon 113	76-13-1	1.2	1.2	U	RL	1.3	U	RL	NA	None
1,1-Dichloroethene	75-35-4	0.65	0.65	U	RL	0.67	U	RL	NA	None
Acetone	67-64-1	1.9	14		> 5xRL	5.6		< 5xRL	85.7	**J Both**
Methylene Chloride	75-09-2	1.1	1.8		< 5xRL	1.2	U	RL	NA	None
cis-1,2-Dichloroethene	156-59-2	0.65	0.65	U	RL	0.67	U	RL	NA	None
1,1,1-Trichloroethane	71-55-6	0.89	0.89	U	RL	0.92	U	RL	NA	None
Benzene	71-43-2	0.52	0.52	U	RL	0.54	U	RL	NA	None
Toluene	108-88-3	0.62	5		> 5xRL	1.2		< 5xRL	122.6	**J Both**
Tetrachloroethene	127-18-4	1.1	1.1	U	< 5xRL	1.1	U	RL	NA	None
Chlorobenzene	108-90-7	0.76	0.76	U	RL	0.77	U	RL	NA	None
Ethyl Benzene	100-41-4	0.71	0.71	U	RL	0.73	U	RL	NA	None
m,p-Xylene	108-38-3/106-42-3	0.71	0.87		< 5xRL	0.73	U	RL	NA	None
o-Xylene	95-47-6	0.71	0.71	U	RL	0.73	U	RL	NA	None
1,3-Dichlorobenzene	541-73-1	0.99	0.99	U	RL	1	U	RL	NA	None
1,4-Dichlorobenzene	106-46-7	0.99	0.99	U	RL	1	U	RL	NA	None
1,2-Dichlorobenzene	95-50-1	0.99	0.99	U	RL	1	U	RL	NA	None
1,2,4-Trichlorobenzene	120-82-1	6.1	6.1	U	RL	6.2	U	RL	NA	None
Vinyl Chloride	75-01-4	0.042	0.42		> 5xRL	0.043	U	RL	NA	**J / UJ**
Carbon Tetrachloride	56-23-5	0.21	0.45		< 5xRL	0.45		< 5xRL	0.0	None
Trichloroethene	79-01-6	0.18	0.18	U	RL	0.18	U	RL	NA	None

*The FD DF was 1.68

Q = Data Qualifier as reported by ATL and/or NEH; U = non-detect, J = estimated result; UJ = non-detect is estimated

NA = Not Applicable. RPD not calculated since one or both results were non-detect.

FD precision was acceptable for all 22 Target VOCs except Acetone, Toluene, and Vinyl Chloride for which result in sample was > 5 x RL while the result in FD was < 5 x RL

**ACTION: Acetone, toluene, and vinyl chloride estimated (J or UJ) in samples IA2008 and DUP34200 with indeterminate bias due to FD imprecision.*

Date: ***11/16/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: Air Toxics Ltd.

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
1,1-Dichloroethene (DCE)		Full		0.8
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-Xylene		Full		0.86
p-Xylene				
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

Date: *11/16/12*
Data Reviewer: *Nancy C. Rothman, Ph.D.*

Lab: Air Toxics Ltd.

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
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Action Level = 5 x Level in Blank; Sample-specific Blank Action Level = Action Level 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. 4, October 2006; 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: ***11/16/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: eurofins/Air Toxics Ltd.
Date Sampled: 10/10/2012
Method of Analysis: TO-15 Hi/Lo

No. Samples 9 Indoor Air + 1 FD

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			Estimate (J or UJ) 30 results					Accept 1 "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.

The samples were received intact on 10/15/2012. The samples received were separated into three Work Orders (1210308A, 1210308B, and 1210308C). A single report will be written, at the clients request, for all three Work Orders.

Canisters were Certified pre-cleaned - certificates of analysis (reported in Work Order 1210308A) indicate all Target compounds were non-detect in the canisters prior to being sent to the field.

The canister vacuums (field initial, field final and lab receipt) were all acceptable; therefore, no action required. There were no COC issues noted by lab upon sample receipt.

Samples were analyzed on 10/18/12 & 10/19/12 (within 9 days of collection); therefore HT was met. No Action required.

ICALs : Instrument A Full Scan and SIM performed on 9/05-10/1/12. Full Scan = 6- to 8-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for 19 Target compounds (see page 5). SIM = 9- to 10-level calibration from 0.003 or 0.01 to 20 ppbV for 3 Targets. %RSD ≤ 30% for all 22 Target Compounds except 1,3-dichlorobenzene %RSD = 37.235% and 1,2-dichlorobenzene %RSD = 38.755% by EI and carbon tetrachloride %RSD = 38.057% by SIM. RLs reported (0.1 ppbV for all 19 Full Scan Targets except Acetone and 1,2,4-Trichlorobenzene at 0.5 ppbV and Methylene Chloride at 0.2 ppbV; and 0.01 ppbV for Vinyl Chloride and 0.02 ppbV for Carbon Tetrachloride and Trichloroethene by SIM for DF=1 analysis) were supported by the ICALs.

**ACTION: 1,3-Dichlorobenzene, 1,2-dichlorobenzene, and carbon tetrachloride estimated (J or UJ) in all samples with indeterminate bias due to the Initial Calibration being outside criteria.*

Date: ***11/17/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

Associated Blanks: Method Blank: a101807 & a101907 (Full Scan and SIM)

Field Blanks: FB1 (reported in Work Order # 1210308C)

Blank ID	Contaminant / Level (µg/m^3)		Action Level DF=		Sample and reported result (µg/m3)	Corrected Database Result
a101807	None				No Blank Action Required	
a101907	None				No Blank Action Required	
FB1	None				No Blank Action Required	

Additional Notes:

CCALs : a101802 / a101802sim and a101902 / a101902sim - % Recovery 70-130% for all 22 Target compounds - no action required.

BFB Tunes: Instrument A 5 Tunes (3 for ICAL + 2 for CCAL) - all criteria in all tunes were met and all samples were analyzed within 12 hours of tune; therefore, No Action Required.

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

LCS/LCSD : a101803/a101804 & a101803sim/a101804sim and a101903/a101904 & a101903sim/a101904sim - %Recovery acceptable for all 22 Targets in LCS and LCSD; therefore, acceptable accuracy for method demonstrated. LCS/LCSD precision (RPD) acceptable for all 22 targets as well - No Action required.

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

The methylene chloride result in sample IA2015 was reported at < RL and qualified "J" by the lab (mathematical rounding resulted in value being equal to the RL on a ug/m3 basis but on a ppbV basis, the detect was < calibration range). This one "J" value was accepted with indeterminate bias due to uncertainty in reporting below the instrument calibration range.

All reporting limits were at a level below the Project required RL (as shown in Table 4); therefore, all results are considered usable as reported.

The narrative did not raise any additional issues that may affect data quality. Note narrative did not disclose Initial Calibration issues.

Date: ***11/17/12***

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

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

Field Duplicate Evaluation_ Sample IDs: Sample = IA2017 FD = DUP34392

Analyte Name	CAS No.	DF = 1.58* RL (µg/m^3)	Sample Result µg/m^3	Q	FD Level	FD Result µg/m^3	Q	Level	RPD	Action
Freon 12	75-71-8	0.78	2.3		< 5xRL	2.4		< 5xRL	4.3	None
Freon 11	75-69-4	0.89	3.2		< 5xRL	2.9		< 5xRL	9.8	None
Freon 113	76-13-1	1.2	1.2	U	RL	1.3	U	RL	NA	None
1,1-Dichloroethene	75-35-4	0.63	0.63	U	RL	0.68	U	RL	NA	None
Acetone	67-64-1	1.9	9.2		< 5xRL	6.6		< 5xRL	32.9	None
Methylene Chloride	75-09-2	1.1	1.1	U	RL	1.2	U	RL	NA	None
cis-1,2-Dichloroethene	156-59-2	0.63	0.63	U	RL	0.68	U	RL	NA	None
1,1,1-Trichloroethane	71-55-6	0.86	0.86	U	RL	0.93	U	RL	NA	None
Benzene	71-43-2	0.5	0.5	U	RL	0.55	U	RL	NA	None
Toluene	108-88-3	0.6	0.71		< 5xRL	0.8		< 5xRL	11.9	None
Tetrachloroethene	127-18-4	1.1	1.4		< 5xRL	1.2	U	RL	NA	None
Chlorobenzene	108-90-7	0.73	0.73	U	RL	0.79	U	RL	NA	None
Ethyl Benzene	100-41-4	0.69	0.69	U	RL	0.74	U	RL	NA	None
m,p-Xylene	108-38-3/106-42-3	0.69	0.69	U	RL	0.74	U	RL	NA	None
o-Xylene	95-47-6	0.69	0.69	U	RL	0.74	U	RL	NA	None
1,3-Dichlorobenzene	541-73-1	0.95	0.95	UJ	RL	1	UJ	RL	NA	None
1,4-Dichlorobenzene	106-46-7	0.95	0.95	U	RL	1	U	RL	NA	None
1,2-Dichlorobenzene	95-50-1	0.95	0.95	UJ	RL	1	UJ	RL	NA	None
1,2,4-Trichlorobenzene	120-82-1	5.9	5.9	U	RL	6.3	U	RL	NA	None
Vinyl Chloride	75-01-4	0.04	0.04	U	RL	0.044	U	RL	NA	None
Carbon Tetrachloride	56-23-5	0.2	0.55	J	< 5xRL	0.64	J	< 5xRL	15.1	None
Trichloroethene	79-01-6	0.17	0.17	U	RL	0.18	U	RL	NA	None

*The FD DF was 1.71

Q = Data Qualifier as reported by ATL and/or NEH; U = non-detect, J = estimated result; UJ = non-detect is estimated

NA = Not Applicable. RPD not calculated since one or both results were non-detect.

FD precision was acceptable for all 22 Target VOCs in the FD pair of IA2017 and DUP34392 - No Action required.

Date: *11/17/12*

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

Lab: Air Toxics Ltd.

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
1,1-Dichloroethene (DCE)		Full		0.8
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-Xylene		Full		0.86
p-Xylene				
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

Date: *11/17/12*
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

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:	Action Level = 5 x Level in Blank; Sample-specific Blank Action Level = Action Level 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. 4, October 2006; 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: ***11/17/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: eurofins/Air Toxics Ltd.
Date Sampled: 10/10/2012
Method of Analysis: TO-15 Hi/Lo

No. Samples 2 IA + 2 AA + 1 FB

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								

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 3 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.

The samples were received intact on 10/15/2012. The samples received were separated into three Work Orders (1210308A, 1210308B, and 1210308C). A single report will be written, at the clients request, for all three Work Orders.

Canisters were Certified pre-cleaned - certificates of analysis (reported in Work Order 1210308A) indicate all Target compounds were non-detect in the canisters prior to being sent to the field.

The canister vacuums (field initial, field final and lab receipt) were all acceptable; therefore, no action required. There were no COC issues noted by lab upon sample receipt.

Samples were analyzed on 10/18/12 (within 8 days of collection); therefore HT was met. No Action required.

ICALs: Instrument V Full Scan and SIM performed on 9/15-9/26/12. Full Scan = 6- to 8-level calibration from 0.05, 0.1, or 0.5 to 40 ppbV for 19 Target compounds (see page 5). SIM = 9- to 10-level calibration from 0.003 or 0.01 to 20 ppbV for 3 Targets. %RSD ≤ 30% for all 22 Target Compounds. RLs reported (0.1 ppbV for all 19 Full Scan Targets except Acetone and 1,2,4-Trichlorobenzene at 0.5 ppbV and Methylene Chloride at 0.2 ppbV; and 0.01 ppbV for Vinyl Chloride and 0.02 ppbV for Carbon Tetrachloride and Trichloroethene by SIM for DF=1 analysis) were supported by the ICALs.

Date: ***11/17/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

Associated Blanks: Method Blank: v101806 (Full Scan and SIM)
Field Blanks: FB1

Blank ID	Contaminant / Level (µg/m^3)		Action Level DF=		Sample and reported result (µg/m3)	Corrected Database Result
v101806	None				No Blank Action Required	
FB1	None				No Blank Action Required	

Additional Notes:

CCALs : v101802 / v101802sim - % Recovery 70-130% for all 22 Target compounds - no action required.

BFB Tunes: Instrument A 4 Tunes (3 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.

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

LCS/LCSD : v101803/v101804 & v101803sim/v101804sim - %Recovery acceptable for all 22 Targets in LCS and LCSD; therefore, acceptable accuracy for method demonstrated. LCS/LCSD precision (RPD) acceptable for all 22 targets as well - No Action required.

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 associated with the samples in this Work Order. See FD results in Work Orders 1210308A and 1210308B.

There were no data reported at < RL (qualified "J" by the lab) and there were no other qualifiers on the data which would affect quality.

All reporting limits were at a level below the Project required RL (as shown in Table 3); therefore, all results are considered usable as reported.

The narrative did not raise any additional issues that may affect data quality. The data were unchanged as a consequence of this review.

Date: ***11/17/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***

Lab: Air Toxics Ltd.

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
1,1-Dichloroethene (DCE)		Full		0.8
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-Xylene		Full		0.86
p-Xylene				
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

Date: *11/17/12*
Data Reviewer: *Nancy C. Rothman, Ph.D.*

Lab: Air Toxics Ltd.

Method of Analysis: TO-15 Hi/Lo

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
Hold Time (HT):	HT > 30 days, J detects/ UJ non-detects
Blank Actions:	Action Level = 5 x Level in Blank; Sample-specific Blank Action Level = Action Level 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. 4, October 2006; 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: ***11/17/12***
Data Reviewer: ***Nancy C. Rothman, Ph.D.***