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SUBSLAB DEPRESSURIZATION CONCEPTUAL DESIGN REPORT

BUILDING 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Prepared for IBM Corporation
File No. 2999.04
March 2017

8976 Wellington Road
Manassas, VA 20109

Sent via email

March 24, 2017

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

Re: Subslab Depressurization Conceptual Design Report – Building 330C
Former IBM East Fishkill Facility
EPA ID No. NYD000707901

Dear Mr. Czuhanich:

The enclosed report presents the conceptual design of a subslab depressurization (SSD) system for Building 330C (B330C) at the former IBM East Fishkill facility, which is currently owned by Global Foundries (GF).

As presented in IBM's July 2016 report titled, *Report of Interim Measures and Indoor Air Quality Testing, Building 330C*, a temporary SSD system began operating in B330C in March 2016. IBM intends to continue operating the temporary SSD system until the full-scale SSD system is operational.

IBM is moving forward with the detailed design of the full-scale SSD system. The timing of construction and startup of the SSD system will be contingent upon GF's plans for the building, but IBM is currently targeting construction beginning in the third quarter of 2017 and startup in fourth quarter of 2017. IBM understands that construction and operation of the SSD system can proceed once the Agencies have accepted this report.

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

Sincerely yours,

Dean W Chartrand

Dean W. Chartrand
Program Manager
Corporate Environmental Affairs

Enclosure: Electronic copy

cc:	Gary Marone	Global Foundries	(via email)
	Jayne Ulrich	Global Foundries	(via email)
	Scarlett McLaughlin	NYSDOH	(via email)

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IBM Corporate Environmental Affairs
8976 Wellington Road
Manassas, VA 20109

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Dear Mr. Chartrand:

The enclosed report presents the conceptual design of a subslab depressurization (SSD) system for Building 330C (B330C) at the former IBM East Fishkill facility. Please contact us if you have any questions.

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

David Shea

David Shea, P.E.
President
20 Foundry St
Concord, NH 03301

JHS/DS: ds

Encl. Subslab Depressurization Conceptual Design Report – Building 330C

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BUILDING 330C
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1.0 INTRODUCTION

This report presents the conceptual design of a subslab depressurization (SSD) system, including the results of a subslab vapor assessment and SSD pilot testing, for Building 330C (B330C) at the former IBM East Fishkill facility (the site), currently owned by Global Foundries (GF). A site location plan is provided as Figure 1, and the location of B330C at the site is shown on Figure 2.

The work described herein was conducted by Sanborn, Head Engineering, PC (SHPC), on behalf of IBM, in general accordance with IBM's Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan dated June 15, 2009 (RFI Work Plan), which was approved by the New York State Department of Environmental Conservation and Department of Health (the Agencies). Progress updates and relevant data associated with vapor intrusion investigations and testing associated with Building 330C have been communicated to the Agencies through periodic correspondence and meetings.

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

2.0 BACKGROUND INFORMATION

B330C was designated in the RFI Work Plan for indoor air assessment for certain volatile organic compounds (VOCs). The assessment found anomalous presence of VOCs, primarily tetrachloroethene (PCE), in indoor air in several areas of the building. Based on these results, remedial measures were implemented to reduce VOC concentrations in indoor air as documented in reports submitted to the Agencies in November 2009[1] and July 2014[2].

In recent years, decommissioning of certain manufacturing areas has been conducted and much of the building has been vacated, although certain areas of the building remain routinely occupied. Additional indoor air quality (IAQ) testing was conducted in B330C in April and November 2015 in conjunction with heating, ventilating, and air conditioning (HVAC) system shutdown testing, as described in a February 2016[3] report to the Agencies. As part of this testing, screening of subslab vapor samples collected in April 2015 confirmed the presence of PCE in subslab vapor beneath B330C.

IBM elected to conduct SSD pilot testing in 2015 and 2016 to: 1) evaluate its potential effectiveness in controlling air pressure gradients across the floor slab in certain areas with higher potential for vapor intrusion, and 2) obtain observational data that could be used to support design of an SSD system.

Based on favorable results of the SSD pilot testing, in March 2016 IBM elected to install a temporary SSD system as an interim measure in the former Baseline Area located in the

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

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

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

northwest portion of the building where the highest subslab PCE concentrations were observed. IAQ sampling and screening were conducted after the interim SSD system was brought online, the results of which were presented in a July 2016 report[4] that was submitted to the Agencies. As discussed in the July 2016 report, the interim SSD system was found to be successful in reducing VOC vapor intrusion into the northwest portion of the building.

This report documents the subslab VOC vapor assessment and SSD pilot testing results that support the development and presentation of the conceptual design for a full-scale SSD system for B330C.

3.0 SUBSLAB VAPOR ASSESSMENT

A subslab vapor assessment was conducted to: 1) evaluate the presence and extent of VOCs below the floor slab, and 2) establish a subslab vapor testing and monitoring network to support potential subslab depressurization as a measure to control air pressure gradients across the floor slab. Subslab vapor assessment activities were initiated in April 2015 and included the installation, screening, sampling, and monitoring of subslab vapor monitoring ports (SSV ports).

3.1 Subslab Vapor Monitoring Port Installation and Screening and Sampling

SSV ports SS3001 through SS3031 were installed in April 2015. SSV screening was conducted at the ports between April 8 and May 5, 2015 using a portable gas chromatograph/mass spectrometer (GC/MS). SSV ports SS3055 through SS3058, located in the far southeastern corner of the building, were installed in January 2016 and were sampled on February 9 and 15, 2016 over a period of approximately 1 hour using 1-L SUMMA® canisters. SSV ports SS3032 through SS3054 were installed in September and October 2015 to obtain cross-slab differential pressure measurements only, and were not sampled.

The SSV ports consist of ¼-inch stainless steel tubing equipped with threaded connectors that penetrate the building slab. A schematic of an SSV port is shown in Exhibit 3.1 below. Helium integrity testing was performed on a subset of the SSV ports following installation to confirm air tight seals around the slab penetration. Figure 3 shows the location of SSV ports installed throughout B330C. The overall SSV port network provides broad coverage of the building.

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

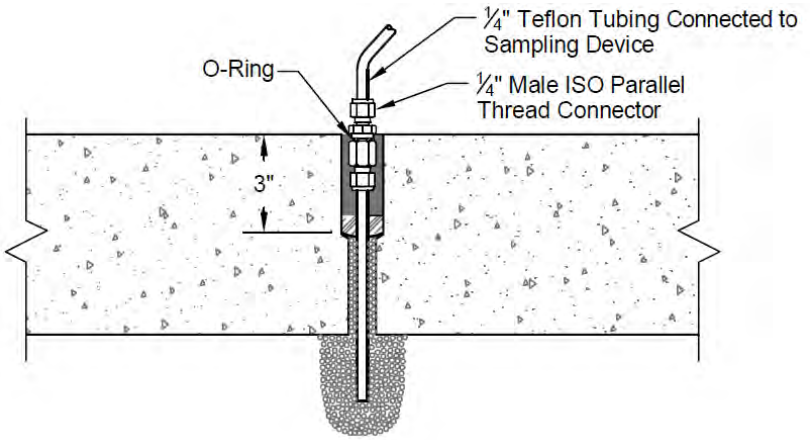

Exhibit 3.1: Subslab Vapor Port - Sampling/Monitoring Configuration

3.2 Subslab Vapor Screening and Sampling Results

The analytical results of the subslab vapor screening and sampling are presented in Tables 1 and 2, respectively. Subslab vapor screening and sampling locations, PCE concentrations, and inferred concentration isopleths for PCE are shown on Figure 4. The results indicate that an area of relatively greater PCE concentrations is present in subslab vapor beneath the former Baseline Area and Reliability Lab located in the western area of the building, where PCE was detected at concentrations of up to 870,000 µg/m^3. PCE was also present in subslab vapor beneath the eastern and southern portions of the building, but at concentrations of about an order of magnitude lower than below the western side of the building.

TCE was also detected in subslab vapor, but at concentrations generally several orders of magnitude lower than PCE. The highest detected subslab vapor concentration of TCE was 1,200 µg/m^3 beneath the former Sintering Furnace area at the southern portion of the building. Since PCE was the predominant compound detected beneath B330C in subslab vapor and in indoor air of B330C, PCE was the primary focus of the subslab depressurization pilot testing work described next.

4.0 SUBSLAB DEPRESSURIZATION PILOT TESTING

SSD pilot testing was conducted at extraction ports (EPs) located throughout the building, and at a suction pit located in the former Baseline Area, to: 1) evaluate the effectiveness of SSD in controlling air pressure gradients across the floor slab as means of reducing potential for vapor intrusion; and 2) obtain observational data that could be used to support design of an SSD system. This section provides a summary of the testing procedures and results.

4.1 Extraction Port and Suction Pit Installations

Seventeen subslab vapor EPs were installed in B330C from July 2015 through August 2016 and are shown on Figure 3. Each EP was constructed by coring a hole through the concrete floor slab and installing a 2-inch-diameter by 1-ft-long 60-slot schedule 40 PVC screen equipped with a capped port flush with the floor. A schematic of an EP is shown in Exhibit 4.1 below.

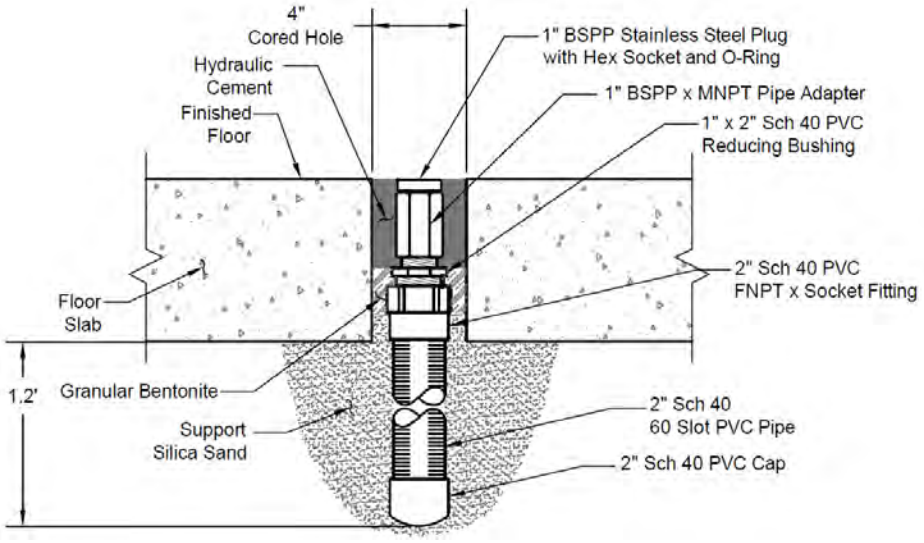

Exhibit 4.1: Subslab Vapor Extraction Test Port

To evaluate and compare alternative methods of applying a vacuum to the subslab, one suction pit was installed in the former Baseline Area of B330C in August 2016. The suction pit was constructed by removing an approximately 4 ft x 4 ft area of the floor slab and excavating the underlying soil to approximately 10 inches below the bottom of the slab. The open pit was lined with a non-woven geotextile fabric and then backfilled with ¾-inch crushed stone. A 2-inch-diameter, 60-slot PVC pipe was installed horizontally through the center of the pit, extended through a conveyance trench via a solid PVC pipe, and angled 90 degrees and extended through the slab near a wall. Additional crushed stone and geotextile was added to the pit and a new concrete slab was poured. A schematic of the suction pit is shown below in Exhibit 4.2.

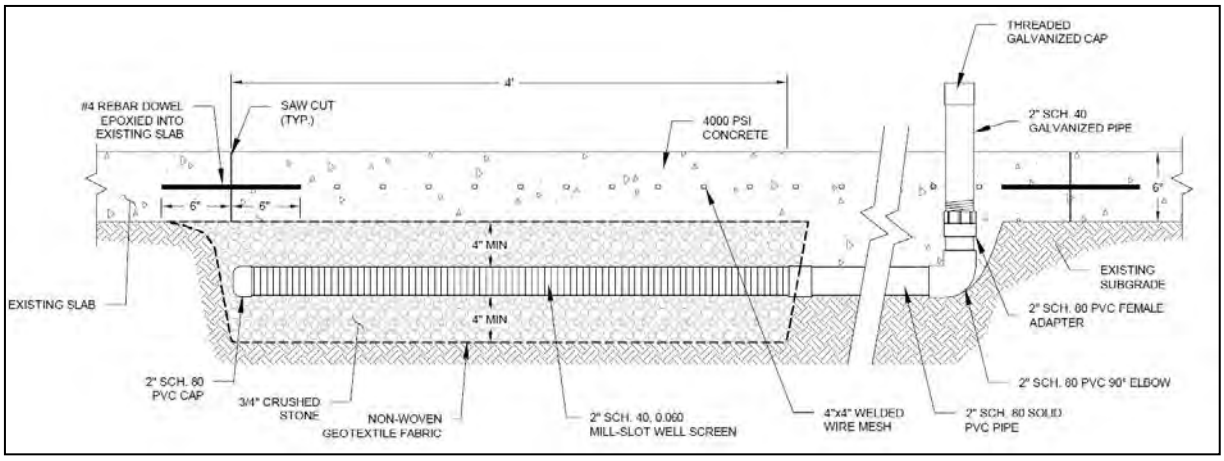

Exhibit 4.2: Typical Suction Pit Configuration

4.2 Testing Procedures

SSD pilot testing activities were conducted in July and October 2015, as well as February, July, and August 2016. During pilot testing activities, individual vacuum extraction tests were conducted at each EP and the suction pit. Extraction ports were connected to a regenerative vacuum blower mounted on a portable cart, shown in Exhibit 4.3 below, which was used to withdraw vapor from the ports for durations ranging from approximately 60 to 180 minutes each. The vapor flow rate, applied vacuum, and photoionization detector (PID) screening value were monitored and recorded at each EP using the assembly shown in Exhibit 4.3. For each test, the cross-slab differential pressure response was monitored at nearby SSV ports using digital micromanometers. For certain tests, the regenerative vacuum blower was used to withdraw air from two extraction ports simultaneously using the setup shown in Exhibit 4.4 to assess the combined influence of extracting from multiple ports.

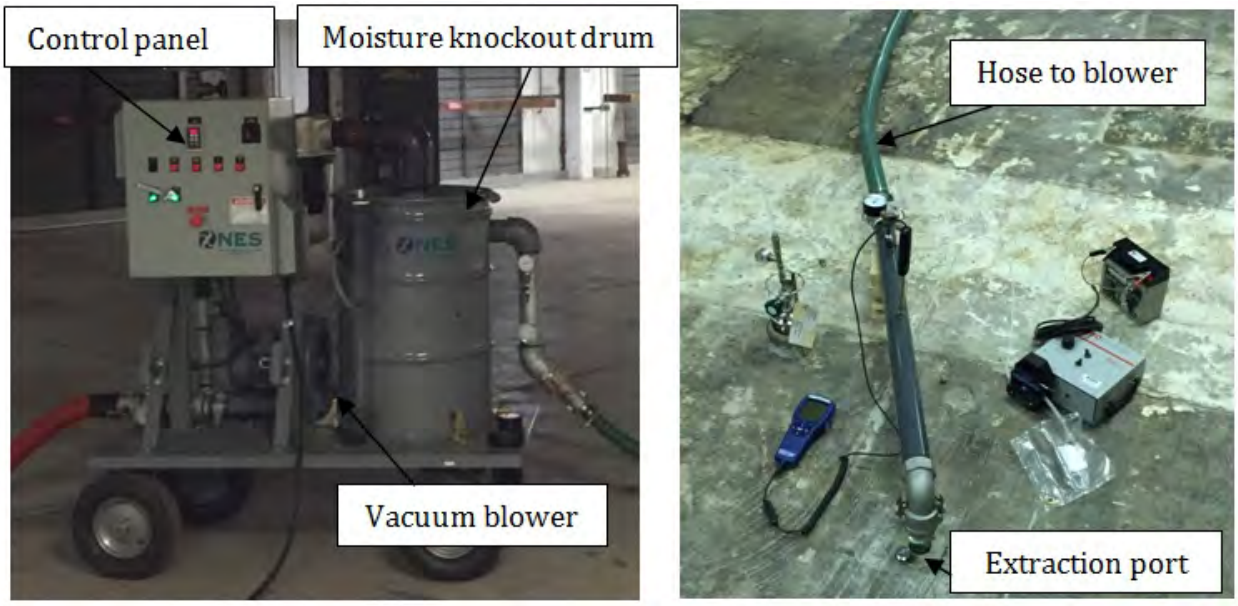

Exhibit 4.3 – Subslab Vapor Extraction Testing Setup
Blower cart (left) and extraction port test assembly (right)

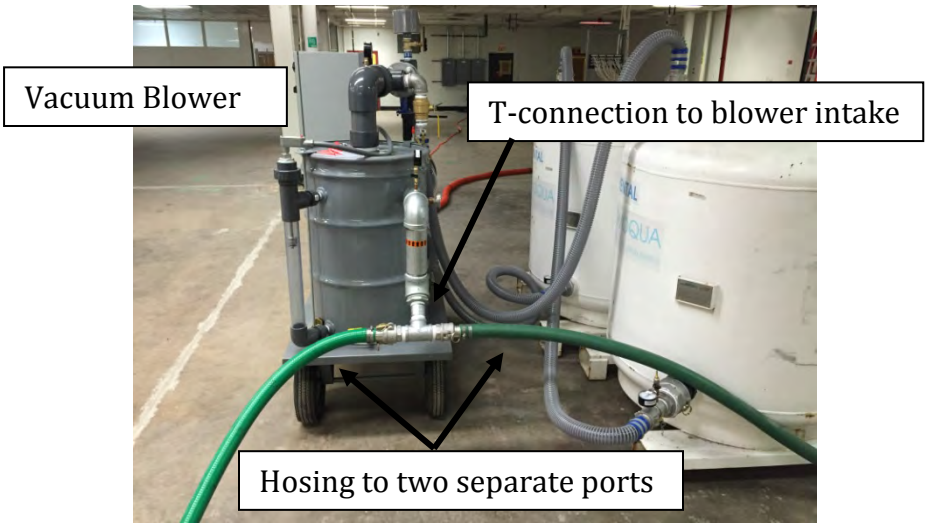

Exhibit 4.4 –Subslab Vapor Extraction Testing Setup for Two Ports

4.3 Pilot Test Results

Figure 5 summarizes the vapor extraction conditions and inferred combined extent of subslab pressure response during pilot testing at eight of the EPs proposed for the SSD system. Please note that the results of the individual tests are superimposed on Figure 5; simultaneous extraction would likely result in a somewhat different response pattern. The subslab pressure response for each individual test (including the EPs that are not proposed for the SSD system) is shown on Figures B-1 through B-23 in Appendix B. On these figures, the inferred extent of subslab pressure response is depicted by the pressure differential isopleth of -0.004 inches of water column (in. wc) (or 1 Pascal); this value, or lower pressure (greater vacuum), is indication that vapor extraction has influence, and is expected to be sufficient to capture subslab soil vapor, within at least the area encompassed by the -0.004 in. wc isopleth.

The test results indicate a wide range of variability in the extent of subslab pressure response and extraction flow rate, which is typical for an older industrial building. For example, while the applied vacuum at the ports was generally consistent at 60 in. wc, the resulting extraction rates ranged from less than 10 cubic feet per minute (cfm) up to nearly 160 cfm. At some ports, vacuum influence was observed at radial distances of 160 feet or more (e.g, EP3003); other ports resulted in limited subslab vacuum responses ranging from approximately 20 to 30 feet away from the port (e.g, EP3002).

Although the individual test results varied, the aggregate results indicate that significant and extensive depressurization can be achieved by concurrent extraction from the installed port network. In particular, simultaneous extraction from the eight ports proposed for the SSD system will effectively depressurize much of the areas where subslab PCE concentrations are greater than 50,000 µg/m^3, as shown on Figure 5.

Near the conclusion of each test, a grab sample of the vapor stream was collected into a Summa® canister and submitted to Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts for analysis of five VOCs by USEPA Method TO-15. The SSD pilot testing data

for each test are summarized in Exhibit 4.5 below. The complete analytical results for the vapor grab samples are provided in Table 3, and analytical laboratory reports are provided in Appendix C.

Port Location	Proposed SSD System[5]	Applied Vacuum [in. wc]	Extracted Flow Rate [cfm]	PID Screening [ppmv]	PCE Laboratory Analysis [µg/m^3]	PCE Removal Rate [lbs/hr]
EP3001	System 2	60	9.2	28	78,000	2.7 x10^{-3}
EP3002	--	60	130	8.7	4,690	2.3 x10^{-3}
EP3003[6]	---	60	100	80	2,710,000	1.0
EP3004	--	60	150	0.20	4.77	2.7 x10^{-6}
EP3005	--	60	91	1.4	5,360	1.8 x10^{-3}
EP3006	System 2	60	40	1.0	2,210	3.3 x10^{-4}
EP3007	System 2	60	160	0.50	976	5.8 x10^{-4}
EP3008	System 2	59	160	1.0	8,410	5.0 x10^{-3}
EP3009	System 1	60	100	1.7	15,500	5.8 x10^{-3}
EP3010	---	53	160	11	210	1.3 x10^{-4}
EP3011	--	60	89	15	20,500	6.8 x10^{-3}
EP3012	System 1	60	94	36	235,000	8.3 x10^{-2}
EP3013	--	60	19	110	300,000	2.1 x10^{-2}
EP3014	--	60	14	52	133,000	7.0 x10^{-3}
EP3015	System 1	60	52	14	30,800	6.0 x10^{-3}
EP3016	System 1	60	53	88	184,000	3.7 x10^{-2}
EP3017	--	60	53	81	161,000	3.2 x10^{-2}
SP3001	--	60	100	36	108,000	4.0 x10^{-2}

Exhibit 4.5: SSD Testing Data Summary
"--" indicates port not planned for full-scale operation

Pilot testing results at suction pit SP3001 (see Fig B-22) were not significantly different from the results at nearby extraction ports with respect to area of vacuum influence (e.g., EP3016 shown in Fig B-16). In addition, the extracted flow rate for SP3001 was about two times higher than EP3016 to achieve a similar area of influence. Because the use of the suction pit would require a larger design flow than the use of the extraction ports, without a commensurate improvement in vacuum field extension, SP3001 is not planned to be connected to the SSD system, and additional suction pits for B330C are not planned.

5.0 SSD SYSTEM DESIGN BASIS

This section presents the design basis for subslab depressurization beneath B330C. The conceptual design is based on the results of vapor extraction pilot testing, which indicates that SSD will achieve the goals of capture of subslab VOC vapor and control of cross-slab pressure gradients to reduce the potential for vapor intrusion to affect indoor air quality.

[5] The planned SSD system will include two separate extraction port networks connected to separate blowers, as further described in Section 5, to provide flexibility for operations and future expansion if appropriate.

[6] Floor cracks were sealed using non-shrinking grout between two pilot tests at EP3003 to limit short-circuiting. The results provided in the table represent post-floor sealing conditions.

The conceptual design of the subslab depressurization and treatment system is described below, including the proposed configuration of the vapor extraction ports, target operating conditions (applied vacuum and extraction flow rate), and treatment of VOC-containing vapor.

5.1 Extraction Port Configuration and Target Operating Conditions

Subslab vapor extraction from EP3012 and EP3015 would effectively depressurize and remove VOC mass from the primary VOC vapor source area delineated by the >500,000 µg/m^3 subslab PCE isopleth located in the west portion of the building. However, initially, vapor extraction from 6 additional ports is planned as a conservative measure to encompass much of the 50,000 µg/m^3 subslab PCE isopleths to provide redundancy and operating flexibility.

A total of 8 of the 17 extraction ports used for pilot testing will be connected to the permanent system. These ports, shown on Figure 6, were selected because they exhibited favorable test results with respect to applied vacuum, corresponding extraction rate, and area of subslab depressurization. They provide the coverage believed appropriate to reduce vapor intrusion potential in the areas where subslab PCE presence is greatest. Since future use and occupancy of the building is unknown, the SSD will be designed to allow other extraction ports to be incorporated into the system in the future if appropriate.

The design target applied vacuum at the extraction ports will be approximately 60 in. wc because this vacuum provided a reasonable balance among extraction flow, vacuum influence, and the efficient operating range of blower capability during pilot testing.

At the target applied vacuum, the subslab vapor extraction rate estimated by summing the extraction rates observed during pilot testing at the 8 extraction ports to be connected to the permanent system would be approximately 665 cfm. The actual withdrawal rate during simultaneous extraction from the port network will likely be lower than estimated above due in part to superposition effects and competition among extraction ports. Overall, the planned extraction port network and target operating conditions will provide for operating flexibility and redundancy via overlapping areas of influence. Additional ports can be connected to the SSD system if appropriate based on the results of system startup performance testing.

5.2 System Configuration

The permanent SSD system will consist of two independent vapor extraction and treatment trains, designated as sub-system 1 and sub-system 2. Figure 6 shows the proposed vacuum pipe header locations within the building and the extraction ports that will be connected to each sub-system.

A two sub-system configuration will provide greater installation flexibility and operational efficiency, flexibility, and redundancy. The SSD equipment will be located in separate enclosures outside of the building. Splitting the extracted vapor stream into two will allow the equipment to fit into pre-constructed enclosures while providing greater operational

flexibility to "scale" the system up or down by turning ports on or off depending upon future building use and occupancy.

5.3 Process Flow Diagram

The planned process flow diagram for each of the two sub-systems is shown in Exhibit 5.1. Subslab soil vapor will be withdrawn from the extraction ports using a regenerative vacuum blower. Before entering the blower, the vapor will pass through a vapor-liquid separator, followed by two granular activated carbon (GAC) units plumbed in series. Placing the GAC units on the suction side of the blowers has several advantages, including 1) maintaining all pipe and equipment with untreated VOC-containing vapor under vacuum, and 2) eliminating the need for a blower aftercooler, which would otherwise be needed on the blower discharge to reduce the temperature prior to GAC treatment. The treated vapor passing through the vacuum blowers will be discharged outside via an exhaust stack installed above the roofline of the treatment system enclosures and away from building doors, windows, and air intakes.

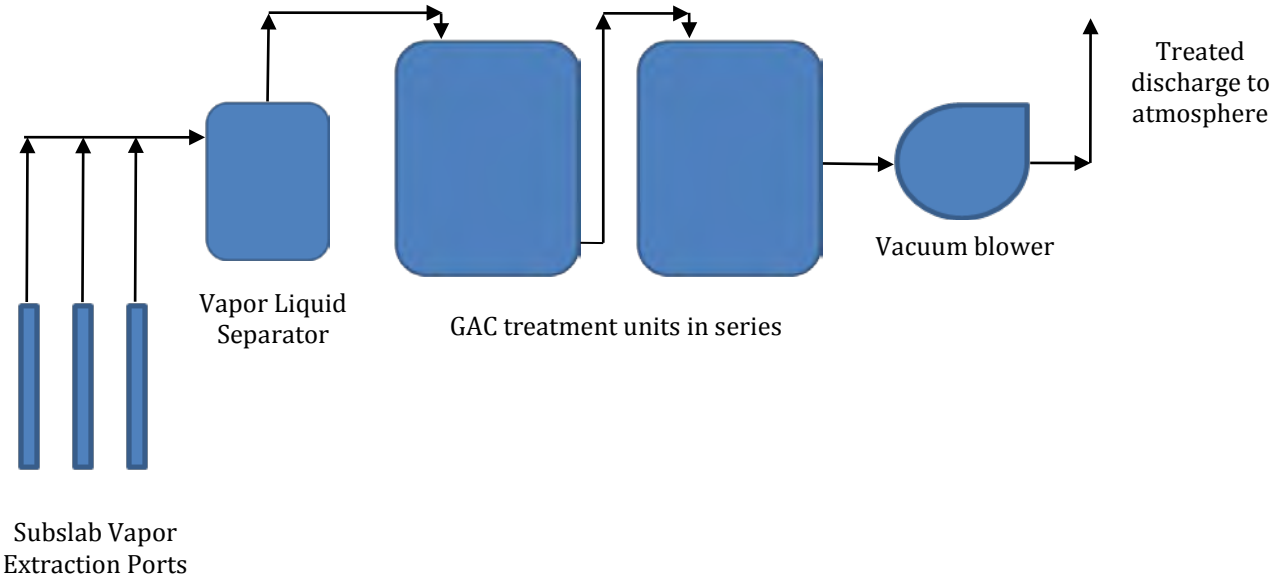

Exhibit 5.1 –Vapor Extraction System Process Flow Diagram

Vacuum blowers for each system will be sized to achieve an applied vacuum at the extraction ports of 60 in. wc and vapor extraction rates of about 300 and 365 cfm for sub-system 1 and sub-system 2, respectively. The blowers will be sized to account for combined head losses through the piping network and GAC-filled vessels. The blowers will be regenerative type blowers, such as FPZ's Model K09-TS with an estimated 20 to 25 horsepower motor and variable frequency drive (VFD). The VFDs will allow for lower power consumption when operating at conditions less than the capacity of the blowers.

5.4 VOC Mass Removal and Treatment

The sum of the VOC mass removal rates observed during short-term testing of the ports associated with sub-system 1 was about 0.13 lb/hr (3.1 lb/day), while the mass removal for the ports of sub-system 2 was about 0.01 lb/hr (0.24 lb/day). After startup of the full-scale

SSD system, we expect the VOC mass recovery to decrease from these values and level off at a rate that represents the mass transfer limitations in the subsurface.

Although the projected VOC removal rates for both sub-systems is expected to be less than the emission rate potential threshold of 0.5 lb/hr that requires air pollution controls under NYSDEC Division of Environmental Remediation guidelines[7], installation of GAC for emissions control is planned. VOC mass in the vapor streams will be treated using coconut-shell GAC units installed in a lead-lag configuration. Each GAC unit will contain about 700 lb of GAC. Assuming an adsorption capacity of about 0.1 lb VOC per lb GAC, and that the initial average VOC loading will be 50% of that observed during pilot testing (i.e. 1.6 lb/day for System 1), a 700 lb GAC unit would need to be replaced after about 40 days for System 1 and over 500 days for System 2. The GAC replacement frequency will gradually decrease as the VOC mass recovery rate declines.

Monitoring of the VOC breakthrough of the lead unit will be conducted, and when the lead unit has exhausted its capacity, the lag unit will be operated in the lead position, and spent GAC can be replaced with fresh GAC that will be operated in the lag position. Spent GAC will be transported off-site for reactivation or disposal.

5.5 System Location and Safeguards

The subslab vapor extraction and treatment equipment for both sub-systems are planned to be installed within two enclosures located outside the southwest corner of Building 330C (see Figure 6). Each sub-system will include the following engineering design and operational safeguards that will prevent VOC vapors from entering occupied building space during system operation, maintenance shutdowns, or potential system malfunction:

- The vacuum blowers will be located downstream of the GAC treatment units such that untreated VOC-containing vapors and the GAC units are maintained under a vacuum condition during operation, limiting the potential for fugitive VOC emissions from the pipe network in B330C or the equipment enclosures.
- The GAC treatment units will be located in dedicated enclosures completely separate from B330C and its occupants.
- The discharge from the vacuum blower will contain only treated vapor and will be piped to an exhaust stack that will be terminated above the roofline of the enclosure and away from building doors, windows, and air intakes.
- For maintenance shutdowns, including GAC replacement, the GAC beds and associated pipe/hose will be purged with clean, outside air by opening a purge air inlet valve located upstream of the GAC units. This will allow clean outside air to be drawn through the GAC units to flush out VOC-containing vapor from the system prior to shut down and carbon change outs. The enclosure will be equipped with a ventilation system, such that

[7] NYSDEC, Division of Environmental Remediation, Internal memorandum from Dale Desnoyers, "Substantive Compliance with Air Requirements", February 28, 2003.

the equipment area will be ventilated during maintenance shut downs, including when the GAC vessels are opened for carbon change-outs.

- The sub-systems will be equipped with several sensors and alarms (e.g., low vacuum, high temperature) that will automatically shut down the blower and send notifications to appropriate personnel if operating conditions are outside of their preset range.

6.0 CONCLUSIONS

The results of this work have met the objectives of: 1) evaluating the feasibility of subslab vapor extraction to control air pressure gradients across the slab in certain areas that have higher potential for VOC vapor entry into the building, and 2) gathering sufficient information to prepare a conceptual design for an effective SSD system.

A design basis for the subslab vapor extraction and treatment system has been developed from the results of pilot testing. The design basis is intended to achieve subslab depressurization in areas where PCE levels in subslab vapor exceeded 50,000 µg/m^3, and which generally correspond to areas where PCE levels in indoor air have historically been higher than other areas of the building. The design will also provide for operating flexibility, redundancy, and future expansion, if appropriate.

IBM is moving forward with the detailed design. The timing of construction and startup of the SSD system will be contingent upon GF's plans for the building, but IBM is currently targeting construction beginning in the third quarter of 2017 and startup in fourth quarter of 2017. IBM understands that construction and operation of the SSD system can proceed once the Agencies have accepted this report. IBM intends to continue operating the temporary SSD system in the former Baseline Area until the full-scale SSD system is operational.

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TABLES

Table 1
Summary of Portable GC/MS Subslab Vapor Screening Results (PCE and TCE)
Subslab Depressurization Conceptual Design Report - Building 330C
Former IBM East Fishkill Facility
Hopewell Junction, New York

Location	Date	µg/m³	
		PCE	TCE
SS3001	04/08/2015	70	32
SS3002	05/05/2015	25,000	R
SS3003	04/08/2015	7,500	<5,400
SS3004	04/13/2015	6,300	1,200
SS3005	05/05/2015	34,000	R
SS3006	04/08/2015	98,000	<21,000
SS3007	04/16/2015	39,000	<5,400
SS3008	05/05/2015	17,000	R
SS3009	04/23/2015	1,800	190
SS3010	04/08/2015	8,800	<5,400
SS3011	04/16/2015	14,000	<5,400
SS3012	04/13/2015	2,200	37
SS3013	05/05/2015	100,000	R
SS3014	04/16/2015	13,000	<5,400
SS3015	04/16/2015	460,000	<11,000
SS3016	04/16/2015	610,000	<11,000
SS3017	05/05/2015	870,000	R
SS3018	04/23/2015	4,700	44
SS3019	04/09/2015	14,000	<5,400
SS3020	04/09/2015	7,400	<5,400
SS3021	05/05/2015	12,000	R
SS3022	04/14/2015	1,500	330
SS3023	04/23/2015	13,000	<5,400
SS3024	04/23/2015	3,200	94
SS3025	04/08/2015	22,000	<5,400
SS3026	04/08/2015	32,000	<5,400
SS3027	04/08/2015	32,000	<21,000
SS3028	04/13/2015	2,100	15
SS3029	04/09/2015	11,000	<5,400
SS3030	04/09/2015	140,000	<11,000
SS3031	04/08/2015	9,500	<5,400

Notes:

1. This table summarizes data recorded during field screening of subslab vapor screening samples by Sanborn, Head Engineering, PC (SHPC) using a HAPSITE Smart ® portable gas chromatograph/mass spectrometer (GC/MS), manufactured by Inficon. The instrument was calibrated to vendor prepared standards for tetrachloroethene (PCE) and trichloroethene (TCE). Results were converted to micrograms per cubic meter (µg/m^3) by SHPC assuming standard temperature (25 °C) and pressure (1 atmosphere) for the conversion. Results were rounded to two significant figures.

2. < - The analyte was not detected above the indicated reporting limit.
R - The result was rejected because the field calibration check indicated that the result was unreliable.

TABLE 2
Summary of Subslab Vapor Sample Analytical Results (SUMMA® Canisters)
Subslab Depressurization Conceptual Design Report - Building 330C
Former IBM East Fishkill Facility
Hopewell Junction, New York

	Concentration in µg/m³				
Field Sample Name	**SS3055**	**FDSS3055 (Field Duplicate)**	**SS3056**	**SS3057**	**SS3058**
Collection Date	02/09/2016	02/09/2016	02/09/2016	02/09/2016	02/09/2016
Acetone	73	75	<26	29	<27
Benzene	<3.8	<3.7	<3.5	<3.6	<3.6
Carbon tetrachloride	<7.4	<7.2	<7.0	<7.0	<7.2
Chlorobenzene (Monochlorobenzene)	<5.4	<5.3	<5.1	<5.1	<5.2
Dichlorobenzene (1,2-)	<7.1	<6.9	<6.7	<6.7	<6.8
Dichlorobenzene (1,3-)	<7.1	<6.9	<6.7	<6.7	<6.8
Dichlorobenzene (1,4-)	<7.1	<6.9	<6.7	<6.7	<6.8
Dichlorodifluoromethane (CFC12)	12	13	3,100	610	1,900
Dichloroethene (1,1-)	<4.6	<4.6	<4.4	<4.4	<4.5
Dichloroethene (cis-1,2-)	<4.6	<4.6	<4.4	<4.4	<4.5
Ethane, 1,1,2-trichloro-1,2,2-trifluoro- (CFC113)	<9.0	<8.8	<8.5	<8.5	<8.7
Ethylbenzene	<5.1	<5.0	<4.8	<4.8	<4.9
Methylene Chloride (Dichloromethane)	<41	<40	<38	<39	<40
Tetrachloroethene (PCE)	610	620	170	54	310
Toluene	<4.4	<4.3	<4.2	<4.2	<4.3
Trichlorobenzene (1,2,4-)	<35	<34	<33	<33	<34
Trichloroethane (1,1,1-)	<6.4	<6.3	<6.0	<6.1	<6.2
Trichloroethene (TCE)	<6.3	<6.2	<6.0	<6.0	<6.1
Trichlorofluoromethane	<6.6	<6.5	<6.2	<6.3	<6.4
Vinyl chloride	<3.0	<2.9	<2.8	<2.8	<2.9
Xylene (o-)	<5.1	<5.0	<4.8	<4.8	<5.0
Xylene-m,p (Sum of Isomers)	<5.1	<5.0	<4.8	<4.8	<5.0

Notes:

1. Samples were collected by Sanborn, Head Engineering, PC (SHPC) on the dates indicated over an approximately 1-hour sampling period. The samples were analyzed by Eurofins Air Toxics, Inc. (EATI) of Folsom, California for the project-specific list of volatile organic compounds (VOCs) by United States Protection Agency (USEPA) Method TO-15 in the full scan mode.

2. Results are presented in micrograms per cubic meter (µg/m³).

3. < - The analyte was not detected above the indicated reporting limit.

Table 3
Summary of Subslab Vapor Extraction Pilot Test Analytical Results
Subslab Depressurization Conceptual Design Report - Building 330C
Former IBM East Fishkill Facility
Hopewell Junction, New York

Sample Location	Collection Date	VC µg/m³	t-1,2-DCE µg/m³	c-1,2-DCE µg/m³	TCE µg/m³	PCE µg/m³	Total VOCs µg/m³
EP3001	7/29/2015	<70.6	<109	<109	159	78,000	78,159
EP3002	7/30/2015	<5.09	<7.89	<7.89	774	4,690	5,464
EP3003	7/29/2015	<585	<908	<908	3,770	2,710,000	2,713,770
EP3004	10/14/2015	<1.49	<2.32	<2.32	<3.14	4.77	4.77
EP3005	10/15/2015	<4.7	<7.3	<7.3	607	5,360	5,967
EP3006	10/14/2015	<2.66	<4.12	<4.12	2,420	2,210	4,630
EP3007	10/13/2015	<3.37	<5.23	<5.23	543	976	1,519
EP3008	10/13/2015	<7.13	<11.1	<11.1	380	8,410	8,790
EP3009	10/14/2015	<16.7	<26	<26	272	15,500	15,772
EP3010	2/15/2016	<1.24	<1.92	<1.92	<2.61	210	210
EP3011	3/16/2016	<25.8	<40	<40	4,400	20,500	24,900
EP3012	3/16/2016	<473	<733	<733	3,150	235,000	238,150
EP3013	3/16/2016	<510	NA	<790	1,100	300,000	301,100
EP3014	3/16/2016	<168	<260	<260	<353	133,000	133,000
EP3015	3/16/2016	<58.8	<91.2	<91.2	170	30,800	30,970
EP3016	7/7/2016	<263	<408	<408	2,460	184,000	186,460
EP3017	7/7/2016	<261	<404	<404	1,370	161,000	162,370
SP3001	8/15/2016	<88.7	<138	<138	444	108,000	108,444

Notes:

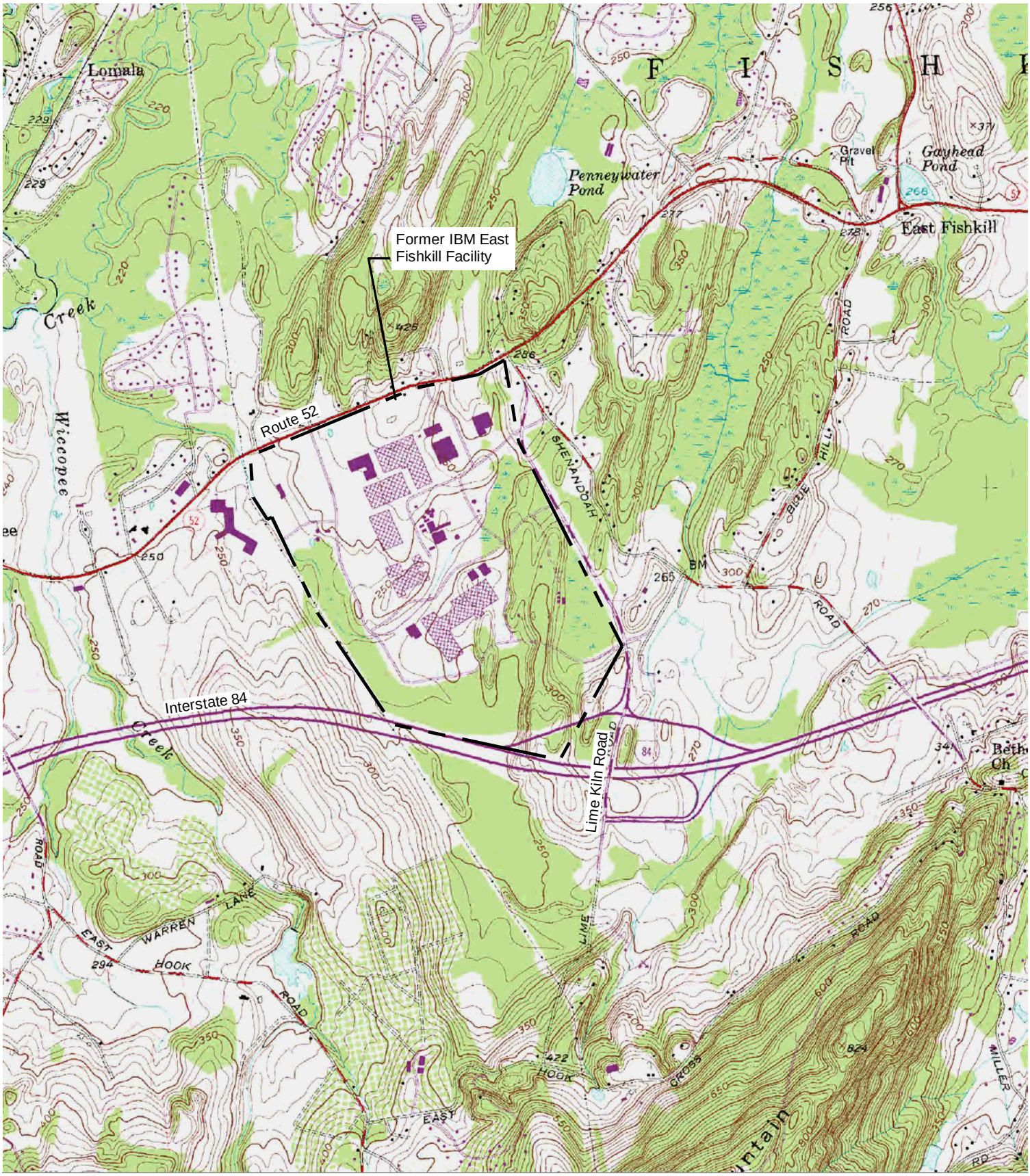
1. Samples were collected by Sanborn Head on the dates indicated. Samples were grab samples collected in Summa canisters during subslab vapor extraction pilot testing, and were collected once the pilot test field parameters stabilized. The samples were analyzed by Alpha Analytical of Westborough, Massachusetts, with the exception of sample EP3013 which was analyzed by Eurofins/Air Toxics of Folsom, California, for five volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method TO-15.

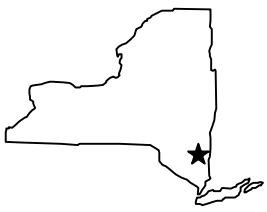
2. "<" indicates the analyte was not detected above the indicated laboratory reporting limit.

3. Total VOCs are the sum of the detected concentrations of VOCs.

4. Abbreviations:
   VC = vinyl chloride
   t-1,2-DCE = trans-1,2-dichloroethene
   c-1,2-DCE = cis-1,2-dichloroethene
   TCE = trichloroethene
   PCE = tetrachloroethene
   NA = not analyzed

FIGURES





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: J. Sanborn
Reviewed By: S. Soos / D. Shea
Project No: 2999.04
Date: March 2017

1,000' 0 2,000' Feet

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Figure 1

Site Location Plan

Building 330C Subslab Depressurizatior
Conceptual Design Report

Former IBM East Fishkill Facility
Hopewell Junction, New York

Figure 2

B330C Location Plan

Building 330C Subslab Depressurization
Conceptual Design Report

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By: E. Wright
Designed By: J. Corsello
Reviewed By: S. Soos / D. Shea
Project No: 2999.04
Date: March 2017

Figure Narrative

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

Legend

— - - — Property Line

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

B320B Indicates building number

Indicates the location of Building 330C

N
W E
S

200' 100' 0 200' 400' Feet

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Last Edited By: clavack
Path: P:\2900s\2999.00\Graphics Files\GIS\Figures\B330C\B330C Pilot Testing Report\B330C_ELP.mxd

Figure 3

Subslab Port Location Plan

Building 330C Subslab Depressurization
Conceptual Design Report

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack / E. Wright
Designed By:	J. Corsello
Reviewed By:	J. Sanborn / S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the location and designation of subslab vapor monitoring ports, extraction ports, and the suction pit in Building 330C. The ports and pit were installed by Sanborn Head personnel in May 2015 through August 2016.

Legend

- SS3001 Subslab Vapor Sample Port
- EP3001 Subslab Vapor Extraction Port
- SP3001 Subslab Vapor Suction Pit
- Approximate HVAC Zone Boundary

Feet
40 20 0 40 80

SANBORN HEAD ENGINEERING

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Figure 4

Summary of PCE Concentrations in Subslab Vapor

Building 330C Subslab Depressurization Conceptual Design Report

Former IBM East Fishkill Facility

Hopewell Junction, New York

Drawn By:	C. LaVack / E. Wright
Designed By:	J. Corsello
Reviewed By:	J. Sanborn / S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the tetrachloroethene (PCE) results for subslab vapor screening conducted in April and May 2015 using a portable gas chromatograph/mass spectrometer (GC/MS). Results are shown in micrograms per cubic meter ($\mu g/m^3$). The colored shading represents inferred PCE concentrations below the slab based on the data recorded at the sample ports.

Legend

- SS3001 — Subslab Vapor Sample Port
- EP3001 — Subslab Vapor Extraction Port
- 11,000 — PCE Results in Subslab Vapor ($\mu g/m^3$)
- Occupied area
- Approximate HVAC Zone Boundary

PCE Screening Concentrations ($\mu g/m^3$)

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

40 20 0 40 80 Feet

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N
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EP3012
Applied Vacuum: 60" in. wc
Flow rate: 94 scfm
VOC: 36 ppmv (via PID)
PCE: 235,000 µg/m^3 (Summa TO-15)

EP3001
Applied Vacuum: 60" in. wc
Flow rate: 9.2 scfm
VOC: 28 ppmv (via PID)
PCE: 78,000 µg/m^3 (Summa TO-15)

EP3015
Applied Vacuum: 60" in. wc
Flow rate: 52 scfm
VOC: 14 ppmv (via PID)
PCE: 30,800 µg/m^3 (Summa TO-15)

EP3006
Applied Vacuum: 60" in. wc
Flow rate: 40 scfm
VOC: 1.0 ppmv (via PID)
PCE: 2,210 µg/m^3 (Summa TO-15)

EP3007
Applied Vacuum: 60" in. wc
Flow rate: 160 scfm
VOC: 0.5 ppmv (via PID)
PCE: 976 µg/m^3 (Summa TO-15)

EP3009
Applied Vacuum: 60" in. wc
Flow rate: 100 scfm
VOC: 1.7 ppmv (via PID)
PCE: 15,500 µg/m^3 (Summa TO-15)

EP3008
Applied Vacuum: 59" in. wc
Flow rate: 160 scfm
VOC: 1.0 ppmv (via PID)
PCE: 8,410 µg/m^3 (Summa TO-15)

EP3016
Applied Vacuum: 60" in. wc
Flow rate: 53 scfm
VOC: 88 ppmv (via PID)
PCE: 184,000 µg/m^3 (Summa TO-15)

Figure 5

Subslab Pressure Response to Vapor Extraction Testing

Building 330C Subslab Depressurization Conceptual Design Report

Former IBM East Fishkill Facility

Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	J. Sanborn / S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the combined footprint of the subslab pressure response from the vapor extraction tests run at the eight extraction ports proposed for the subslab depressurization systems, and the measurements recorded at the extraction port for each of these tests. The subslab pressure response footprint represents the combined outer limit of the -0.004 inches of water column (in. wc) differential pressure measurement of each of the tests. The extraction tests were conducted individually - the results are presented in aggregrate. Individual vapor extraction test results are presented in Appendix B of this report.

Legend

SS3001 Subslab Vapor Sample Port

EP3001 Subslab Vapor Extraction Port

SP3001 Subslab Vapor Suction Pit

Occupied area

Inferred Footprint of subslab pressure response to vapor extraction (-0.004 in. wc contour)

Approximate HVAC Zone Boundary

PCE Concentrations (µg/m^3)

<1,000

1,000 - 10,000

10,000 - 50,000

50,000 - 100,000

100,000 - 500,000

>500,000

40 20 0 40 80 Feet

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N
W E
S

EP3004
EP3005
EP3001
EP3010
EP3011
EP3015
EP3012
EP3006
EP3014
EP3003
EP3013
EP3017
EP3016
EP3002
EP3007
EP3009
EP3008

Figure 6

Conceptual Subslab SSD Systems Layout

Building 330C Subslab Depressurization
Conceptual Design Report

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack / E. Wright
Designed By:	J. Corsello
Reviewed By:	J. Sanborn / S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the planned layout of the active subslab vapor extraction ports, overhead vapor conveyance pipe, and treatment system enclosure to be installed as part of subslab depressurization system in B330C. The conveyance pipe route shown is approximate and subject to change based on field conditions.

Legend

- EP3001 — Subslab Vapor Extraction Port
- Sub-System 1 Conveyance Pipe and Flow Arrow
- Sub-System 2 Conveyance Pipe and Flow Arrow
- Proposed Location of Treatment Systems Enclosure
- Occupied area

40 20 0 40 80 Feet

SANBORN HEAD ENGINEERING

APPENDIX A

LIMITATIONS

APPENDIX A
SHPC LIMITATIONS

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

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

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

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

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

SUBSLAB PRESSURE RESPONSE TO INDIVIDUAL VAPOR EXTRACTION TESTS

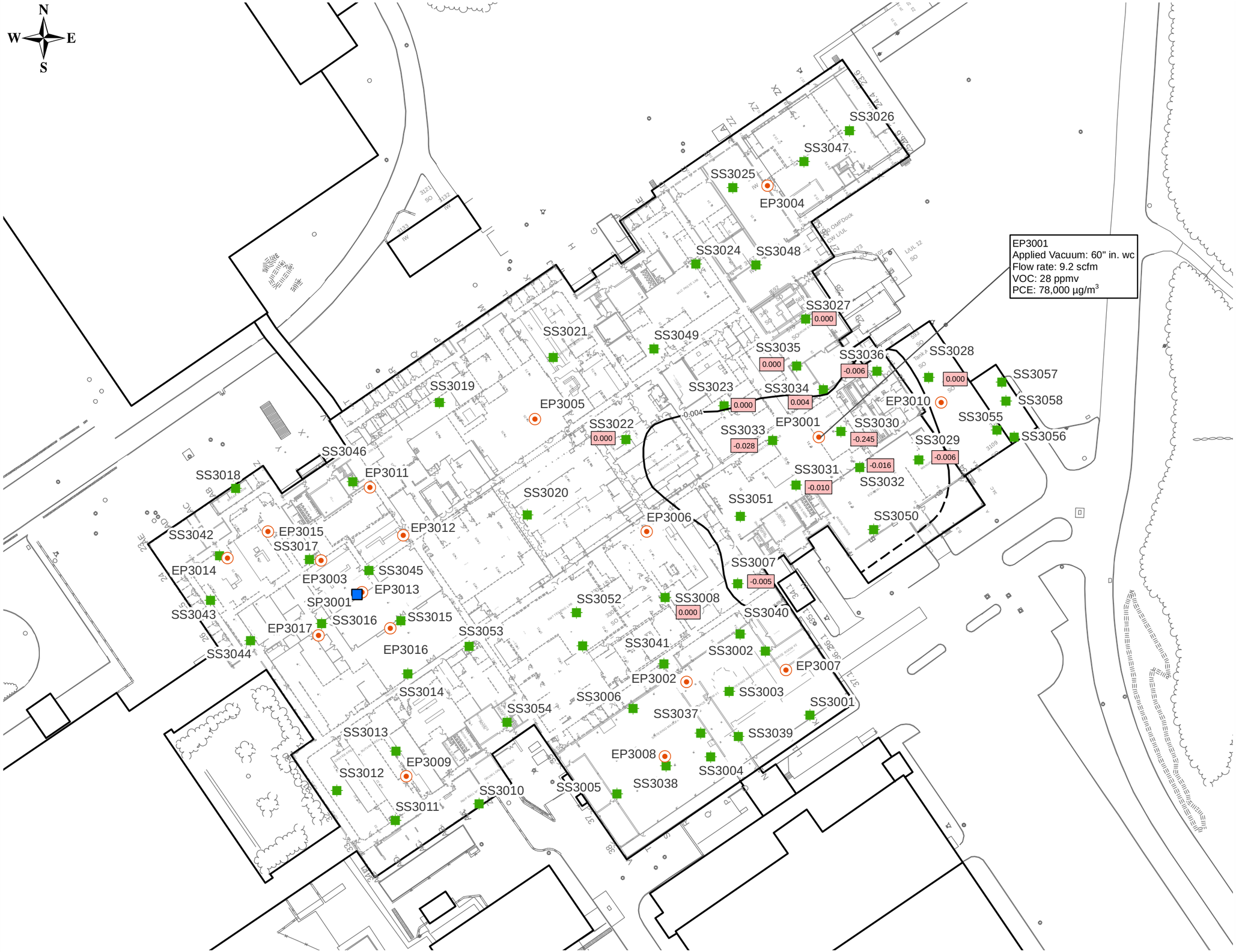

Figure B-1

Subslab Pressure Response to Vapor Extraction Testing

EP3001
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3001
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-2

Subslab Pressure Response to Vapor Extraction Testing

EP3002
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3002
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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N
W E
S

EP3003
Applied Vacuum: 60" in. wc
Flow rate: 70 scfm
VOC: 170 ppmv
PCE: 2,710,000 µg/m^3

SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3019 SS3023 SS3034 EP3010 EP3005 SS3022 0.000 EP3001 SS3030 SS3055 SS3056 SS3033 SS3029 SS3046 -0.014 EP3011 SS3031 SS3032 SS3018 0.000 SS3020 0.005 SS3051 SS3050 EP3006 EP3012 EP3015 SS3042 -0.008 SS3017 -2.735 -0.044 SS3007 EP3014 SS3045 EP3003 EP3013 SS3052 SS3008 SS3040 0.000 SP3001 SS3043 SS3016 SS3015 EP3017 -0.255 -0.026 SS3053 SS3041 SS3002 EP3007 SS3044 -0.017 EP3016 EP3002 0.000 SS3014 SS3003 SS3006 SS3001 -0.004 SS3054 SS3037 SS3013 SS3039 EP3008 SS3004 EP3009 SS3012 SS3038 SS3010 SS3005 SS3011

Figure B-3

Subslab Pressure Response to Vapor Extraction Testing

EP3003
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3003
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-4

Subslab Pressure Response to Vapor Extraction Testing

EP3004
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3004
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-5

Subslab Pressure Response to Vapor Extraction Testing

EP3005
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3005
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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N
W E
S

SS3026
SS3047
SS3025
EP3004
SS3024
SS3048
SS3027
SS3021
SS3049
0.000
SS3035
0.004
SS3036
-0.008
SS3028
0.008
SS3057
SS3058
SS3019
SS3023
0.000
SS3034
0.000
EP3010
SS3055
EP3005
EP3001
SS3030
-0.017
SS3056
SS3022
0.000
SS3033
-0.010
SS3029
-0.005
SS3046
SS3031
-0.013
SS3032
EP3011
SS3018
SS3020
0.000
SS3051
-0.008
SS3050
-0.013
EP3006
EP3012
EP3015
SS3042
SS3017
SS3007
-0.008
EP3014
SS3045
EP3003
EP3013
SP3001
SS3052
0.000
SS3008
-0.023
SS3040
0.000
SS3043
SS3016
SS3015
EP3017
SS3053
SS3041
SS3002
EP3016
SS3044
-0.004
EP3007
EP3002
SS3014
SS3006
0.000
SS3003
SS3001
SS3054
SS3037
SS3013
SS3039
EP3008
EP3009
SS3004
SS3012
SS3038
SS3010
SS3005
SS3011

EP3006
Applied Vacuum: 60" in. wc
Flow rate: 40 scfm
VOC: 1.0 ppmv
PCE: 2,210 µg/m^3

Figure B-6

Subslab Pressure Response to Vapor Extraction Testing

EP3006
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3006
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-7

Subslab Pressure Response to Vapor Extraction Testing

EP3007
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3007
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

EP3007
Applied Vacuum: 60" in. wc
Flow rate: 160 scfm
VOC: 0.5 ppmv
PCE: 976 µg/m³

40 20 0 40 80 Feet

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Figure B-8

Subslab Pressure Response to Vapor Extraction Testing

EP3008
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3008
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

EP3008
Applied Vacuum: 59" in. wc
Flow rate: 160 scfm
VOC: 1.0 ppmv
PCE: 8,410 µg/m³

40 20 0 40 80 Feet

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SS3026
SS3047
SS3025
EP3004
SS3024
SS3048
SS3027
SS3021
SS3049
SS3035
SS3036
SS3028
SS3057
SS3058
SS3019
SS3023
SS3034
EP3010
EP3005
SS3055
SS3022
EP3001
SS3030
SS3056
SS3033
SS3029
SS3046
SS3031
EP3011
SS3032
SS3018
0.000
SS3020
SS3051
EP3006
SS3050
EP3015
EP3012
SS3042
0.000
SS3017
-0.005
0.000
-0.004
EP3014
SS3045
EP3003
EP3013
SS3007
SP3001
0.000
SS3052
SS3008
SS3043
SS3040
EP3017
SS3016
SS3015
-0.007
-0.018
SS3053
-0.005
EP3016
SS3041
SS3044
-0.004
SS3002
EP3007
-0.005
EP3002
SS3014
SS3003
SS3006
SS3001
0.000
SS3054
SS3037
-0.003
SS3039
SS3013
-0.644
EP3008
SS3004
EP3009
SS3038
SS3012
-0.006
SS3005
0.000
SS3010
-0.004
SS3011
-0.044

EP3009
Applied Vacuum: 60" in. wc
Flow rate: 100 scfm
VOC: 1.7 ppmv
PCE: 15,500 µg/m^3

Figure B-9

Subslab Pressure Response to Vapor Extraction Testing

EP3009
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3009	Extraction Port
in. wc	Applied Vacuum (extraction port) inches of water column (in. wc)
scfm	Flow Rate (std. cu. ft. per min.)
ppmv	PID Concentration (Total VOCs)
µg/m^3	Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-10

Subslab Pressure Response to Vapor Extraction Testing

EP3010
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- Differential pressure contour (inches of water column). Dashed where inferred.

EP3010
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005

Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

EP3010
Applied Vacuum: 53" in. wc
Flow rate: 160 scfm
VOC: 11 ppmv
PCE: 210 µg/m³

Feet
40 20 0 40 80

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Figure B-11

Subslab Pressure Response to Vapor Extraction Testing

EP3011
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3011
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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EP3012
Applied Vacuum: 60" in. wc
Flow rate: 94 scfm
VOC: 36 ppmv
PCE: 235,000 µg/m^3

SS3026
SS3047
SS3025
EP3004
SS3024
SS3048
SS3027
SS3021
SS3049
SS3035
SS3036
SS3028
SS3057
SS3058
SS3019
-0.003
SS3023
SS3034
EP3010
EP3005
0.000
SS3022
EP3001
SS3030
SS3055
SS3056
SS3033
SS3029
SS3046
-0.005
EP3011
-0.006
SS3031
SS3032
SS3018
SS3020
0.004
SS3051
EP3006
SS3050
EP3012
SS3042
EP3015
0.000
SS3017
-0.003
-0.007
SS3007
EP3014
0.000
SS3045
EP3003
-0.008
EP3013
SS3052
SS3008
SS3040
SS3043
SP3001
-0.012
SS3016
SS3015
EP3017
0.000
-0.022
SS3053
SS3041
SS3002
SS3044
0.000
-0.003
EP3016
-0.004
EP3007
EP3002
0.000
SS3014
SS3003
SS3006
SS3001
SS3054
SS3037
SS3013
SS3039
EP3008
EP3009
SS3004
SS3012
SS3038
SS3005
SS3010
SS3011

Figure B-12

Subslab Pressure Response to Vapor Extraction Testing

EP3012
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3012
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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N
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SS3026
SS3047
SS3025
EP3004
SS3024
SS3048
SS3027
SS3021
SS3049
SS3035
SS3036
SS3028
SS3057
SS3058
SS3019
SS3023
SS3034
EP3010
EP3005
SS3055
SS3022
0.004
EP3001
SS3030
SS3056
SS3033
SS3029
SS3046
SS3031
SS3032
EP3011
0.000
SS3018
SS3020
-0.009
SS3051
EP3006
SS3050
EP3012
0.000
EP3015
0.000
SS3042
SS3017
-0.003
-0.009
-0.062
SS3045
EP3014
EP3003
EP3013
SP3001
SS3007
SS3052
0.000
SS3008
SS3040
SS3043
SS3016
SS3015
-0.076
EP3017
-0.004
SS3053
-0.017
SS3041
SS3002
SS3044
0.000
EP3016
-0.004
EP3007
0.000
EP3002
SS3014
SS3003
SS3006
SS3001
SS3054
SS3037
SS3013
SS3039
EP3008
EP3009
SS3004
SS3012
SS3038
SS3005
SS3010
SS3011

EP3013
Applied Vacuum: 60" in. wc
Flow rate: 19 scfm
VOC: 110 ppmv
PCE: 300,000 µg/m^3

Figure B-13

Subslab Pressure Response to Vapor Extraction Testing

EP3013
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3013
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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EP3014
Applied Vacuum: 60" in. wc
Flow rate: 14 scfm
VOC: 52 ppmv
PCE: 133,000 µg/m^3

SS3018 -0.003
SS3042 -0.761
EP3015
-0.004
SS3017 -0.003
EP3014
EP3012 0.000
0.000
SS3045
EP3003 -0.005
EP3013
SP3001 0.000
SS3043 -0.019
SS3016
EP3017 -0.004
0.000
SS3015
SS3044 -0.003
EP3016
EP3011 0.000
SS3046
SS3019
EP3005
SS3021
SS3049
SS3035
SS3023
SS3034
SS3022
EP3001
SS3033
SS3030
SS3029
SS3031
SS3032
SS3020
SS3051
EP3006
SS3050
SS3007
SS3052
SS3008
SS3040
SS3053
SS3041
SS3002
EP3007
EP3002
SS3014
SS3006
SS3003
SS3001
SS3054
SS3037
SS3013
SS3039
EP3008
SS3004
EP3009
SS3012
SS3038
SS3005
SS3010
SS3011
SS3024
SS3048
SS3027
SS3036
SS3028
SS3057
SS3058
EP3010
SS3055
SS3056
SS3026
SS3047
SS3025
EP3004

Figure B-14

Subslab Pressure Response to Vapor Extraction Testing

EP3014
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3014
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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EP3015
Applied Vacuum: 60" in. wc
Flow rate: 52 scfm
VOC: 14 ppmv
PCE: 30,800 µg/m^3

SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3019 SS3023 SS3034 EP3010 SS3055 SS3056 EP3005 EP3001 SS3030 SS3029 SS3022 SS3033 SS3031 SS3032 SS3046 -0.010 EP3011 0.000 SS3018 -0.007 SS3020 SS3051 SS3050 EP3006 EP3012 0.000 SS3042 -0.032 SS3017 -0.029 0.000 SS3007 EP3014 -0.040 SS3045 EP3003 -0.020 EP3013 SS3052 SS3008 SP3001 0.000 SS3040 SS3043 0.000 SS3016 SS3015 EP3017 -0.004 -0.005 SS3053 SS3041 SS3002 SS3044 0.000 EP3016 EP3007 EP3002 SS3014 SS3003 SS3006 SS3001 SS3054 SS3037 SS3013 SS3039 EP3008 EP3009 SS3004 SS3012 SS3038 SS3005 SS3010 SS3011

Figure B-15

Subslab Pressure Response to Vapor Extraction Testing

EP3015
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3015
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-16

Subslab Pressure Response to Vapor Extraction Testing

EP3016
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0:004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3016
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3019 SS3023 SS3034 EP3010 EP3005 SS3055 SS3022 EP3001 SS3030 SS3056 SS3033 SS3029 SS3046 SS3031 SS3032 EP3011 SS3018 SS3020 SS3051 SS3050 EP3006 0.000 EP3015 EP3012 0.000 SS3042 0.000 SS3017 -0.011 -0.003 SS3045 EP3014 EP3003 EP3013 -0.004 SP3001 -0.032 0.004 SS3043 SS3007 SS3052 SS3008 0.000 SS3040 SS3016 SS3015 EP3017 -0.054 SS3053 SS3041 -0.029 SS3044 -0.007 SS3002 EP3016 EP3007 -0.007 EP3002 SS3014 SS3003 SS3006 SS3001 SS3054 SS3037 SS3013 SS3039 0.000 EP3008 EP3009 SS3004 SS3012 SS3038 0.000 SS3005 SS3010 SS3011

EP3017
Applied Vacuum: 60" in. wc
Flow rate: 53 scfm
VOC: 81 ppmv
PCE: 161,000 µg/m^3

Figure B-17

Subslab Pressure Response to Vapor Extraction Testing

EP3017
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3017
in. wc
scfm
ppmv
µg/m^3

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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EP3003 (Post-Floor Sealing)
Applied Vacuum: 60" in. wc
Flow rate: 100 scfm

SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3023 SS3034 EP3010 SS3055 SS3056 SS3019 -0.005 EP3005 0.000 SS3022 EP3001 SS3033 SS3030 SS3029 SS3046 -0.012 EP3011 SS3031 SS3032 SS3018 0.000 SS3020 SS3051 SS3050 -0.040 EP3015 EP3012 -0.005 EP3006 SS3042 -0.003 SS3017 -2.120 -0.055 SS3007 EP3014 -0.004 SS3045 EP3003 EP3013 SS3052 SS3008 SS3040 0.000 SP3001 -0.058 SS3043 SS3016 SS3015 EP3017 -0.021 -0.021 SS3053 SS3041 SS3002 EP3007 SS3044 0.000 EP3016 0.000 -0.004 EP3002 SS3014 SS3003 SS3006 SS3054 SS3037 SS3001 SS3013 SS3039 EP3008 EP3009 SS3004 SS3012 SS3038 SS3005 SS3010 SS3011

Figure B-18

Subslab Pressure Response to Vapor Extraction Testing

EP3003 Post-Floor Sealing
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3003	Extraction Port
in. wc	Applied Vacuum (extraction port) inches of water column (in. wc)
scfm	Flow Rate (std. cu. ft. per min.)
ppmv	PID Concentration (Total VOCs)
µg/m³	Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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N W E S

SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3019 -0.003 EP3005 0.000 SS3023 SS3034 EP3010 SS3055 SS3056 SS3022 EP3001 SS3033 SS3030 SS3029 SS3046 -0.170 EP3011 SS3031 SS3032 SS3018 0.000 SS3020 0.006 SS3051 SS3050 EP3006 0.000 EP3015 EP3012 -0.011 SS3042 0.005 SS3017 -0.012 -0.073 SS3007 EP3014 0.000 SS3045 EP3003 -0.016 EP3013 SS3052 SS3008 SP3001 SS3040 SS3043 0.000 SS3016 SS3015 -0.071 EP3017 -0.011 SS3053 -0.003 SS3041 SS3002 EP3016 SS3044 0.000 -0.004 EP3007 0.000 EP3002 SS3014 SS3003 SS3006 SS3001 SS3054 SS3037 SS3013 SS3039 EP3008 EP3009 SS3004 SS3012 SS3038 SS3005 SS3010 SS3011

EP3011/3013
Applied Vacuum: 56/64" in. wc
Flow rate: 100/20 scfm

Figure B-19

Subslab Pressure Response to Vapor Extraction Testing

EP3011/3013
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3011/3013
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

SANBORN HEAD ENGINEERING

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Figure B-20

Subslab Pressure Response to Vapor Extraction Testing

EP3011/3014
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.
- **EP3011/3014** — Extraction Port
- in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
- scfm — Flow Rate (std. cu. ft. per min.)
- ppmv — PID Concentration (Total VOCs)
- µg/m^3 — Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)
- -0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

SANBORN HEAD ENGINEERING

N
W E
S

EP3012/3014
Applied Vacuum: 60/68" in. wc
Flow rate: 100/20 scfm

SS3026
SS3047
SS3025
EP3004
SS3024
SS3048
SS3027
SS3021
SS3049
SS3035
SS3036
SS3028
SS3057
SS3058
SS3019
-0.008
SS3023
SS3034
EP3010
SS3055
SS3056
EP3005
0.000
SS3022
EP3001
SS3030
SS3033
SS3029
SS3046
-0.008
EP3011
-0.011
SS3031
SS3032
SS3018
0.000
-0.004
SS3020
0.000
SS3051
EP3006
SS3050
SS3042
-0.732
EP3015
-0.009
SS3017
0.000
EP3012
-0.013
SS3007
EP3014
SS3045
EP3003
-0.012
EP3013
SS3052
SS3008
SP3001
-0.022
SS3040
SS3043
-0.008
SS3016
SS3015
-0.031
EP3017
-0.003
SS3053
-0.005
SS3041
SS3002
EP3016
-0.004
SS3044
0.000
EP3007
EP3002
0.000
SS3014
SS3003
SS3006
SS3001
SS3054
SS3037
SS3013
SS3039
EP3008
EP3009
SS3004
SS3012
SS3038
SS3005
SS3010
SS3011

Figure B-21

Subslab Pressure Response to Vapor Extraction Testing

EP3012/3014
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3012/3014	Extraction Port
in. wc	Applied Vacuum (extraction port) inches of water column (in. wc)
scfm	Flow Rate (std. cu. ft. per min.)
ppmv	PID Concentration (Total VOCs)
µg/m^3	Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m^3)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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Figure B-22

Subslab Pressure Response to Vapor Extraction Testing

SP3001
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

SP3001
in. wc
scfm
ppmv
µg/m³

- Extraction Port
- Applied Vacuum (extraction port) inches of water column (in. wc)
- Flow Rate (std. cu. ft. per min.)
- PID Concentration (Total VOCs)
- Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

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SP3001
Applied Vacuum: 60" in. wc
Flow rate: 100 scfm
VOC: 36 ppmv
PCE: 108,000 µg/m³

SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3019 SS3023 SS3034 EP3010 SS3055 SS3056 EP3005 SS3022 EP3001 SS3030 SS3033 SS3029 SS3046 SS3031 SS3032 SS3018 EP3011 SS3020 SS3051 EP3006 SS3050 SS3042 EP3015 EP3012 SS3017 SS3007 EP3014 SS3045 EP3003 EP3013 SS3052 SS3008 SS3040 SS3043 SP3001 SS3016 SS3015 EP3017 SS3053 SS3041 SS3002 SS3044 EP3016 EP3007 EP3002 SS3014 SS3003 SS3006 SS3001 SS3054 SS3037 SS3013 SS3039 EP3008 SS3004 EP3009 SS3012 SS3038 SS3005 SS3010 SS3011

Last Edited By: clavack

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Final EP3012/3015
Applied Vacuum: 47/52" in. wc
Flow rate: 83/48 scfm

SS3026 SS3047 SS3025 EP3004 SS3024 SS3048 SS3027 SS3021 SS3049 SS3035 SS3036 SS3028 SS3057 SS3058 SS3019 -0.011 EP3005 0.000 SS3023 SS3034 EP3010 SS3055 SS3056 SS3022 0.000 EP3001 SS3033 SS3030 SS3029 SS3046 -0.010 EP3011 -0.011 SS3018 -0.007 SS3031 SS3032 SS3020 -0.007 SS3051 SS3050 EP3006 EP3015 EP3012 SS3042 -0.034 SS3017 -0.044 -0.010 SS3045 EP3014 -0.041 EP3003 -0.030 EP3013 SP3001 -0.018 -0.005 SS3043 SS3007 SS3052 0.000 SS3008 SS3040 EP3017 SS3016 SS3015 -0.009 -0.022 SS3053 -0.010 SS3041 SS3002 EP3016 SS3044 -0.008 -0.004 EP3007 EP3002 -0.004 SS3014 SS3003 SS3006 SS3001 SS3054 SS3037 SS3013 SS3039 EP3008 EP3009 SS3004 SS3012 SS3038 SS3005 SS3010 SS3011

Figure B-23

Subslab Pressure Response to Vapor Extraction Testing

EP3012/3015
Building 330C

Former IBM East Fishkill Facility
Hopewell Junction, New York

Drawn By:	C. LaVack
Designed By:	J. Corsello
Reviewed By:	S. Soos
Project No:	2999.04
Date:	March 2017

Figure Narrative

This figure shows the individual vapor extraction test data and inferred subslab pressure response footprint observed during testing.

Legend

- Subslab Vapor Monitoring Point
- Subslab Vapor Extraction Port
- Subslab Vapor Suction Pit
- -0.004 — Differential pressure contour (inches of water column). Dashed where inferred.

EP3012/3015 — Extraction Port
in. wc — Applied Vacuum (extraction port) inches of water column (in. wc)
scfm — Flow Rate (std. cu. ft. per min.)
ppmv — PID Concentration (Total VOCs)
µg/m³ — Tetrachloroethene (PCE) Concentration, micrograms per cubic meter (µg/m³)

-0.005 — Observed pressure differential between the subslab and room during subslab vapor extraction test (in. wc). Negative values indicate subslab pressure is less than indoor air pressure.

40 20 0 40 80 Feet

SANBORN HEAD ENGINEERING

APPENDIX C

ANALYTICAL LABORATORY REPORTS (ON CD)

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4/4/2016
Ms. Erica Bosse
Sanborn, Head & Associates
24 Wade Road

Latham NY

Project Name: B330C
Project #: 2999.04
Workorder #: 1603419

Dear Ms. Erica Bosse

The following report includes the data for the above referenced project for sample(s) received on 3/22/2016 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

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

Regards,

Ausha Scott

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1603419

Work Order Summary

CLIENT:	Ms. Erica Bosse Sanborn, Head & Associates 24 Wade Road Latham, NY	**BILL TO:**	Accounts Payable Sanborn, Head & Associates 20 Foundry Street Concord, NH 03301
PHONE:	518-207-0769	**P.O. #**	2999.04
FAX:		**PROJECT #**	2999.04 B330C
DATE RECEIVED:	03/22/2016	**CONTACT:**	Ausha Scott
DATE COMPLETED:	04/04/2016		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20160314 INF	TO-15	5.3 "Hg	15.1 psi
01B	20160314 INF	TO-15	5.3 "Hg	15.1 psi
02A	20160314 MID	TO-15	5.9 "Hg	14.7 psi
03A	20160314 EFF	TO-15	6.1 "Hg	15.1 psi
04A	EP3013	TO-15	4.9 "Hg	14.6 psi
04B	EP3013	TO-15	4.9 "Hg	14.6 psi
05A	Lab Blank	TO-15	NA	NA
05B	Lab Blank	TO-15	NA	NA
06A	CCV	TO-15	NA	NA
06B	CCV	TO-15	NA	NA
07A	LCS	TO-15	NA	NA
07AA	LCSD	TO-15	NA	NA
07B	LCS	TO-15	NA	NA
07BB	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 04/04/16

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Sanborn, Head & Associates
Workorder# 1603419

Four 1 Liter Summa Canister (100% Certified) samples were received on March 22, 2016. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

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.

Receiving Notes

The Chain of Custody (COC) information for sample 20160314MID and 20160314EFF did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

Due to high-level target compounds, samples 20160314 INF and EP3013 were analyzed twice. In the "B" fraction, the sample was diluted to bring the highest-level compounds within the calibration range.

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, LOD, or MDL value. See data page for project specific U-flag definition.

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

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
EPA METHOD TO-15 GC/MS

Client Sample ID: 20160314 INF

Lab ID#: 1603419-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	25	430	190	3300
Acetone	98	270	230	650
Benzene	25	210	78	660
Trichloroethene	25	97	130	520

Client Sample ID: 20160314 INF

Lab ID#: 1603419-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	100	17000	700	120000

Client Sample ID: 20160314 MID

Lab ID#: 1603419-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	2.7	6.2	14
Acetone	12	16	30	38
Benzene	1.2	18	4.0	58
m,p-Xylene	1.2	2.2	5.4	9.5
o-Xylene	1.2	2.0	5.4	8.8

Client Sample ID: 20160314 EFF

Lab ID#: 1603419-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	2.7	6.3	14
Benzene	1.3	2.2	4.0	6.9

Client Sample ID: EP3013

Lab ID#: 1603419-04A

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

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS

Client Sample ID: EP3013

Lab ID#: 1603419-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 113	200	500	1500	3800
Trichloroethene	200	200	1100	1100

Client Sample ID: EP3013

Lab ID#: 1603419-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	300	44000	2000	300000

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Client Sample ID: 20160314 INF

Lab ID#: 1603419-01A

EPA METHOD TO-15 GC/MS

File Name:	**14033113**	**Date of Collection: 3/14/16 6:00:00 PM**	
Dil. Factor:	**4.92**	**Date of Analysis: 3/31/16 02:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	25	Not Detected	120	Not Detected
Vinyl Chloride	25	Not Detected	63	Not Detected
Freon 11	25	Not Detected	140	Not Detected
Freon 113	25	430	190	3300
1,1-Dichloroethene	25	Not Detected	98	Not Detected
Acetone	98	270	230	650
Methylene Chloride	25	Not Detected	85	Not Detected
cis-1,2-Dichloroethene	25	Not Detected	98	Not Detected
1,1,1-Trichloroethane	25	Not Detected	130	Not Detected
Carbon Tetrachloride	25	Not Detected	150	Not Detected
Benzene	25	210	78	660
Trichloroethene	25	97	130	520
Toluene	25	Not Detected	93	Not Detected
Chlorobenzene	25	Not Detected	110	Not Detected
Ethyl Benzene	25	Not Detected	110	Not Detected
m,p-Xylene	25	Not Detected	110	Not Detected
o-Xylene	25	Not Detected	110	Not Detected
1,3-Dichlorobenzene	25	Not Detected	150	Not Detected
1,4-Dichlorobenzene	25	Not Detected	150	Not Detected
1,2-Dichlorobenzene	25	Not Detected	150	Not Detected
1,2,4-Trichlorobenzene	98	Not Detected	730	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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

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Client Sample ID: 20160314 INF

Lab ID#: 1603419-01B

EPA METHOD TO-15 GC/MS

File Name:	**14033110**	**Date of Collection: 3/14/16 6:00:00 PM**	
Dil. Factor:	**20.5**	**Date of Analysis: 3/31/16 12:38 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	100	17000	700	120000

Container Type: 1 Liter Summa Canister (100% Certified)

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

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Client Sample ID: 20160314 MID

Lab ID#: 1603419-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17032513**	**Date of Collection:**	**3/14/16 6:05:00 PM**
Dil. Factor:	**2.49**	**Date of Analysis:**	**3/25/16 06:57 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	2.7	6.2	14
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	Not Detected	7.0	Not Detected
Freon 113	1.2	Not Detected	9.5	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	16	30	38
Methylene Chloride	12	Not Detected	43	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.8	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
Benzene	1.2	18	4.0	58
Trichloroethene	1.2	Not Detected	6.7	Not Detected
Toluene	1.2	Not Detected	4.7	Not Detected
Tetrachloroethene	1.2	Not Detected	8.4	Not Detected
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	2.2	5.4	9.5
o-Xylene	1.2	2.0	5.4	8.8
1,3-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.5	Not Detected
1,2,4-Trichlorobenzene	5.0	Not Detected	37	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: 20160314 EFF

Lab ID#: 1603419-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17032514**	**Date of Collection:**	**3/14/16 6:10:00 PM**
Dil. Factor:	**2.54**	**Date of Analysis:**	**3/25/16 07:23 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.3	2.7	6.3	14
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Freon 11	1.3	Not Detected	7.1	Not Detected
Freon 113	1.3	Not Detected	9.7	Not Detected
1,1-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Acetone	13	Not Detected	30	Not Detected
Methylene Chloride	13	Not Detected	44	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	2.2	4.0	6.9
Trichloroethene	1.3	Not Detected	6.8	Not Detected
Toluene	1.3	Not Detected	4.8	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
Chlorobenzene	1.3	Not Detected	5.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
1,3-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,4-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2-Dichlorobenzene	1.3	Not Detected	7.6	Not Detected
1,2,4-Trichlorobenzene	5.1	Not Detected	38	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	110	70-130

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Client Sample ID: EP3013

Lab ID#: 1603419-04A

EPA METHOD TO-15 GC/MS

File Name:	**14033111**	**Date of Collection: 3/16/16 5:54:00 PM**	
Dil. Factor:	**39.7**	**Date of Analysis: 3/31/16 01:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	200	Not Detected	980	Not Detected
Vinyl Chloride	200	Not Detected	510	Not Detected
Freon 11	200	Not Detected	1100	Not Detected
Freon 113	200	500	1500	3800
1,1-Dichloroethene	200	Not Detected	790	Not Detected
Acetone	790	Not Detected	1900	Not Detected
Methylene Chloride	200	Not Detected	690	Not Detected
cis-1,2-Dichloroethene	200	Not Detected	790	Not Detected
1,1,1-Trichloroethane	200	Not Detected	1100	Not Detected
Carbon Tetrachloride	200	Not Detected	1200	Not Detected
Benzene	200	Not Detected	630	Not Detected
Trichloroethene	200	200	1100	1100
Toluene	200	Not Detected	750	Not Detected
Chlorobenzene	200	Not Detected	910	Not Detected
Ethyl Benzene	200	Not Detected	860	Not Detected
m,p-Xylene	200	Not Detected	860	Not Detected
o-Xylene	200	Not Detected	860	Not Detected
1,3-Dichlorobenzene	200	Not Detected	1200	Not Detected
1,4-Dichlorobenzene	200	Not Detected	1200	Not Detected
1,2-Dichlorobenzene	200	Not Detected	1200	Not Detected
1,2,4-Trichlorobenzene	790	Not Detected	5900	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	98	70-130

eurofins | Air Toxics

Client Sample ID: EP3013

Lab ID#: 1603419-04B

EPA METHOD TO-15 GC/MS

File Name:	**14033112**	**Date of Collection: 3/16/16 5:54:00 PM**	
Dil. Factor:	**59.5**	**Date of Analysis: 3/31/16 02:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	300	44000	2000	300000

Container Type: 1 Liter Summa Canister (100% Certified)

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

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Client Sample ID: Lab Blank

Lab ID#: 1603419-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17032506**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/16 01:23 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1603419-05B

EPA METHOD TO-15 GC/MS

File Name:	**14033106**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/31/16 10:42 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Freon 113	5.0	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
cis-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected

Container Type: NA - Not Applicable

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

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Client Sample ID: CCV

Lab ID#: 1603419-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17032502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/16 09:51 AM**	

Compound	%Recovery
Freon 12	96
Vinyl Chloride	92
Freon 11	102
Freon 113	106
1,1-Dichloroethene	94
Acetone	99
Methylene Chloride	88
cis-1,2-Dichloroethene	95
1,1,1-Trichloroethane	96
Carbon Tetrachloride	102
Benzene	94
Trichloroethene	95
Toluene	96
Tetrachloroethene	107
Chlorobenzene	101
Ethyl Benzene	98
m,p-Xylene	99
o-Xylene	98
1,3-Dichlorobenzene	105
1,4-Dichlorobenzene	104
1,2-Dichlorobenzene	104
1,2,4-Trichlorobenzene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	111	70-130

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Client Sample ID: CCV

Lab ID#: 1603419-06B

EPA METHOD TO-15 GC/MS

File Name:	**14033102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/31/16 08:40 AM**	

Compound	%Recovery
Freon 12	88
Vinyl Chloride	83
Freon 11	94
Freon 113	94
1,1-Dichloroethene	87
Acetone	91
Methylene Chloride	86
cis-1,2-Dichloroethene	88
1,1,1-Trichloroethane	96
Carbon Tetrachloride	103
Benzene	92
Trichloroethene	82
Toluene	89
Tetrachloroethene	97
Chlorobenzene	92
Ethyl Benzene	90
m,p-Xylene	95
o-Xylene	93
1,3-Dichlorobenzene	94
1,4-Dichlorobenzene	94
1,2-Dichlorobenzene	87
1,2,4-Trichlorobenzene	71

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 1603419-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17032503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/16 10:17 AM**	

Compound	%Recovery	Method Limits
Freon 12	93	70-130
Vinyl Chloride	90	70-130
Freon 11	100	70-130
Freon 113	99	70-130
1,1-Dichloroethene	86	70-130
Acetone	83	70-130
Methylene Chloride	83	70-130
cis-1,2-Dichloroethene	87	70-130
1,1,1-Trichloroethane	90	70-130
Carbon Tetrachloride	95	70-130
Benzene	90	70-130
Trichloroethene	101	70-130
Toluene	95	70-130
Tetrachloroethene	106	70-130
Chlorobenzene	98	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	98	70-130
o-Xylene	99	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	103	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	98	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	113	70-130

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Client Sample ID: LCSD

Lab ID#: 1603419-07AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17032504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/16 10:44 AM**	

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Vinyl Chloride	92	70-130
Freon 11	102	70-130
Freon 113	102	70-130
1,1-Dichloroethene	89	70-130
Acetone	83	70-130
Methylene Chloride	83	70-130
cis-1,2-Dichloroethene	88	70-130
1,1,1-Trichloroethane	92	70-130
Carbon Tetrachloride	97	70-130
Benzene	91	70-130
Trichloroethene	103	70-130
Toluene	96	70-130
Tetrachloroethene	106	70-130
Chlorobenzene	99	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	98	70-130
o-Xylene	99	70-130
1,3-Dichlorobenzene	105	70-130
1,4-Dichlorobenzene	105	70-130
1,2-Dichlorobenzene	105	70-130
1,2,4-Trichlorobenzene	112	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCS

Lab ID#: 1603419-07B

EPA METHOD TO-15 GC/MS

File Name:	**14033103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/31/16 09:21 AM**	

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Vinyl Chloride	92	70-130
Freon 11	98	70-130
Freon 113	94	70-130
1,1-Dichloroethene	89	70-130
Acetone	95	70-130
Methylene Chloride	88	70-130
cis-1,2-Dichloroethene	90	70-130
1,1,1-Trichloroethane	102	70-130
Carbon Tetrachloride	102	70-130
Benzene	93	70-130
Trichloroethene	84	70-130
Toluene	92	70-130
Tetrachloroethene	98	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	97	70-130
o-Xylene	98	70-130
1,3-Dichlorobenzene	100	70-130
1,4-Dichlorobenzene	98	70-130
1,2-Dichlorobenzene	99	70-130
1,2,4-Trichlorobenzene	97	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCSD

Lab ID#: 1603419-07BB

EPA METHOD TO-15 GC/MS

File Name:	**14033104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/31/16 09:40 AM**	

Compound	%Recovery	Method Limits
Freon 12	92	70-130
Vinyl Chloride	88	70-130
Freon 11	98	70-130
Freon 113	95	70-130
1,1-Dichloroethene	88	70-130
Acetone	95	70-130
Methylene Chloride	85	70-130
cis-1,2-Dichloroethene	90	70-130
1,1,1-Trichloroethane	103	70-130
Carbon Tetrachloride	107	70-130
Benzene	93	70-130
Trichloroethene	86	70-130
Toluene	90	70-130
Tetrachloroethene	102	70-130
Chlorobenzene	94	70-130
Ethyl Benzene	95	70-130
m,p-Xylene	96	70-130
o-Xylene	94	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	98	70-130
1,2-Dichlorobenzene	95	70-130
1,2,4-Trichlorobenzene	104	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	107	70-130

ANALYTICAL REPORT

Lab Number:	L1518041
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	B330C PILOT TEST
Project Number:	2999.04
Report Date:	08/06/15

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1518041
Report Date: 08/06/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1518041-01	EP3001	SOIL_VAPOR	HOPEWELL JUNCTION, NY	07/29/15 14:30	07/31/15
L1518041-02	EP3002	SOIL_VAPOR	HOPEWELL JUNCTION, NY	07/30/15 13:00	07/31/15
L1518041-03	EP3003	SOIL_VAPOR	HOPEWELL JUNCTION, NY	07/29/15 09:50	07/31/15
L1518041-04	UNUSED CAN #2087	SOIL_VAPOR	HOPEWELL JUNCTION, NY		07/31/15

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1518041
Report Date: 08/06/15

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1518041
Report Date: 08/06/15

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on July 27, 2015. The canister certification results are provided as an addendum.

Samples L1518041-01 through -03: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

Samples L1518041-01 through -03 and WG808943-5 Duplicate: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Sample L1518041-03 was diluted and re-analyzed to quantify the sample within the calibration range. The results should be considered estimated, and are qualified with an E flag, for any compound that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 08/06/15

AIR

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1518041
Report Date: 08/06/15

SAMPLE RESULTS

Lab ID: L1518041-01 D
Client ID: EP3001
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/04/15 17:28
Analyst: MB

Date Collected: 07/29/15 14:30
Date Received: 07/31/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	27.6	--	ND	70.6	--		137.8
trans-1,2-Dichloroethene	ND	27.6	--	ND	109	--		137.8
cis-1,2-Dichloroethene	ND	27.6	--	ND	109	--		137.8
Trichloroethene	29.5	27.6	--	159	148	--		137.8
Tetrachloroethene	11500	27.6	--	78000	187	--		137.8

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	95		60-140
Bromochloromethane	97		60-140
chlorobenzene-d5	95		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1518041
Report Date: 08/06/15

SAMPLE RESULTS

Lab ID: L1518041-02 D
Client ID: EP3002
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/04/15 18:00
Analyst: MB

Date Collected: 07/30/15 13:00
Date Received: 07/31/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	1.99	--	ND	5.09	--		9.933
trans-1,2-Dichloroethene	ND	1.99	--	ND	7.89	--		9.933
cis-1,2-Dichloroethene	ND	1.99	--	ND	7.89	--		9.933
Trichloroethene	144	1.99	--	774	10.7	--		9.933
Tetrachloroethene	691	1.99	--	4690	13.5	--		9.933

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	94		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1518041
Report Date: 08/06/15

SAMPLE RESULTS

Lab ID: L1518041-03 D
Client ID: EP3003
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/04/15 19:03
Analyst: MB

Date Collected: 07/29/15 09:50
Date Received: 07/31/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	229.	--	ND	585	--		1145
trans-1,2-Dichloroethene	ND	229.	--	ND	908	--		1145
cis-1,2-Dichloroethene	ND	229.	--	ND	908	--		1145
Trichloroethene	702	229	--	3770	1230	--		1145
Tetrachloroethene	339000	229	--	2300000	1550	--	E	1145

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	91		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	91		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1518041
Report Date: 08/06/15

SAMPLE RESULTS

Lab ID: L1518041-03 D2
Client ID: EP3003
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/05/15 09:17
Analyst: MB

Date Collected: 07/29/15 09:50
Date Received: 07/31/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Tetrachloroethene	400000	1140	--	2710000	7730	--		5721

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	91		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1518041
Report Date: 08/06/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/04/15 16:40

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-03 Batch: WG808943-4								
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TEST

Project Number: 2999.04

Lab Number: L1518041

Report Date: 08/06/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG808943-3								
Vinyl chloride	94		-		70-130	-		
trans-1,2-Dichloroethene	84		-		70-130	-		
cis-1,2-Dichloroethene	100		-		70-130	-		
Trichloroethene	97		-		70-130	-		
Tetrachloroethene	90		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1518041
Report Date: 08/06/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG808943-5 QC Sample: L1518041-02 Client ID: EP3002						
Vinyl chloride	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Trichloroethene	144	140	ppbV	3		25
Tetrachloroethene	691	701	ppbV	1		25

Project Name: B330C PILOT TEST

Lab Number: L1518041

Project Number: 2999.04

Report Date: 08/06/15

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1518041-01	EP3001	1926	1.0L Can	07/27/15	207122	L1516783-02	Pass	-29.6	-6.5	-	-	-	-
L1518041-02	EP3002	1503	1.0L Can	07/27/15	207122	L1516783-02	Pass	-29.6	-8.2	-	-	-	-
L1518041-03	EP3003	1958	1.0L Can	07/27/15	207122	L1516783-02	Pass	-29.6	-7.1	-	-	-	-
L1518041-04	UNUSED CAN #2087	2087	1.0L Can	07/27/15	207122	L1516783-02	Pass	-29.6	-29.0	-	-	-	-

Project Name:

Lab Number: L1516783

Project Number: CANISTER QC BAT

Report Date: 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02
Client ID: CAN 566 SHELF 4
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 07/21/15 17:44
Analyst: RY

Date Collected: 07/20/15 18:00
Date Received: 07/21/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	2.50	--	ND	4.71	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: **Lab Number:** L1516783

Project Number: CANISTER QC BAT **Report Date:** 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02 Date Collected: 07/20/15 18:00

Client ID: CAN 566 SHELF 4 Date Received: 07/21/15

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: **Lab Number:** L1516783

Project Number: CANISTER QC BAT **Report Date:** 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02 Date Collected: 07/20/15 18:00

Client ID: CAN 566 SHELF 4 Date Received: 07/21/15

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl Acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name:

Lab Number: L1516783

Project Number: CANISTER QC BAT

Report Date: 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02
Client ID: CAN 566 SHELF 4
Sample Location:

Date Collected: 07/20/15 18:00
Date Received: 07/21/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane (C10)	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Project Name:

Lab Number: L1516783

Project Number: CANISTER QC BAT

Report Date: 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02
Client ID: CAN 566 SHELF 4
Sample Location:

Date Collected: 07/20/15 18:00
Date Received: 07/21/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	95		60-140
Bromochloromethane	94		60-140
chlorobenzene-d5	92		60-140

Project Name: **Lab Number:** L1516783

Project Number: CANISTER QC BAT **Report Date:** 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02
Client ID: CAN 566 SHELF 4
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/21/15 17:44
Analyst: RY

Date Collected: 07/20/15 18:00
Date Received: 07/21/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: **Lab Number:** L1516783

Project Number: CANISTER QC BAT **Report Date:** 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02 Date Collected: 07/20/15 18:00

Client ID: CAN 566 SHELF 4 Date Received: 07/21/15

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.020	--	ND	0.092	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name:

Lab Number: L1516783

Project Number: CANISTER QC BAT

Report Date: 08/06/15

Air Canister Certification Results

Lab ID: L1516783-02
Client ID: CAN 566 SHELF 4
Sample Location:

Date Collected: 07/20/15 18:00
Date Received: 07/21/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	97		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	95		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1518041
Report Date: 08/06/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information	Custody Seal
Cooler	
N/A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1518041-01A	Canister - 2.7 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1518041-02A	Canister - 2.7 Liter	N/A	N/A		Y	Absent	TO15-LL(30)
L1518041-03A	Canister - 2.7 Liter	N/A	N/A		Y	Absent	TO15-LL(30)
L1518041-04A	Canister - 1 Liter	N/A	N/A		Y	Absent	CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	B330C PILOT TEST	**Lab Number:**	L1518041
Project Number:	2999.04	**Report Date:**	08/06/15

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

Report Format: Data Usability Report

Project Name:	B330C PILOT TEST	**Lab Number:**	L1518041
Project Number:	2999.04	**Report Date:**	08/06/15

Data Qualifiers

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	B330C PILOT TEST	**Lab Number:**	L1518041
Project Number:	2999.04	**Report Date:**	08/06/15

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

Last revised December 16, 2014

The following analytes are not included in our NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide), Methyl methacrylate, Azobenzene.
EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.
EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA 2540D: TSS
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 7/31/15

ALPHA Job #: L1518041

Client Information

Client: Sanborn, Head + Associates
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: B330C Pilot Test
Project Location: Hopewell Junction, NY
Project #: 2999.04
Project Manager: S. Soos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:
☒ Site specific list: PCE, TCE, Cis-1,2-DCE, Trans-1,2-DCE, Vinyl Chloride

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
18041-01	EP3001	7/29/15	1430	1430	24"	8"	SV	JWC	1L	1926	—		X						☒ Site specific list
-02	EP3002	7/29/15	1300	1300	16"	5"	SV	JWC	1L	1503	—		X						☒ Site specific list
-03	EP3003	7/29/15	0950	0950	22"	3.5"	SV	JWC	1L	1958	—		X						☒ Site specific list

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
	7/31/15 1625	USPS AIR	7/31/15 1625
HSPL	7/31/15 1825	Beth Bedard	7/31/15 18:25

ANALYTICAL REPORT

Lab Number:	L1526552
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	B330C PILOT TEST
Project Number:	2999.04
Report Date:	10/23/15

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1526552
Report Date: 10/23/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1526552-01	EP3004	SOIL_VAPOR	HOPEWELL JUNCTION, NY	10/14/15 12:05	10/19/15
L1526552-02	EP3005	SOIL_VAPOR	HOPEWELL JUNCTION, NY	10/15/15 09:30	10/19/15
L1526552-03	EP3006	SOIL_VAPOR	HOPEWELL JUNCTION, NY	10/14/15 16:20	10/19/15
L1526552-04	EP3007	SOIL_VAPOR	HOPEWELL JUNCTION, NY	10/13/15 16:55	10/19/15
L1526552-05	EP3008	SOIL_VAPOR	HOPEWELL JUNCTION, NY	10/13/15 13:30	10/19/15
L1526552-06	EP3009	SOIL_VAPOR	HOPEWELL JUNCTION, NY	10/14/15 08:50	10/19/15
L1526552-07	UNUSED CAN # 699	SOIL_VAPOR	HOPEWELL JUNCTION, NY		10/19/15
L1526552-08	UNUSED CAN # 1495	SOIL_VAPOR	HOPEWELL JUNCTION, NY		10/19/15

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: B330C PILOT TEST **Lab Number:** L1526552
Project Number: 2999.04 **Report Date:** 10/23/15

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on October 8, 2015. The canister certification results are provided as an addendum.

Samlples L1526552-01 through -06: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

Samlples L1526552-02, -03, -05 and -06: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Samlple L1526552-04 : The canister vacuum measured on receipt at the laboratory was > 15 in. Hg and a larger dilution resulted due to pressurization. The reporting limits have been elevated accordingly.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 10/23/15

AIR

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

SAMPLE RESULTS

Lab ID: L1526552-01 D
Client ID: EP3004
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/23/15 01:43
Analyst: RY

Date Collected: 10/14/15 12:05
Date Received: 10/19/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	0.584	--	ND	1.49	--		2.922
trans-1,2-Dichloroethene	ND	0.584	--	ND	2.32	--		2.922
cis-1,2-Dichloroethene	ND	0.584	--	ND	2.32	--		2.922
Trichloroethene	ND	0.584	--	ND	3.14	--		2.922
Tetrachloroethene	0.704	0.584	--	4.77	3.96	--		2.922

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	91		60-140
Bromochloromethane	97		60-140
chlorobenzene-d5	93		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

SAMPLE RESULTS

Lab ID: L1526552-02 D
Client ID: EP3005
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/23/15 03:11
Analyst: RY

Date Collected: 10/15/15 09:30
Date Received: 10/19/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	1.84	--	ND	4.70	--		9.198
trans-1,2-Dichloroethene	ND	1.84	--	ND	7.30	--		9.198
cis-1,2-Dichloroethene	ND	1.84	--	ND	7.30	--		9.198
Trichloroethene	113	1.84	--	607	9.89	--		9.198
Tetrachloroethene	790	1.84	--	5360	12.5	--		9.198

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	90		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	92		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

SAMPLE RESULTS

Lab ID: L1526552-03 D
Client ID: EP3006
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/23/15 03:55
Analyst: RY

Date Collected: 10/14/15 16:20
Date Received: 10/19/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	1.04	--	ND	2.66	--		5.193
trans-1,2-Dichloroethene	ND	1.04	--	ND	4.12	--		5.193
cis-1,2-Dichloroethene	ND	1.04	--	ND	4.12	--		5.193
Trichloroethene	451	1.04	--	2420	5.59	--		5.193
Tetrachloroethene	326	1.04	--	2210	7.05	--		5.193

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	91		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	91		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

SAMPLE RESULTS

Lab ID: L1526552-04 D
Client ID: EP3007
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/23/15 04:41
Analyst: RY

Date Collected: 10/13/15 16:55
Date Received: 10/19/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	1.32	--	ND	3.37	--		6.578
trans-1,2-Dichloroethene	ND	1.32	--	ND	5.23	--		6.578
cis-1,2-Dichloroethene	ND	1.32	--	ND	5.23	--		6.578
Trichloroethene	101	1.32	--	543	7.09	--		6.578
Tetrachloroethene	144	1.32	--	976	8.95	--		6.578

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	90		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	94		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

SAMPLE RESULTS

Lab ID: L1526552-05 D
Client ID: EP3008
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/23/15 05:25
Analyst: RY

Date Collected: 10/13/15 13:30
Date Received: 10/19/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	2.79	--	ND	7.13	--		13.96
trans-1,2-Dichloroethene	ND	2.79	--	ND	11.1	--		13.96
cis-1,2-Dichloroethene	ND	2.79	--	ND	11.1	--		13.96
Trichloroethene	70.7	2.79	--	380	15.0	--		13.96
Tetrachloroethene	1240	2.79	--	8410	18.9	--		13.96

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	90		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	91		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

SAMPLE RESULTS

Lab ID: L1526552-06 D
Client ID: EP3009
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 10/23/15 06:06
Analyst: RY

Date Collected: 10/14/15 08:50
Date Received: 10/19/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	6.55	--	ND	16.7	--		32.75
trans-1,2-Dichloroethene	ND	6.55	--	ND	26.0	--		32.75
cis-1,2-Dichloroethene	ND	6.55	--	ND	26.0	--		32.75
Trichloroethene	50.7	6.55	--	272	35.2	--		32.75
Tetrachloroethene	2290	6.55	--	15500	44.4	--		32.75

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	88		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	89		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/22/15 15:35

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-06 Batch: WG833307-4								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/22/15 15:35

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-06 Batch: WG833307-4								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/22/15 15:35

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-06 Batch: WG833307-4								
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl Acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/22/15 15:35

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-06 Batch: WG833307-4								
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane (C10)	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1

Project Name: B330C PILOT TEST
Project Number: 2999.04
Lab Number: L1526552
Report Date: 10/23/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 10/22/15 15:35

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-06 Batch: WG833307-4								
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1526552
Report Date: 10/23/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 Batch: WG833307-3								
Chlorodifluoromethane	85		-		70-130	-		
Propylene	97		-		70-130	-		
Propane	77		-		70-130	-		
Dichlorodifluoromethane	77		-		70-130	-		
Chloromethane	103		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	98		-		70-130	-		
Methanol	86		-		70-130	-		
Vinyl chloride	99		-		70-130	-		
1,3-Butadiene	102		-		70-130	-		
Butane	93		-		70-130	-		
Bromomethane	89		-		70-130	-		
Chloroethane	94		-		70-130	-		
Ethyl Alcohol	76		-		70-130	-		
Dichlorofluoromethane	90		-		70-130	-		
Vinyl bromide	89		-		70-130	-		
Acrolein	84		-		70-130	-		
Acetone	102		-		70-130	-		
Acetonitrile	94		-		70-130	-		
Trichlorofluoromethane	94		-		70-130	-		
iso-Propyl Alcohol	91		-		70-130	-		
Acrylonitrile	90		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TEST

Project Number: 2999.04

Lab Number: L1526552

Report Date: 10/23/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 Batch: WG833307-3								
Pentane	89		-		70-130	-		
Ethyl ether	87		-		70-130	-		
1,1-Dichloroethene	92		-		70-130	-		
tert-Butyl Alcohol	77		-		70-130	-		
Methylene chloride	93		-		70-130	-		
3-Chloropropene	97		-		70-130	-		
Carbon disulfide	84		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	79		-		70-130	-		
trans-1,2-Dichloroethene	78		-		70-130	-		
1,1-Dichloroethane	85		-		70-130	-		
Methyl tert butyl ether	76		-		70-130	-		
Vinyl acetate	112		-		70-130	-		
2-Butanone	94		-		70-130	-		
cis-1,2-Dichloroethene	103		-		70-130	-		
Ethyl Acetate	83		-		70-130	-		
Chloroform	83		-		70-130	-		
Tetrahydrofuran	88		-		70-130	-		
2,2-Dichloropropane	74		-		70-130	-		
1,2-Dichloroethane	84		-		70-130	-		
n-Hexane	117		-		70-130	-		
Isopropyl Ether	97		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1526552
Report Date: 10/23/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 Batch: WG833307-3								
Ethyl-Tert-Butyl-Ether	103		-		70-130	-		
1,1,1-Trichloroethane	104		-		70-130	-		
1,1-Dichloropropene	102		-		70-130	-		
Benzene	107		-		70-130	-		
Carbon tetrachloride	100		-		70-130	-		
Cyclohexane	115		-		70-130	-		
Tertiary-Amyl Methyl Ether	94		-		70-130	-		
Dibromomethane	99		-		70-130	-		
1,2-Dichloropropane	120		-		70-130	-		
Bromodichloromethane	110		-		70-130	-		
1,4-Dioxane	102		-		70-130	-		
Trichloroethene	98		-		70-130	-		
2,2,4-Trimethylpentane	120		-		70-130	-		
Methyl Methacrylate	119		-		70-130	-		
Heptane	125		-		70-130	-		
cis-1,3-Dichloropropene	117		-		70-130	-		
4-Methyl-2-pentanone	127		-		70-130	-		
trans-1,3-Dichloropropene	99		-		70-130	-		
1,1,2-Trichloroethane	109		-		70-130	-		
Toluene	87		-		70-130	-		
1,3-Dichloropropane	88		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TEST

Project Number: 2999.04

Lab Number: L1526552

Report Date: 10/23/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 Batch: WG833307-3								
2-Hexanone	110		-		70-130	-		
Dibromochloromethane	86		-		70-130	-		
1,2-Dibromoethane	90		-		70-130	-		
Butyl Acetate	85		-		70-130	-		
Octane	81		-		70-130	-		
Tetrachloroethene	80		-		70-130	-		
1,1,1,2-Tetrachloroethane	79		-		70-130	-		
Chlorobenzene	87		-		70-130	-		
Ethylbenzene	90		-		70-130	-		
p/m-Xylene	92		-		70-130	-		
Bromoform	85		-		70-130	-		
Styrene	89		-		70-130	-		
1,1,2,2-Tetrachloroethane	105		-		70-130	-		
o-Xylene	97		-		70-130	-		
1,2,3-Trichloropropane	90		-		70-130	-		
Nonane (C9)	100		-		70-130	-		
Isopropylbenzene	86		-		70-130	-		
Bromobenzene	90		-		70-130	-		
o-Chlorotoluene	82		-		70-130	-		
n-Propylbenzene	84		-		70-130	-		
p-Chlorotoluene	84		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TEST

Project Number: 2999.04

Lab Number: L1526552

Report Date: 10/23/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 Batch: WG833307-3								
4-Ethyltoluene	87		-		70-130	-		
1,3,5-Trimethylbenzene	92		-		70-130	-		
tert-Butylbenzene	89		-		70-130	-		
1,2,4-Trimethylbenzene	100		-		70-130	-		
Decane (C10)	99		-		70-130	-		
Benzyl chloride	98		-		70-130	-		
1,3-Dichlorobenzene	93		-		70-130	-		
1,4-Dichlorobenzene	92		-		70-130	-		
sec-Butylbenzene	90		-		70-130	-		
p-Isopropyltoluene	82		-		70-130	-		
1,2-Dichlorobenzene	91		-		70-130	-		
n-Butylbenzene	95		-		70-130	-		
1,2-Dibromo-3-chloropropane	91		-		70-130	-		
Undecane	103		-		70-130	-		
Dodecane (C12)	113		-		70-130	-		
1,2,4-Trichlorobenzene	91		-		70-130	-		
Naphthalene	93		-		70-130	-		
1,2,3-Trichlorobenzene	86		-		70-130	-		
Hexachlorobutadiene	90		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1526552
Report Date: 10/23/15

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG833307-5 QC Sample: L1526552-01 Client ID: EP3004						
Vinyl chloride	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Trichloroethene	ND	ND	ppbV	NC		25
Tetrachloroethene	0.704	0.637	ppbV	10		25

Project Name: B330C PILOT TEST

Lab Number: L1526552

Project Number: 2999.04

Report Date: 10/23/15

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1526552-01	EP3004	734	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-8.4	-	-	-	-
L1526552-02	EP3005	721	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-6.9	-	-	-	-
L1526552-03	EP3006	676	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-5.7	-	-	-	-
L1526552-04	EP3007	674	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-21.5	-	-	-	-
L1526552-05	EP3008	820	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-7.5	-	-	-	-
L1526552-06	EP3009	837	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-11.6	-	-	-	-
L1526552-07	UNUSED CAN # 699	699	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-29.4	-	-	-	-
L1526552-08	UNUSED CAN # 1495	1495	1.0L Can	10/08/15	210660	L1524620-01	Pass	-29.7	-29.4	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 10/02/15 19:53
Analyst: RY

Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	2.50	--	ND	4.71	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1524620

Project Number: CANISTER QC BAT **Report Date:** 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01 Date Collected: 09/30/15 16:00

Client ID: CAN 2084 SHELF 16 Date Received: 10/01/15

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.500	--	ND	3.48	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	99		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	95		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 10/02/15 19:53
Analyst: RY

Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.020	--	ND	0.092	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1524620
Report Date: 10/23/15

Air Canister Certification Results

Lab ID: L1524620-01
Client ID: CAN 2084 SHELF 16
Sample Location:
Date Collected: 09/30/15 16:00
Date Received: 10/01/15
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	101		60-140
bromochloromethane	103		60-140
chlorobenzene-d5	101		60-140

Project Name: B330C PILOT TEST
Project Number: 2999.04

Lab Number: L1526552
Report Date: 10/23/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information **Custody Seal**

Cooler

N/A Present/Intact

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1526552-01A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1526552-02A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1526552-03A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-LL(30)
L1526552-04A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-LL(30)
L1526552-05A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-LL(30)
L1526552-06A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-LL(30)
L1526552-07A	Canister - 1 Liter	N/A	N/A		Y	Absent	CLEAN-FEE()
L1526552-08A	Canister - 1 Liter	N/A	N/A		Y	Absent	CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	B330C PILOT TEST	**Lab Number:**	L1526552
Project Number:	2999.04	**Report Date:**	10/23/15

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: Data Usability Report

Project Name:	B330C PILOT TEST	**Lab Number:**	L1526552
Project Number:	2999.04	**Report Date:**	10/23/15

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	B330C PILOT TEST	**Lab Number:**	L1526552
Project Number:	2999.04	**Report Date:**	10/23/15

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide) (soil), Methyl methacrylate (soil), Azobenzene.
EPA 8270D: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA 2540D: TSS
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/20/15

ALPHA Job #: L1526552

Client Information

Client: Sanborn, Head + Associates
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: B330C Pilot Test
Project Location: Hopewell Junction, NY
Project #: 2999.04
Project Manager: S. SOOS
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Criteria

Other Project Specific Requirements/Comments:
* Site specific list: PCE, TCE, Cis-1,2-DCE, Trans-1,2-DCE, Vinyl Chloride

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	ANALYSIS: TO-14A by TO-15	TO-15	TO-15 SIM	APH	FIXED GASES	TO-13A	TO-4 / TO-10	Sample Comments (i.e. PID)
26552-01	EP3004	10/14/15	1205	1205	-20	-5	SV	JWC	1L	734	—		X						* Site specific list
-02	EP3005	10/15/15	0930	0930	-24	-7				721	—		X						
-03	EP3006	10/14/15	1620	1620	-23	-6				676	—		X						
-04	EP3007	10/13/15	1655	1655	-24	-5				674	—		X						
-05	EP3008	10/13/15	1330	1330	-22	-6				0820	—		X						
-06	EP3009	10/14/15	0850	0850	-17	-4				837	—		X						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
	10/19/15 1026		10/19/15 1026
	10/19/15 1726		10/19/15 1726
	10/20/15 0400		10/20/15 0400

ANALYTICAL REPORT

Lab Number:	L1604301
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	B330C
Project Number:	2999.04
Report Date:	02/22/16

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1604301-01	EP3010	SOIL_VAPOR	HOPEWELL JUNCTION, NY	02/15/16 16:30	02/17/16

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	B330C	**Lab Number:**	L1604301
Project Number:	2999.04	**Report Date:**	02/22/16

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on February 12, 2016. The canister certification results are provided as an addendum.

Sample L1604301-01: Prior to sample analysis, the canister was pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the sample. The reporting limits have been elevated accordingly.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 02/22/16

AIR

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

SAMPLE RESULTS

Lab ID: L1604301-01 D
Client ID: EP3010
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 02/21/16 01:34
Analyst: RY

Date Collected: 02/15/16 16:30
Date Received: 02/17/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	0.485	--	ND	1.24	--		2.426
trans-1,2-Dichloroethene	ND	0.485	--	ND	1.92	--		2.426
cis-1,2-Dichloroethene	ND	0.485	--	ND	1.92	--		2.426
Trichloroethene	ND	0.485	--	ND	2.61	--		2.426
Tetrachloroethene	31.0	0.485	--	210	3.29	--		2.426

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	91		60-140
Bromochloromethane	93		60-140
chlorobenzene-d5	95		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 02/20/16 13:27

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG866999-4								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 02/20/16 13:27

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG866999-4								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 02/20/16 13:27

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG866999-4								
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl Acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 02/20/16 13:27

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG866999-4								
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane (C10)	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 02/20/16 13:27

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG866999-4								
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					
No Tentatively Identified Compounds					

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C

Project Number: 2999.04

Lab Number: L1604301

Report Date: 02/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG866999-3								
Chlorodifluoromethane	92		-		70-130	-		
Propylene	100		-		70-130	-		
Propane	75		-		70-130	-		
Dichlorodifluoromethane	74		-		70-130	-		
Chloromethane	84		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	93		-		70-130	-		
Methanol	73		-		70-130	-		
Vinyl chloride	90		-		70-130	-		
1,3-Butadiene	88		-		70-130	-		
Butane	76		-		70-130	-		
Bromomethane	94		-		70-130	-		
Chloroethane	83		-		70-130	-		
Ethyl Alcohol	85		-		70-130	-		
Dichlorofluoromethane	90		-		70-130	-		
Vinyl bromide	95		-		70-130	-		
Acrolein	83		-		70-130	-		
Acetone	90		-		70-130	-		
Acetonitrile	74		-		70-130	-		
Trichlorofluoromethane	106		-		70-130	-		
iso-Propyl Alcohol	94		-		70-130	-		
Acrylonitrile	82		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C

Project Number: 2999.04

Lab Number: L1604301

Report Date: 02/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG866999-3								
Pentane	76		-		70-130	-		
Ethyl ether	79		-		70-130	-		
1,1-Dichloroethene	95		-		70-130	-		
tert-Butyl Alcohol	89		-		70-130	-		
Methylene chloride	91		-		70-130	-		
3-Chloropropene	87		-		70-130	-		
Carbon disulfide	85		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	92		-		70-130	-		
trans-1,2-Dichloroethene	81		-		70-130	-		
1,1-Dichloroethane	88		-		70-130	-		
Methyl tert butyl ether	88		-		70-130	-		
Vinyl acetate	92		-		70-130	-		
2-Butanone	83		-		70-130	-		
cis-1,2-Dichloroethene	109		-		70-130	-		
Ethyl Acetate	115		-		70-130	-		
Chloroform	110		-		70-130	-		
Tetrahydrofuran	90		-		70-130	-		
2,2-Dichloropropane	98		-		70-130	-		
1,2-Dichloroethane	107		-		70-130	-		
n-Hexane	87		-		70-130	-		
Isopropyl Ether	87		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C

Project Number: 2999.04

Lab Number: L1604301

Report Date: 02/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG866999-3								
Ethyl-Tert-Butyl-Ether	82		-		70-130	-		
1,1,1-Trichloroethane	100		-		70-130	-		
1,1-Dichloropropene	90		-		70-130	-		
Benzene	90		-		70-130	-		
Carbon tetrachloride	106		-		70-130	-		
Cyclohexane	88		-		70-130	-		
Tertiary-Amyl Methyl Ether	81		-		70-130	-		
Dibromomethane	98		-		70-130	-		
1,2-Dichloropropane	95		-		70-130	-		
Bromodichloromethane	100		-		70-130	-		
1,4-Dioxane	97		-		70-130	-		
Trichloroethene	103		-		70-130	-		
2,2,4-Trimethylpentane	90		-		70-130	-		
Methyl Methacrylate	88		-		70-130	-		
Heptane	85		-		70-130	-		
cis-1,3-Dichloropropene	99		-		70-130	-		
4-Methyl-2-pentanone	93		-		70-130	-		
trans-1,3-Dichloropropene	92		-		70-130	-		
1,1,2-Trichloroethane	101		-		70-130	-		
Toluene	97		-		70-130	-		
1,3-Dichloropropane	92		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG866999-3								
2-Hexanone	97		-		70-130	-		
Dibromochloromethane	108		-		70-130	-		
1,2-Dibromoethane	103		-		70-130	-		
Butyl Acetate	94		-		70-130	-		
Octane	88		-		70-130	-		
Tetrachloroethene	103		-		70-130	-		
1,1,1,2-Tetrachloroethane	98		-		70-130	-		
Chlorobenzene	99		-		70-130	-		
Ethylbenzene	99		-		70-130	-		
p/m-Xylene	100		-		70-130	-		
Bromoform	115		-		70-130	-		
Styrene	101		-		70-130	-		
1,1,2,2-Tetrachloroethane	104		-		70-130	-		
o-Xylene	105		-		70-130	-		
1,2,3-Trichloropropane	93		-		70-130	-		
Nonane (C9)	86		-		70-130	-		
Isopropylbenzene	99		-		70-130	-		
Bromobenzene	94		-		70-130	-		
o-Chlorotoluene	98		-		70-130	-		
n-Propylbenzene	97		-		70-130	-		
p-Chlorotoluene	92		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG866999-3								
4-Ethyltoluene	101		-		70-130	-		
1,3,5-Trimethylbenzene	103		-		70-130	-		
tert-Butylbenzene	100		-		70-130	-		
1,2,4-Trimethylbenzene	107		-		70-130	-		
Decane (C10)	94		-		70-130	-		
Benzyl chloride	113		-		70-130	-		
1,3-Dichlorobenzene	113		-		70-130	-		
1,4-Dichlorobenzene	110		-		70-130	-		
sec-Butylbenzene	100		-		70-130	-		
p-Isopropyltoluene	93		-		70-130	-		
1,2-Dichlorobenzene	113		-		70-130	-		
n-Butylbenzene	103		-		70-130	-		
1,2-Dibromo-3-chloropropane	100		-		70-130	-		
Undecane	102		-		70-130	-		
Dodecane (C12)	116		-		70-130	-		
1,2,4-Trichlorobenzene	**132**	Q	-		70-130	-		
Naphthalene	118		-		70-130	-		
1,2,3-Trichlorobenzene	123		-		70-130	-		
Hexachlorobutadiene	**131**	Q	-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG866999-5 QC Sample: L1604447-01 Client ID: DUP Sample						
Dichlorodifluoromethane	0.483	0.374	ppbV	25		25
Chloromethane	0.543	0.540	ppbV	1		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
1,3-Butadiene	ND	ND	ppbV	NC		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
Ethyl Alcohol	65.8	66.8	ppbV	2		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	4.98	4.03	ppbV	21		25
Trichlorofluoromethane	0.298	0.284	ppbV	5		25
iso-Propyl Alcohol	4.83	4.74	ppbV	2		25
tert-Butyl Alcohol	ND	ND	ppbV	NC		25
Methylene chloride	ND	ND	ppbV	NC		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	ND	ND	ppbV	NC		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
1,1-Dichloroethane	ND	ND	ppbV	NC		25
Methyl tert butyl ether	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG866999-5 QC Sample: L1604447-01 Client ID: DUP Sample					
2-Butanone	1.87	2.01	ppbV	7	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Chloroform	ND	ND	ppbV	NC	25
Tetrahydrofuran	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
n-Hexane	0.228	0.202	ppbV	12	25
Benzene	0.251	0.261	ppbV	4	25
Cyclohexane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
Heptane	0.236	ND	ppbV	NC	25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
Toluene	0.642	0.659	ppbV	3	25
2-Hexanone	ND	ND	ppbV	NC	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG866999-5 QC Sample: L1604447-01 Client ID: DUP Sample					
Dibromochloromethane	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
Chlorobenzene	ND	ND	ppbV	NC	25
Ethylbenzene	0.251	0.231	ppbV	8	25
p/m-Xylene	0.682	0.682	ppbV	0	25
Bromoform	ND	ND	ppbV	NC	25
Styrene	ND	ND	ppbV	NC	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
o-Xylene	0.241	0.226	ppbV	6	25
4-Ethyltoluene	ND	ND	ppbV	NC	25
1,3,5-Trimethylbenzene	ND	ND	ppbV	NC	25
1,2,4-Trimethylbenzene	0.391	0.380	ppbV	3	25
Benzyl chloride	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25

Project Name: B330C

Project Number: 2999.04

Lab Number: L1604301

Report Date: 02/22/16

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1604301-01	EP3010	1498	1.0L Can	02/12/16	217018	L1602994-02	Pass	-29.1	-4.2	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1602994
Report Date: 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 02/04/16 17:57
Analyst: RY

Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1602994
Report Date: 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:
Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1602994
Report Date: 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:
Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1602994
Report Date: 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:
Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	Qualifier	Units	RDL	Dilution Factor
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1602994

Project Number: CANISTER QC BAT **Report Date:** 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02 Date Collected: 02/03/16 16:00

Client ID: CAN 731 SHELF 8 Date Received: 02/04/16

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	96		60-140
Bromochloromethane	91		60-140
chlorobenzene-d5	98		60-140

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1602994

Project Number: CANISTER QC BAT **Report Date:** 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 02/04/16 17:57
Analyst: RY

Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1602994
Report Date: 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:

Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.020	--	ND	0.092	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1602994
Report Date: 02/22/16

Air Canister Certification Results

Lab ID: L1602994-02
Client ID: CAN 731 SHELF 8
Sample Location:
Date Collected: 02/03/16 16:00
Date Received: 02/04/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	99		60-140
bromochloromethane	97		60-140
chlorobenzene-d5	100		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1604301
Report Date: 02/22/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information **Custody Seal**
Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1604301-01A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	B330C	**Lab Number:**	L1604301
Project Number:	2999.04	**Report Date:**	02/22/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: Data Usability Report

Project Name:	B330C	**Lab Number:**	L1604301
Project Number:	2999.04	**Report Date:**	02/22/16

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	B330C	**Lab Number:**	L1604301
Project Number:	2999.04	**Report Date:**	02/22/16

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: ***8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:*** Lead***; 8270D:*** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 2/18/16

ALPHA Job #: L1604301

Client Information

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: B330C
Project Location: Bakewell Junction, NY
Project #: 2999.04
Project Manager: S. Soos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ E-IBM East Bakewell Site specific list of VOCs (5) [PCE, TCE, 1,2-cis DCE, 1,2-trans DCE, VC]

All Columns Below Must Be Filled Out

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	Sample Comments (i.e. PID)
04301.01	EP3010	2/15/16	1630	1630	-30	-5	SV	JWC	1L	1498	—	X					Site Specific list

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
	2/17/16; 1200		2/17/16 1353
	2/17/16 1510		2/17/16 1510
	2/18/16 0900		2/18/16 0900

Form No: 101-02 Rev: (25-Sep-15)

ANALYTICAL REPORT

Lab Number:	L1607836
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	B330C
Project Number:	2999.04
Report Date:	03/23/16

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1607836-01	EP3012	SOIL_VAPOR	HOPEWELL JUNCTION, NY	03/16/16 16:23	03/17/16
L1607836-02	EP3011	SOIL_VAPOR	HOPEWELL JUNCTION, NY	03/16/16 14:38	03/17/16
L1607836-03	EP3015	SOIL_VAPOR	HOPEWELL JUNCTION, NY	03/16/16 11:52	03/17/16
L1607836-04	EP3014	SOIL_VAPOR	HOPEWELL JUNCTION, NY	03/16/16 10:25	03/17/16

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on March 15, 2016. The canister certification results are provided as an addendum.

Samples L1607836-01 through -04: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Samples L1607836-01 through -04: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 03/23/16

AIR

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

SAMPLE RESULTS

Lab ID: L1607836-01 D
Client ID: EP3012
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/23/16 06:15
Analyst: MB

Date Collected: 03/16/16 16:23
Date Received: 03/17/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	185.	--	ND	473	--		923.9
trans-1,2-Dichloroethene	ND	185.	--	ND	733	--		923.9
cis-1,2-Dichloroethene	ND	185.	--	ND	733	--		923.9
Trichloroethene	587	185	--	3150	994	--		923.9
Tetrachloroethene	34600	185	--	235000	1250	--		923.9

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	93		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	97		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

SAMPLE RESULTS

Lab ID: L1607836-02 D
Client ID: EP3011
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/23/16 06:49
Analyst: MB

Date Collected: 03/16/16 14:38
Date Received: 03/17/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	10.1	--	ND	25.8	--		50.7
trans-1,2-Dichloroethene	ND	10.1	--	ND	40.0	--		50.7
cis-1,2-Dichloroethene	ND	10.1	--	ND	40.0	--		50.7
Trichloroethene	819	10.1	--	4400	54.3	--		50.7
Tetrachloroethene	3030	10.1	--	20500	68.5	--		50.7

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	91		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	99		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

SAMPLE RESULTS

Lab ID: L1607836-03 D
Client ID: EP3015
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/23/16 07:20
Analyst: MB

Date Collected: 03/16/16 11:52
Date Received: 03/17/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	23.0	--	ND	58.8	--		114.8
trans-1,2-Dichloroethene	ND	23.0	--	ND	91.2	--		114.8
cis-1,2-Dichloroethene	ND	23.0	--	ND	91.2	--		114.8
Trichloroethene	31.6	23.0	--	170	124	--		114.8
Tetrachloroethene	4540	23.0	--	30800	156	--		114.8

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	91		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	98		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

SAMPLE RESULTS

Lab ID: L1607836-04 D
Client ID: EP3014
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 03/23/16 09:11
Analyst: MB

Date Collected: 03/16/16 10:25
Date Received: 03/17/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	65.6	--	ND	168	--		328.1
trans-1,2-Dichloroethene	ND	65.6	--	ND	260	--		328.1
cis-1,2-Dichloroethene	ND	65.6	--	ND	260	--		328.1
Trichloroethene	ND	65.6	--	ND	353	--		328.1
Tetrachloroethene	19600	65.6	--	133000	445	--		328.1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	87		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	92		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 03/22/16 16:34

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-04 Batch: WG876392-4								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 03/22/16 16:34

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-04 Batch: WG876392-4								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 03/22/16 16:34

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-04 Batch: WG876392-4								
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl Acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1

Project Name: B330C
Project Number: 2999.04
Lab Number: L1607836
Report Date: 03/23/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 03/22/16 16:34

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-04 Batch: WG876392-4								
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane (C10)	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 03/22/16 16:34

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-04 Batch: WG876392-4								
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-04 Batch: WG876392-3								
Chlorodifluoromethane	86		-		70-130	-		
Propylene	90		-		70-130	-		
Propane	93		-		70-130	-		
Dichlorodifluoromethane	111		-		70-130	-		
Chloromethane	109		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	118		-		70-130	-		
Methanol	116		-		70-130	-		
Vinyl chloride	112		-		70-130	-		
1,3-Butadiene	117		-		70-130	-		
Butane	104		-		70-130	-		
Bromomethane	120		-		70-130	-		
Chloroethane	104		-		70-130	-		
Ethyl Alcohol	116		-		70-130	-		
Dichlorofluoromethane	102		-		70-130	-		
Vinyl bromide	113		-		70-130	-		
Acrolein	88		-		70-130	-		
Acetone	113		-		70-130	-		
Acetonitrile	103		-		70-130	-		
Trichlorofluoromethane	128		-		70-130	-		
iso-Propyl Alcohol	112		-		70-130	-		
Acrylonitrile	97		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C

Project Number: 2999.04

Lab Number: L1607836

Report Date: 03/23/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-04 Batch: WG876392-3								
Pentane	101		-		70-130	-		
Ethyl ether	110		-		70-130	-		
1,1-Dichloroethene	112		-		70-130	-		
tert-Butyl Alcohol	104		-		70-130	-		
Methylene chloride	118		-		70-130	-		
3-Chloropropene	116		-		70-130	-		
Carbon disulfide	108		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	115		-		70-130	-		
trans-1,2-Dichloroethene	86		-		70-130	-		
1,1-Dichloroethane	96		-		70-130	-		
Methyl tert butyl ether	93		-		70-130	-		
Vinyl acetate	104		-		70-130	-		
2-Butanone	94		-		70-130	-		
cis-1,2-Dichloroethene	101		-		70-130	-		
Ethyl Acetate	86		-		70-130	-		
Chloroform	102		-		70-130	-		
Tetrahydrofuran	83		-		70-130	-		
2,2-Dichloropropane	89		-		70-130	-		
1,2-Dichloroethane	102		-		70-130	-		
n-Hexane	84		-		70-130	-		
Isopropyl Ether	82		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C

Project Number: 2999.04

Lab Number: L1607836

Report Date: 03/23/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-04 Batch: WG876392-3								
Ethyl-Tert-Butyl-Ether	77		-		70-130	-		
1,1,1-Trichloroethane	103		-		70-130	-		
1,1-Dichloropropene	84		-		70-130	-		
Benzene	87		-		70-130	-		
Carbon tetrachloride	110		-		70-130	-		
Cyclohexane	80		-		70-130	-		
Tertiary-Amyl Methyl Ether	77		-		70-130	-		
Dibromomethane	93		-		70-130	-		
1,2-Dichloropropane	88		-		70-130	-		
Bromodichloromethane	100		-		70-130	-		
1,4-Dioxane	90		-		70-130	-		
Trichloroethene	100		-		70-130	-		
2,2,4-Trimethylpentane	86		-		70-130	-		
Methyl Methacrylate	79		-		70-130	-		
Heptane	83		-		70-130	-		
cis-1,3-Dichloropropene	93		-		70-130	-		
4-Methyl-2-pentanone	92		-		70-130	-		
trans-1,3-Dichloropropene	85		-		70-130	-		
1,1,2-Trichloroethane	97		-		70-130	-		
Toluene	91		-		70-130	-		
1,3-Dichloropropane	91		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-04 Batch: WG876392-3								
2-Hexanone	100		-		70-130	-		
Dibromochloromethane	115		-		70-130	-		
1,2-Dibromoethane	106		-		70-130	-		
Butyl Acetate	86		-		70-130	-		
Octane	84		-		70-130	-		
Tetrachloroethene	115		-		70-130	-		
1,1,1,2-Tetrachloroethane	103		-		70-130	-		
Chlorobenzene	105		-		70-130	-		
Ethylbenzene	97		-		70-130	-		
p/m-Xylene	100		-		70-130	-		
Bromoform	126		-		70-130	-		
Styrene	103		-		70-130	-		
1,1,2,2-Tetrachloroethane	106		-		70-130	-		
o-Xylene	103		-		70-130	-		
1,2,3-Trichloropropane	93		-		70-130	-		
Nonane (C9)	85		-		70-130	-		
Isopropylbenzene	100		-		70-130	-		
Bromobenzene	90		-		70-130	-		
o-Chlorotoluene	105		-		70-130	-		
n-Propylbenzene	105		-		70-130	-		
p-Chlorotoluene	95		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-04 Batch: WG876392-3								
4-Ethyltoluene	102		-		70-130	-		
1,3,5-Trimethylbenzene	104		-		70-130	-		
tert-Butylbenzene	108		-		70-130	-		
1,2,4-Trimethylbenzene	113		-		70-130	-		
Decane (C10)	86		-		70-130	-		
Benzyl chloride	107		-		70-130	-		
1,3-Dichlorobenzene	123		-		70-130	-		
1,4-Dichlorobenzene	120		-		70-130	-		
sec-Butylbenzene	103		-		70-130	-		
p-Isopropyltoluene	98		-		70-130	-		
1,2-Dichlorobenzene	119		-		70-130	-		
n-Butylbenzene	102		-		70-130	-		
1,2-Dibromo-3-chloropropane	98		-		70-130	-		
Undecane	91		-		70-130	-		
Dodecane (C12)	98		-		70-130	-		
1,2,4-Trichlorobenzene	**136**	Q	-		70-130	-		
Naphthalene	113		-		70-130	-		
1,2,3-Trichlorobenzene	124		-		70-130	-		
Hexachlorobutadiene	**141**	Q	-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-04 QC Batch ID: WG876392-5 QC Sample: L1607836-03 Client ID: EP3015						
Vinyl chloride	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Trichloroethene	31.6	29.2	ppbV	8		25
Tetrachloroethene	4540	4640	ppbV	2		25

Project Name: B330C

Project Number: 2999.04

Lab Number: L1607836

Report Date: 03/23/16

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1607836-01	EP3012	848	1.0L Can	03/15/16	218771	L1606987-02	Pass	-29.9	-7.2	-	-	-	-
L1607836-02	EP3011	1508	1.0L Can	03/15/16	218771	L1606987-02	Pass	-29.9	-4.7	-	-	-	-
L1607836-03	EP3015	2148	1.0L Can	03/15/16	218771	L1606987-02	Pass	-30.0	-7.8	-	-	-	-
L1607836-04	EP3014	837	1.0L Can	03/15/16	218771	L1606987-02	Pass	-30.0	-5.5	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1606987
Report Date: 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02
Client ID: CAN 2147 SHELF 13
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 03/11/16 14:51
Analyst: RY

Date Collected: 03/10/16 16:00
Date Received: 03/11/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1606987
Report Date: 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02
Client ID: CAN 2147 SHELF 13
Sample Location:
Date Collected: 03/10/16 16:00
Date Received: 03/11/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1606987

Project Number: CANISTER QC BAT **Report Date:** 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02 Date Collected: 03/10/16 16:00

Client ID: CAN 2147 SHELF 13 Date Received: 03/11/16

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1606987

Project Number: CANISTER QC BAT **Report Date:** 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02 Date Collected: 03/10/16 16:00

Client ID: CAN 2147 SHELF 13 Date Received: 03/11/16

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L1606987

Project Number: CANISTER QC BAT **Report Date:** 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02 Date Collected: 03/10/16 16:00

Client ID: CAN 2147 SHELF 13 Date Received: 03/11/16

Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	87		60-140
Bromochloromethane	92		60-140
chlorobenzene-d5	83		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1606987
Report Date: 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02
Client ID: CAN 2147 SHELF 13
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 03/11/16 14:51
Analyst: RY

Date Collected: 03/10/16 16:00
Date Received: 03/11/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1606987
Report Date: 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02
Client ID: CAN 2147 SHELF 13
Sample Location:
Date Collected: 03/10/16 16:00
Date Received: 03/11/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.020	--	ND	0.092	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1606987
Report Date: 03/23/16

Air Canister Certification Results

Lab ID: L1606987-02
Client ID: CAN 2147 SHELF 13
Sample Location:
Date Collected: 03/10/16 16:00
Date Received: 03/11/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	85		60-140
bromochloromethane	110		60-140
chlorobenzene-d5	83		60-140

Project Name: B330C
Project Number: 2999.04

Lab Number: L1607836
Report Date: 03/23/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information **Custody Seal**

Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1607836-01A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1607836-02A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1607836-03A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1607836-04A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	B330C	**Lab Number:**	L1607836
Project Number:	2999.04	**Report Date:**	03/23/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

Report Format: Data Usability Report

Project Name:	B330C	**Lab Number:**	L1607836
Project Number:	2999.04	**Report Date:**	03/23/16

Data Qualifiers

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	B330C	**Lab Number:**	L1607836
Project Number:	2999.04	**Report Date:**	03/23/16

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: ***8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:*** Lead***; 8270D:*** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 3/18/16

ALPHA Job #: L1607836

Client Information

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA
Phone: 978-392-0900
Fax: —
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: B330C
Project Location: Hopewell Junction, NY
Project #: 2999.04
Project Manager: S. Sooos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments: East Fishkill (IBM) list of 5 VOCs

Project-Specific Target Compound List: ☒ PCE, TCE, VC, cis, trans 1-2 DCE

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
1607836-01	EP3062	3-16-16	—	1623	29.5	7.5	SV	JWC	1L	848	—	X							
-02	EP3011	↓	—	1438	29.4	5	↓	↓	↓	1508	—	X							
-03	EP3015	↓	—	1152	28.9	8.3	↓	↓	↓	2148	—	X							
-04	EP3014	↓	—	1025	29.5	5.9	↓	↓	↓	837	-	X							

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CN

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
	3-17-16 1547		3/17/16 1547
	3/17/16 1648		3/17/16 1648
	3/18/16 0000		3/18/16 06:00

ANALYTICAL REPORT

Lab Number:	L1621200
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	B330C PILOT TESTS
Project Number:	2999.04
Report Date:	07/14/16

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1621200-01	EP3017	SOIL_VAPOR	HOPEWELL JUNCTION, NY	07/07/16 14:10	07/11/16
L1621200-02	EP3016	SOIL_VAPOR	HOPEWELL JUNCTION, NY	07/07/16 16:02	07/11/16
L1621200-03	UNUSED CANISTER 571	SOIL_VAPOR	HOPEWELL JUNCTION, NY		07/11/16

Project Name:	B330C PILOT TESTS	**Lab Number:**	L1621200
Project Number:	2999.04	**Report Date:**	07/14/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: B330C PILOT TESTS **Lab Number:** L1621200
Project Number: 2999.04 **Report Date:** 07/14/16

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on June 30, 2016. The canister certification results are provided as an addendum.

Sample L1621200-01 and -02: Prior to sample analysis, the canisters were pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the samples. The reporting limits have been elevated accordingly. The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 07/14/16

AIR

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

SAMPLE RESULTS

Lab ID: L1621200-01 D
Client ID: EP3017
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/14/16 06:05
Analyst: MB

Date Collected: 07/07/16 14:10
Date Received: 07/11/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	102.	--	ND	261	--		509.7
trans-1,2-Dichloroethene	ND	102.	--	ND	404	--		509.7
cis-1,2-Dichloroethene	ND	102.	--	ND	404	--		509.7
Trichloroethene	254	102	--	1370	548	--		509.7
Tetrachloroethene	23800	102	--	161000	692	--		509.7

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	86		60-140
chlorobenzene-d5	92		60-140

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

SAMPLE RESULTS

Lab ID: L1621200-02 D
Client ID: EP3016
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 07/14/16 06:50
Analyst: MB

Date Collected: 07/07/16 16:02
Date Received: 07/11/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	103.	--	ND	263	--		514.8
trans-1,2-Dichloroethene	ND	103.	--	ND	408	--		514.8
cis-1,2-Dichloroethene	ND	103.	--	ND	408	--		514.8
Trichloroethene	457	103	--	2460	554	--		514.8
Tetrachloroethene	27200	103	--	184000	698	--		514.8

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	89		60-140
chlorobenzene-d5	93		60-140

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/13/16 15:48

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-02 Batch: WG913091-4								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.200	--	ND	1.40	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethyl Alcohol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
iso-Propyl Alcohol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
tert-Butyl Alcohol	ND	0.500	--	ND	1.52	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/13/16 15:48

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-02 Batch: WG913091-4								
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Isopropyl Ether	ND	0.200	--	ND	0.836	--		1
Ethyl-Tert-Butyl-Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
Tertiary-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/13/16 15:48

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-02 Batch: WG913091-4								
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl Acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/13/16 15:48

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-02 Batch: WG913091-4								
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane (C9)	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1
o-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
p-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane (C10)	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane (C12)	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1

Project Name: B330C PILOT TESTS
Project Number: 2999.04
Lab Number: L1621200
Report Date: 07/14/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 07/13/16 15:48

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01-02 Batch: WG913091-4								
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG913091-3								
Chlorodifluoromethane	83		-		70-130	-		
Propylene	86		-		70-130	-		
Propane	77		-		70-130	-		
Dichlorodifluoromethane	92		-		70-130	-		
Chloromethane	76		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	87		-		70-130	-		
Vinyl chloride	89		-		70-130	-		
1,3-Butadiene	90		-		70-130	-		
Butane	77		-		70-130	-		
Bromomethane	84		-		70-130	-		
Chloroethane	87		-		70-130	-		
Ethyl Alcohol	76		-		70-130	-		
Dichlorofluoromethane	81		-		70-130	-		
Vinyl bromide	85		-		70-130	-		
Acrolein	83		-		70-130	-		
Acetone	88		-		70-130	-		
Acetonitrile	85		-		70-130	-		
Trichlorofluoromethane	88		-		70-130	-		
iso-Propyl Alcohol	93		-		70-130	-		
Acrylonitrile	96		-		70-130	-		
Pentane	94		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TESTS

Project Number: 2999.04

Lab Number: L1621200

Report Date: 07/14/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG913091-3								
Ethyl ether	95		-		70-130	-		
1,1-Dichloroethene	94		-		70-130	-		
tert-Butyl Alcohol	93		-		70-130	-		
Methylene chloride	97		-		70-130	-		
3-Chloropropene	96		-		70-130	-		
Carbon disulfide	102		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	97		-		70-130	-		
trans-1,2-Dichloroethene	86		-		70-130	-		
1,1-Dichloroethane	93		-		70-130	-		
Methyl tert butyl ether	102		-		70-130	-		
Vinyl acetate	106		-		70-130	-		
2-Butanone	88		-		70-130	-		
cis-1,2-Dichloroethene	105		-		70-130	-		
Ethyl Acetate	83		-		70-130	-		
Chloroform	97		-		70-130	-		
Tetrahydrofuran	88		-		70-130	-		
2,2-Dichloropropane	94		-		70-130	-		
1,2-Dichloroethane	97		-		70-130	-		
n-Hexane	100		-		70-130	-		
Isopropyl Ether	93		-		70-130	-		
Ethyl-Tert-Butyl-Ether	94		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TESTS

Project Number: 2999.04

Lab Number: L1621200

Report Date: 07/14/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG913091-3								
1,1,1-Trichloroethane	103		-		70-130	-		
1,1-Dichloropropene	100		-		70-130	-		
Benzene	97		-		70-130	-		
Carbon tetrachloride	104		-		70-130	-		
Cyclohexane	102		-		70-130	-		
Tertiary-Amyl Methyl Ether	97		-		70-130	-		
Dibromomethane	93		-		70-130	-		
1,2-Dichloropropane	93		-		70-130	-		
Bromodichloromethane	101		-		70-130	-		
1,4-Dioxane	94		-		70-130	-		
Trichloroethene	100		-		70-130	-		
2,2,4-Trimethylpentane	100		-		70-130	-		
Methyl Methacrylate	90		-		70-130	-		
Heptane	95		-		70-130	-		
cis-1,3-Dichloropropene	94		-		70-130	-		
4-Methyl-2-pentanone	96		-		70-130	-		
trans-1,3-Dichloropropene	108		-		70-130	-		
1,1,2-Trichloroethane	101		-		70-130	-		
Toluene	92		-		70-130	-		
1,3-Dichloropropane	87		-		70-130	-		
2-Hexanone	88		-		70-130	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG913091-3								
Dibromochloromethane	94		-		70-130	-		
1,2-Dibromoethane	92		-		70-130	-		
Butyl Acetate	91		-		70-130	-		
Octane	89		-		70-130	-		
Tetrachloroethene	93		-		70-130	-		
1,1,1,2-Tetrachloroethane	87		-		70-130	-		
Chlorobenzene	91		-		70-130	-		
Ethylbenzene	97		-		70-130	-		
p/m-Xylene	95		-		70-130	-		
Bromoform	95		-		70-130	-		
Styrene	99		-		70-130	-		
1,1,2,2-Tetrachloroethane	91		-		70-130	-		
o-Xylene	97		-		70-130	-		
1,2,3-Trichloropropane	88		-		70-130	-		
Nonane (C9)	85		-		70-130	-		
Isopropylbenzene	92		-		70-130	-		
Bromobenzene	89		-		70-130	-		
o-Chlorotoluene	93		-		70-130	-		
n-Propylbenzene	91		-		70-130	-		
p-Chlorotoluene	87		-		70-130	-		
4-Ethyltoluene	95		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C PILOT TESTS

Project Number: 2999.04

Lab Number: L1621200

Report Date: 07/14/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 Batch: WG913091-3								
1,3,5-Trimethylbenzene	111		-		70-130	-		
tert-Butylbenzene	92		-		70-130	-		
1,2,4-Trimethylbenzene	98		-		70-130	-		
Decane (C10)	90		-		70-130	-		
Benzyl chloride	96		-		70-130	-		
1,3-Dichlorobenzene	95		-		70-130	-		
1,4-Dichlorobenzene	92		-		70-130	-		
sec-Butylbenzene	91		-		70-130	-		
p-Isopropyltoluene	85		-		70-130	-		
1,2-Dichlorobenzene	90		-		70-130	-		
n-Butylbenzene	93		-		70-130	-		
1,2-Dibromo-3-chloropropane	91		-		70-130	-		
Undecane	95		-		70-130	-		
Dodecane (C12)	98		-		70-130	-		
1,2,4-Trichlorobenzene	98		-		70-130	-		
Naphthalene	98		-		70-130	-		
1,2,3-Trichlorobenzene	92		-		70-130	-		
Hexachlorobutadiene	93		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG913091-5 QC Sample: L1621038-02 Client ID: DUP Sample						
Propylene	5.16	5.69	ppbV	10		25
Dichlorodifluoromethane	ND	ND	ppbV	NC		25
Chloromethane	ND	ND	ppbV	NC		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
Vinyl chloride	ND	ND	ppbV	NC		25
1,3-Butadiene	ND	ND	ppbV	NC		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
Ethyl Alcohol	ND	ND	ppbV	NC		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	3020	3030	ppbV	0		25
Trichlorofluoromethane	2.08	2.03	ppbV	2		25
iso-Propyl Alcohol	25.8	24.8	ppbV	4		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
Methylene chloride	ND	ND	ppbV	NC		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	ND	ND	ppbV	NC		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG913091-5 QC Sample: L1621038-02 Client ID: DUP Sample					
1,1-Dichloroethane	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
Vinyl acetate	ND	ND	ppbV	NC	25
2-Butanone	21.5	21.3	ppbV	1	25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Chloroform	ND	ND	ppbV	NC	25
Tetrahydrofuran	ND	ND	ppbV	NC	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
n-Hexane	ND	ND	ppbV	NC	25
1,1,1-Trichloroethane	ND	ND	ppbV	NC	25
Benzene	3.00	3.12	ppbV	4	25
Carbon tetrachloride	ND	ND	ppbV	NC	25
Cyclohexane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
Trichloroethene	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Parameter	Native Sample	Duplicate Sample	Units	RPD		RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG913091-5 QC Sample: L1621038-02 Client ID: DUP Sample						
Heptane	ND	ND	ppbV	NC		25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC		25
4-Methyl-2-pentanone	7.15	6.75	ppbV	6		25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC		25
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25
Toluene	5.28	5.40	ppbV	2		25
2-Hexanone	ND	ND	ppbV	NC		25
Dibromochloromethane	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
Tetrachloroethene	72.2	76.9	ppbV	6		25
Chlorobenzene	ND	ND	ppbV	NC		25
Ethylbenzene	2.36	2.44	ppbV	3		25
p/m-Xylene	11.7	11.9	ppbV	2		25
Bromoform	ND	ND	ppbV	NC		25
Styrene	ND	ND	ppbV	NC		25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC		25
o-Xylene	5.28	5.33	ppbV	1		25
4-Ethyltoluene	14.5	23.4	ppbV	**47**	Q	25
1,3,5-Trimethylbenzene	74.5	76.4	ppbV	3		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG913091-5 QC Sample: L1621038-02 Client ID: DUP Sample					
1,2,4-Trimethylbenzene	151	157	ppbV	4	25
Benzyl chloride	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
Naphthalene	2.15	2.40	ppbV	11	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25

Project Name: B330C PILOT TESTS

Lab Number: L1621200

Project Number: 2999.04

Report Date: 07/14/16

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1621200-01	EP3017	2095	1.0L Can	06/30/16	224520	L1619300-01	Pass	-29.4	-5.6	-	-	-	-
L1621200-02	EP3016	847	1.0L Can	06/30/16	224520	L1619300-01	Pass	-29.4	-5.3	-	-	-	-
L1621200-03	UNUSED CANISTER 571	571	1.0L Can	06/30/16	224520	L1619300-01	Pass	-29.3	-29.3	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 06/23/16 20:49
Analyst: RY

Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:

Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:
Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:

Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:

Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	87		60-140
Bromochloromethane	91		60-140
chlorobenzene-d5	84		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 06/23/16 20:49
Analyst: RY

Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:

Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1619300
Report Date: 07/14/16

Air Canister Certification Results

Lab ID: L1619300-01
Client ID: CAN 871 SHELF 9
Sample Location:
Date Collected: 06/22/16 16:00
Date Received: 06/23/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	90		60-140
bromochloromethane	92		60-140
chlorobenzene-d5	88		60-140

Project Name: B330C PILOT TESTS
Project Number: 2999.04

Lab Number: L1621200
Report Date: 07/14/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information **Custody Seal**

Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1621200-01A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1621200-02A	Canister - 1 Liter	N/A	N/A	N/A	Y	Absent	TO15-LL(30)
L1621200-03A	Canister - 1 Liter	N/A	N/A		Y	Absent	CLEAN-FEE()

*Values in parentheses indicate holding time in days

Project Name:	B330C PILOT TESTS	**Lab Number:**	L1621200
Project Number:	2999.04	**Report Date:**	07/14/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: Data Usability Report

Project Name:	B330C PILOT TESTS	**Lab Number:**	L1621200
Project Number:	2999.04	**Report Date:**	07/14/16

Data Qualifiers

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, m/p-xylene, o-xylene
EPA 624: 2-Butanone (MEK), 1,4-Dioxane, tert-Amylmethyl Ether, tert-Butyl Alcohol, m/p-xylene, o-xylene
EPA 625: Aniline, Benzoic Acid, Benzyl Alcohol, 4-Chloroaniline, 3-Methylphenol, 4-Methylphenol.
EPA 1010A: NPW: Ignitability
EPA 6010C: NPW: Strontium; SCM: Strontium
EPA 8151A: NPW: 2,4-DB, Dicamba, Dichloroprop, MCPA, MCPP; SCM: 2,4-DB, Dichloroprop, MCPA, MCPP
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene, Isopropanol; SCM: Iodomethane (methyl iodide), Methyl methacrylate (soil); 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Pentachloronitrobenzene, 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 9010: NPW: Amenable Cyanide Distillation, Total Cyanide Distillation
EPA 9038: NPW: Sulfate
EPA 9050A: NPW: Specific Conductance
EPA 9056: NPW: Chloride, Nitrate, Sulfate
EPA 9065: NPW: Phenols
EPA 9251: NPW: Chloride
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
EPA 8270D: NPW: Biphenyl; SCM: Biphenyl, Caprolactam
EPA 8270D-SIM Isotope Dilution: SCM: 1,4-Dioxane
SM 2540D: TSS
SM2540G: SCM: Percent Solids
EPA 1631E: SCM: Mercury
EPA 7474: SCM: Mercury
EPA 8081B: NPW and SCM: Mirex, Hexachlorobenzene.
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA 8270-SIM: NPW and SCM: Alkylated PAHs.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene, n-Butylbenzene, n-Propylbenzene, sec-Butylbenzene, tert-Butylbenzene.
Biological Tissue Matrix: ***8270D-SIM; 3050B; 3051A; 7471B; 8081B; 8082A; 6020A:*** Lead***; 8270D:*** bis(2-ethylhexyl)phthalate, Butylbenzylphthalate, Diethyl phthalate, Dimethyl phthalate, Di-n-butyl phthalate, Di-n-octyl phthalate, Fluoranthene, Pentachlorophenol.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F,**
EPA 353.2: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 7/11/16

ALPHA Job #: L1621200

Client Information

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: —
Email: SSCOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: B330C Pilot Tests
Project Location: Hopewell Junction, NY
Project #: 2999.04
Project Manager: Seth Scos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker: _____
(Default based on Regulatory Criteria Indicated)
Other Formats: _____
☒ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ IBM East Fishkill VOCs ; PCE, TCE, VC, cis, trans-1,2 DCE

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15		Sample Comments (i.e. PID)
21200-01	EP3017	7/7/16	—	1410	29	5	SV	JWC	1L	2095	—	X						PID = 81 ppm
-02	EP3016	7/7/16	—	1602	29	5	SV	JWC	1L	847	—	X						PID = 87 ppm

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
	7/8/16, 1300		7/11/16 1345
	7/11/16 1510		7/11/16 1510

ANALYTICAL REPORT

Lab Number:	L1625553
Client:	Sanborn, Head & Associates, Inc. 20 Foundry Street Concord, NH 03301
ATTN:	Seth Soos
Phone:	(603) 229-1900
Project Name:	B330C SP TEST
Project Number:	2999.04
Report Date:	08/22/16

Certifications & Approvals: NY (11627), CT (PH-0141), NH (2206), NJ NELAP (MA015), RI (LAO00299), ME (MA00030), PA (68-02089), VA (460194), LA NELAP (03090), FL (E87814), TX (T104704419), WA (C954), USFWS (Permit #LE2069641), USDA (Permit #P330-11-00109), US Army Corps of Engineers.

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1625553-01	SP3001	SOIL_VAPOR	HOPEWELL JUNCTION, NY	08/15/16 11:13	08/16/16

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	B330C SP TEST	**Lab Number:**	L1625553
Project Number:	2999.04	**Report Date:**	08/22/16

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on August 9, 2016. The canister certification results are provided as an addendum.

Sample L1625553-01: Prior to sample analysis, the canister was pressurized with UHP Nitrogen due to canister size. The pressurization resulted in a dilution of the sample. The reporting limits have been elevated accordingly.

Sample L1625553-01: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 08/22/16

AIR

Project Name: B330C SP TEST
Project Number: 2999.04
Lab Number: L1625553
Report Date: 08/22/16

SAMPLE RESULTS

Lab ID: L1625553-01 D
Client ID: SP3001
Sample Location: HOPEWELL JUNCTION, NY
Matrix: Soil_Vapor
Anaytical Method: 48,TO-15
Analytical Date: 08/19/16 23:36
Analyst: MB

Date Collected: 08/15/16 11:13
Date Received: 08/16/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Vinyl chloride	ND	34.7	--	ND	88.7	--		173.7
trans-1,2-Dichloroethene	ND	34.7	--	ND	138	--		173.7
cis-1,2-Dichloroethene	ND	34.7	--	ND	138	--		173.7
Trichloroethene	82.7	34.7	--	444	186	--		173.7
Tetrachloroethene	15900	34.7	--	108000	235	--		173.7

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	102		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	89		60-140

Project Name: B330C SP TEST
Project Number: 2999.04
Lab Number: L1625553
Report Date: 08/22/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15
Analytical Date: 08/19/16 17:12

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab for sample(s): 01 Batch: WG924267-4								
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Trichloroethene	ND	0.200	--	ND	1.07	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1

Lab Control Sample Analysis
Batch Quality Control

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3								
Chlorodifluoromethane	96		-		70-130	-		
Propylene	122		-		70-130	-		
Propane	87		-		70-130	-		
Dichlorodifluoromethane	115		-		70-130	-		
Chloromethane	100		-		70-130	-		
1,2-Dichloro-1,1,2,2-tetrafluoroethane	104		-		70-130	-		
Methanol	83		-		70-130	-		
Vinyl chloride	106		-		70-130	-		
1,3-Butadiene	110		-		70-130	-		
Butane	110		-		70-130	-		
Bromomethane	107		-		70-130	-		
Chloroethane	103		-		70-130	-		
Ethyl Alcohol	92		-		70-130	-		
Dichlorofluoromethane	106		-		70-130	-		
Vinyl bromide	96		-		70-130	-		
Acrolein	87		-		70-130	-		
Acetone	110		-		70-130	-		
Acetonitrile	113		-		70-130	-		
Trichlorofluoromethane	114		-		70-130	-		
iso-Propyl Alcohol	104		-		70-130	-		
Acrylonitrile	93		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C SP TEST

Project Number: 2999.04

Lab Number: L1625553

Report Date: 08/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3								
Pentane	93		-		70-130	-		
Ethyl ether	101		-		70-130	-		
1,1-Dichloroethene	115		-		70-130	-		
tert-Butyl Alcohol	99		-		70-130	-		
Methylene chloride	95		-		70-130	-		
3-Chloropropene	114		-		70-130	-		
Carbon disulfide	99		-		70-130	-		
1,1,2-Trichloro-1,2,2-Trifluoroethane	100		-		70-130	-		
trans-1,2-Dichloroethene	105		-		70-130	-		
1,1-Dichloroethane	113		-		70-130	-		
Methyl tert butyl ether	99		-		70-130	-		
Vinyl acetate	127		-		70-130	-		
2-Butanone	104		-		70-130	-		
cis-1,2-Dichloroethene	128		-		70-130	-		
Ethyl Acetate	112		-		70-130	-		
Chloroform	115		-		70-130	-		
Tetrahydrofuran	102		-		70-130	-		
2,2-Dichloropropane	100		-		70-130	-		
1,2-Dichloroethane	123		-		70-130	-		
n-Hexane	111		-		70-130	-		
Isopropyl Ether	97		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C SP TEST

Project Number: 2999.04

Lab Number: L1625553

Report Date: 08/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3								
Ethyl-Tert-Butyl-Ether	102		-		70-130	-		
1,1,1-Trichloroethane	116		-		70-130	-		
1,1-Dichloropropene	106		-		70-130	-		
Benzene	103		-		70-130	-		
Carbon tetrachloride	124		-		70-130	-		
Cyclohexane	111		-		70-130	-		
Tertiary-Amyl Methyl Ether	92		-		70-130	-		
Dibromomethane	103		-		70-130	-		
1,2-Dichloropropane	113		-		70-130	-		
Bromodichloromethane	120		-		70-130	-		
1,4-Dioxane	105		-		70-130	-		
Trichloroethene	103		-		70-130	-		
2,2,4-Trimethylpentane	125		-		70-130	-		
Methyl Methacrylate	115		-		70-130	-		
Heptane	105		-		70-130	-		
cis-1,3-Dichloropropene	101		-		70-130	-		
4-Methyl-2-pentanone	110		-		70-130	-		
trans-1,3-Dichloropropene	114		-		70-130	-		
1,1,2-Trichloroethane	107		-		70-130	-		
Toluene	91		-		70-130	-		
1,3-Dichloropropane	90		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C SP TEST

Project Number: 2999.04

Lab Number: L1625553

Report Date: 08/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3								
2-Hexanone	98		-		70-130	-		
Dibromochloromethane	99		-		70-130	-		
1,2-Dibromoethane	92		-		70-130	-		
Butyl Acetate	84		-		70-130	-		
Octane	89		-		70-130	-		
Tetrachloroethene	88		-		70-130	-		
1,1,1,2-Tetrachloroethane	92		-		70-130	-		
Chlorobenzene	94		-		70-130	-		
Ethylbenzene	95		-		70-130	-		
p/m-Xylene	98		-		70-130	-		
Bromoform	100		-		70-130	-		
Styrene	89		-		70-130	-		
1,1,2,2-Tetrachloroethane	104		-		70-130	-		
o-Xylene	99		-		70-130	-		
1,2,3-Trichloropropane	93		-		70-130	-		
Nonane (C9)	91		-		70-130	-		
Isopropylbenzene	91		-		70-130	-		
Bromobenzene	94		-		70-130	-		
o-Chlorotoluene	86		-		70-130	-		
n-Propylbenzene	90		-		70-130	-		
p-Chlorotoluene	90		-		70-130	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: B330C SP TEST

Project Number: 2999.04

Lab Number: L1625553

Report Date: 08/22/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 Batch: WG924267-3								
4-Ethyltoluene	91		-		70-130	-		
1,3,5-Trimethylbenzene	96		-		70-130	-		
tert-Butylbenzene	93		-		70-130	-		
1,2,4-Trimethylbenzene	100		-		70-130	-		
Decane (C10)	102		-		70-130	-		
Benzyl chloride	106		-		70-130	-		
1,3-Dichlorobenzene	96		-		70-130	-		
1,4-Dichlorobenzene	95		-		70-130	-		
sec-Butylbenzene	90		-		70-130	-		
p-Isopropyltoluene	87		-		70-130	-		
1,2-Dichlorobenzene	95		-		70-130	-		
n-Butylbenzene	98		-		70-130	-		
1,2-Dibromo-3-chloropropane	110		-		70-130	-		
Undecane	105		-		70-130	-		
Dodecane (C12)	118		-		70-130	-		
1,2,4-Trichlorobenzene	93		-		70-130	-		
Naphthalene	93		-		70-130	-		
1,2,3-Trichlorobenzene	95		-		70-130	-		
Hexachlorobutadiene	99		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample						
Dichlorodifluoromethane	2.19	2.21	ppbV	1		25
Chloromethane	ND	ND	ppbV	NC		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	ND	ppbV	NC		25
Vinyl chloride	ND	ND	ppbV	NC		25
1,3-Butadiene	ND	ND	ppbV	NC		25
Bromomethane	ND	ND	ppbV	NC		25
Chloroethane	ND	ND	ppbV	NC		25
Ethyl Alcohol	ND	ND	ppbV	NC		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	19.9	20.1	ppbV	1		25
Trichlorofluoromethane	144	147	ppbV	2		25
iso-Propyl Alcohol	1.33	1.39	ppbV	4		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
tert-Butyl Alcohol	ND	ND	ppbV	NC		25
Methylene chloride	ND	ND	ppbV	NC		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	1.33	1.32	ppbV	1		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	ND	ppbV	NC		25
trans-1,2-Dichloroethene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample					
1,1-Dichloroethane	ND	ND	ppbV	NC	25
Methyl tert butyl ether	ND	ND	ppbV	NC	25
2-Butanone	15.4	15.5	ppbV	1	25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC	25
Ethyl Acetate	ND	ND	ppbV	NC	25
Chloroform	8.49	8.68	ppbV	2	25
Tetrahydrofuran	1.58	1.59	ppbV	1	25
1,2-Dichloroethane	ND	ND	ppbV	NC	25
n-Hexane	1.09	1.09	ppbV	0	25
1,1,1-Trichloroethane	ND	ND	ppbV	NC	25
Benzene	0.608	0.612	ppbV	1	25
Carbon tetrachloride	ND	ND	ppbV	NC	25
Cyclohexane	ND	ND	ppbV	NC	25
1,2-Dichloropropane	ND	ND	ppbV	NC	25
Bromodichloromethane	ND	ND	ppbV	NC	25
1,4-Dioxane	ND	ND	ppbV	NC	25
Trichloroethene	ND	ND	ppbV	NC	25
2,2,4-Trimethylpentane	ND	ND	ppbV	NC	25
Heptane	0.724	0.750	ppbV	4	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample					
cis-1,3-Dichloropropene	ND	ND	ppbV	NC	25
4-Methyl-2-pentanone	ND	ND	ppbV	NC	25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC	25
1,1,2-Trichloroethane	ND	ND	ppbV	NC	25
Toluene	5.34	5.43	ppbV	2	25
2-Hexanone	3.52	3.62	ppbV	3	25
Dibromochloromethane	ND	ND	ppbV	NC	25
1,2-Dibromoethane	ND	ND	ppbV	NC	25
Tetrachloroethene	33.5	33.3	ppbV	1	25
Chlorobenzene	ND	ND	ppbV	NC	25
Ethylbenzene	2.16	2.16	ppbV	0	25
p/m-Xylene	9.07	9.25	ppbV	2	25
Bromoform	ND	ND	ppbV	NC	25
Styrene	6.78	6.97	ppbV	3	25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC	25
o-Xylene	3.71	3.75	ppbV	1	25
4-Ethyltoluene	0.828	0.824	ppbV	0	25
1,3,5-Trimethylbenzene	1.46	1.48	ppbV	1	25
1,2,4-Trimethylbenzene	5.05	5.14	ppbV	2	25

Lab Duplicate Analysis
Batch Quality Control

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Volatile Organics in Air - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG924267-5 QC Sample: L1625564-04 Client ID: DUP Sample					
Benzyl chloride	ND	ND	ppbV	NC	25
1,3-Dichlorobenzene	ND	ND	ppbV	NC	25
1,4-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2-Dichlorobenzene	ND	ND	ppbV	NC	25
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC	25
Hexachlorobutadiene	ND	ND	ppbV	NC	25

Project Name: B330C SP TEST

Lab Number: L1625553

Project Number: 2999.04

Report Date: 08/22/16

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1625553-01	SP3001	2083	1.0L Can	08/09/16	226822	L1624034-02	Pass	-30.0	-5.5	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15
Analytical Date: 08/03/16 18:54
Analyst: MB

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	--	ND	0.707	--		1
Propylene	ND	0.500	--	ND	0.861	--		1
Propane	ND	0.500	--	ND	0.902	--		1
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.200	--	ND	1.40	--		1
Methanol	ND	5.00	--	ND	6.55	--		1
Vinyl chloride	ND	0.200	--	ND	0.511	--		1
1,3-Butadiene	ND	0.200	--	ND	0.442	--		1
Butane	ND	0.200	--	ND	0.475	--		1
Bromomethane	ND	0.200	--	ND	0.777	--		1
Chloroethane	ND	0.200	--	ND	0.528	--		1
Ethanol	ND	5.00	--	ND	9.42	--		1
Dichlorofluoromethane	ND	0.200	--	ND	0.842	--		1
Vinyl bromide	ND	0.200	--	ND	0.874	--		1
Acrolein	ND	0.500	--	ND	1.15	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Acetonitrile	ND	0.200	--	ND	0.336	--		1
Trichlorofluoromethane	ND	0.200	--	ND	1.12	--		1
Isopropanol	ND	0.500	--	ND	1.23	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
Pentane	ND	0.200	--	ND	0.590	--		1
Ethyl ether	ND	0.200	--	ND	0.606	--		1
1,1-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Tertiary butyl Alcohol	ND	0.500	--	ND	1.52	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	--	ND	1.74	--		1
3-Chloropropene	ND	0.200	--	ND	0.626	--		1
Carbon disulfide	ND	0.200	--	ND	0.623	--		1
Freon-113	ND	0.200	--	ND	1.53	--		1
trans-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
1,1-Dichloroethane	ND	0.200	--	ND	0.809	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
Vinyl acetate	ND	1.00	--	ND	3.52	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.200	--	ND	0.793	--		1
Ethyl Acetate	ND	0.500	--	ND	1.80	--		1
Chloroform	ND	0.200	--	ND	0.977	--		1
Tetrahydrofuran	ND	0.500	--	ND	1.47	--		1
2,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
1,2-Dichloroethane	ND	0.200	--	ND	0.809	--		1
n-Hexane	ND	0.200	--	ND	0.705	--		1
Diisopropyl ether	ND	0.200	--	ND	0.836	--		1
tert-Butyl Ethyl Ether	ND	0.200	--	ND	0.836	--		1
1,1,1-Trichloroethane	ND	0.200	--	ND	1.09	--		1
1,1-Dichloropropene	ND	0.200	--	ND	0.908	--		1
Benzene	ND	0.200	--	ND	0.639	--		1
Carbon tetrachloride	ND	0.200	--	ND	1.26	--		1
Cyclohexane	ND	0.200	--	ND	0.688	--		1
tert-Amyl Methyl Ether	ND	0.200	--	ND	0.836	--		1
Dibromomethane	ND	0.200	--	ND	1.42	--		1
1,2-Dichloropropane	ND	0.200	--	ND	0.924	--		1
Bromodichloromethane	ND	0.200	--	ND	1.34	--		1
1,4-Dioxane	ND	0.200	--	ND	0.721	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
Trichloroethene	ND	0.200	--	ND	1.07	--		1
2,2,4-Trimethylpentane	ND	0.200	--	ND	0.934	--		1
Methyl Methacrylate	ND	0.500	--	ND	2.05	--		1
Heptane	ND	0.200	--	ND	0.820	--		1
cis-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.200	--	ND	0.908	--		1
1,1,2-Trichloroethane	ND	0.200	--	ND	1.09	--		1
Toluene	ND	0.200	--	ND	0.754	--		1
1,3-Dichloropropane	ND	0.200	--	ND	0.924	--		1
2-Hexanone	ND	0.200	--	ND	0.820	--		1
Dibromochloromethane	ND	0.200	--	ND	1.70	--		1
1,2-Dibromoethane	ND	0.200	--	ND	1.54	--		1
Butyl acetate	ND	0.500	--	ND	2.38	--		1
Octane	ND	0.200	--	ND	0.934	--		1
Tetrachloroethene	ND	0.200	--	ND	1.36	--		1
1,1,1,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
Chlorobenzene	ND	0.200	--	ND	0.921	--		1
Ethylbenzene	ND	0.200	--	ND	0.869	--		1
p/m-Xylene	ND	0.400	--	ND	1.74	--		1
Bromoform	ND	0.200	--	ND	2.07	--		1
Styrene	ND	0.200	--	ND	0.852	--		1
1,1,2,2-Tetrachloroethane	ND	0.200	--	ND	1.37	--		1
o-Xylene	ND	0.200	--	ND	0.869	--		1
1,2,3-Trichloropropane	ND	0.200	--	ND	1.21	--		1
Nonane	ND	0.200	--	ND	1.05	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
Bromobenzene	ND	0.200	--	ND	0.793	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air - Mansfield Lab								
2-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
n-Propylbenzene	ND	0.200	--	ND	0.983	--		1
4-Chlorotoluene	ND	0.200	--	ND	1.04	--		1
4-Ethyltoluene	ND	0.200	--	ND	0.983	--		1
1,3,5-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
tert-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trimethylbenzene	ND	0.200	--	ND	0.983	--		1
Decane	ND	0.200	--	ND	1.16	--		1
Benzyl chloride	ND	0.200	--	ND	1.04	--		1
1,3-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
1,4-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.200	--	ND	1.20	--		1
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2-Dibromo-3-chloropropane	ND	0.200	--	ND	1.93	--		1
Undecane	ND	0.200	--	ND	1.28	--		1
Dodecane	ND	0.200	--	ND	1.39	--		1
1,2,4-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Naphthalene	ND	0.200	--	ND	1.05	--		1
1,2,3-Trichlorobenzene	ND	0.200	--	ND	1.48	--		1
Hexachlorobutadiene	ND	0.200	--	ND	2.13	--		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					
Silanol, Trimethyl-	1.8	NJ	ppbV		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air - Mansfield Lab								

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	108		60-140
Bromochloromethane	112		60-140
chlorobenzene-d5	109		60-140

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 08/03/16 18:54
Analyst: MB

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air by SIM - Mansfield Lab								
Dichlorodifluoromethane	ND	0.200	--	ND	0.989	--		1
Chloromethane	ND	0.200	--	ND	0.413	--		1
Freon-114	ND	0.050	--	ND	0.349	--		1
Vinyl chloride	ND	0.020	--	ND	0.051	--		1
1,3-Butadiene	ND	0.020	--	ND	0.044	--		1
Bromomethane	ND	0.020	--	ND	0.078	--		1
Chloroethane	ND	0.020	--	ND	0.053	--		1
Acetone	ND	1.00	--	ND	2.38	--		1
Trichlorofluoromethane	ND	0.050	--	ND	0.281	--		1
Acrylonitrile	ND	0.500	--	ND	1.09	--		1
1,1-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Methylene chloride	ND	0.500	--	ND	1.74	--		1
Freon-113	ND	0.050	--	ND	0.383	--		1
Halothane	ND	0.050	--	ND	0.404	--		1
trans-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
1,1-Dichloroethane	ND	0.020	--	ND	0.081	--		1
Methyl tert butyl ether	ND	0.200	--	ND	0.721	--		1
2-Butanone	ND	0.500	--	ND	1.47	--		1
cis-1,2-Dichloroethene	ND	0.020	--	ND	0.079	--		1
Chloroform	ND	0.020	--	ND	0.098	--		1
1,2-Dichloroethane	ND	0.020	--	ND	0.081	--		1
1,1,1-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Benzene	ND	0.100	--	ND	0.319	--		1
Carbon tetrachloride	ND	0.020	--	ND	0.126	--		1
1,2-Dichloropropane	ND	0.020	--	ND	0.092	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:

Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
Bromodichloromethane	ND	0.020	--	ND	0.134	--		1
1,4-Dioxane	ND	0.100	--	ND	0.360	--		1
Trichloroethene	ND	0.020	--	ND	0.107	--		1
cis-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
4-Methyl-2-pentanone	ND	0.500	--	ND	2.05	--		1
trans-1,3-Dichloropropene	ND	0.020	--	ND	0.091	--		1
1,1,2-Trichloroethane	ND	0.020	--	ND	0.109	--		1
Toluene	ND	0.050	--	ND	0.188	--		1
Dibromochloromethane	ND	0.020	--	ND	0.170	--		1
1,2-Dibromoethane	ND	0.020	--	ND	0.154	--		1
Tetrachloroethene	ND	0.020	--	ND	0.136	--		1
1,1,1,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
Chlorobenzene	ND	0.100	--	ND	0.461	--		1
Ethylbenzene	ND	0.020	--	ND	0.087	--		1
p/m-Xylene	ND	0.040	--	ND	0.174	--		1
Bromoform	ND	0.020	--	ND	0.207	--		1
Styrene	ND	0.020	--	ND	0.085	--		1
1,1,2,2-Tetrachloroethane	ND	0.020	--	ND	0.137	--		1
o-Xylene	ND	0.020	--	ND	0.087	--		1
Isopropylbenzene	ND	0.200	--	ND	0.983	--		1
4-Ethyltoluene	ND	0.020	--	ND	0.098	--		1
1,3,5-Trimethybenzene	ND	0.020	--	ND	0.098	--		1
1,2,4-Trimethylbenzene	ND	0.020	--	ND	0.098	--		1
1,3-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
1,4-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1
sec-Butylbenzene	ND	0.200	--	ND	1.10	--		1
p-Isopropyltoluene	ND	0.200	--	ND	1.10	--		1
1,2-Dichlorobenzene	ND	0.020	--	ND	0.120	--		1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT
Lab Number: L1624034
Report Date: 08/22/16

Air Canister Certification Results

Lab ID: L1624034-02
Client ID: CAN 1502 SHELF 14
Sample Location:
Date Collected: 08/02/16 16:00
Date Received: 08/03/16
Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM - Mansfield Lab								
n-Butylbenzene	ND	0.200	--	ND	1.10	--		1
1,2,4-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Naphthalene	ND	0.050	--	ND	0.262	--		1
1,2,3-Trichlorobenzene	ND	0.050	--	ND	0.371	--		1
Hexachlorobutadiene	ND	0.050	--	ND	0.533	--		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	109		60-140
bromochloromethane	114		60-140
chlorobenzene-d5	111		60-140

Project Name: B330C SP TEST
Project Number: 2999.04

Lab Number: L1625553
Report Date: 08/22/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information **Custody Seal**

Cooler
N/A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1625553-01A	Canister - 1 Liter	N/A	N/A		Y	Absent	TO15-LL(30)

*Values in parentheses indicate holding time in days

Project Name:	B330C SP TEST	**Lab Number:**	L1625553
Project Number:	2999.04	**Report Date:**	08/22/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: Data Usability Report

Project Name:	B330C SP TEST	**Lab Number:**	L1625553
Project Number:	2999.04	**Report Date:**	08/22/16

Data Qualifiers

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	B330C SP TEST	**Lab Number:**	L1625553
Project Number:	2999.04	**Report Date:**	08/22/16

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: ***EPA 3050B***

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 8/16/16

ALPHA Job #: L1625553

Client Information

Client: Sanborn Head
Address: 1 Technology Park Dr
Westford, MA 01886
Phone: 978-392-0900
Fax: –
Email: SSOOS@sanbornhead.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: B330C SP Test
Project Location: Hopewell Junction, NY
Project #: 2999.04
Project Manager: S. Soos
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☒ ADEx
Criteria Checker: _____
(Default based on Regulatory Criteria Indicated)
Other Formats: _____
☒ EMAIL (standard pdf report)
☐ Additional Deliverables: _____
Report to: (if different than Project Manager)

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☒ IBM East Fishkill VOCs: PCE, TCE, VC, cis,-trans-1,2DCE

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	ANALYSIS TO-15	TO-15 SIM	APH Subfract Non-petroleum HCs	☐ Fixed Gases	Sulfides & Mercaptans by TO-15			Sample Comments (i.e. PID)
25553-01	SP3001	8/15/16	–	1113	29.68	5.85	SV	JWC	1L	2083	–	X							PID = 35 ppm

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type: CS

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
Rob Mauss AAL	8/16/16, 1620	Rob Mauss AAL	8/16/16 10:40
	8/16/16 11:47		8/16/16 11:47