

Mr. Jeffrey Crawford
Rhode Island Department of Environmental Management
Office of Waste Management
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Subject:

January 2017 Quarterly Monitoring Report for Springfield Street School Complex

ENVIRONMENTAL

Dear Mr. Crawford:

ARCADIS US, Inc. (ARCADIS) conducted quarterly monitoring of soil gas, indoor air, the cap, and the sub-slab ventilation system between January 17th and 20th, 2017. The monitoring was performed in accordance with the *Long-Term Operation and Maintenance Plan and Site Contingency Plan (O&M Plan)* contained in the *Remedial Action Work Plan* prepared by ATC dated April 2, 1999, revised May 3, 1999 and May 9, 1999. The *Remedial Action Work Plan (RAWP)* was approved by the Rhode Island Department of Environmental Management (RIDEM) in a letter dated June 4, 1999.

Date:

March 8, 2017

Contact:

Donna H. Pallister, PE

Phone:

401.285.2235

Email:

Donna.pallister@arcadis.com

This work is subject to the Limitations contained in Attachment A. Results of monitoring are provided in the following sections and in the attachments.

Our ref:

WK012152.2016

COVER MONITORING

ARCADIS conducted a visual survey of the site on January 17th, 2016 for evidence of significant soil cover erosion, or for any areas of settling and depression.

The orange indicator barrier was not observed during the inspection, and there was no evidence of significant settling or cover erosion in need of repair.

SUB-SLAB VENTILATION SYSTEM

Field Monitoring

The sub-slab ventilation system was inspected by ARCADIS during the quarterly monitoring on January 19, 2017. The two elementary school blowers and one of the two middle school blowers were operating normally upon arrival. The second

middle school blower, middle school back, was not operating normally due to an unknown issue. ARCADIS previously determined that the motor and blower would need repair.

Samples of influent and effluent (before and after the carbon canisters) air were collected at each functioning blower and screened for methane, carbon dioxide, oxygen, carbon monoxide, hydrogen sulfide, and organic vapors using a Landtec GEM2000 Plus and a MiniRae 3000. Results of screening are provided in Table 1. Methane, carbon monoxide, and hydrogen sulfide were not detected in any of the samples. Organic vapors were detected at 0.7 ppm at Elementary School influent port 2, below the RAWP Action Level of 5 ppm. Carbon dioxide was detected at concentrations of 0.1% for the elementary school effluent and at concentrations of 0.3% and 0.2% at the two elementary school influent ports. Carbon dioxide was detected at the middle school front influent and effluent ports at a concentration of 0.1%. All of these concentrations exceed the RAWP Action Level of 1000 ppm (0.1%).

Soil Gas Laboratory Results

Sub-slab soil gas samples were collected from the influent to each functioning sub-slab ventilation system. The samples were collected in Tedlar bags and submitted to Con-Test Analytical Laboratories for analysis of volatile organic compounds (VOCs) by EPA method TO-14. Results of the analysis are summarized in Table 2, and the laboratory report is provided in Attachment B.

The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) and CT DEEP Proposed Residential Volatilization Criteria for Soil Vapor are provided in Table 2 for comparison purposes. The OSHA PELs are not directly applicable to soil gas, because it does not represent exposure point concentrations. The PELs are the average concentrations that OSHA allows to be present in a workplace without any respiratory protection or exposure controls. The concentrations detected in soil gas were well below the OSHA PELs and the CT DEEP Proposed Residential Volatilization Criteria.

INDOOR AIR MONITORING

Indoor air monitoring was conducted on January 19, 2017 using a Landtec GEM 2000 Plus meter (methane, hydrogen sulfide, oxygen), a Mini Rae 3000 photoionization detector (organic vapors), and a Fluke 975 Airmeter (carbon dioxide, carbon monoxide). School was in session during the monitoring event. Results of monitoring are provided in the Table 3. Carbon dioxide measurements were made with a Fluke 975 Airmeter indoor air quality meter. The Fluke 975 has a range of 0 to 5,000 ppm, with a resolution of 1 ppm.

The outside temperature on January 19, 2017 was 35°F and ambient carbon dioxide was measured at 459 ppm.

Carbon dioxide did not exceed the RAWP Action Levels at any monitoring point. Methane, carbon monoxide, hydrogen sulfide, and organic vapors were not detected. Carbon dioxide was detected at concentrations between 564 and 788 ppm. As noted below, these readings are within the expected range for indoor air levels of carbon dioxide in an occupied building.

Concentrations of carbon dioxide inside occupied buildings are expected to be higher than the concentrations in outdoor air because the building occupants expel carbon dioxide. Therefore, in indoor air, the concentration of carbon dioxide is typically used as an indicator of the effectiveness of the heating, ventilating, and air conditioning (HVAC) system in circulating outdoor air into the building. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) have prepared ASHRAE Standard 62.1-2007 titled *Ventilation for Acceptable Indoor Air Quality*. The purpose of the Standard is to specify minimum ventilation rates and other measures to provide indoor air quality that is acceptable to human occupants and that minimize adverse health effects. A discussion regarding carbon dioxide concentrations in indoor air contained in Informative Attachment C of the Standard states: "... maintaining a steady-state CO₂ concentration in a space of no greater than about 700 ppm above outdoor air levels will indicate that a substantial majority of visitors entering a space will be satisfied with respect to human bioeffluents (body odor)." This is the basis for ASHRAE's recommendations for concentrations of carbon dioxide in indoor air.

The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for carbon dioxide in the workplace is 5,000 ppm. All readings were below this concentration.

The control panels for the methane monitors at both schools were inspected on January 19, 2017. The methane monitor control panels had stickers that indicated that the monitors were calibrated by Diamond Technical Services within the month prior to the inspection. Diamond Technical Services calibrates the sensors on a monthly basis.

Calibration Certificates from Diamond Calibration indicate that many of the sensors read above 0 when calibrated to the zero gas. This prevents the sensors from giving a fault alarm if the reading drops below zero due to a sudden temperature change, and still provides a conservative measure of protection because the alarm limit does not change.

GROUNDWATER MONITORING

The groundwater monitoring wells were sampled by ARCADIS on January 19, 2017. Prior to sampling, the depth to water was gauged, and a volume of water equivalent to approximately three well volumes was removed from the well. Groundwater samples were collected in laboratory prepared sample jars and delivered under chain-of-custody protocol to Contest Laboratory in East Longmeadow, Massachusetts for analysis for volatile organic compounds by EPA method 8260. During the sampling period, MW-6 and MW-8 were discovered dry and unable to be sampled. ATC-4 was found to be destroyed by vehicular traffic and was not sampled. The laboratory report is provided as Attachment B. Results of analysis of groundwater samples are summarized in Table 4.

No target analytes were detected in either of the two groundwater samples collected on January 17th, 2017.

SOIL GAS MONITORING

Soil gas monitoring was conducted at 28 locations on January 19, 2017. Soil gas well MPL2 was buried under an icy snowdrift and was not monitored. The sampling was conducted by placing an air sampling gripper cap on each well and attaching a piece of tubing. A volume of air equivalent to approximately 3 well volumes was removed from each well using a Sensidyne BD XII air sampling pump. Soil gas was then screened using a Landtec GEM 2000 Plus Landfill Gas Analyzer and a MiniRae 3000 Photoionization Detector (PID).

Soil Gas Field Monitoring Results

Soil gas samples were screened for methane, carbon monoxide, hydrogen sulfide, carbon dioxide, oxygen, and total VOCs. Soil gas survey results are provided in Table 5. Total VOCs, Carbon monoxide, and hydrogen sulfide were not detected in any samples. Methane was detected at a concentration of 0.3% in well MPL6.

Carbon dioxide was detected in soil gas at concentrations ranging from 0.0% to 2.3% during the January 2017 monitoring event. The carbon dioxide RAWP action level of 0.1% was exceeded at 21 monitoring points. The maximum concentration detected during the June 2016 monitoring round was 2.3%, which was lower than the maximum detected during the October 2016 round of 11.4%. This is consistent with the pattern shown during previous rounds of declining carbon dioxide concentrations in the winter, and increasing concentrations in the summer and early fall. Graphs depicting carbon dioxide, oxygen, and methane concentrations over time for selected representative wells are presented in Attachment C.

The presence of carbon dioxide in soil gas is an indicator of subsurface biological activity and does not represent a threat to users of the property. The highest concentrations of carbon dioxide were found in well MPL6, located on the northern end of the property near Hartford Avenue. The monitoring locations on the northern end of the property adjacent to large expanses of paved parking lot, sidewalk, and streets have typically had the highest carbon dioxide concentrations.

CONCLUSIONS

Methane, hydrogen sulfide, carbon monoxide and organic vapor concentrations did not exceed RAWP action levels in any soil gas or indoor air samples in this quarterly round of sampling. Carbon dioxide concentrations exceeded the action level at 21 soil gas locations and 5 sub slab system monitoring points. The detection of carbon dioxide in soil gas is typical of what has been detected during previous monitoring events and appears to be a result of naturally occurring biological activity in the subsurface.

If you have any questions or require any additional information, please contact the undersigned at 401-285-2235.

Sincerely,

Arcadis U.S., Inc.

Mr. Jeffrey Crawford
March 8, 2016



Donna H. Pallister, PE, LSP
Senior Environmental Engineer

Copies:

A. Sepe, City of Providence
Providence Public Building Authority

Enclosures:

Tables

- 1 System Monitoring Notes
- 2 Soil Gas Lab Results
- 3 Indoor Air Monitoring Results
- 4 Groundwater Monitoring Results
- 5 Soil Gas Survey results

Figures

- 1 Site Plan

Attachments

- A. Limitations and Service Constraints
- B. Complete Lab Results
- C. Soil Gas Trends

TABLES



Table 1
 System Monitoring Notes
 Springfield Street School Complex
 Providence, RI
 1/19/2017

Monitoring Location	Methane % by volume Landtec	Carbon Dioxide % by volume	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
Elementary School inlet 1	0	0.3	19.7	0	0	0
Elementary School inlet 2	0	0.2	19.7	0	0	0.7
Elementary School Outlet	0	0.1	19.7	0	0	0
Middle School front shed inlet	0	0.1	19.9	0	0	0
Middle School front shed after 2nd carbon	0	0.1	19.8	0	0	0
Middle School back shed inlet #	NT	NT	NT	NT	NT	NT
Middle School back shed after 2nd carbon #	NT	NT	NT	NT	NT	NT
Remedial Action Work Plan Action Levels	0.5	1,000 ppm (0.1%)	NA	9 ppm	10 ppm	5 ppm

Measurements made with: Landtec GEM2000 Plus, MiniRae 3000
Sampling date: 1/19/2017
Measured by: Jon Lewis
 #- Middle school back shed not tested because blower not functioning properly

Table 2
Soil Gas Collected From System Influent
Springfield Street School Complex
Providence, RI

Parameter	Sample Date	CT DEEP Proposed Residential Volatization Criteria For Soil Vapor (ug/m3)*	MassDEP Residential Subslab Screening Values (ug/m3)	OSHA PELs (ug/m3)	Middle School Back (ug/m3)	Middle School Front (ug/m3)	Elementary School #1 (ug/m3)	Elementary School # 2 (ug/m3)
Benzene	10/27/2015	3,247	160	3,000	NT	ND	ND	0.35
	1/6/2016				NT	0.59	1	0.89
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	0.41	0.32	ND
	10/5/2016				NT	0.58	0.69	0.36
	1/19/2017				NT	0.43	0.51	0.61
Carbon Tetrachloride	10/27/2015	6,395	38	62,900	NT	ND	ND	ND
	1/6/2016				NT	0.64	0.57	0.6
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	0.64	ND	ND
	10/5/2016				NT	ND	ND	ND
	1/19/2017				NT	ND	ND	ND
Chloroform	10/27/2015	22,334	130	240,000	NT	ND	1.3	1.6
	1/6/2016				NT	0.25	1.3	1.3
	3/23/2016				NT	ND	1	1.1
	6/3/2016				NT	ND	0.75	0.89
	10/5/2016				NT	ND	1.6	1.4
	1/19/2017				NT	ND	0.96	1.1
Chloromethane	10/27/2015	NA	NA	207,000	NT	0.51	ND	ND
	1/6/2016				NT	0.35	2.3	2.1
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	0.71	ND	ND
	10/5/2016				NT	ND	ND	ND
	1/19/2017				NT	ND	ND	ND
1,4-Dichlorobenzene	10/27/2015	5,805,840	35	450,000	NT	0.71	1	0.89
	1/6/2016				NT	1.1	0.51	0.66
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	ND	ND	ND
	10/5/2016				NT	ND	ND	ND
	1/19/2017				NT	ND	ND	ND
Dichlorodifluoromethane (Freon 12)	10/27/2015	NA	NA	4,950,000	NT	3.7	4.2	7
	1/6/2016				NT	4.1	4.1	4.3
	3/23/2016				NT	2.7	3.1	5.9
	6/3/2016				NT	1.5	1.2	2.5
	10/5/2016				NT	4.3	11	3.1
	1/19/2017				NT	3.4	5.4	4.8
1,2-Dichloroethane	10/27/2015	4,000	6.3	202,372	NT	ND	ND	ND
	1/6/2016				NT	ND	ND	ND
	3/23/2016				NT	ND	ND	0.56
	6/3/2016				NT	ND	ND	ND
	10/5/2016				NT	ND	ND	ND
	1/19/2017				NT	ND	ND	ND
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	10/27/2015	NA	NA	7,000,000	NT	3.9	2.5	5.6
	1/6/2016				NT	2.8	1.6	2.6
	3/23/2016				NT	0.98	ND	2.6
	6/3/2016				NT	0.78	ND	1.4
	10/5/2016				NT	5.3	17	2.7
	1/19/2017				NT	1.2	2.7	1.4
Ethylbenzene	10/27/2015	7,281,812	520	435,000	NT	ND	0.72	0.59
	1/6/2016				NT	0.29	0.33	0.48
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	0.5	ND	ND
	10/5/2016				NT	0.9	1.4	ND
	1/19/2017				NT	ND	ND	4.4

Table 2
Soil Gas Collected From System Influent
Springfield Street School Complex
Providence, RI

Parameter	Sample Date	CT DEEP Proposed Residential Volatilization Criteria For Soil Vapor (ug/m3)*	MassDEP Residential Subslab Screening Values (ug/m3)	OSHA PELs (ug/m3)	Middle School Back (ug/m3)	Middle School Front (ug/m3)	Elementary School #1 (ug/m3)	Elementary School # 2 (ug/m3)
Methylene Chloride	10/27/2015	4,237,289	770	86,750	NT	21	30	8.4
	1/6/2016				NT	4.1	2.4	2
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	17	15	17
	10/5/2016				NT	4.2	4.2	3.9
1/19/2017	NT	ND	ND	ND				
Styrene	10/27/2015	34,633	95	456,000	NT	30	46	27
	1/6/2016				NT	34	31	31
	3/23/2016				NT	25	26	25
	6/3/2016				NT	38	36	35
	10/5/2016				NT	1.3	2.3	1.3
1/19/2017	NT	3	3.1	3.6				
Tetrachloroethylene	10/27/2015	75,840	98	678,000	NT	1.6	2.6	32
	1/6/2016				NT	6	2.8	19
	3/23/2016				NT	1.2	1.6	9.8
	6/3/2016				NT	1	3.1	7.9
	10/5/2016				NT	3.6	51	6.2
1/19/2017	NT	4.8	20	5.6				
Toluene	10/27/2015	2,910,779	3,800	750,000	NT	27	36	25
	1/6/2016				NT	31	27	28
	3/23/2016				NT	18	18	16
	6/3/2016				NT	21	18	19
	10/5/2016				NT	3.6	9.5	3.7
1/19/2017	NT	6.8	6.6	8.1				
Trichloroethylene	10/27/2015	38,237	28	537,000	NT	ND	ND	4.2
	1/6/2016				NT	0.53	0.82	4.1
	3/23/2016				NT	ND	ND	1.1
	6/3/2016				NT	ND	ND	1.1
	10/5/2016				NT	ND	5.6	0.7
1/19/2017	NT	ND	2.1	ND				
Trichlorofluoromethane (Freon 11)	10/27/2015	NA	NA	5,600,000	NT	2.7	3.7	3.4
	1/6/2016				NT	2.9	2.8	4
	3/23/2016				NT	3.2	2.8	3
	6/3/2016				NT	3.8	2.9	3.9
	10/5/2016				NT	1.7	3.2	1.8
1/19/2017	NT	1.6	2.1	1.9				
1,1,2- Trichloro-1,2,2-trifluoroethane (Freon 113)	6/16/2015	NA	NA	7,600,000	NT	ND	ND	ND
	10/27/2015				NT	ND	ND	ND
	1/6/2016				NT	0.64	0.77	0.64
	3/23/2016				NT	ND	0.84	0.8
	6/3/2016				NT	ND	ND	ND
10/5/2016	NT	ND	ND	ND				
1/19/2017	NT	ND	ND	ND				
1,2,4-Trimethylbenzene	10/27/2015	NA	NA	125,000##	NT	1.2	0.76	1.9
	1/6/2016				NT	0.68	0.44	0.54
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	0.66	ND	0.59
	10/5/2016				NT	2	2	2
1/19/2017	NT	ND	ND	ND				
1,3,5-Trimethylbenzene	10/27/2015	6,883	NA	125,000##	NT	ND	ND	ND
	1/6/2016				NT	ND	ND	ND
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	ND	ND	ND
	10/5/2016				NT	0.7	0.71	0.66
1/19/2017	NT	ND	ND	5.1				
M/p-Xylene	10/27/2015	2,215,755#	1400#	435,000	NT	1.3	2.7	2.4
	1/6/2016				NT	1.6	1.2	1.7
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	1.7	0.91	1.1
	10/5/2016				NT	2.3	3.3	ND
1/19/2017	NT	1	1.1	20				

Table 2
Soil Gas Collected From System Influent
Springfield Street School Complex
Providence, RI

Parameter	Sample Date	CT DEEP Proposed Residential Volatization Criteria For Soil Vapor (ug/m3)*	MassDEP Residential Subslab Screening Values (ug/m3)	OSHA PELs (ug/m3)	Middle School Back (ug/m3)	Middle School Front (ug/m3)	Elementary School #1 (ug/m3)	Elementary School # 2 (ug/m3)
o-Xylene	6/16/2015	2,215,755#	1400#	435,000	NT	1.4	1.3	1.3
	10/27/2015				NT	0.57	1.1	0.89
	1/6/2016				NT	0.62	0.53	0.64
	3/23/2016				NT	ND	ND	ND
	6/3/2016				NT	0.67	ND	0.48
	10/5/2016				NT	ND	ND	ND
	1/19/2017				NT	0.43	ND	7.9

Notes:

Samples collected in Tedlar bags and analyzed via EPA method TO-14

Only detected compounds are listed, see laboratory certificate for complete list of analyses

OSHA PELs = Occupational Safety and Health Administration Permissible Exposure Limits

CT DEEP= Connecticut Department of Energy and Environmental Protection

MassDEP Residential Subslab screening values from "Soil Vapor Intrusion Guidance: Site Assessment, Mitigation and Closure (Policy #WSC-16-435)

ug/m3 = micrograms per cubic meter

* From Appendix F to Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies

#- Represents Total Xylenes

##- Represents total trimethylbenzene

Results prior to June 2015 are not shown.

Table 3
Indoor Air Monitoring Results
Springfield Street School Complex
Providence, RI
1/19/2017

Monitoring Location	Methane % by volume Landtec	Carbon Dioxide PPM	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
E.S. Front office	0	661	19.5	0	0	0
E.S. Elevator	0	564	19.5	0	0	0
E.S. Faculty Work Room	0	597	19.6	0	0	0
E.S. Gym	0	580	19.6	0	0	0
E.S. Stairway B	0	574	19.6	0	0	0
E.S. Stairway C	0	565	19.6	0	0	0
E.S. Library	0	605	19.6	0	0	0
E.S. Front Stairs	0	600	19.5	0	0	0
E.S. Cafeteria	0	598	19.6	0	0	0
E.S. Mechanical Room	0	609	19.6	0	0	0
M.S. Front Office	0	714	19.7	0	0	0
M.S. Elevator	0	745	19.6	0	0	0
M.S. Stairway near GS-01	0	781	19.5	0	0	0
M.S. Near sensor #16 in hall outside cafeteria	0	673	19.4	0	0	0
M.S. Faculty Work Room	0	753	19.4	0	0	0
M.S. Sensor #15 Outside Gym	0	645	19.4	0	0	0
M.S. GS-03 Across from Boys Bathroom	0	740	19.5	0	0	0
M.S. Gym	0	645	19.4	0	0	0
M.S. Outside of Music Room	0	732	19.4	0	0	0
M.S. Cafeteria	0	642	19.4	0	0	0
M.S. Front Hall near sensor #4	0	716	19.6	0	0	0
M.S. Hallway across from elevator near sensor #9	0	738	19.4	0	0	0
M.S. Near sensor GS 06 hallway right end	0	702	19.5	0	0	0
M.S. stairway near Hartford Ave. sensor GS-7	0	788	19.5	0	0	0
Remedial Action Work Plan Action Levels	0.5	1,000 ppm (0.1%)	NA	9 ppm	10 ppm	5 ppm

Notes: The indoor air quality monitoring panels in the M.S. and E.S. were calibrated on 12/29/16.
 E.S. indicates Elementary School, M.S. indicates Middle School
 Measurements made with: MiniRae 3000 photoionization detector, Fluke 975 Airmeter, Landtec Gem 2000 Plus
 PPM = Parts per million
 Outdoor conditions: carbon dioxide = 459 ppm temperature = 35 degrees F

Table 4
Groundwater Monitoring Results
Springfield Street School Complex
Providence, RI

Sampling Dates and Results in µg/L		Sampling Dates and Results in µg/L						RIDEM GB Groundwater Objective
Well ID	Detected Compounds	10/29/2015	1/6/2016	3/23/2016	6/3/2016	10/5/2016	1/17/2017	
ATC-1								NA
	Chloromethane	ND	ND	ND	ND	ND	ND	
ATC-2		Closed	Closed	Closed	Closed	Closed	Closed	
MW-6		NS	NS	NS	NS	NS	NS	
ATC-3		Closed	Closed	Closed	Closed	Closed	Closed	70 NA
MW-7		ND	ND	ND	ND	ND	ND	
ATC-4								
	Chlorobenzene	1.2	ND	ND	ND	NS	Destroyed	
	1,4-dichlorobenzene	1.8	1.4	1	1	NS	Destroyed	
ATC-5		Closed	Closed	Closed	Closed	Closed	Closed	
MW-8		NS	NS	NS	NS	NS	NS	
Sampled By:		ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	

ND = not detected above method detection limit
 NS = not sampled
 NA = No applicable standard published
 MTBE = Methyl tert-Butyl Ether
 µg/L = micrograms per liter
 Samples collected prior to 10/29/15 and after 2009 are hidden.

Table 5
Soil Gas Survey
Springfield Street School Complex
Providence, RI
1/19/17

Monitoring Location	Methane % by volume Landtec	Carbon Dioxide % by volume	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
WB-1	0	0.4	19.8	0	0	0
WB-2	0	0.2	19.9	0	0	0
WB-3	0	0	20	0	0	0
WB-4	0	0	20	0	0	0
WB-5	0	0	19.9	0	0	0
WB-6	0	0.1	19.9	0	0	0
WB-7	0	0	20	0	0	0
WB-8	0	0	19.9	0	0	0
WB-12	0	0.1	19.7	0	0	0
WB-13	0	0.2	19.5	0	0	0
WB-14	0	0.6	19	0	0	0
WB-15	0	1.2	19.9	0	0	0
EPL-1	0	0.1	19.5	0	0	0
EPL-2	0	0.4	19.1	0	0	0
EPL-3	0	0.7	18.3	0	0	0
EPL-4	0	1.4	19.1	0	0	0
EPL-5	0	0.8	19.9	0	0	0
ENE-1	0	0.2	20.3	0	0	0
MG1	0	0	20	0	0	0
MG2	0	0.6	20	0	0	0
MG3	0	0	20	0	0	0
MG4	0	0.3	20	0	0	0
MG5	0	0.2	20	0	0	0
MPL2	NA	NA	NA	NA	NA	NA
MPL3	0	1.8	18.7	0	0	0
MPL5	0	1	19.2	0	0	0
MPL6	0.3	2.3	16.1	0	0	0
MPL7	0	1.6	17.7	0	0	0
MPL8	0	0.4	20	0	0	0
Remedial Action Work Plan Action Levels	0.5	1,000 ppm (0.1%)	NA	9 ppm	10 ppm	5 ppm

Sampled by: Jon Lewis
Weather Conditions: 1/19/17 - clear, 42°F
Sampling Equipment: Landtec GEM 2000 Plus, MiniRae 3000 PID
NA - Not accessible due to icy snowdrift

FIGURES
















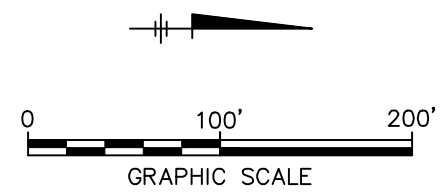
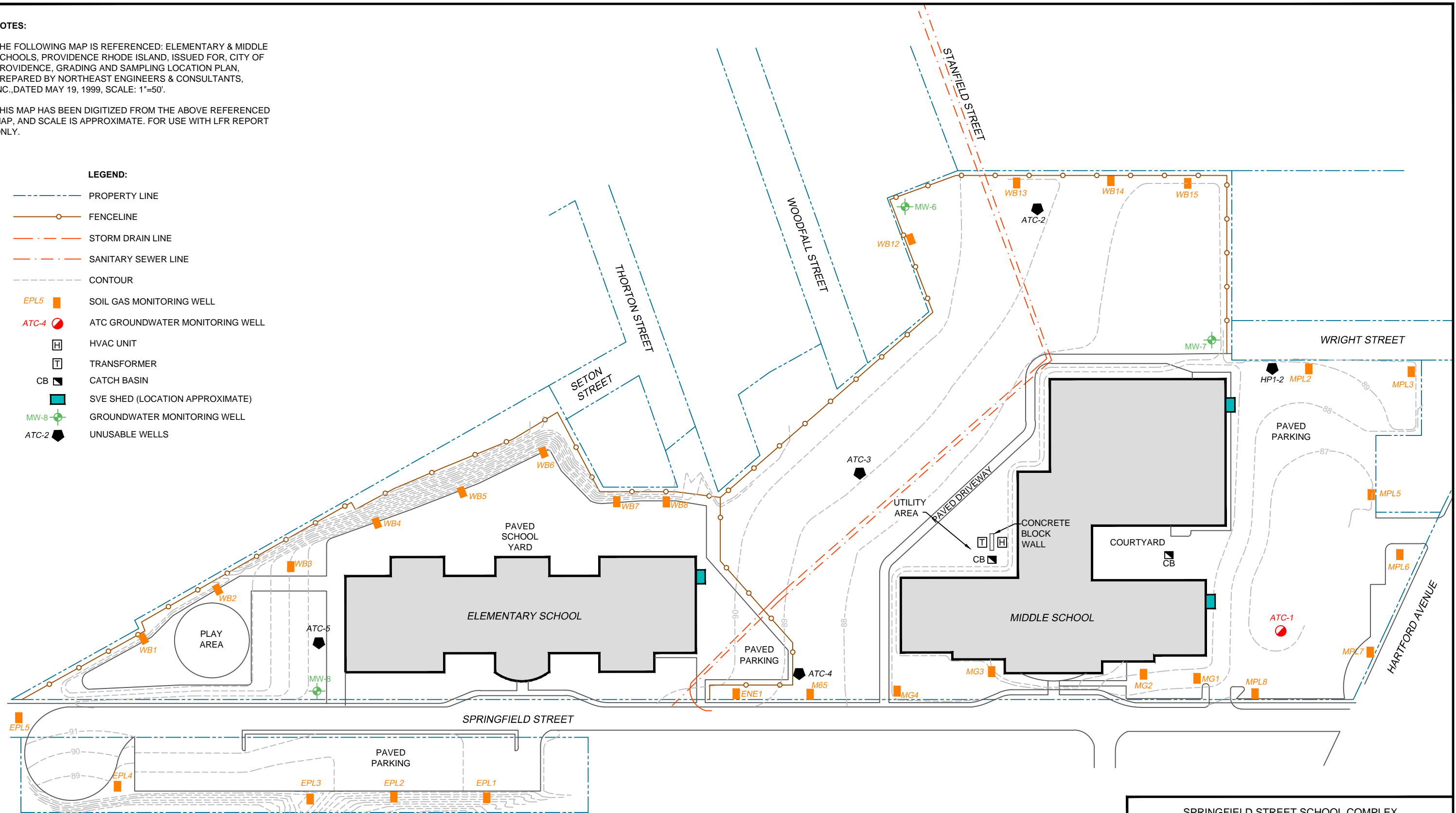
NOTES:

THE FOLLOWING MAP IS REFERENCED: ELEMENTARY & MIDDLE SCHOOLS, PROVIDENCE RHODE ISLAND, ISSUED FOR, CITY OF PROVIDENCE, GRADING AND SAMPLING LOCATION PLAN, PREPARED BY NORTHEAST ENGINEERS & CONSULTANTS, INC., DATED MAY 19, 1999, SCALE: 1"=50'.

THIS MAP HAS BEEN DIGITIZED FROM THE ABOVE REFERENCED MAP, AND SCALE IS APPROXIMATE. FOR USE WITH LFR REPORT ONLY.

LEGEND:

-  PROPERTY LINE
-  FENCELINE
-  STORM DRAIN LINE
-  SANITARY SEWER LINE
-  CONTOUR
-  EPL5 SOIL GAS MONITORING WELL
-  ATC-4 ATC GROUNDWATER MONITORING WELL
-  HVAC UNIT
-  TRANSFORMER
-  CATCH BASIN
-  SVE SHED (LOCATION APPROXIMATE)
-  MW-8 GROUNDWATER MONITORING WELL
-  ATC-2 UNUSABLE WELLS



SPRINGFIELD STREET SCHOOL COMPLEX
SPRINGFIELD STREET
PROVIDENCE, RHODE ISLAND

SITE PLAN


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for natural and built assets

FIGURE
1

CITY: MANCHESTER, CT DIV/GROUP: ENVCAD DB: B. SMALL PM: TM: G:\ENVCAD\MANCHESTER\ACT\WK012152016\000001\WK012152011-B02.dwg LAYOUT: 1 SAVED: 1/20/2017 1:27 PM ACADVER: 19.15 (LMS TECH) PAGESETUP: PDF-LB PLOTSTYLETABLE: ... PLOTTED: 1/20/2017 1:27 PM BY: HALLIWELL, TRISH

ATTACHMENT A

Limitations and Service Constraints



LIMITATIONS AND SERVICE CONSTRAINTS

GENERAL REPORTS/DOCUMENT

The opinions and recommendations presented in this report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by ARCADIS and the party for whom this report was originally prepared. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting industry. No representation, warranty, or guarantee, express or implied, is intended or given. To the extent that ARCADIS relied upon any information prepared by other parties not under contract to ARCADIS, ARCADIS makes no representation as to the accuracy or completeness of such information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared for a particular purpose. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk.

Results of any investigations or testing and any findings presented in this report apply solely to conditions existing at the time when ARCADIS' investigative work was performed. It must be recognized that any such investigative or testing activities are inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the project site may vary from those at the locations where data were collected. ARCADIS's ability to interpret investigation results is related to the availability of the data and the extent of the investigation activities. As such, 100% confidence in environmental investigation conclusions cannot reasonably be achieved.

ARCADIS, therefore, does not provide any guarantees, certifications, or warranties regarding any conclusions regarding environmental contamination of any such property. Furthermore, nothing contained in this document shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

ATTACHMENT B

Complete Lab Results



January 27, 2017

Donna Pallister
Arcadis US, Inc. - Warwick, RI
300 Metro Center Blvd., Suite 250
Warwick, RI 02886

Project Location: Springfield Street Schools
Client Job Number:
Project Number: WK012152.2016
Laboratory Work Order Number: 17A0937

Enclosed are results of analyses for samples received by the laboratory on January 20, 2017. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Aaron L. Benoit", with a horizontal line extending to the right from the end of the signature.

Aaron L. Benoit
Project Manager

Table of Contents

Sample Summary	3
Case Narrative	4
Sample Results	5
Sample Preparation Information	11
QC Data	12
Air Toxics by EPA Compendium Methods	12
B168981	12
Flag/Qualifier Summary	14
Certifications	15
Chain of Custody/Sample Receipt	17

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Arcadis US, Inc. - Warwick, RI
300 Metro Center Blvd., Suite 250
Warwick, RI 02886
ATTN: Donna Pallister

REPORT DATE: 1/27/2017

PURCHASE ORDER NUMBER: 5131

PROJECT NUMBER: WK012152.2016

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 17A0937

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Springfield Street Schools

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MS Front	17A0937-01	Air		EPA TO-14A	
ES1	17A0937-02	Air		EPA TO-14A	
ES2	17A0937-03	Air		EPA TO-14A	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Tod Kopyscinski". The signature is written in a cursive style with a large, sweeping initial "T".

Tod E. Kopyscinski
Laboratory Director

ANALYTICAL RESULTS

Project Location: Springfield Street Schools
 Date Received: 1/20/2017
Field Sample #: MS Front
Sample ID: 17A0937-01
 Sample Matrix: Air
 Sampled: 1/19/2017 10:00

Sample Description/Location:
 Sub Description/Location:
 Canister ID:
 Canister Size:
 Flow Controller ID:
 Sample Type:

Work Order: 17A0937
 Initial Vacuum(in Hg):
 Final Vacuum(in Hg):
 Receipt Vacuum(in Hg):
 Flow Controller Type:
 Flow Controller Calibration
 RPD Pre and Post-Sampling:

EPA TO-14A

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analized		
Benzene	0.13	0.10		0.43	0.32	2	1/25/17 17:53	TPH	
Bromomethane	ND	0.10		ND	0.39	2	1/25/17 17:53	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	1/25/17 17:53	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	1/25/17 17:53	TPH	
Chloroethane	ND	0.10		ND	0.26	2	1/25/17 17:53	TPH	
Chloroform	ND	0.10		ND	0.49	2	1/25/17 17:53	TPH	
Chloromethane	ND	0.20		ND	0.41	2	1/25/17 17:53	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	1/25/17 17:53	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	1/25/17 17:53	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	1/25/17 17:53	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	1/25/17 17:53	TPH	
Dichlorodifluoromethane (Freon 12)	0.68	0.10		3.4	0.49	2	1/25/17 17:53	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	1/25/17 17:53	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	1/25/17 17:53	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	1/25/17 17:53	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	1/25/17 17:53	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	1/25/17 17:53	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	1/25/17 17:53	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	1/25/17 17:53	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	0.17	0.10		1.2	0.70	2	1/25/17 17:53	TPH	
Ethylbenzene	ND	0.10		ND	0.43	2	1/25/17 17:53	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	1/25/17 17:53	TPH	
Methylene Chloride	ND	1.0		ND	3.5	2	1/25/17 17:53	TPH	
Styrene	0.70	0.10		3.0	0.43	2	1/25/17 17:53	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	1/25/17 17:53	TPH	
Tetrachloroethylene	0.71	0.10		4.8	0.68	2	1/25/17 17:53	TPH	
Toluene	1.8	0.10		6.8	0.38	2	1/25/17 17:53	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	1/25/17 17:53	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	1/25/17 17:53	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	1/25/17 17:53	TPH	
Trichloroethylene	ND	0.10		ND	0.54	2	1/25/17 17:53	TPH	
Trichlorofluoromethane (Freon 11)	0.29	0.10		1.6	0.56	2	1/25/17 17:53	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	1/25/17 17:53	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	1/25/17 17:53	TPH	
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	1/25/17 17:53	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	1/25/17 17:53	TPH	
m&p-Xylene	0.24	0.20		1.0	0.87	2	1/25/17 17:53	TPH	

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ANALYTICAL RESULTS

Project Location: Springfield Street Schools
 Date Received: 1/20/2017
Field Sample #: MS Front
Sample ID: 17A0937-01
 Sample Matrix: Air
 Sampled: 1/19/2017 10:00

Sample Description/Location:
 Sub Description/Location:
 Canister ID:
 Canister Size:
 Flow Controller ID:
 Sample Type:

Work Order: 17A0937
 Initial Vacuum(in Hg):
 Final Vacuum(in Hg):
 Receipt Vacuum(in Hg):
 Flow Controller Type:
 Flow Controller Calibration
 RPD Pre and Post-Sampling:

EPA TO-14A

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	ND	0.10		ND	0.43	2	1/25/17	17:53	TPH
Surrogates	% Recovery			% REC Limits					
4-Bromofluorobenzene (1)		107			70-130		1/25/17	17:53	

ANALYTICAL RESULTS

Project Location: Springfield Street Schools
 Date Received: 1/20/2017
Field Sample #: ES1
Sample ID: 17A0937-02
 Sample Matrix: Air
 Sampled: 1/19/2017 10:36

Sample Description/Location:
 Sub Description/Location:
 Canister ID:
 Canister Size:
 Flow Controller ID:
 Sample Type:

Work Order: 17A0937
 Initial Vacuum(in Hg):
 Final Vacuum(in Hg):
 Receipt Vacuum(in Hg):
 Flow Controller Type:
 Flow Controller Calibration
 RPD Pre and Post-Sampling:

EPA TO-14A

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analized		
Benzene	0.16	0.10		0.51	0.32	2	1/25/17 18:31	TPH	
Bromomethane	ND	0.10		ND	0.39	2	1/25/17 18:31	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	1/25/17 18:31	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	1/25/17 18:31	TPH	
Chloroethane	ND	0.10		ND	0.26	2	1/25/17 18:31	TPH	
Chloroform	0.20	0.10		0.96	0.49	2	1/25/17 18:31	TPH	
Chloromethane	ND	0.20		ND	0.41	2	1/25/17 18:31	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	1/25/17 18:31	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	1/25/17 18:31	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	1/25/17 18:31	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	1/25/17 18:31	TPH	
Dichlorodifluoromethane (Freon 12)	1.1	0.10		5.4	0.49	2	1/25/17 18:31	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	1/25/17 18:31	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	1/25/17 18:31	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	1/25/17 18:31	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	1/25/17 18:31	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	1/25/17 18:31	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	1/25/17 18:31	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	1/25/17 18:31	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	0.39	0.10		2.7	0.70	2	1/25/17 18:31	TPH	
Ethylbenzene	ND	0.10		ND	0.43	2	1/25/17 18:31	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	1/25/17 18:31	TPH	
Methylene Chloride	ND	1.0		ND	3.5	2	1/25/17 18:31	TPH	
Styrene	0.72	0.10		3.1	0.43	2	1/25/17 18:31	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	1/25/17 18:31	TPH	
Tetrachloroethylene	2.9	0.10		20	0.68	2	1/25/17 18:31	TPH	
Toluene	1.8	0.10		6.6	0.38	2	1/25/17 18:31	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	1/25/17 18:31	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	1/25/17 18:31	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	1/25/17 18:31	TPH	
Trichloroethylene	0.40	0.10		2.1	0.54	2	1/25/17 18:31	TPH	
Trichlorofluoromethane (Freon 11)	0.38	0.10		2.1	0.56	2	1/25/17 18:31	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	1/25/17 18:31	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	1/25/17 18:31	TPH	
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	1/25/17 18:31	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	1/25/17 18:31	TPH	
m&p-Xylene	0.26	0.20		1.1	0.87	2	1/25/17 18:31	TPH	

ANALYTICAL RESULTS

Project Location: Springfield Street Schools
 Date Received: 1/20/2017
Field Sample #: ES1
Sample ID: 17A0937-02
 Sample Matrix: Air
 Sampled: 1/19/2017 10:36

Sample Description/Location:
 Sub Description/Location:
 Canister ID:
 Canister Size:
 Flow Controller ID:
 Sample Type:

Work Order: 17A0937
 Initial Vacuum(in Hg):
 Final Vacuum(in Hg):
 Receipt Vacuum(in Hg):
 Flow Controller Type:
 Flow Controller Calibration
 RPD Pre and Post-Sampling:

EPA TO-14A

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	ND	0.10		ND	0.43	2	1/25/17 18:31		TPH
Surrogates	% Recovery			% REC Limits					
4-Bromofluorobenzene (1)		109			70-130		1/25/17 18:31		

ANALYTICAL RESULTS

Project Location: Springfield Street Schools
 Date Received: 1/20/2017
Field Sample #: ES2
Sample ID: 17A0937-03
 Sample Matrix: Air
 Sampled: 1/19/2017 10:42

Sample Description/Location:
 Sub Description/Location:
 Canister ID:
 Canister Size:
 Flow Controller ID:
 Sample Type:

Work Order: 17A0937
 Initial Vacuum(in Hg):
 Final Vacuum(in Hg):
 Receipt Vacuum(in Hg):
 Flow Controller Type:
 Flow Controller Calibration
 RPD Pre and Post-Sampling:

EPA TO-14A

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analized		
Benzene	0.19	0.10		0.61	0.32	2	1/26/17 10:32	TPH	
Bromomethane	ND	0.10		ND	0.39	2	1/26/17 10:32	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	1/26/17 10:32	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	1/26/17 10:32	TPH	
Chloroethane	ND	0.10		ND	0.26	2	1/26/17 10:32	TPH	
Chloroform	0.22	0.10		1.1	0.49	2	1/26/17 10:32	TPH	
Chloromethane	ND	0.20		ND	0.41	2	1/26/17 10:32	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	1/26/17 10:32	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	1/26/17 10:32	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	1/26/17 10:32	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	1/26/17 10:32	TPH	
Dichlorodifluoromethane (Freon 12)	0.97	0.10		4.8	0.49	2	1/26/17 10:32	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	1/26/17 10:32	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	1/26/17 10:32	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	1/26/17 10:32	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	1/26/17 10:32	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	1/26/17 10:32	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	1/26/17 10:32	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	1/26/17 10:32	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	0.21	0.10		1.4	0.70	2	1/26/17 10:32	TPH	
Ethylbenzene	1.0	0.10		4.4	0.43	2	1/26/17 10:32	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	1/26/17 10:32	TPH	
Methylene Chloride	ND	1.0		ND	3.5	2	1/26/17 10:32	TPH	
Styrene	0.85	0.10		3.6	0.43	2	1/26/17 10:32	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	1/26/17 10:32	TPH	
Tetrachloroethylene	0.83	0.10		5.6	0.68	2	1/26/17 10:32	TPH	
Toluene	2.1	0.10		8.1	0.38	2	1/26/17 10:32	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	1/26/17 10:32	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	1/26/17 10:32	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	1/26/17 10:32	TPH	
Trichloroethylene	ND	0.10		ND	0.54	2	1/26/17 10:32	TPH	
Trichlorofluoromethane (Freon 11)	0.33	0.10		1.9	0.56	2	1/26/17 10:32	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	1/26/17 10:32	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	1/26/17 10:32	TPH	
1,3,5-Trimethylbenzene	1.0	0.10		5.1	0.49	2	1/26/17 10:32	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	1/26/17 10:32	TPH	
m&p-Xylene	4.7	0.20		20	0.87	2	1/26/17 10:32	TPH	

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ANALYTICAL RESULTS

Project Location: Springfield Street Schools
 Date Received: 1/20/2017
Field Sample #: ES2
Sample ID: 17A0937-03
 Sample Matrix: Air
 Sampled: 1/19/2017 10:42

Sample Description/Location:
 Sub Description/Location:
 Canister ID:
 Canister Size:
 Flow Controller ID:
 Sample Type:

Work Order: 17A0937
 Initial Vacuum(in Hg):
 Final Vacuum(in Hg):
 Receipt Vacuum(in Hg):
 Flow Controller Type:
 Flow Controller Calibration
 RPD Pre and Post-Sampling:

EPA TO-14A

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	1.8	0.10		7.9	0.43	2	1/26/17	10:32	TPH
Surrogates	% Recovery			% REC Limits					
4-Bromofluorobenzene (1)		109			70-130		1/26/17	10:32	

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Sample Extraction Data

Prep Method: TO-15 Prep-EPA TO-14A

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
17A0937-01 [MS Front]	B168981	1	1	N/A	1000	400	200	01/25/17
17A0937-02 [ES1]	B168981	1	1	N/A	1000	400	200	01/25/17
17A0937-03 [ES2]	B168981	1	1	N/A	1000	400	200	01/25/17

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv		ug/m3		Spike Level	Source	%REC	%REC	RPD	RPD	Flag/Qual
	Results	RL	Results	RL	ppbv	Result	%REC	Limits	RPD	Limit	
Batch B168981 - TO-15 Prep											
Blank (B168981-BLK1)											
						Prepared & Analyzed: 01/25/17					
Benzene	ND	0.035									
Bromomethane	ND	0.035									
Carbon Tetrachloride	ND	0.035									
Chlorobenzene	ND	0.035									
Chloroethane	ND	0.035									
Chloroform	ND	0.035									
Chloromethane	ND	0.070									
1,2-Dibromoethane (EDB)	ND	0.035									
1,2-Dichlorobenzene	ND	0.035									
1,3-Dichlorobenzene	ND	0.035									
1,4-Dichlorobenzene	ND	0.035									
Dichlorodifluoromethane (Freon 12)	ND	0.035									
1,1-Dichloroethane	ND	0.035									
1,2-Dichloroethane	ND	0.035									
1,1-Dichloroethylene	ND	0.035									
cis-1,2-Dichloroethylene	ND	0.035									
1,2-Dichloropropane	ND	0.035									
cis-1,3-Dichloropropene	ND	0.035									
trans-1,3-Dichloropropene	ND	0.035									
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.035									
Ethylbenzene	ND	0.035									
Hexachlorobutadiene	ND	0.035									
Methylene Chloride	ND	0.35									
Styrene	ND	0.035									
1,1,1,2-Tetrachloroethane	ND	0.035									
Tetrachloroethylene	ND	0.035									
Toluene	ND	0.035									
1,2,4-Trichlorobenzene	ND	0.035									
1,1,1-Trichloroethane	ND	0.035									
1,1,2-Trichloroethane	ND	0.035									
Trichloroethylene	ND	0.035									
Trichlorofluoromethane (Freon 11)	ND	0.035									
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.035									
1,2,4-Trimethylbenzene	ND	0.035									
1,3,5-Trimethylbenzene	ND	0.035									
Vinyl Chloride	ND	0.035									
m&p-Xylene	ND	0.070									
o-Xylene	ND	0.035									
Surrogate: 4-Bromofluorobenzene (1)	8.44				8.00		106	70-130			

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv		ug/m3		Spike Level	Source	%REC	%REC	RPD	RPD	Flag/Qual
	Results	RL	Results	RL	ppbv	Result	Limits	RPD	Limit		
Batch B168981 - TO-15 Prep											
LCS (B168981-BS1)											
Prepared & Analyzed: 01/25/17											
Benzene	4.86				5.00		97.2	55.6-131			
Bromomethane	5.42				5.00		108	29.2-163			
Carbon Tetrachloride	5.38				5.00		108	70.9-128			
Chlorobenzene	5.47				5.00		109	67.8-126			
Chloroethane	4.87				5.00		97.4	49.5-146			
Chloroform	5.66				5.00		113	65-133			
Chloromethane	4.73				5.00		94.6	55.1-139			
1,2-Dibromoethane (EDB)	5.33				5.00		107	76.8-121			
1,2-Dichlorobenzene	4.81				5.00		96.3	79.6-141			
1,3-Dichlorobenzene	5.22				5.00		104	76.2-147			
1,4-Dichlorobenzene	4.99				5.00		99.8	73.6-147			
Dichlorodifluoromethane (Freon 12)	6.11				5.00		122	40.6-164			
1,1-Dichloroethane	5.25				5.00		105	67.7-119			
1,2-Dichloroethane	5.72				5.00		114	69.8-121			
1,1-Dichloroethylene	4.89				5.00		97.7	72.9-121			
cis-1,2-Dichloroethylene	5.29				5.00		106	66.2-119			
1,2-Dichloropropane	4.41				5.00		88.3	49.8-131			
cis-1,3-Dichloropropene	5.03				5.00		101	59.9-138			
trans-1,3-Dichloropropene	5.02				5.00		100	60.6-130			
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	5.05				5.00		101	36.3-154			
Ethylbenzene	4.94				5.00		98.9	73.3-137			
Hexachlorobutadiene	6.35				5.00		127	68.1-180			
Methylene Chloride	4.06				5.00		81.2	73.7-115			
Styrene	5.24				5.00		105	58.2-141			
1,1,2,2-Tetrachloroethane	4.67				5.00		93.3	70.2-141			
Tetrachloroethylene	5.80				5.00		116	62.6-135			
Toluene	5.57				5.00		111	74.9-124			
1,2,4-Trichlorobenzene	5.92				5.00		118	62.9-176			
1,1,1-Trichloroethane	4.88				5.00		97.6	62-128			
1,1,2-Trichloroethane	5.13				5.00		103	76.3-120			
Trichloroethylene	4.91				5.00		98.2	68.4-122			
Trichlorofluoromethane (Freon 11)	6.17				5.00		123	56.8-154			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	5.96				5.00		119	62.7-147			
1,2,4-Trimethylbenzene	4.52				5.00		90.4	75.7-137			
1,3,5-Trimethylbenzene	4.64				5.00		92.7	74-134			
Vinyl Chloride	4.92				5.00		98.4	53.7-137			
m&p-Xylene	10.2				10.0		102	78.8-139			
o-Xylene	4.95				5.00		99.1	70.4-140			
<i>Surrogate: 4-Bromofluorobenzene (1)</i>	8.68				8.00		108	70-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>EPA TO-14A in Air</i>	
Benzene	AIHA,FL,NY
Bromomethane	AIHA,FL,NY
Carbon Tetrachloride	AIHA,FL,NY
Chlorobenzene	AIHA,FL,NY
Chloroethane	AIHA,FL,NY
Chloroform	AIHA,FL,NY
Chloromethane	AIHA,FL,NY
1,2-Dibromoethane (EDB)	NY
1,2-Dichlorobenzene	AIHA,FL,NY
1,3-Dichlorobenzene	AIHA,FL,NY
1,4-Dichlorobenzene	AIHA,FL,NY
Dichlorodifluoromethane (Freon 12)	AIHA,FL,NY
1,1-Dichloroethane	AIHA,FL,NY
1,2-Dichloroethane	AIHA,FL,NY
1,1-Dichloroethylene	AIHA,FL,NY
cis-1,2-Dichloroethylene	AIHA,FL,NY
1,2-Dichloropropane	AIHA,FL,NY
cis-1,3-Dichloropropene	AIHA,FL,NY
trans-1,3-Dichloropropene	NY
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	AIHA,FL,NY
Ethylbenzene	AIHA,FL,NY
Hexachlorobutadiene	AIHA,FL,NY
Methylene Chloride	AIHA,FL,NY
Styrene	AIHA,FL,NY
1,1,2,2-Tetrachloroethane	AIHA,FL,NY
Tetrachloroethylene	AIHA,FL,NY
Toluene	AIHA,FL,NY
1,2,4-Trichlorobenzene	AIHA,FL,NY
1,1,1-Trichloroethane	AIHA,FL,NY
1,1,2-Trichloroethane	AIHA,FL,NY
Trichloroethylene	AIHA,FL,NY
Trichlorofluoromethane (Freon 11)	AIHA,FL,NY
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NY
1,2,4-Trimethylbenzene	AIHA,FL,NY
1,3,5-Trimethylbenzene	AIHA,FL,NY
Vinyl Chloride	AIHA,FL,NY
m&p-Xylene	AIHA,FL,NY
o-Xylene	AIHA,FL,NY

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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2017
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017

Client / Reporting Information					Project Information					Requested Analysis (see TEST CODE sheet)				
Company Name: ARCADIS Street Address: 300 Metro Center Blvd City: Warwick RI State: RI Zip: 02886 Project Contact: Deanna Pallister Phone #: 401-285-2235 Email: dpallister@arcadis.com Fax #: 401-285-2235 Client PO#: _____					Project Name: Springfield Street Schools Street: Springfield St City: Providence RI Project #: _____ Client PO#: _____ Billing Information (If different from Report to): Company Name: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Attention: _____ PO#: _____					Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank				
Approved By: (Accutest PM) / Date: _____ / _____					Data Deliverable Information <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> CT RCP <input type="checkbox"/> MA MCP Commercial "A" = Results Only Commercial "B" = Results + QC Summary					Comments / Special Instructions				
Accutest Sample #	Field ID / Point of Collection	MECH/DI Vial #	Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles					LAB USE ONLY	
								HSO3	HNO3	NOH	DI Water	MEOH		ENCORF
01	MS Front		11/17/17	1000	JAL	AIR	1	1						
02	ESI		"	1036	"	AIR	1	1						
03	ESZ		"	1042	"	AIR	1	1						
JAL														
Turnaround Time (Business days) <input checked="" type="checkbox"/> Std. 3 Business Days - SIP <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink														
Requisitioned by Sampler: Jonathan Lewis Date Time: 11/17/17 9:40 Requisitioned by: _____ Date Time: _____ Relinquished by: _____ Date Time: _____ Relinquished by: _____ Date Time: _____													Received By: _____ Date Time: _____ Relinquished By: _____ Date Time: _____ Relinquished by: _____ Date Time: _____	
Sample Custody must be documented below each time samples change possession, including courier delivery. Received By: _____ Date Time: 11/17/17 9:44 Relinquished By: _____ Date Time: 11/17/17 9:44 Received By: _____ Date Time: _____ Relinquished By: _____ Date Time: _____ Received By: _____ Date Time: _____ Relinquished By: _____ Date Time: _____													Received By: Paul Date Time: 3.30 Relinquished By: _____ Date Time: _____ Received By: _____ Date Time: _____	
Emergency & Rush T/A data available VIA Lablink														
Relinquished by: _____ Date Time: _____ Relinquished by: _____ Date Time: _____ Relinquished by: _____ Date Time: _____													Relinquished by: _____ Date Time: _____ Relinquished by: _____ Date Time: _____ Relinquished by: _____ Date Time: _____	



39 Spruce St.
 East Longmeadow, MA.
 01028
 P: 413-525-2332
 F: 413-525-6405

AIR Only Receipt Checklist

CLIENT NAME Arcadis RECEIVED BY: PB DATE: 1-30-17

- 1) Was the chain(s) of custody relinquished and signed? Yes No
- 2) Does the chain agree with the samples? Yes No
 If not, explain: _____
- 3) Are all the samples in good condition? Yes No
 If not, explain: _____
- 4) Are there any samples "On Hold"? Yes No Stored where:
- 5) Are there any RUSH or SHORT HOLDING TIME samples? Yes No
 Who was notified _____ Date _____ Time _____

6) Location where samples are stored: Permission to subcontract samples? Yes No
 (Walk-in clients only) if not already approved
 Client Signature: _____

7) Number of cans Individually Certified or Batch Certified? NONE

Containers received at Con-Test		
	# of Containers	Types (Size, Duration)
Summa Cans (TO-14/TO-15/APH)	3	
Tediar Bags		
TO-17 Tubes		
Regulators		
Restrictors		
Hg/Hopcalite Tube (NIOSH 6009)		
(TO-4A/ TO-10A/TO-13) PUFs		
PCB Florisil Tubes (NIOSH 5503)		
Air cassette		
PM 2.5/PM 10		
TO-11A Cartridges		
Other		

Unused Summas/PUF Media:

Unused Regulators:

- 1) Was all media (used & unused) checked into the WASP?
- 2) Were all returned summa cans, Restrictors & Regulators and PUF's documented as returned in the Air Lab Inbound/Outbound Excel Spreadsheet?

Laboratory Comments:																				

Page 2 of 2

Login Sample Receipt Checklist
(Rejection Criteria Listing - Using Sample Acceptance Policy)
Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>		<u>Comment</u>
	<u>T/F/NA</u>		
1) The coolers'/boxes' custody seal, if present, is intact.	NA		
2) The cooler or samples do not appear to have been compromised or tampered with.	T		
3) Samples were received on ice.	NA		
4) Cooler Temperature is acceptable.	NA		
5) Cooler Temperature is recorded.	NA		
6) COC is filled out in ink and legible.	T		
7) COC is filled out with all pertinent information.	T		
8) Field Sampler's name present on COC.	T		
9) Samples are received within Holding Time.	T		
10) Sample containers have legible labels.	T		
11) Containers/media are not broken or leaking and valves and caps are closed tightly.	T		
12) Sample collection date/times are provided.	T		
13) Appropriate sample/media containers are used.	T		
14) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T		
15) Trip blanks provided if applicable.	NA		

Doc #278 Rev. 5 October 2014

Who notified of False statements?
 Log-In Technician Initials: PB

Date/Time:

Date/Time: 1-20-17
 15:30

January 25, 2017

Donna Pallister
Arcadis US, Inc. - Warwick, RI
300 Metro Center Blvd., Suite 250
Warwick, RI 02886

Project Location: Springfield St. Schools
Client Job Number:
Project Number: WK012152.2016
Laboratory Work Order Number: 17A0796

Enclosed are results of analyses for samples received by the laboratory on January 18, 2017. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Aaron L. Benoit", with a horizontal line extending to the right from the end of the signature.

Aaron L. Benoit
Project Manager

Table of Contents

Sample Summary	3
Case Narrative	4
Sample Results	6
17A0796-01	6
17A0796-02	8
17A0796-03	10
Sample Preparation Information	12
QC Data	13
Volatile Organic Compounds by GC/MS	13
B168393	13
Flag/Qualifier Summary	18
Certifications	19
Chain of Custody/Sample Receipt	21

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Arcadis US, Inc. - Warwick, RI
300 Metro Center Blvd., Suite 250
Warwick, RI 02886
ATTN: Donna Pallister

REPORT DATE: 1/25/2017

PURCHASE ORDER NUMBER:

PROJECT NUMBER: WK012152.2016

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 17A0796

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Springfield St. Schools

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
ATC-1	17A0796-01	Ground Water		SW-846 8260C	
MW-7	17A0796-02	Ground Water		SW-846 8260C	
TB	17A0796-03	Trip Blank Water		SW-846 8260C	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW-846 8260C

Qualifications:**L-02**

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:**Methyl Acetate**

B168393-BS1, B168393-BSD1

R-05

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:**Bromomethane**

17A0796-01[ATC-1], 17A0796-02[MW-7], 17A0796-03[TB], B168393-BLK1, B168393-BS1, B168393-BSD1

V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:**1,4-Dioxane**

17A0796-01[ATC-1], 17A0796-02[MW-7], 17A0796-03[TB], B168393-BLK1, B168393-BS1, B168393-BSD1

tert-Butyl Alcohol (TBA)

17A0796-01[ATC-1], 17A0796-02[MW-7], 17A0796-03[TB], B168393-BLK1, B168393-BS1, B168393-BSD1

V-20

Continuing calibration did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**2-Butanone (MEK)**

B168393-BS1, B168393-BSD1

Acetone

B168393-BS1, B168393-BSD1

Acrylonitrile

B168393-BS1, B168393-BSD1

Chloroethane

B168393-BS1, B168393-BSD1

tert-Butyl Alcohol (TBA)

B168393-BS1, B168393-BSD1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa A. Worthington", is written over a light gray rectangular background.

Lisa A. Worthington
Project Manager

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Springfield St. Schools

Sample Description:

Work Order: 17A0796

Date Received: 1/18/2017

Field Sample #: ATC-1

Sampled: 1/17/2017 10:30

Sample ID: 17A0796-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Acrylonitrile	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Benzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Bromodichloromethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Bromoform	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Bromomethane	ND	2.0	µg/L	1	R-05	SW-846 8260C	1/20/17	1/21/17 4:39	CMR
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
tert-Butyl Alcohol (TBA)	ND	20	µg/L	1	V-16	SW-846 8260C	1/20/17	1/21/17 4:39	CMR
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Carbon Disulfide	ND	4.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Carbon Tetrachloride	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Chloroethane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Chloroform	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Chloromethane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
cis-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Springfield St. Schools

Sample Description:

Work Order: 17A0796

Date Received: 1/18/2017

Field Sample #: ATC-1

Sampled: 1/17/2017 10:30

Sample ID: 17A0796-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Hexachlorobutadiene	ND	0.60	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Methyl Acetate	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Methyl Cyclohexane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Naphthalene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Styrene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Toluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,3,5-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
o-Xylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 4:39	CMR
Surrogates		% Recovery		Recovery Limits		Flag/Qual			
1,2-Dichloroethane-d4		100		70-130				1/21/17 4:39	
Toluene-d8		99.3		70-130				1/21/17 4:39	
4-Bromofluorobenzene		96.4		70-130				1/21/17 4:39	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Springfield St. Schools

Sample Description:

Work Order: 17A0796

Date Received: 1/18/2017

Field Sample #: MW-7

Sampled: 1/17/2017 11:30

Sample ID: 17A0796-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Acrylonitrile	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Benzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Bromodichloromethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Bromoform	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Bromomethane	ND	2.0	µg/L	1	R-05	SW-846 8260C	1/20/17	1/21/17 5:05	CMR
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
tert-Butyl Alcohol (TBA)	ND	20	µg/L	1	V-16	SW-846 8260C	1/20/17	1/21/17 5:05	CMR
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Carbon Disulfide	ND	4.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Carbon Tetrachloride	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Chloroethane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Chloroform	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Chloromethane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
cis-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Springfield St. Schools

Sample Description:

Work Order: 17A0796

Date Received: 1/18/2017

Field Sample #: MW-7

Sampled: 1/17/2017 11:30

Sample ID: 17A0796-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Hexachlorobutadiene	ND	0.60	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Methyl Acetate	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Methyl Cyclohexane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Naphthalene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Styrene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Toluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,3,5-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
o-Xylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 5:05	CMR
Surrogates		% Recovery		Recovery Limits		Flag/Qual			
1,2-Dichloroethane-d4		100		70-130				1/21/17 5:05	
Toluene-d8		100		70-130				1/21/17 5:05	
4-Bromofluorobenzene		95.1		70-130				1/21/17 5:05	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Springfield St. Schools

Sample Description:

Work Order: 17A0796

Date Received: 1/18/2017

Field Sample #: TB

Sampled: 1/17/2017 00:00

Sample ID: 17A0796-03

Sample Matrix: Trip Blank Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Acrylonitrile	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Benzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Bromobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Bromochloromethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Bromodichloromethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Bromoform	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Bromomethane	ND	2.0	µg/L	1	R-05	SW-846 8260C	1/20/17	1/21/17 2:24	CMR
2-Butanone (MEK)	ND	20	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
tert-Butyl Alcohol (TBA)	ND	20	µg/L	1	V-16	SW-846 8260C	1/20/17	1/21/17 2:24	CMR
n-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
sec-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
tert-Butylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Carbon Disulfide	ND	4.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Carbon Tetrachloride	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Chlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Chlorodibromomethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Chloroethane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Chloroform	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Chloromethane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
2-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
4-Chlorotoluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2-Dibromoethane (EDB)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Dibromomethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,3-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,4-Dichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2-Dichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
cis-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
trans-1,2-Dichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,3-Dichloropropane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
2,2-Dichloropropane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1-Dichloropropene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
cis-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
trans-1,3-Dichloropropene	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Diethyl Ether	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Springfield St. Schools

Sample Description:

Work Order: 17A0796

Date Received: 1/18/2017

Field Sample #: TB

Sampled: 1/17/2017 00:00

Sample ID: 17A0796-03

Sample Matrix: Trip Blank Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,4-Dioxane	ND	50	µg/L	1	V-16	SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Ethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Hexachlorobutadiene	ND	0.60	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
2-Hexanone (MBK)	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Isopropylbenzene (Cumene)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Methyl Acetate	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Methyl Cyclohexane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Methylene Chloride	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Naphthalene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
n-Propylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Styrene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Tetrachloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Tetrahydrofuran	ND	10	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Toluene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,3,5-Trichlorobenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1,1-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1,2-Trichloroethane	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Trichloroethylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2,3-Trichloropropane	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Vinyl Chloride	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
m+p Xylene	ND	2.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
o-Xylene	ND	1.0	µg/L	1		SW-846 8260C	1/20/17	1/21/17 2:24	CMR
Surrogates		% Recovery	Recovery Limits		Flag/Qual				
1,2-Dichloroethane-d4		101	70-130					1/21/17 2:24	
Toluene-d8		100	70-130					1/21/17 2:24	
4-Bromofluorobenzene		98.3	70-130					1/21/17 2:24	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 5030B-SW-846 8260C

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
17A0796-01 [ATC-1]	B168393	5	5.00	01/20/17
17A0796-02 [MW-7]	B168393	5	5.00	01/20/17
17A0796-03 [TB]	B168393	5	5.00	01/20/17

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B168393 - SW-846 5030B

Blank (B168393-BLK1)

Prepared: 01/20/17 Analyzed: 01/21/17

Acetone	ND	50	µg/L							
Acrylonitrile	ND	5.0	µg/L							
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L							
Benzene	ND	1.0	µg/L							
Bromobenzene	ND	1.0	µg/L							
Bromochloromethane	ND	1.0	µg/L							
Bromodichloromethane	ND	0.50	µg/L							
Bromoform	ND	1.0	µg/L							
Bromomethane	ND	2.0	µg/L							R-05
2-Butanone (MEK)	ND	20	µg/L							
tert-Butyl Alcohol (TBA)	ND	20	µg/L							V-16
n-Butylbenzene	ND	1.0	µg/L							
sec-Butylbenzene	ND	1.0	µg/L							
tert-Butylbenzene	ND	1.0	µg/L							
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L							
Carbon Disulfide	ND	4.0	µg/L							
Carbon Tetrachloride	ND	5.0	µg/L							
Chlorobenzene	ND	1.0	µg/L							
Chlorodibromomethane	ND	0.50	µg/L							
Chloroethane	ND	2.0	µg/L							
Chloroform	ND	2.0	µg/L							
Chloromethane	ND	2.0	µg/L							
2-Chlorotoluene	ND	1.0	µg/L							
4-Chlorotoluene	ND	1.0	µg/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L							
1,2-Dibromoethane (EDB)	ND	0.50	µg/L							
Dibromomethane	ND	1.0	µg/L							
1,2-Dichlorobenzene	ND	1.0	µg/L							
1,3-Dichlorobenzene	ND	1.0	µg/L							
1,4-Dichlorobenzene	ND	1.0	µg/L							
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L							
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L							
1,1-Dichloroethane	ND	1.0	µg/L							
1,2-Dichloroethane	ND	1.0	µg/L							
1,1-Dichloroethylene	ND	1.0	µg/L							
cis-1,2-Dichloroethylene	ND	1.0	µg/L							
trans-1,2-Dichloroethylene	ND	1.0	µg/L							
1,2-Dichloropropane	ND	1.0	µg/L							
1,3-Dichloropropane	ND	0.50	µg/L							
2,2-Dichloropropane	ND	1.0	µg/L							
1,1-Dichloropropene	ND	2.0	µg/L							
cis-1,3-Dichloropropene	ND	0.50	µg/L							
trans-1,3-Dichloropropene	ND	0.50	µg/L							
Diethyl Ether	ND	2.0	µg/L							
Diisopropyl Ether (DIPE)	ND	0.50	µg/L							
1,4-Dioxane	ND	50	µg/L							V-16
Ethylbenzene	ND	1.0	µg/L							
Hexachlorobutadiene	ND	0.60	µg/L							
2-Hexanone (MBK)	ND	10	µg/L							
Isopropylbenzene (Cumene)	ND	1.0	µg/L							
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L							
Methyl Acetate	ND	1.0	µg/L							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B168393 - SW-846 5030B

Blank (B168393-BLK1)

Prepared: 01/20/17 Analyzed: 01/21/17

Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
Methyl Cyclohexane	ND	1.0	µg/L							
Methylene Chloride	ND	5.0	µg/L							
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L							
Naphthalene	ND	2.0	µg/L							
n-Propylbenzene	ND	1.0	µg/L							
Styrene	ND	1.0	µg/L							
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L							
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L							
Tetrachloroethylene	ND	1.0	µg/L							
Tetrahydrofuran	ND	10	µg/L							
Toluene	ND	1.0	µg/L							
1,2,3-Trichlorobenzene	ND	5.0	µg/L							
1,2,4-Trichlorobenzene	ND	1.0	µg/L							
1,3,5-Trichlorobenzene	ND	1.0	µg/L							
1,1,1-Trichloroethane	ND	1.0	µg/L							
1,1,2-Trichloroethane	ND	1.0	µg/L							
Trichloroethylene	ND	1.0	µg/L							
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L							
1,2,3-Trichloropropane	ND	2.0	µg/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
1,3,5-Trimethylbenzene	ND	1.0	µg/L							
Vinyl Chloride	ND	2.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 1,2-Dichloroethane-d4	25.2		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	24.9		µg/L	25.0		99.4	70-130			
Surrogate: 4-Bromofluorobenzene	24.0		µg/L	25.0		96.2	70-130			

LCS (B168393-BS1)

Prepared: 01/20/17 Analyzed: 01/21/17

Acetone	126	50	µg/L	100		126	70-160			V-20 †
Acrylonitrile	12.2	5.0	µg/L	10.0		122	70-130			V-20
tert-Amyl Methyl Ether (TAME)	8.19	0.50	µg/L	10.0		81.9	70-130			
Benzene	9.75	1.0	µg/L	10.0		97.5	70-130			
Bromobenzene	9.79	1.0	µg/L	10.0		97.9	70-130			
Bromochloromethane	10.3	1.0	µg/L	10.0		103	70-130			
Bromodichloromethane	9.20	0.50	µg/L	10.0		92.0	70-130			
Bromoform	8.89	1.0	µg/L	10.0		88.9	70-130			
Bromomethane	4.30	2.0	µg/L	10.0		43.0	40-160			R-05 †
2-Butanone (MEK)	125	20	µg/L	100		125	40-160			V-20 †
tert-Butyl Alcohol (TBA)	140	20	µg/L	100		140	40-160			V-16, V-20 †
n-Butylbenzene	9.78	1.0	µg/L	10.0		97.8	70-130			
sec-Butylbenzene	10.2	1.0	µg/L	10.0		102	70-130			
tert-Butylbenzene	10.2	1.0	µg/L	10.0		102	70-130			
tert-Butyl Ethyl Ether (TBEE)	8.65	0.50	µg/L	10.0		86.5	70-130			
Carbon Disulfide	11.0	4.0	µg/L	10.0		110	70-130			
Carbon Tetrachloride	8.72	5.0	µg/L	10.0		87.2	70-130			
Chlorobenzene	10.4	1.0	µg/L	10.0		104	70-130			
Chlorodibromomethane	8.61	0.50	µg/L	10.0		86.1	70-130			
Chloroethane	10.9	2.0	µg/L	10.0		109	70-130			V-20
Chloroform	9.60	2.0	µg/L	10.0		96.0	70-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B168393 - SW-846 5030B										
LCS (B168393-BS1)										
					Prepared: 01/20/17 Analyzed: 01/21/17					
Chloromethane	4.65	2.0	µg/L	10.0		46.5	40-160			†
2-Chlorotoluene	9.71	1.0	µg/L	10.0		97.1	70-130			
4-Chlorotoluene	9.87	1.0	µg/L	10.0		98.7	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	9.34	5.0	µg/L	10.0		93.4	70-130			
1,2-Dibromoethane (EDB)	9.70	0.50	µg/L	10.0		97.0	70-130			
Dibromomethane	10.1	1.0	µg/L	10.0		101	70-130			
1,2-Dichlorobenzene	10.2	1.0	µg/L	10.0		102	70-130			
1,3-Dichlorobenzene	10.3	1.0	µg/L	10.0		103	70-130			
1,4-Dichlorobenzene	9.85	1.0	µg/L	10.0		98.5	70-130			
trans-1,4-Dichloro-2-butene	8.92	2.0	µg/L	10.0		89.2	70-130			
Dichlorodifluoromethane (Freon 12)	4.44	2.0	µg/L	10.0		44.4	40-160			†
1,1-Dichloroethane	9.84	1.0	µg/L	10.0		98.4	70-130			
1,2-Dichloroethane	9.46	1.0	µg/L	10.0		94.6	70-130			
1,1-Dichloroethylene	10.6	1.0	µg/L	10.0		106	70-130			
cis-1,2-Dichloroethylene	9.20	1.0	µg/L	10.0		92.0	70-130			
trans-1,2-Dichloroethylene	10.8	1.0	µg/L	10.0		108	70-130			
1,2-Dichloropropane	9.66	1.0	µg/L	10.0		96.6	70-130			
1,3-Dichloropropane	9.35	0.50	µg/L	10.0		93.5	70-130			
2,2-Dichloropropane	7.30	1.0	µg/L	10.0		73.0	40-130			†
1,1-Dichloropropene	9.53	2.0	µg/L	10.0		95.3	70-130			
cis-1,3-Dichloropropene	7.68	0.50	µg/L	10.0		76.8	70-130			
trans-1,3-Dichloropropene	7.69	0.50	µg/L	10.0		76.9	70-130			
Diethyl Ether	10.4	2.0	µg/L	10.0		104	70-130			
Diisopropyl Ether (DIPE)	8.59	0.50	µg/L	10.0		85.9	70-130			
1,4-Dioxane	113	50	µg/L	100		113	40-130			V-16 †
Ethylbenzene	10.2	1.0	µg/L	10.0		102	70-130			
Hexachlorobutadiene	9.73	0.60	µg/L	10.0		97.3	70-130			
2-Hexanone (MBK)	107	10	µg/L	100		107	70-160			†
Isopropylbenzene (Cumene)	10.8	1.0	µg/L	10.0		108	70-130			
p-Isopropyltoluene (p-Cymene)	9.95	1.0	µg/L	10.0		99.5	70-130			
Methyl Acetate	13.8	1.0	µg/L	10.0		138 *	70-130			L-02
Methyl tert-Butyl Ether (MTBE)	9.27	1.0	µg/L	10.0		92.7	70-130			
Methyl Cyclohexane	8.88	1.0	µg/L	10.0		88.8	70-130			
Methylene Chloride	11.4	5.0	µg/L	10.0		114	70-130			
4-Methyl-2-pentanone (MIBK)	105	10	µg/L	100		105	70-160			†
Naphthalene	11.2	2.0	µg/L	10.0		112	40-130			†
n-Propylbenzene	10.2	1.0	µg/L	10.0		102	70-130			
Styrene	10.2	1.0	µg/L	10.0		102	70-130			
1,1,1,2-Tetrachloroethane	9.10	1.0	µg/L	10.0		91.0	70-130			
1,1,1,2,2-Tetrachloroethane	10.9	0.50	µg/L	10.0		109	70-130			
Tetrachloroethylene	9.76	1.0	µg/L	10.0		97.6	70-130			
Tetrahydrofuran	10.4	10	µg/L	10.0		104	70-130			
Toluene	9.83	1.0	µg/L	10.0		98.3	70-130			
1,2,3-Trichlorobenzene	10.6	5.0	µg/L	10.0		106	70-130			
1,2,4-Trichlorobenzene	9.97	1.0	µg/L	10.0		99.7	70-130			
1,3,5-Trichlorobenzene	9.18	1.0	µg/L	10.0		91.8	70-130			
1,1,1-Trichloroethane	8.80	1.0	µg/L	10.0		88.0	70-130			
1,1,2-Trichloroethane	10.1	1.0	µg/L	10.0		101	70-130			
Trichloroethylene	9.93	1.0	µg/L	10.0		99.3	70-130			
Trichlorofluoromethane (Freon 11)	9.49	2.0	µg/L	10.0		94.9	70-130			
1,2,3-Trichloropropane	10.8	2.0	µg/L	10.0		108	70-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B168393 - SW-846 5030B

LCS (B168393-BS1)

Prepared: 01/20/17 Analyzed: 01/21/17

1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	9.66	1.0	µg/L	10.0		96.6	70-130			
1,2,4-Trimethylbenzene	9.86	1.0	µg/L	10.0		98.6	70-130			
1,3,5-Trimethylbenzene	9.95	1.0	µg/L	10.0		99.5	70-130			
Vinyl Chloride	9.09	2.0	µg/L	10.0		90.9	40-160			†
m+p Xylene	20.4	2.0	µg/L	20.0		102	70-130			
o-Xylene	10.2	1.0	µg/L	10.0		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	25.1		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	24.8		µg/L	25.0		99.1	70-130			
Surrogate: 4-Bromofluorobenzene	24.3		µg/L	25.0		97.2	70-130			

LCS Dup (B168393-BSD1)

Prepared: 01/20/17 Analyzed: 01/21/17

Acetone	125	50	µg/L	100		125	70-160	0.919	25	V-20	†
Acrylonitrile	12.7	5.0	µg/L	10.0		127	70-130	3.53	25	V-20	
tert-Amyl Methyl Ether (TAME)	8.21	0.50	µg/L	10.0		82.1	70-130	0.244	25		
Benzene	9.67	1.0	µg/L	10.0		96.7	70-130	0.824	25		
Bromobenzene	9.73	1.0	µg/L	10.0		97.3	70-130	0.615	25		
Bromochloromethane	10.5	1.0	µg/L	10.0		105	70-130	1.44	25		
Bromodichloromethane	8.61	0.50	µg/L	10.0		86.1	70-130	6.63	25		
Bromoform	8.87	1.0	µg/L	10.0		88.7	70-130	0.225	25		
Bromomethane	5.86	2.0	µg/L	10.0		58.6	40-160	30.7 *	25	R-05	†
2-Butanone (MEK)	127	20	µg/L	100		127	40-160	1.60	25	V-20	†
tert-Butyl Alcohol (TBA)	142	20	µg/L	100		142	40-160	1.65	25	V-16, V-20	†
n-Butylbenzene	9.58	1.0	µg/L	10.0		95.8	70-130	2.07	25		
sec-Butylbenzene	9.97	1.0	µg/L	10.0		99.7	70-130	2.28	25		
tert-Butylbenzene	9.91	1.0	µg/L	10.0		99.1	70-130	2.39	25		
tert-Butyl Ethyl Ether (TBEE)	8.71	0.50	µg/L	10.0		87.1	70-130	0.691	25		
Carbon Disulfide	10.6	4.0	µg/L	10.0		106	70-130	3.80	25		
Carbon Tetrachloride	8.54	5.0	µg/L	10.0		85.4	70-130	2.09	25		
Chlorobenzene	10.2	1.0	µg/L	10.0		102	70-130	1.36	25		
Chlorodibromomethane	8.65	0.50	µg/L	10.0		86.5	70-130	0.463	25		
Chloroethane	11.6	2.0	µg/L	10.0		116	70-130	5.69	25	V-20	
Chloroform	9.62	2.0	µg/L	10.0		96.2	70-130	0.208	25		
Chloromethane	4.95	2.0	µg/L	10.0		49.5	40-160	6.25	25		†
2-Chlorotoluene	9.43	1.0	µg/L	10.0		94.3	70-130	2.93	25		
4-Chlorotoluene	9.69	1.0	µg/L	10.0		96.9	70-130	1.84	25		
1,2-Dibromo-3-chloropropane (DBCP)	9.68	5.0	µg/L	10.0		96.8	70-130	3.58	25		
1,2-Dibromoethane (EDB)	9.67	0.50	µg/L	10.0		96.7	70-130	0.310	25		
Dibromomethane	9.90	1.0	µg/L	10.0		99.0	70-130	2.30	25		
1,2-Dichlorobenzene	10.1	1.0	µg/L	10.0		101	70-130	0.889	25		
1,3-Dichlorobenzene	10.3	1.0	µg/L	10.0		103	70-130	0.291	25		
1,4-Dichlorobenzene	9.67	1.0	µg/L	10.0		96.7	70-130	1.84	25		
trans-1,4-Dichloro-2-butene	9.06	2.0	µg/L	10.0		90.6	70-130	1.56	25		
Dichlorodifluoromethane (Freon 12)	4.32	2.0	µg/L	10.0		43.2	40-160	2.74	25		†
1,1-Dichloroethane	9.77	1.0	µg/L	10.0		97.7	70-130	0.714	25		
1,2-Dichloroethane	9.26	1.0	µg/L	10.0		92.6	70-130	2.14	25		
1,1-Dichloroethylene	10.5	1.0	µg/L	10.0		105	70-130	1.04	25		
cis-1,2-Dichloroethylene	9.27	1.0	µg/L	10.0		92.7	70-130	0.758	25		
trans-1,2-Dichloroethylene	10.6	1.0	µg/L	10.0		106	70-130	2.06	25		
1,2-Dichloropropane	9.62	1.0	µg/L	10.0		96.2	70-130	0.415	25		
1,3-Dichloropropane	9.70	0.50	µg/L	10.0		97.0	70-130	3.67	25		
2,2-Dichloropropane	7.05	1.0	µg/L	10.0		70.5	40-130	3.48	25		†
1,1-Dichloropropene	9.43	2.0	µg/L	10.0		94.3	70-130	1.05	25		

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B168393 - SW-846 5030B										
LCS Dup (B168393-BSD1)										
					Prepared: 01/20/17 Analyzed: 01/21/17					
cis-1,3-Dichloropropene	7.83	0.50	µg/L	10.0		78.3	70-130	1.93	25	
trans-1,3-Dichloropropene	7.90	0.50	µg/L	10.0		79.0	70-130	2.69	25	
Diethyl Ether	10.5	2.0	µg/L	10.0		105	70-130	1.05	25	
Diisopropyl Ether (DIPE)	8.59	0.50	µg/L	10.0		85.9	70-130	0.00	25	
1,4-Dioxane	114	50	µg/L	100		114	40-130	0.904	50	V-16 † ‡
Ethylbenzene	10.0	1.0	µg/L	10.0		100	70-130	1.68	25	
Hexachlorobutadiene	9.74	0.60	µg/L	10.0		97.4	70-130	0.103	25	
2-Hexanone (MBK)	106	10	µg/L	100		106	70-160	0.403	25	†
Isopropylbenzene (Cumene)	10.6	1.0	µg/L	10.0		106	70-130	1.77	25	
p-Isopropyltoluene (p-Cymene)	9.78	1.0	µg/L	10.0		97.8	70-130	1.72	25	
Methyl Acetate	13.9	1.0	µg/L	10.0		139 *	70-130	1.23	25	L-02
Methyl tert-Butyl Ether (MTBE)	9.15	1.0	µg/L	10.0		91.5	70-130	1.30	25	
Methyl Cyclohexane	8.69	1.0	µg/L	10.0		86.9	70-130	2.16	25	
Methylene Chloride	11.5	5.0	µg/L	10.0		115	70-130	0.349	25	
4-Methyl-2-pentanone (MIBK)	105	10	µg/L	100		105	70-160	0.410	25	†
Naphthalene	11.3	2.0	µg/L	10.0		113	40-130	1.07	25	†
n-Propylbenzene	10.0	1.0	µg/L	10.0		100	70-130	2.27	25	
Styrene	9.87	1.0	µg/L	10.0		98.7	70-130	3.09	25	
1,1,1,2-Tetrachloroethane	8.96	1.0	µg/L	10.0		89.6	70-130	1.55	25	
1,1,2,2-Tetrachloroethane	10.8	0.50	µg/L	10.0		108	70-130	1.66	25	
Tetrachloroethylene	9.52	1.0	µg/L	10.0		95.2	70-130	2.49	25	
Tetrahydrofuran	11.2	10	µg/L	10.0		112	70-130	6.66	25	
Toluene	9.74	1.0	µg/L	10.0		97.4	70-130	0.920	25	
1,2,3-Trichlorobenzene	10.9	5.0	µg/L	10.0		109	70-130	2.90	25	
1,2,4-Trichlorobenzene	10.0	1.0	µg/L	10.0		100	70-130	0.600	25	
1,3,5-Trichlorobenzene	9.03	1.0	µg/L	10.0		90.3	70-130	1.65	25	
1,1,1-Trichloroethane	8.74	1.0	µg/L	10.0		87.4	70-130	0.684	25	
1,1,2-Trichloroethane	9.98	1.0	µg/L	10.0		99.8	70-130	1.39	25	
Trichloroethylene	9.67	1.0	µg/L	10.0		96.7	70-130	2.65	25	
Trichlorofluoromethane (Freon 11)	9.44	2.0	µg/L	10.0		94.4	70-130	0.528	25	
1,2,3-Trichloropropane	10.8	2.0	µg/L	10.0		108	70-130	0.0930	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	9.29	1.0	µg/L	10.0		92.9	70-130	3.91	25	
1,2,4-Trimethylbenzene	9.75	1.0	µg/L	10.0		97.5	70-130	1.12	25	
1,3,5-Trimethylbenzene	9.75	1.0	µg/L	10.0		97.5	70-130	2.03	25	
Vinyl Chloride	8.91	2.0	µg/L	10.0		89.1	40-160	2.00	25	†
m+p Xylene	20.0	2.0	µg/L	20.0		99.9	70-130	2.23	25	
o-Xylene	9.99	1.0	µg/L	10.0		99.9	70-130	1.59	25	
Surrogate: 1,2-Dichloroethane-d4	25.4		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	25.0		µg/L	25.0		100	70-130			
Surrogate: 4-Bromofluorobenzene	24.2		µg/L	25.0		96.8	70-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
V-20	Continuing calibration did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260C in Water</i>	
Acetone	CT,NY,ME,NH,VA
Acrylonitrile	CT,NY,ME,NH,VA
tert-Amyl Methyl Ether (TAME)	NY,ME,NH,VA
Benzene	CT,NY,ME,NH,VA
Bromochloromethane	NY,ME,NH,VA
Bromodichloromethane	CT,NY,ME,NH,VA
Bromoform	CT,NY,ME,NH,VA
Bromomethane	CT,NY,ME,NH,VA
2-Butanone (MEK)	CT,NY,ME,NH,VA
tert-Butyl Alcohol (TBA)	NY,ME,NH,VA
n-Butylbenzene	NY,ME,VA
sec-Butylbenzene	NY,ME,VA
tert-Butylbenzene	NY,ME,VA
tert-Butyl Ethyl Ether (TBEE)	NY,ME,NH,VA
Carbon Disulfide	CT,NY,ME,NH,VA
Carbon Tetrachloride	CT,NY,ME,NH,VA
Chlorobenzene	CT,NY,ME,NH,VA
Chlorodibromomethane	CT,NY,ME,NH,VA
Chloroethane	CT,NY,ME,NH,VA
Chloroform	CT,NY,ME,NH,VA
Chloromethane	CT,NY,ME,NH,VA
2-Chlorotoluene	NY,ME,NH,VA
4-Chlorotoluene	NY,ME,NH,VA
Dibromomethane	NY,ME,NH,VA
1,2-Dichlorobenzene	CT,NY,ME,NH,VA
1,3-Dichlorobenzene	CT,NY,ME,NH,VA
1,4-Dichlorobenzene	CT,NY,ME,NH,VA
trans-1,4-Dichloro-2-butene	NY,ME,NH,VA
Dichlorodifluoromethane (Freon 12)	NY,ME,NH,VA
1,1-Dichloroethane	CT,NY,ME,NH,VA
1,2-Dichloroethane	CT,NY,ME,NH,VA
1,1-Dichloroethylene	CT,NY,ME,NH,VA
cis-1,2-Dichloroethylene	NY,ME
trans-1,2-Dichloroethylene	CT,NY,ME,NH,VA
1,2-Dichloropropane	CT,NY,ME,NH,VA
1,3-Dichloropropane	NY,ME,VA
2,2-Dichloropropane	NY,ME,NH,VA
1,1-Dichloropropene	NY,ME,NH,VA
cis-1,3-Dichloropropene	CT,NY,ME,NH,VA
trans-1,3-Dichloropropene	CT,NY,ME,NH,VA
Diisopropyl Ether (DIPE)	NY,ME,NH,VA
Ethylbenzene	CT,NY,ME,NH,VA
Hexachlorobutadiene	CT,NY,ME,NH,VA
2-Hexanone (MBK)	CT,NY,ME,NH,VA
Isopropylbenzene (Cumene)	NY,ME,VA
p-Isopropyltoluene (p-Cymene)	CT,NY,ME,NH,VA
Methyl tert-Butyl Ether (MTBE)	CT,NY,ME,NH,VA

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260C in Water</i>	
Methylene Chloride	CT,NY,ME,NH,VA
4-Methyl-2-pentanone (MIBK)	CT,NY,ME,NH,VA
Naphthalene	NY,ME,NH,VA
n-Propylbenzene	CT,NY,ME,NH,VA
Styrene	CT,NY,ME,NH,VA
1,1,1,2-Tetrachloroethane	CT,NY,ME,NH,VA
1,1,2,2-Tetrachloroethane	CT,NY,ME,NH,VA
Tetrachloroethylene	CT,NY,ME,NH,VA
Toluene	CT,NY,ME,NH,VA
1,2,3-Trichlorobenzene	NY,ME,NH,VA
1,2,4-Trichlorobenzene	CT,NY,ME,NH,VA
1,3,5-Trichlorobenzene	ME
1,1,1-Trichloroethane	CT,NY,ME,NH,VA
1,1,2-Trichloroethane	CT,NY,ME,NH,VA
Trichloroethylene	CT,NY,ME,NH,VA
Trichlorofluoromethane (Freon 11)	CT,NY,ME,NH,VA
1,2,3-Trichloropropane	NY,ME,NH,VA
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NY,VA
1,2,4-Trimethylbenzene	NY,ME,VA
1,3,5-Trimethylbenzene	NY,ME,VA
Vinyl Chloride	CT,NY,ME,NH,VA
m+p Xylene	CT,NY,ME,NH,VA
o-Xylene	CT,NY,ME,NH,VA

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	02/1/2018
MA	Massachusetts DEP	M-MA100	06/30/2017
CT	Connecticut Department of Public Health	PH-0567	09/30/2017
NY	New York State Department of Health	10899 NELAP	04/1/2017
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2017
RI	Rhode Island Department of Health	LAO00112	12/30/2017
NC	North Carolina Div. of Water Quality	652	12/31/2017
NJ	New Jersey DEP	MA007 NELAP	06/30/2017
FL	Florida Department of Health	E871027 NELAP	06/30/2017
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2017
ME	State of Maine	2011028	06/9/2017
VA	Commonwealth of Virginia	460217	12/14/2017
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2017



Phone: 413-525-2332
 Fax: 413-525-6405
 Email: info@contestlabs.com
 www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
 East Longmeadow, MA 01028

Page 1 of 1

Company Name: Arcadis
 Address: 300 Metro Center Blvd.
Ste 250 Warwick, RI
 Attention: Dana Pellister
 Project Location: Springfield St. Schools Prov., RI
 Sampled By: JAN

Telephone: 401-285-2235
 Project # 11K02153.2016
 Client PO#

DATA DELIVERY (check all that apply)
 FAX EMAIL WEBSITE
 PDF EXCEL OGIS
 OTHER
 "Enhanced Data Package"

Project Proposal Provided? (for billing purposes)
 yes proposal date

Con-Test Lab ID <small>(laboratory use only)</small>	Client Sample ID / Description	Collection		Composite	Grab	Matrix Code	Canc Data
		Beginning Date/Time	Ending Date/Time				
01	ATC-1	11/17	1030	X	X	GW	
02	MU-7	11/17	1130	X	X	GW	
03	TB						

# of Containers	** Preservation	*** Container Code	ANALYSIS REQUESTED
6	2		VOC
			0928
			0928
			3
			3
			2

Disolved Metals
 Field Filtered
 Lab to Filter

*****Cont. Code:**
 A=amber glass
 G=glass
 P=plastic
 ST=sterile
 V=vial
 S=summa can
 T=tetlar bag
 O=Other

****preservation**
 I=iced
 H=HCL
 M=Methanol
 N=Nitric Acid
 S=Sulfuric Acid
 B=So dium bisulfate
 X=Na hydroxide
 T=Na thiosulfate
 O=Other

***Matrix Code:**
 GW= groundwater
 WW= wastewater
 DW= drinking water
 A= air
 S= soil/solid
 SL= sludge
 O= other

Comments:
 Please use the following codes to let Con-Test know if a specific sample may be high in concentration in Matrix/Conc. Code Box:
 H - High, M - Medium, L - Low, C - Clean, U - Unknown

Is your project MCP or RCP?

MCP Form Required
 RCP Form Required
 MA State DW Form Required PWSID # _____

Accredited
 NELAC & AIHA-LAP, LLC
 WBE/DBE Certifie

Detection Limit Requirements

Massachusetts: _____
 Connecticut: _____
 Other: _____

Turnaround

7-Day
 10-Day
 Other STP

RUSH †
 24-Hr 48-Hr
 72-Hr 14-Day
 † Require lab approval

Relinquished by: (signature) _____ Date/Time: 1:30
 Received by: (signature) _____ Date/Time: 1-18-17
 Furnished by: (signature) _____ Date/Time: 4:30
 Received by: (signature) _____ Date/Time: 3:30

TURNAROUND TIME STARTS AT 9:00 A.M. THE DAY AFTER SAMPLE RECEIPT UNLESS THERE ARE QUESTIONS ON YOUR CHAIN. IF THIS FORM IS NOT FILLED OUT COMPLETELY OR INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.

5.6 11/18/17 12:45

39 Spruce St.
 East Longmeadow, MA. 01028
 P: 413-525-2332
 F: 413-525-6405
 www.contestlabs.com



Sample Receipt Checklist

CLIENT NAME: Arcadis RECEIVED BY: EB DATE: 1/18/17

1) Was the chain(s) of custody relinquished and signed? Yes No No COC Incl.

2) Does the chain agree with the samples? Yes No
 If not, explain:

3) Are all the samples in good condition? Yes No
 If not, explain:

4) How were the samples received:

On Ice Direct from Sampling Ambient In Cooler(s)

Were the samples received in Temperature Compliance of (2-6°C)? Yes No N/A

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5.6

5) Are there Dissolved samples for the lab to filter? Yes No
 Who was notified _____ Date _____ Time _____

6) Are there any RUSH or SHORT HOLDING TIME samples? Yes No
 Who was notified _____ Date _____ Time _____

7) Location where samples are stored:

Log In

Permission to subcontract samples? Yes No
 (Walk-in clients only) if not already approved
 Client Signature: _____

8) Do all samples have the proper Acid pH: Yes No N/A

9) Do all samples have the proper Base pH: Yes No N/A

10) Was the PC notified of any discrepancies with the CoC vs the samples: Yes N/A

Containers received at Con-Test

	# of containers		# of containers
1 Liter Amber		16 oz amber	
500 mL Amber		8 oz amber/clear jar	
250 mL Amber (8oz amber)		4 oz amber/clear jar	
1 Liter Plastic		2 oz amber/clear jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		SOC Kit	
40 mL Vial - type listed below	<u>EB 7 8</u>	Perchlorate Kit	
Colisure / bacteria bottle		Flashpoint bottle	
Dissolved Oxygen bottle		Other glass jar	
Encore		Other	

40 mL vials: # HCl <u>EB 7 8</u>	# Methanol _____	Time and Date Frozen:
Doc# 277 # Bisulfate _____	# DI Water _____	
Rev. 4 August 2013 # Thiosulfate _____	Unpreserved _____	

Login Sample Receipt Checklist
(Rejection Criteria Listing - Using Sample Acceptance Policy)
Any False statement will be brought to the attention of Client

<u>Question</u>	<u>Answer (True/False)</u>		<u>Comment</u>
	T/F/NA		
1) The cooler's custody seal, if present, is intact.	N/A		
2) The cooler or samples do not appear to have been compromised or tampered with.	T		
3) Samples were received on ice.	T		
4) Cooler Temperature is acceptable.	T		
5) Cooler Temperature is recorded.	T		3.0 with gun
6) COC is filled out in ink and legible.	T		
7) COC is filled out with all pertinent information.	T		
8) Field Sampler's name present on COC.	T		
9) There are no discrepancies between the sample IDs on the container and the COC.	T		
10) Samples are received within Holding Time.	T		
11) Sample containers have legible labels.	T		
12) Containers are not broken or leaking.	T		
13) Air Cassettes are not broken/open.	N/A		
14) Sample collection date/times are provided.	T		
15) Appropriate sample containers are used.	T		
16) Proper collection media used.	T		
17) No headspace sample bottles are completely filled.	T		
18) There is sufficient volume for all requested analyses, including any requested MS/MSDs.	T		
19) Trip blanks provided if applicable.	T		
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	T		
21) Samples do not require splitting or compositing.	T		

Doc #277 Rev. 4 August 2013 Who notified of False statements?
 Log-In Technician Initials: *EB*

Date/Time:

Date/Time:

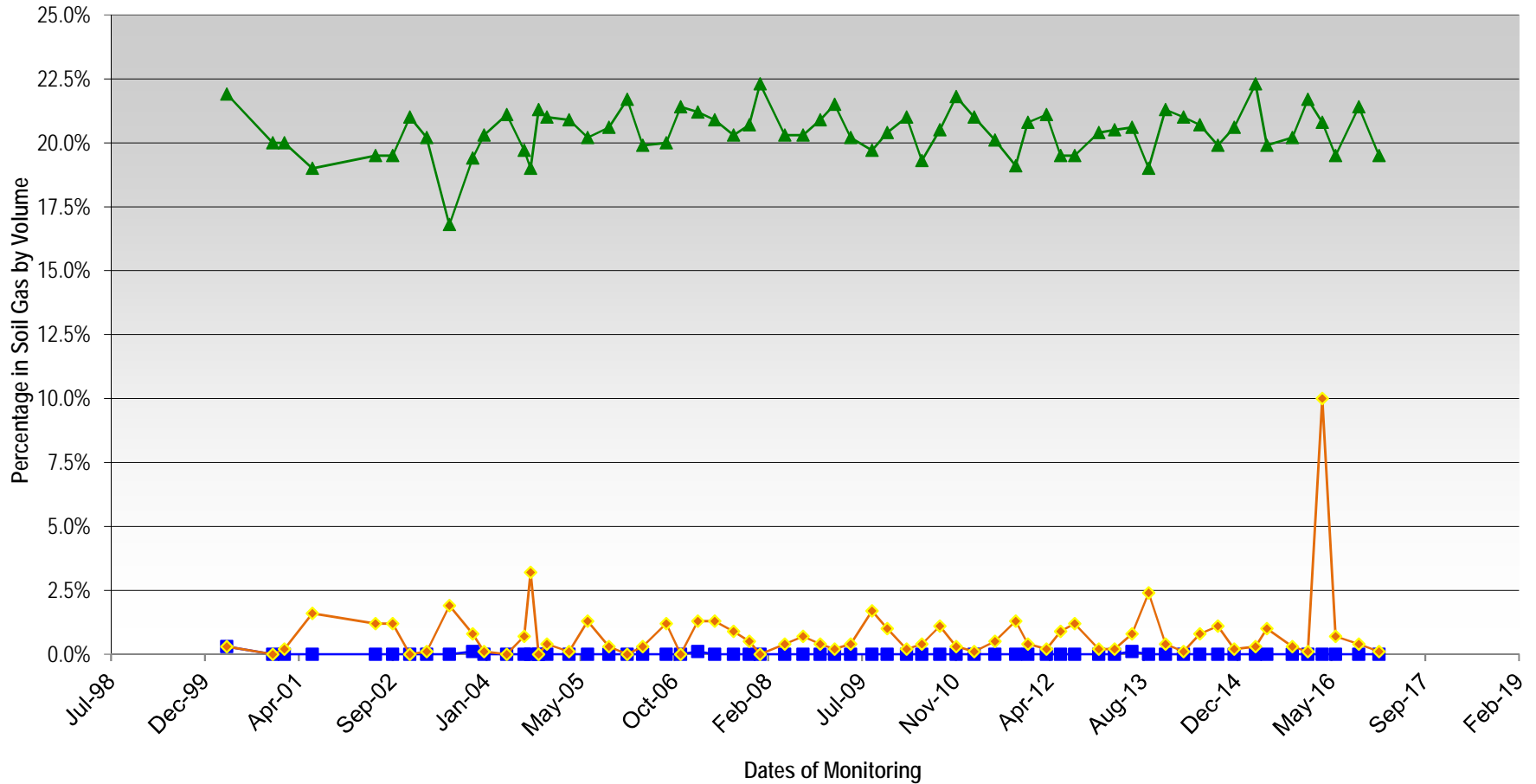
*11/18/17**16:45*

ATTACHMENT C

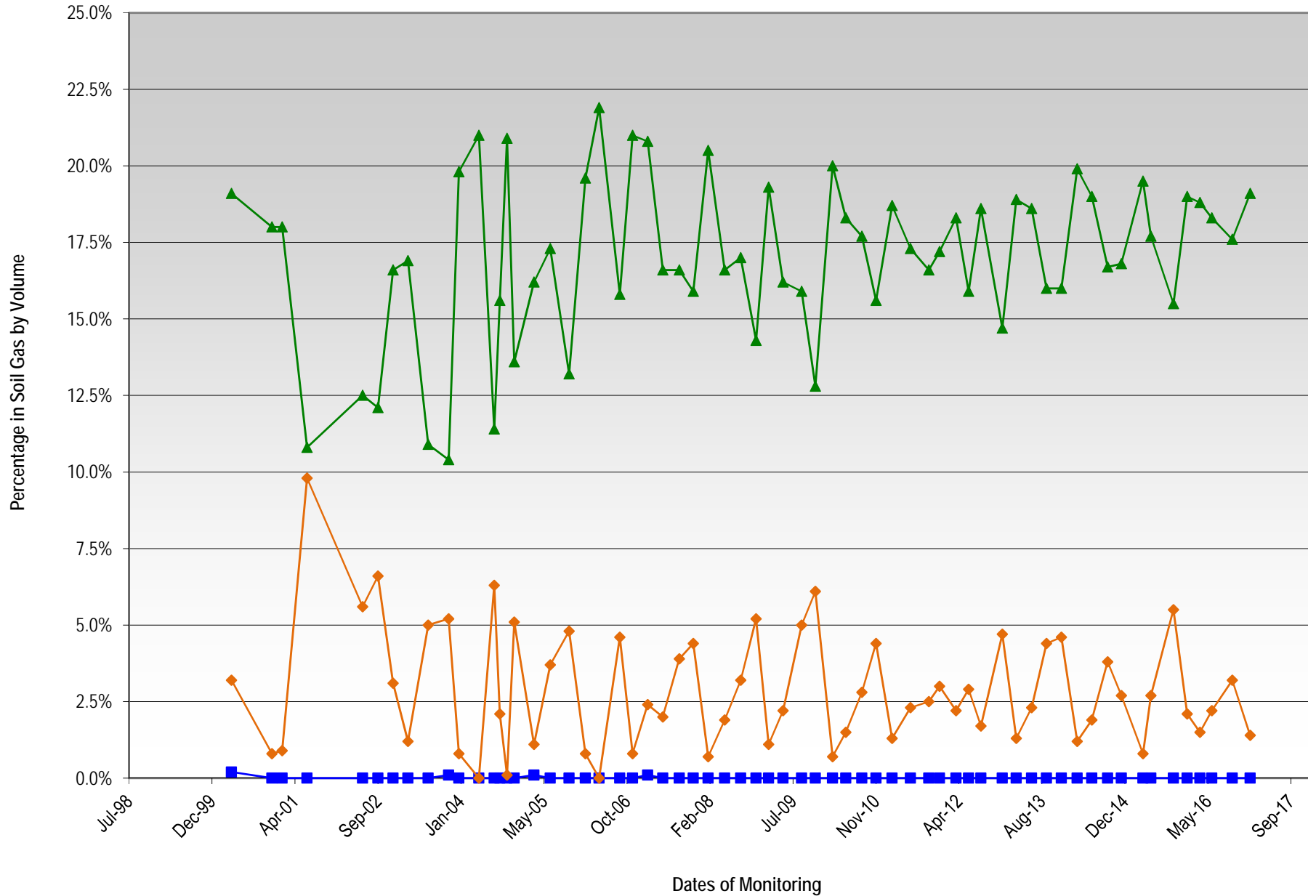
Soil Gas Trends



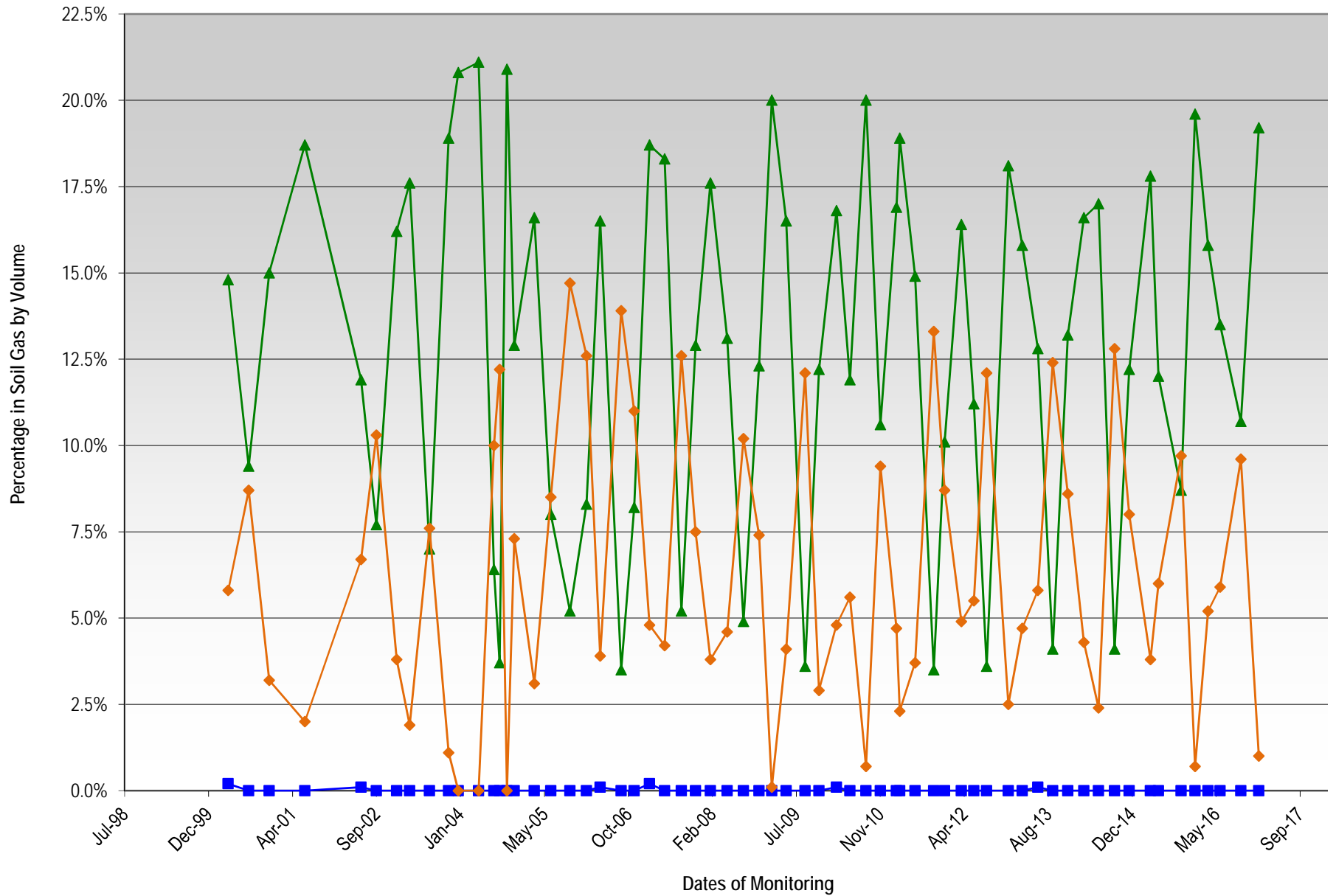
Soil Gas Well EPL1
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



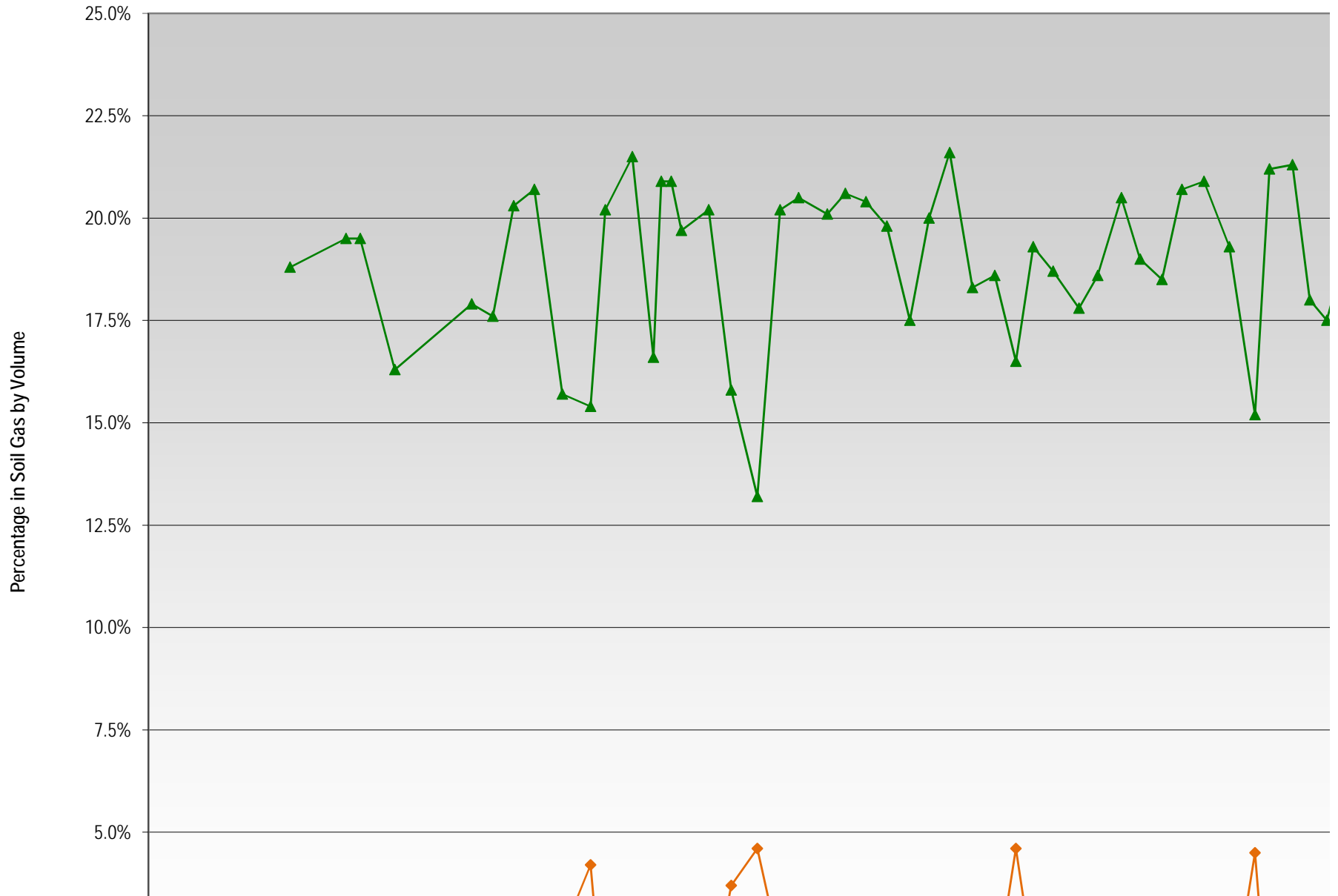
Soil Gas Well EPL4
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



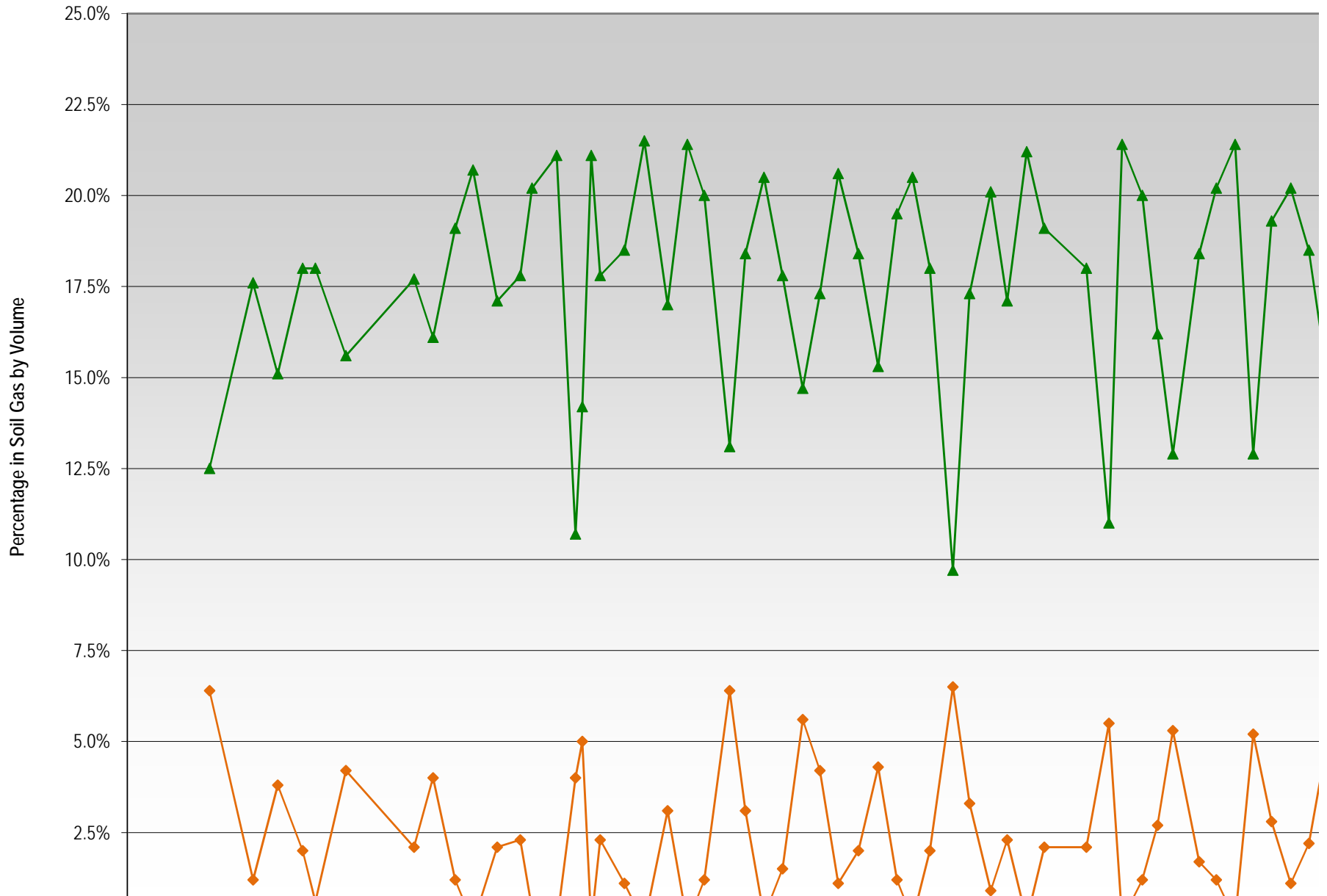
Soil Gas Well MPL5
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



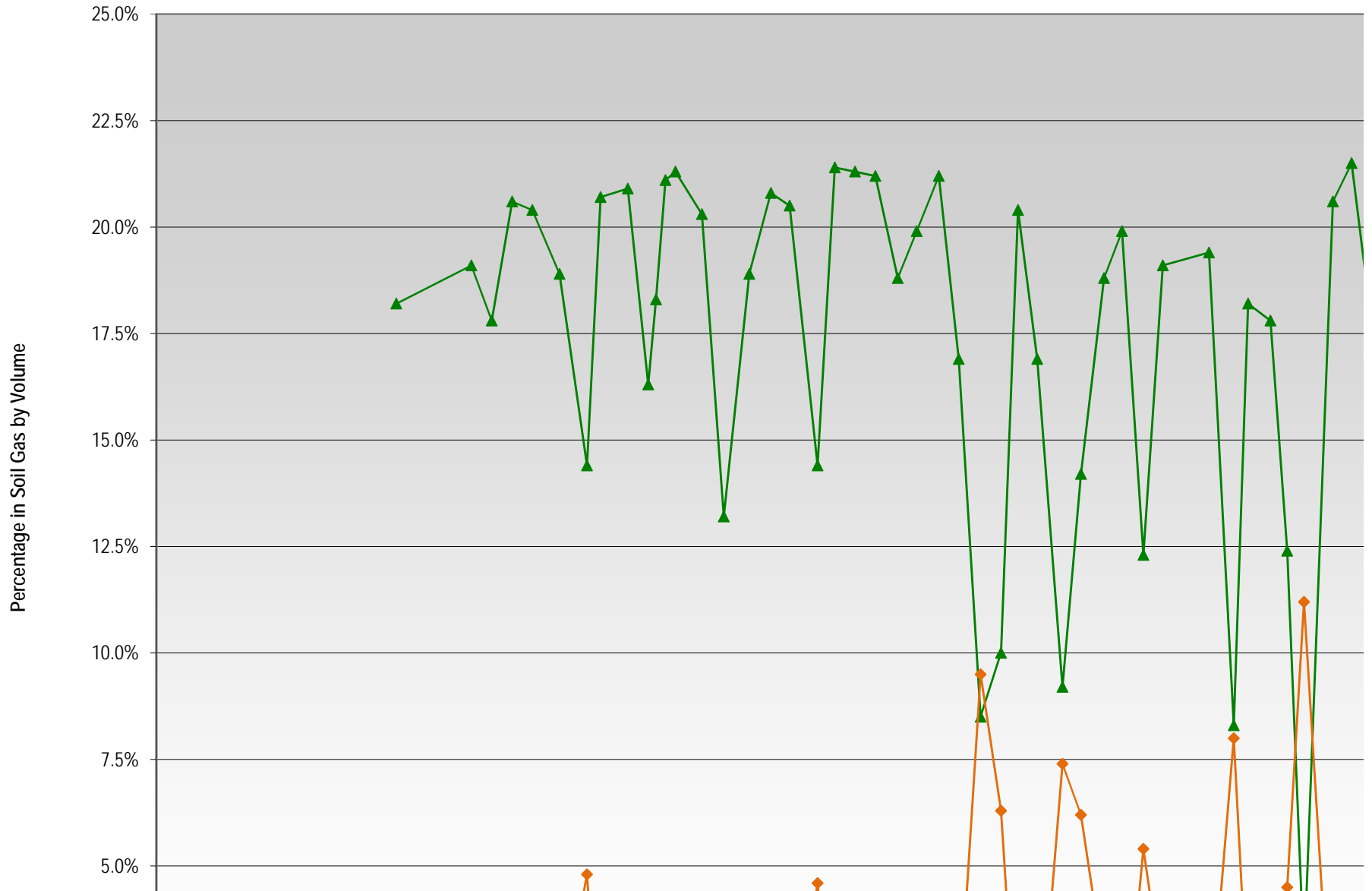
Soil Gas Well MG2
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



Soil Gas Well WB1
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



Soil Gas Well WB15
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



Soil Gas MPL 7
Fluctuation in Methane, Oxygen, Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island

