



Mr. Jeffrey Crawford  
Rhode Island Department of Environmental Management  
Office of Waste Management  
235 Promenade Street  
Providence, RI 02908-5767

ARCADIS U.S., Inc.  
300 Metro Center Boulevard  
Suite 250  
Warwick  
Rhode Island 02886  
Tel 401.738.3887  
Fax 401.732.1686  
[www.arcadis-us.com](http://www.arcadis-us.com)

Subject: December 2013 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 December 9, 2013 and December 11, 2013. 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 6, 2014

Contact:  
Donna H. Pallister, PE

Phone:  
401.738.3887

Email:  
[Donna.pallister@arcadis-us.com](mailto:Donna.pallister@arcadis-us.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:  
WK012152.0009

## COVER MONITORING

ARCADIS conducted a visual survey of the site on December 11, 2013 for evidence of significant soil cover erosion, or for any areas where the orange snow fencing indicator barrier was visible. ARCADIS did not observe any areas where the orange indicator barrier was visible during this monitoring event. No evidence of erosion or significant settling was observed.

## SUB-SLAB VENTILATION SYSTEM

### Field Monitoring

The sub-slab ventilation system was inspected by ARCADIS during the quarterly monitoring on December 9, 2013. The two elementary school blowers and the two middle school blowers were operating normally upon arrival.

Samples of influent and effluent (before and after the carbon canisters) air were collected at each blower and screened for methane, carbon dioxide, oxygen, carbon monoxide, hydrogen sulfide, and organic vapors using a Landtec GEM2000 Plus and a MiniRae 2000. Results of screening are provided on Table 1. Methane, carbon monoxide, and hydrogen sulfide were not detected in any of the samples. Organic vapors were detected in two samples (Elementary school inlets 1 and 2) at concentrations of 1.5 and 0.7 ppm, respectively. These concentrations are less than the RAWP Action Level of 5 ppm. Carbon dioxide was detected at concentrations of 0.2 to 0.4% at each location; all seven of the sample concentrations were greater than 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 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) are provided in Table 2 for comparison purposes even though they 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.

### **INDOOR AIR MONITORING**

Indoor air monitoring was conducted on December 11, 2013 using a Landtec GEM 2000 Plus meter (methane, hydrogen sulfide, oxygen), a Mini Rae 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 December 11, 2013 was 29 °F. Carbon dioxide was measured outside in the school parking lot at 506 ppm.

All readings were below the RAWP Action Levels. Methane, carbon monoxide, hydrogen sulfide, and organic vapors were not detected, and carbon dioxide was within the expected range for 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 Appendix C of the Standard states: "... maintaining a steady-state CO<sub>2</sub> 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 average concentrations measured inside the site buildings were less than 700 ppm above the ambient outdoor concentrations.

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 December 11, 2013. 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 December 11, 2013. 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. The laboratory report is provided as Attachment B. Results of analysis of groundwater samples are summarized in Table 4.

The only target analytes detected in any of the wells were chlorobenzene and 1,4-dichlorobenzene which were detected in a sample collected from monitoring well ATC-4 at concentrations of 1.4 and 2.3 µg/L, respectively. The GB groundwater standard for chlorobenzene of 70 ug/l was not exceeded. There is no GB groundwater standard for 1,4-dichlorobenzene. This compound has been detected during many previous sampling events in this well at a similar concentration. No other target analytes were detected in any of the groundwater samples collected on December 10, 2013.

## SOIL GAS MONITORING

Soil gas monitoring was conducted at 29 locations on December 9, 2013. 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 BDXII air sampling pump. Soil gas was then screened using a Landtec GEM 2000 Plus Landfill Gas Analyzer and a MiniRae 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. Methane, carbon monoxide and hydrogen sulfide, and total VOCs were not detected in any samples.

Carbon dioxide was detected in soil gas at concentrations ranging from 0.1% to 10.8% during the December monitoring event. The carbon dioxide Remedial Action Work Plan Action Level of 0.1% was exceeded at 27 of the 29 monitoring points. The maximum concentration detected during the December 2013 monitoring round was 10.8%, which was lower than the maximum detected during the September 2013 round of 12.8%. 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 bacterial activity and does not represent a threat to users of the property. The highest concentration of carbon dioxide was found in well MPL-6, 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.

### **ANNUAL ELUR INSPECTIONS**

After the Five Year Review of the Site was completed, RIDEM issued a letter dated August 17, 2012 which requires, among other things, that annual inspections be conducted for compliance with the Environmental Land Usage Restriction (ELUR). The Annual ELUR inspection was conducted during the December 2013 monitoring round. Annual monitoring of the vacuum produced by the subslab ventilation system, as required by the August 17, 2012 letter, will be conducted during a future monitoring round since weather conditions were not favorable during the December 2013 monitoring event.

The Site was inspected for compliance with the restrictions contained in Section A of the ELUR. The restrictions specified in the ELUR are listed below along with the current status with respect to the restriction:

- No residential use beyond current RIDEM approved use as a school – compliant, no change in use.
- No groundwater on the property to be used as potable water – compliant, no drinking water wells have been installed.
- No soil shall be disturbed in any manner without written permission of the Office of Waste Management except as permitted in the Long Term Operation and Maintenance Plan (LTOMP) – compliant, no evidence of disturbance of soils not in compliance with the LTOMP.
- Humans engaged in activities at the Property shall not be exposed to soils containing Hazardous Materials and/or petroleum in concentrations exceeding applicable Department approved Direct Exposure Criteria set forth in the Remediation Regulations – compliant, no evidence of breaches of cap that would allow people at the site to come in contact with underlying impacted soil.

- No subsurface structures shall be constructed on the Property over groundwater containing Hazardous Materials and/or petroleum concentrations exceeding the applicable Department approved GB Objectives – compliant, no Hazardous Materials or petroleum have been detected in groundwater at concentrations exceeding GB Objectives.
- The engineered controls described in the LTOMP must not be disturbed and shall be properly maintained to prevent humans engaged in residential activities from being exposed to soils containing Hazardous Materials and/or petroleum in concentrations exceeding the applicable Department approved residential Direct Exposure Criteria – compliant, engineered controls are in place and properly maintained.

## CONCLUSIONS

Methane, hydrogen sulfide, carbon monoxide and organic vapor concentrations did not exceed RAWP action levels in any soil gas or indoor air samples. Carbon dioxide concentrations exceeded the action level at 27 soil gas locations and 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 bacterial activity in the subsurface.

The ELUR inspection did not reveal any evidence of non-compliance with the restrictions contained in the ELUR.

If you have any questions or require any additional information, please contact the undersigned at 401-738-3887, extension 25.

Sincerely,

ARCADIS U.S., Inc.



Donna H. Pallister, PE, LSP  
Senior Environmental Engineer

Attachments

Copies:

A. Sepe, City of Providence  
Providence Public Building Authority

**Appendix A**  
**Limitations & 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.



ARCADIS

**Appendix B**  
**Laboratory Results**

13L0566

PO #: 5131

Con-Test Analytical Laboratory

<b>Client:</b> Arcadis US, Inc. - Warwick, RI	<b>Project Manager:</b> Lisa A. Worthington
<b>Project:</b> Springfield St.	<b>Project Number:</b> WK012152.0007
<b>Project Location:</b> Springfield St.	<b>Deliverable Package:</b> None Requested

**Report To:**  
 Arcadis US, Inc. - Warwick, RI  
 Donna Pallister  
 300 Metro Center Blvd., Suite 250  
 Warwick, RI 02886  
 Phone: (401) 738-3887  
 Fax: (401) 732-1686

**Invoice To:**  
 Arcadis US, Inc. - Warwick, RI  
 Accounts Payable  
 630 Plaza Drive, Suite 600  
 Highlands Ranch, CO 80129  
 Phone : (401) 738-3887  
 Fax: (401) 732-1686

Date Due:	12/20/13 18:00 (5 day TAT)	Date Received:	12/13/13 16:20
Received By:	Rebecca Faust	Date Logged In:	12/13/13 16:57
Logged In By:	Rebecca Faust		

Samples Received at:	2.4°C			
COC Relinquish Signed	Yes	Temperature by Temp. Blank	No	
COC/Sample Labels Agree	Yes	Temperature by Temp. Gun	Yes	Soil VOA samples not completely covered by preserv No
All Samples In Good Condition	Yes	Direct From Sampling - Ambient Temp.	No	Container(s) not supplied by Con-Test Lab No
Samples Received at < 6 C.	Yes	Received On Ice	Yes	Custody Seals No

Analysis	Due	TAT	Expires	Comments
<b>13L0566-01 ATC-4 [Water] Sampled 12/10/13 09:00 Eastern</b>				
8260 Standard	12/20/13 12:00	5	12/24/13 09:00	
<b>13L0566-02 MW-7 [Water] Sampled 12/10/13 09:30 Eastern</b>				
8260 Standard	12/20/13 12:00	5	12/24/13 09:30	
<b>13L0566-03 MW-8 [Water] Sampled 12/10/13 10:00 Eastern</b>				
8260 Standard	12/20/13 12:00	5	12/24/13 10:00	
<b>13L0566-04 ATC-1 [Water] Sampled 12/10/13 10:30 Eastern</b>				
8260 Standard	12/20/13 12:00	5	12/24/13 10:30	
<b>13L0566-05 Trip Blank [Water] Sampled 12/10/13 00:00 Eastern</b>				
8260 Standard	12/20/13 12:00	5	12/24/13 00:00	

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Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Invoice OK to Spool \_\_\_\_\_  
 Initials

December 20, 2013

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

Project Location: Springfield St.  
Client Job Number:  
Project Number: WK012152.0007  
Laboratory Work Order Number: 13L0569

Enclosed are results of analyses for samples received by the laboratory on December 13, 2013. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Lisa A. Worthington  
Project Manager

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

REPORT DATE: 12/20/2013

PURCHASE ORDER NUMBER: 5131

PROJECT NUMBER: WK012152.0007

**ANALYTICAL SUMMARY**

WORK ORDER NUMBER: 13L0569

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.

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MS Front	13L0569-01	Sub Slab		EPA TO-14A	
MS Back	13L0569-02	Sub Slab		EPA TO-14A	
ES #1	13L0569-03	Sub Slab		EPA TO-14A	
ES #2	13L0569-04	Sub Slab		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.

**EPA TO-14A**

**Qualifications:**

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Holding times and stability of samples taken in tedlar bags have not been determined

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

13L0569-01[MS Front], 13L0569-02[MS Back], 13L0569-03[ES #1], 13L0569-04[ES #2]

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

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

**1,3-Dichlorobenzene, Hexachlorobutadiene**

B087288-BS1

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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.



Daren J. Damboragian  
Laboratory Manager

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: MS Front**  
**Sample ID: 13L0569-01**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 11:30

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Benzene	0.14	0.10		0.45	0.32	2	12/14/13 14:04	TPH	
Bromomethane	ND	0.10		ND	0.39	2	12/14/13 14:04	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	12/14/13 14:04	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	12/14/13 14:04	TPH	
Chloroethane	ND	0.10		ND	0.26	2	12/14/13 14:04	TPH	
Chloroform	ND	0.10		ND	0.49	2	12/14/13 14:04	TPH	
Chloromethane	0.25	0.20		0.52	0.41	2	12/14/13 14:04	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	12/14/13 14:04	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 14:04	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 14:04	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 14:04	TPH	
Dichlorodifluoromethane (Freon 12)	1.2	0.10		6.0	0.49	2	12/14/13 14:04	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 14:04	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 14:04	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 14:04	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 14:04	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	12/14/13 14:04	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 14:04	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 14:04	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	0.71	0.10		5.0	0.70	2	12/14/13 14:04	TPH	
Ethylbenzene	0.17	0.10		0.76	0.43	2	12/14/13 14:04	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	12/14/13 14:04	TPH	
Methylene Chloride	2.3	1.0		8.0	3.5	2	12/14/13 14:04	TPH	
Styrene	0.29	0.10		1.2	0.43	2	12/14/13 14:04	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	12/14/13 14:04	TPH	
Tetrachloroethylene	1.1	0.10		7.2	0.68	2	12/14/13 14:04	TPH	
Toluene	4.6	0.10		17	0.38	2	12/14/13 14:04	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	12/14/13 14:04	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 14:04	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 14:04	TPH	
Trichloroethylene	ND	0.10		ND	0.54	2	12/14/13 14:04	TPH	
Trichlorofluoromethane (Freon 11)	1.1	0.10		6.2	0.56	2	12/14/13 14:04	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	12/14/13 14:04	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 14:04	TPH	
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 14:04	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	12/14/13 14:04	TPH	
m&p-Xylene	0.90	0.20		3.9	0.87	2	12/14/13 14:04	TPH	

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: MS Front**  
**Sample ID: 13L0569-01**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 11:30

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	0.28	0.10		1.2	0.43	2	12/14/13	14:04	TPH

Surrogates	% Recovery		% REC Limits		Date/Time
4-Bromofluorobenzene (1)		102		70-130	12/14/13 14:04

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: MS Back**  
**Sample ID: 13L0569-02**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 11:45

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Benzene	0.12	0.10		0.40	0.32	2	12/14/13 14:43	TPH	
Bromomethane	ND	0.10		ND	0.39	2	12/14/13 14:43	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	12/14/13 14:43	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	12/14/13 14:43	TPH	
Chloroethane	ND	0.10		ND	0.26	2	12/14/13 14:43	TPH	
Chloroform	0.15	0.10		0.72	0.49	2	12/14/13 14:43	TPH	
Chloromethane	ND	0.20		ND	0.41	2	12/14/13 14:43	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	12/14/13 14:43	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 14:43	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 14:43	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 14:43	TPH	
Dichlorodifluoromethane (Freon 12)	2.8	0.10		14	0.49	2	12/14/13 14:43	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 14:43	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 14:43	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 14:43	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 14:43	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	12/14/13 14:43	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 14:43	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 14:43	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	2.7	0.10		19	0.70	2	12/14/13 14:43	TPH	
Ethylbenzene	0.16	0.10		0.68	0.43	2	12/14/13 14:43	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	12/14/13 14:43	TPH	
Methylene Chloride	2.2	1.0		7.8	3.5	2	12/14/13 14:43	TPH	
Styrene	0.25	0.10		1.1	0.43	2	12/14/13 14:43	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	12/14/13 14:43	TPH	
Tetrachloroethylene	1.4	0.10		9.7	0.68	2	12/14/13 14:43	TPH	
Toluene	3.4	0.10		13	0.38	2	12/14/13 14:43	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	12/14/13 14:43	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 14:43	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 14:43	TPH	
Trichloroethylene	0.11	0.10		0.57	0.54	2	12/14/13 14:43	TPH	
Trichlorofluoromethane (Freon 11)	1.2	0.10		6.6	0.56	2	12/14/13 14:43	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	12/14/13 14:43	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 14:43	TPH	
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 14:43	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	12/14/13 14:43	TPH	
m&p-Xylene	0.89	0.20		3.9	0.87	2	12/14/13 14:43	TPH	



**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: MS Back**  
**Sample ID: 13L0569-02**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 11:45

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	0.30	0.10		1.3	0.43	2	12/14/13	14:43	TPH

Surrogates	% Recovery		% REC Limits		Date/Time
4-Bromofluorobenzene (1)		102		70-130	12/14/13 14:43

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: ES #1**  
**Sample ID: 13L0569-03**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 12:05

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Benzene	0.20	0.10		0.65	0.32	2	12/14/13 15:22	TPH	
Bromomethane	ND	0.10		ND	0.39	2	12/14/13 15:22	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	12/14/13 15:22	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	12/14/13 15:22	TPH	
Chloroethane	ND	0.10		ND	0.26	2	12/14/13 15:22	TPH	
Chloroform	0.36	0.10		1.7	0.49	2	12/14/13 15:22	TPH	
Chloromethane	ND	0.20		ND	0.41	2	12/14/13 15:22	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	12/14/13 15:22	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 15:22	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 15:22	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 15:22	TPH	
Dichlorodifluoromethane (Freon 12)	1.2	0.10		6.2	0.49	2	12/14/13 15:22	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 15:22	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 15:22	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 15:22	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 15:22	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	12/14/13 15:22	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 15:22	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 15:22	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	0.33	0.10		2.3	0.70	2	12/14/13 15:22	TPH	
Ethylbenzene	0.19	0.10		0.82	0.43	2	12/14/13 15:22	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	12/14/13 15:22	TPH	
Methylene Chloride	2.4	1.0		8.4	3.5	2	12/14/13 15:22	TPH	
Styrene	0.30	0.10		1.3	0.43	2	12/14/13 15:22	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	12/14/13 15:22	TPH	
Tetrachloroethylene	1.1	0.10		7.8	0.68	2	12/14/13 15:22	TPH	
Toluene	4.0	0.10		15	0.38	2	12/14/13 15:22	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	12/14/13 15:22	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 15:22	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 15:22	TPH	
Trichloroethylene	0.12	0.10		0.62	0.54	2	12/14/13 15:22	TPH	
Trichlorofluoromethane (Freon 11)	1.1	0.10		6.0	0.56	2	12/14/13 15:22	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	12/14/13 15:22	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 15:22	TPH	
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 15:22	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	12/14/13 15:22	TPH	
m&p-Xylene	0.93	0.20		4.0	0.87	2	12/14/13 15:22	TPH	

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: ES #1**  
**Sample ID: 13L0569-03**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 12:05

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	0.32	0.10		1.4	0.43	2	12/14/13	15:22	TPH

Surrogates	% Recovery		% REC Limits		Date/Time
4-Bromofluorobenzene (1)		102		70-130	12/14/13 15:22

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: ES #2**  
**Sample ID: 13L0569-04**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 12:00

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
Benzene	0.20	0.10		0.65	0.32	2	12/14/13 16:02	TPH	
Bromomethane	ND	0.10		ND	0.39	2	12/14/13 16:02	TPH	
Carbon Tetrachloride	ND	0.10		ND	0.63	2	12/14/13 16:02	TPH	
Chlorobenzene	ND	0.10		ND	0.46	2	12/14/13 16:02	TPH	
Chloroethane	ND	0.10		ND	0.26	2	12/14/13 16:02	TPH	
Chloroform	0.39	0.10		1.9	0.49	2	12/14/13 16:02	TPH	
Chloromethane	ND	0.20		ND	0.41	2	12/14/13 16:02	TPH	
1,2-Dibromoethane (EDB)	ND	0.10		ND	0.77	2	12/14/13 16:02	TPH	
1,2-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 16:02	TPH	
1,3-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 16:02	TPH	
1,4-Dichlorobenzene	ND	0.10		ND	0.60	2	12/14/13 16:02	TPH	
Dichlorodifluoromethane (Freon 12)	1.2	0.10		6.1	0.49	2	12/14/13 16:02	TPH	
1,1-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 16:02	TPH	
1,2-Dichloroethane	ND	0.10		ND	0.40	2	12/14/13 16:02	TPH	
1,1-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 16:02	TPH	
cis-1,2-Dichloroethylene	ND	0.10		ND	0.40	2	12/14/13 16:02	TPH	
1,2-Dichloropropane	ND	0.10		ND	0.46	2	12/14/13 16:02	TPH	
cis-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 16:02	TPH	
trans-1,3-Dichloropropene	ND	0.10		ND	0.45	2	12/14/13 16:02	TPH	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	0.32	0.10		2.2	0.70	2	12/14/13 16:02	TPH	
Ethylbenzene	0.21	0.10		0.91	0.43	2	12/14/13 16:02	TPH	
Hexachlorobutadiene	ND	0.10		ND	1.1	2	12/14/13 16:02	TPH	
Methylene Chloride	2.7	1.0		9.2	3.5	2	12/14/13 16:02	TPH	
Styrene	0.29	0.10		1.2	0.43	2	12/14/13 16:02	TPH	
1,1,2,2-Tetrachloroethane	ND	0.10		ND	0.69	2	12/14/13 16:02	TPH	
Tetrachloroethylene	1.5	0.10		10	0.68	2	12/14/13 16:02	TPH	
Toluene	3.9	0.10		15	0.38	2	12/14/13 16:02	TPH	
1,2,4-Trichlorobenzene	ND	0.10		ND	0.74	2	12/14/13 16:02	TPH	
1,1,1-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 16:02	TPH	
1,1,2-Trichloroethane	ND	0.10		ND	0.55	2	12/14/13 16:02	TPH	
Trichloroethylene	0.15	0.10		0.78	0.54	2	12/14/13 16:02	TPH	
Trichlorofluoromethane (Freon 11)	0.76	0.10		4.3	0.56	2	12/14/13 16:02	TPH	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.10		ND	0.77	2	12/14/13 16:02	TPH	
1,2,4-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 16:02	TPH	
1,3,5-Trimethylbenzene	ND	0.10		ND	0.49	2	12/14/13 16:02	TPH	
Vinyl Chloride	ND	0.10		ND	0.26	2	12/14/13 16:02	TPH	
m&p-Xylene	1.1	0.20		4.8	0.87	2	12/14/13 16:02	TPH	

**ANALYTICAL RESULTS**

Project Location: Springfield St.  
 Date Received: 12/13/2013  
**Field Sample #: ES #2**  
**Sample ID: 13L0569-04**  
 Sample Matrix: Sub Slab  
 Sampled: 12/10/2013 12:00

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

**Work Order: 13L0569**  
 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**

Sample Flags: A-09

Analyte	ppbv		Flag/Qual	ug/m3		Dilution	Date/Time		Analyst
	Results	RL		Results	RL		Analyzed		
o-Xylene	0.36	0.10		1.6	0.43	2	12/14/13	16:02	TPH

Surrogates	% Recovery		% REC Limits		Date/Time
4-Bromofluorobenzene (1)		102		70-130	12/14/13 16:02

**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
13L0569-01 [MS Front]	B087288	1	1	N/A	1000	400	200	12/13/13
13L0569-02 [MS Back]	B087288	1	1	N/A	1000	400	200	12/13/13
13L0569-03 [ES #1]	B087288	1	1	N/A	1000	400	200	12/13/13
13L0569-04 [ES #2]	B087288	1	1	N/A	1000	400	200	12/13/13

QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv		ug/m3		Spike Level ppbv	Source Result	%REC Limits	RPD	RPD Limit	Flag/Qual
	Results	RL	Results	RL						
<b>Batch B087288 - TO-15 Prep</b>										
<b>Blank (B087288-BLK1)</b>										
					Prepared & Analyzed: 12/13/13					
Benzene	ND	0.025								
Bromomethane	ND	0.025								
Carbon Tetrachloride	ND	0.025								
Chlorobenzene	ND	0.025								
Chloroethane	ND	0.025								
Chloroform	ND	0.025								
Chloromethane	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.025								
1,2-Dichlorobenzene	ND	0.025								
1,3-Dichlorobenzene	ND	0.025								
1,4-Dichlorobenzene	ND	0.025								
Dichlorodifluoromethane (Freon 12)	ND	0.025								
1,1-Dichloroethane	ND	0.025								
1,2-Dichloroethane	ND	0.025								
1,1-Dichloroethylene	ND	0.025								
cis-1,2-Dichloroethylene	ND	0.025								
1,2-Dichloropropane	ND	0.025								
cis-1,3-Dichloropropene	ND	0.025								
trans-1,3-Dichloropropene	ND	0.025								
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.025								
Ethylbenzene	ND	0.025								
Hexachlorobutadiene	ND	0.025								
Methylene Chloride	ND	0.25								
Styrene	ND	0.025								
1,1,1,2-Tetrachloroethane	ND	0.025								
Tetrachloroethylene	ND	0.025								
Toluene	ND	0.025								
1,2,4-Trichlorobenzene	ND	0.025								
1,1,1-Trichloroethane	ND	0.025								
1,1,2-Trichloroethane	ND	0.025								
Trichloroethylene	ND	0.025								
Trichlorofluoromethane (Freon 11)	ND	0.025								
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.025								
1,2,4-Trimethylbenzene	ND	0.025								
1,3,5-Trimethylbenzene	ND	0.025								
Vinyl Chloride	ND	0.025								
m&p-Xylene	ND	0.050								
o-Xylene	ND	0.025								
Surrogate: 4-Bromofluorobenzene (1)	8.64				8.00		108		70-130	

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		
<b>Batch B087288 - TO-15 Prep</b>											
<b>LCS (B087288-BS1)</b>											
						Prepared & Analyzed: 12/13/13					
Benzene	4.36				5.00		87.1	70-130			
Bromomethane	5.28				5.00		106	70-130			
Carbon Tetrachloride	6.15				5.00		123	70-130			
Chlorobenzene	5.41				5.00		108	70-130			
Chloroethane	5.53				5.00		111	70-130			
Chloroform	5.45				5.00		109	70-130			
Chloromethane	4.47				5.00		89.5	70-130			
1,2-Dibromoethane (EDB)	5.34				5.00		107	70-130			
1,2-Dichlorobenzene	6.36				5.00		127	70-130			
1,3-Dichlorobenzene	6.51				5.00		130	70-130			L-01
1,4-Dichlorobenzene	6.40				5.00		128	70-130			
Dichlorodifluoromethane (Freon 12)	6.00				5.00		120	70-130			
1,1-Dichloroethane	4.77				5.00		95.4	70-130			
1,2-Dichloroethane	6.04				5.00		121	70-130			
1,1-Dichloroethylene	5.13				5.00		103	70-130			
cis-1,2-Dichloroethylene	4.86				5.00		97.2	70-130			
1,2-Dichloropropane	4.14				5.00		82.7	70-130			
cis-1,3-Dichloropropene	5.01				5.00		100	70-130			
trans-1,3-Dichloropropene	5.58				5.00		112	70-130			
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	5.67				5.00		113	70-130			
Ethylbenzene	5.50				5.00		110	70-130			
Hexachlorobutadiene	6.89				5.00		138 *	70-130			L-01
Methylene Chloride	4.80				5.00		96.1	70-130			
Styrene	5.84				5.00		117	70-130			
1,1,1,2-Tetrachloroethane	5.10				5.00		102	70-130			
Tetrachloroethylene	5.94				5.00		119	70-130			
Toluene	5.11				5.00		102	70-130			
1,2,4-Trichlorobenzene	6.48				5.00		130	70-130			
1,1,1-Trichloroethane	5.65				5.00		113	70-130			
1,1,2-Trichloroethane	5.04				5.00		101	70-130			
Trichloroethylene	4.95				5.00		99.1	70-130			
Trichlorofluoromethane (Freon 11)	6.27				5.00		125	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	5.26				5.00		105	70-130			
1,2,4-Trimethylbenzene	6.18				5.00		124	70-130			
1,3,5-Trimethylbenzene	6.44				5.00		129	70-130			
Vinyl Chloride	5.30				5.00		106	70-130			
m&p-Xylene	12.4				10.0		124	70-130			
o-Xylene	5.99				5.00		120	70-130			
Surrogate: 4-Bromofluorobenzene (1)	8.52				8.00		106	70-130			



**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
- 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.
- A-09 Holding times and stability of samples taken in tedlar bags have not been determined
- L-01 Laboratory fortified blank /laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

**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

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

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC	100033	02/1/2014
MA	Massachusetts DEP	M-MA100	06/30/2014
CT	Connecticut Department of Public Health	PH-0567	09/30/2015
NY	New York State Department of Health	10899 NELAP	04/1/2014
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2014
RI	Rhode Island Department of Health	LAO00112	12/30/2013
NC	North Carolina Div. of Water Quality	652	12/31/2013
NJ	New Jersey DEP	MA007 NELAP	06/30/2014
FL	Florida Department of Health	E871027 NELAP	06/30/2014
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2014
WA	State of Washington Department of Ecology	C2065	02/23/2014
ME	State of Maine	2011028	06/9/2015
VA	Commonwealth of Virginia	460217	12/14/2014
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2014



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

**AIR SAMPLE CHAIN OF CUSTODY RECORD**

13L05069

39 SPRUCE ST  
 EAST LONGMEADOW, MA 01028

Company Name: ARCAO 15

Address: 300 Metro Center Blvd.

Attention: Wendy R1  
Donna Fallister

Project Location: Springfield St. Providence, RI

Sampled By: A. Dasilva

Proposal Provided? (For Billing purposes)  
 yes  no

Telephone: (401) - 738-3887  
 Project # WK012152.0009  
 Client PO # \_\_\_\_\_

DATA DELIVERY (check one):  
 FAX  EMAIL  WEBSITE CLIENT

Fax #: \_\_\_\_\_  
 Email: donna.fallister@arcad15-us.com  
 Format:  EXCEL  PDF  GIS KEY  OTHER \_\_\_\_\_

Field ID	Sample Description	Media	Lab #	Date		Total	Flow Rate	Volume	Matrix	Code*	Analysis Requested	Hg	Please fill out completely, sign, date and retain the yellow copy for your record
				Start	Stop								
MS Front	TB		01	12/10/13	1130	-	-	-	SS	X			Summa canisters will be returned for a minimum of 14 days after sampling date prior to cleaning.
MS Back	TB		02		1145	-	-	-	SS	X			
ES #1	TB		03		1205	-	-	-	SS	X			
ES #2	TB		04		1200	-	-	-	SS	X			

Laboratory Comments:

CLIENT COMMENTS:

Relinquished by: (signature) [Signature] Date/Time: 12/10/13 1500

Received by: (signature) [Signature] Date/Time: 12/13/13 1025

Relinquished by: (signature) [Signature] Date/Time: 12/13/13 1125

Received by: (signature) [Signature] Date/Time: 12/13/13 1600

**Turnaround \*\***  
 7-Day  
 10-Day  
 Other: SR

**RUSH \***  
 \*24-Hr  \*48-Hr  
 \*72-Hr  \*4-Day

**Special Requirements**  
 Regulations: \_\_\_\_\_  
 Data Enhancement/RCP?  Y  N  
 Enhanced Data Package  Y  N  
 (Surcharge Applies)  
 Required Detection Limits: \_\_\_\_\_  
 Other: \_\_\_\_\_

**Matrix Code:**  
 SG= SOIL GAS  
 IA= INDOOR AIR  
 AMB= AMBIENT  
 SS= SUB SLAB  
 D= DUP  
 BL= BLANK  
 O= other

**Media Codes:**  
 S= summa can  
 TB= tediab bag  
 P= PUF  
 T= tube  
 F= filter  
 C= cassette  
 O= Other

**\*Approval Required**

\*\* 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 IS INCORRECT, TURNAROUND TIME WILL NOT START UNTIL ALL QUESTIONS ARE ANSWERED BY OUR CLIENT.



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

### AIR Only Receipt Checklist

CLIENT NAME: ARCADIS RECEIVED BY: RCF DATE: 12/13/13

- 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) Temperature °C by Temp blank \_\_\_\_\_ Temperature °C by Temp gun \_\_\_\_\_

Containers received at Con-Test		
	# of Containers	Types (Size, Duration)
Summa Cans (TO-14/TO-15/APH)		
Tedlar Bags	4	1L
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:

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

Question	Answer (True/False)	Comment
	T/F/NA	
1) The cooler's custody seal, if present, is intact.	T	
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) 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.	T	
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.	NA	
20) VOA sample vials do not have head space or bubble is <6mm (1/4") in diameter.	NA	
21) Samples do not require splitting or compositing.	T	

Doc #278 Rev. 3 August 2013

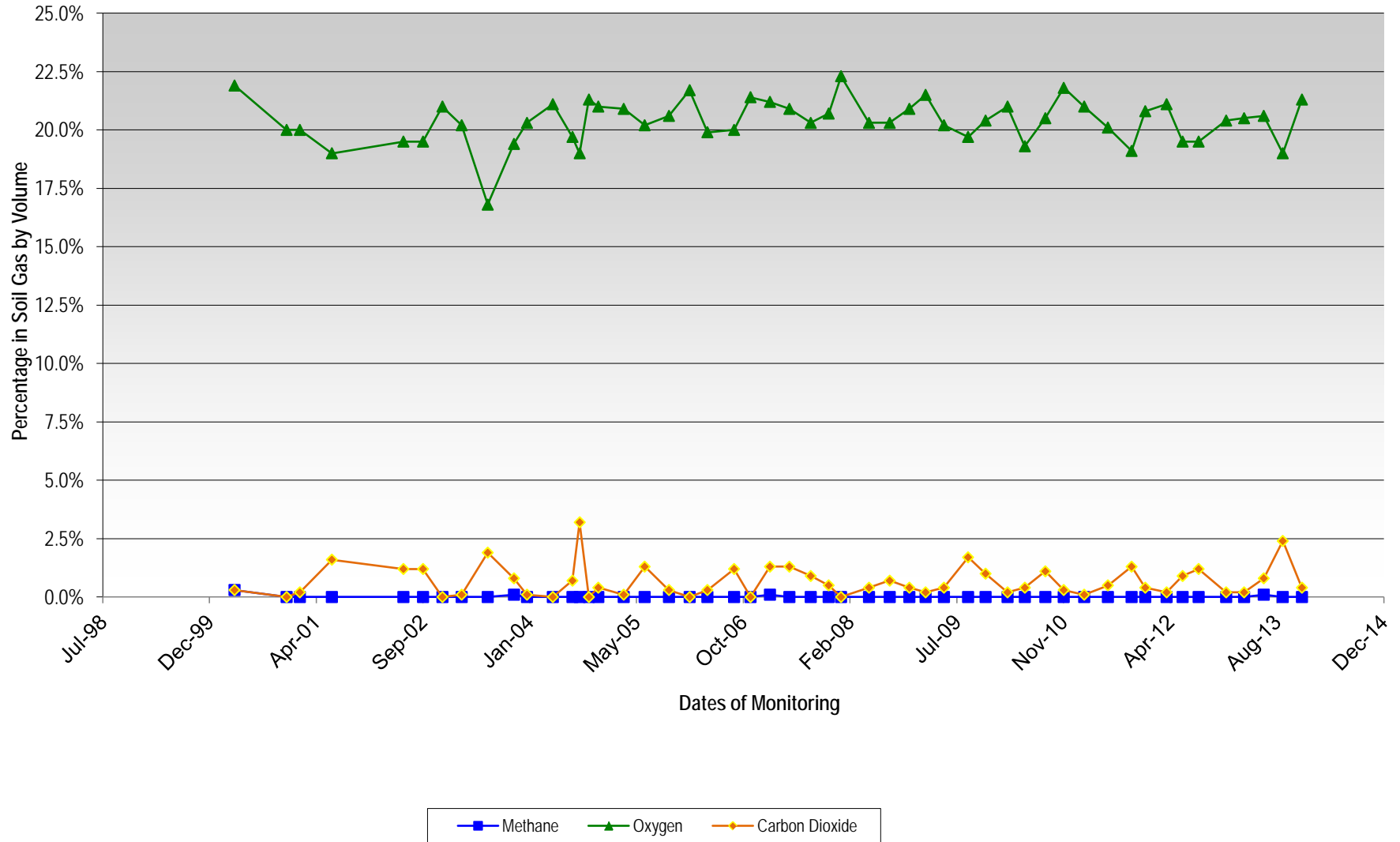
Who notified of False statements?  
 Log-In Technician Initials:

Date/Time:  
 Date/Time:

RLF 10/13/13 1620

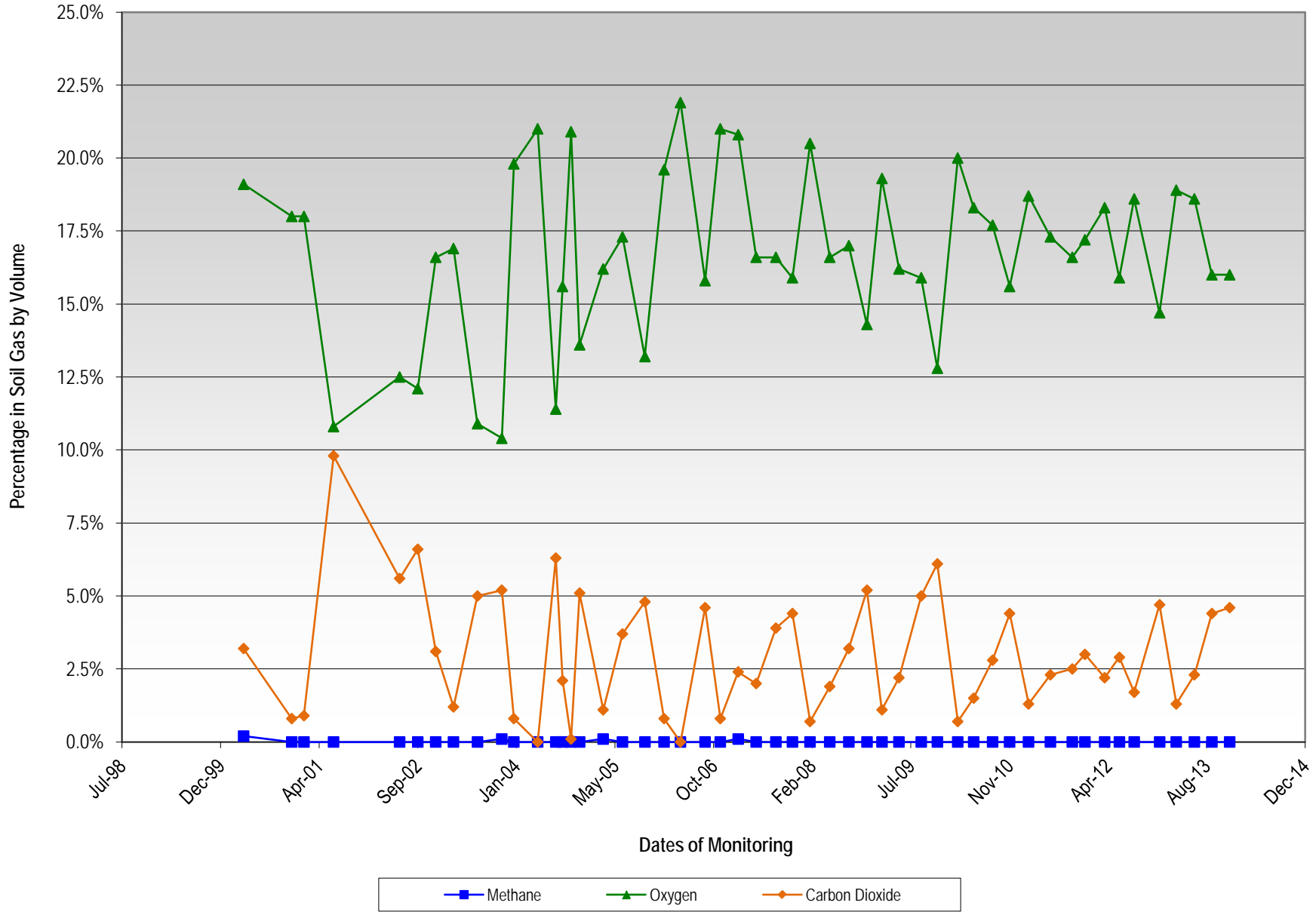
**Appendix C**  
**Soil Gas Parameter Graphs**

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

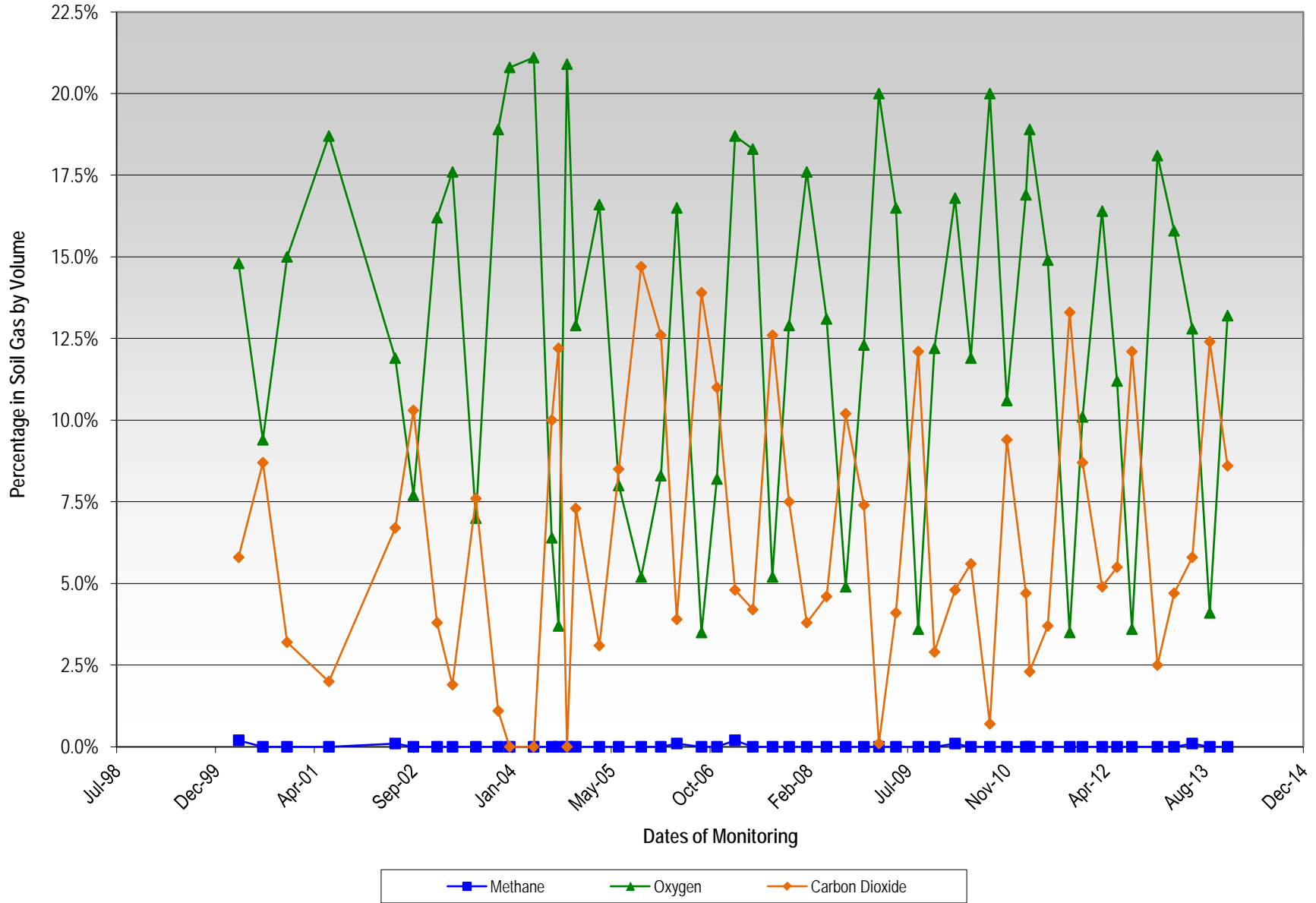




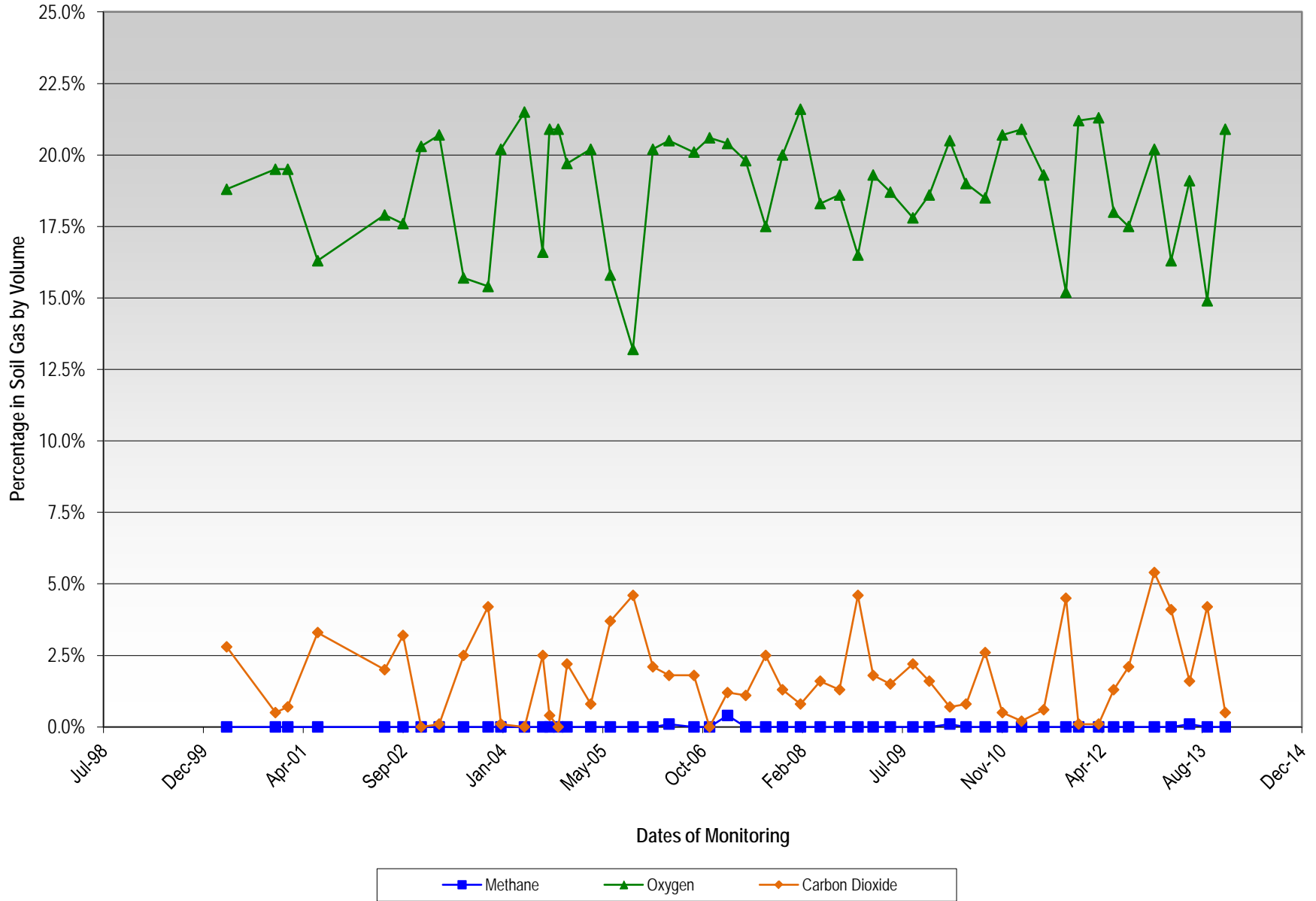
Soil Gas Well EPL4  
 Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time  
 Springfield Street School Complex  
 Providence, Rhode Island



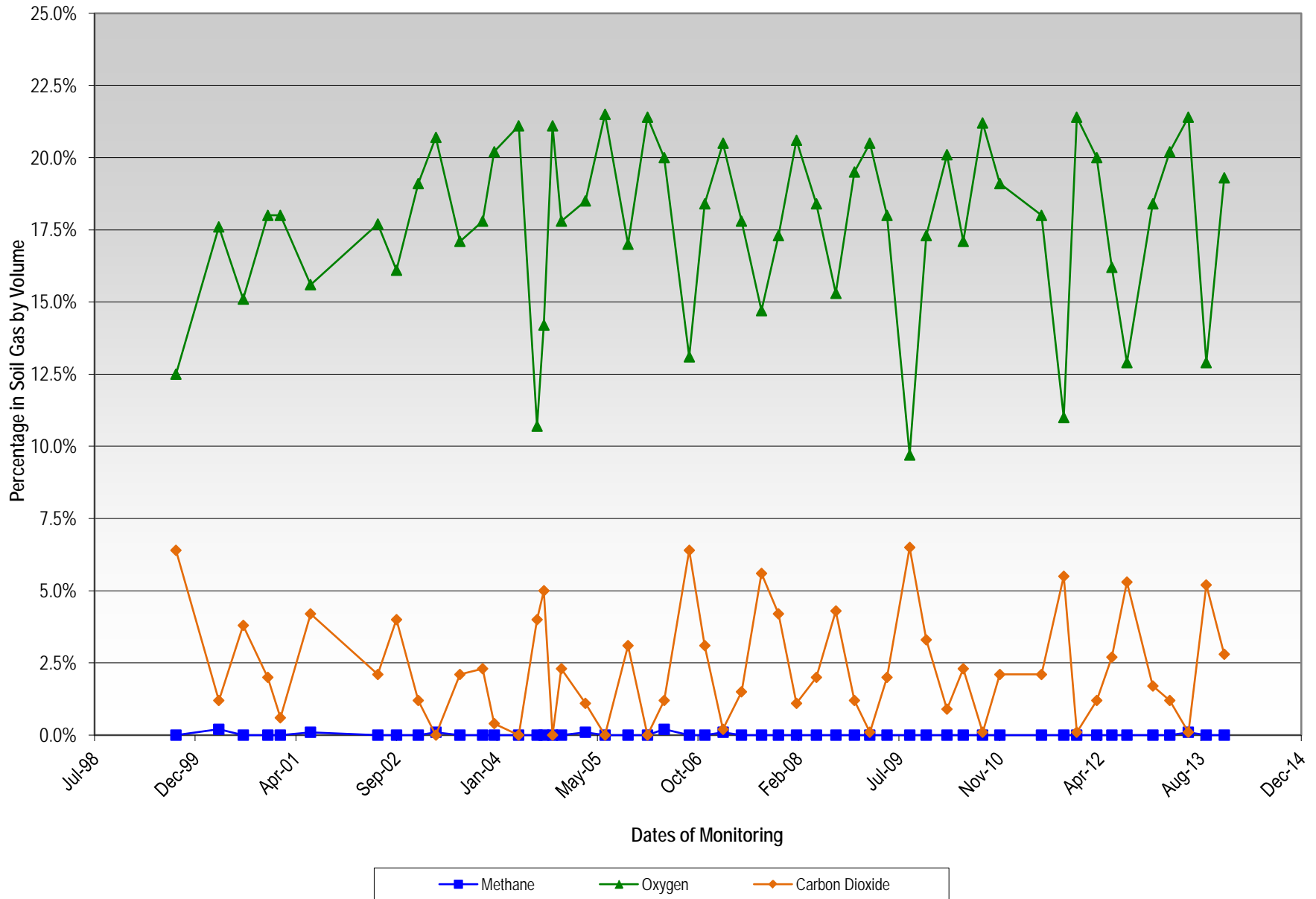
Soil Gas Well MPL5  
 Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time  
 Springfield Street School Complex  
 Providence, Rhode Island



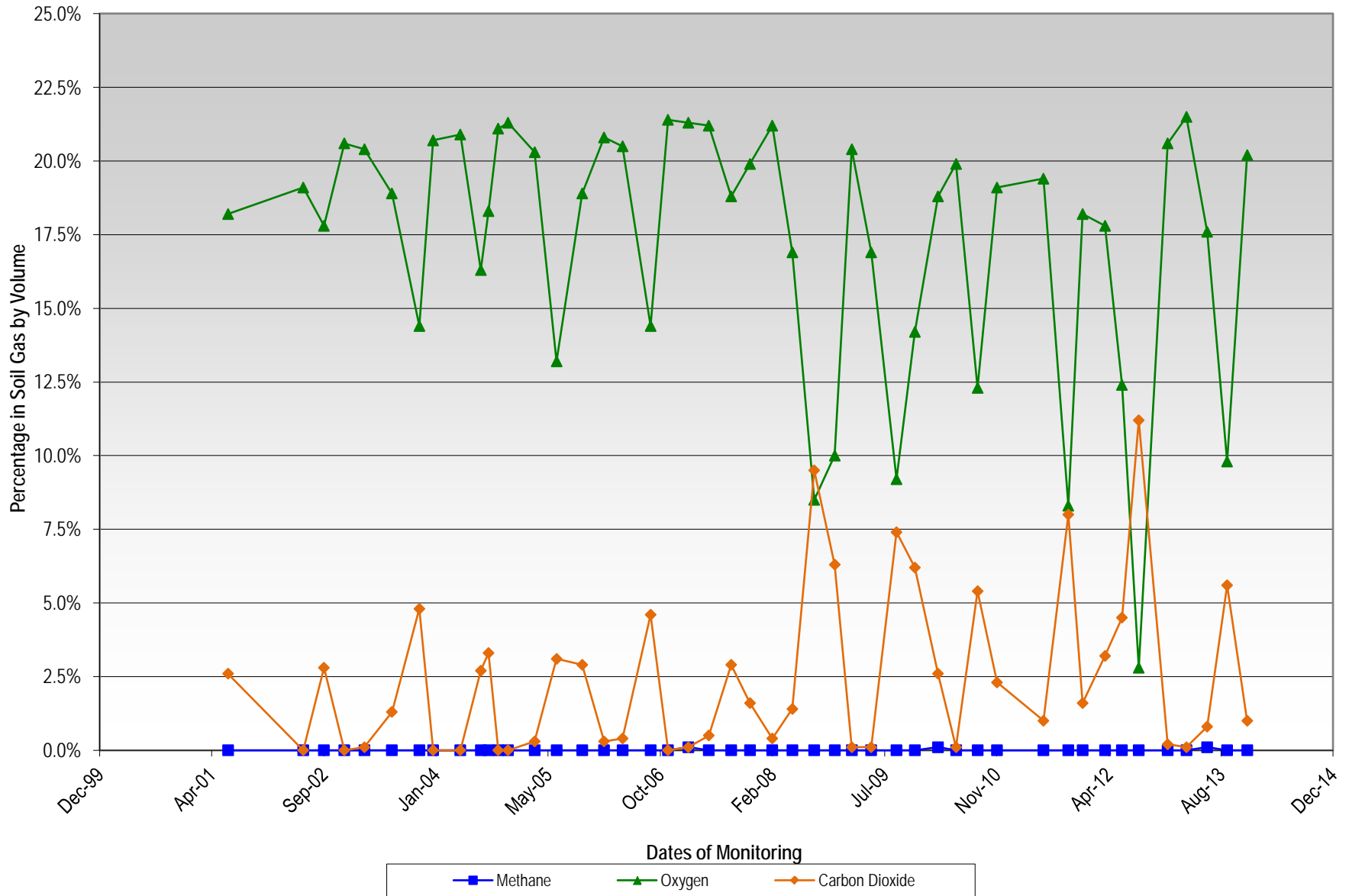
Soil Gas Well MG2  
 Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time  
 Springfield Street School Complex  
 Providence, Rhode Island



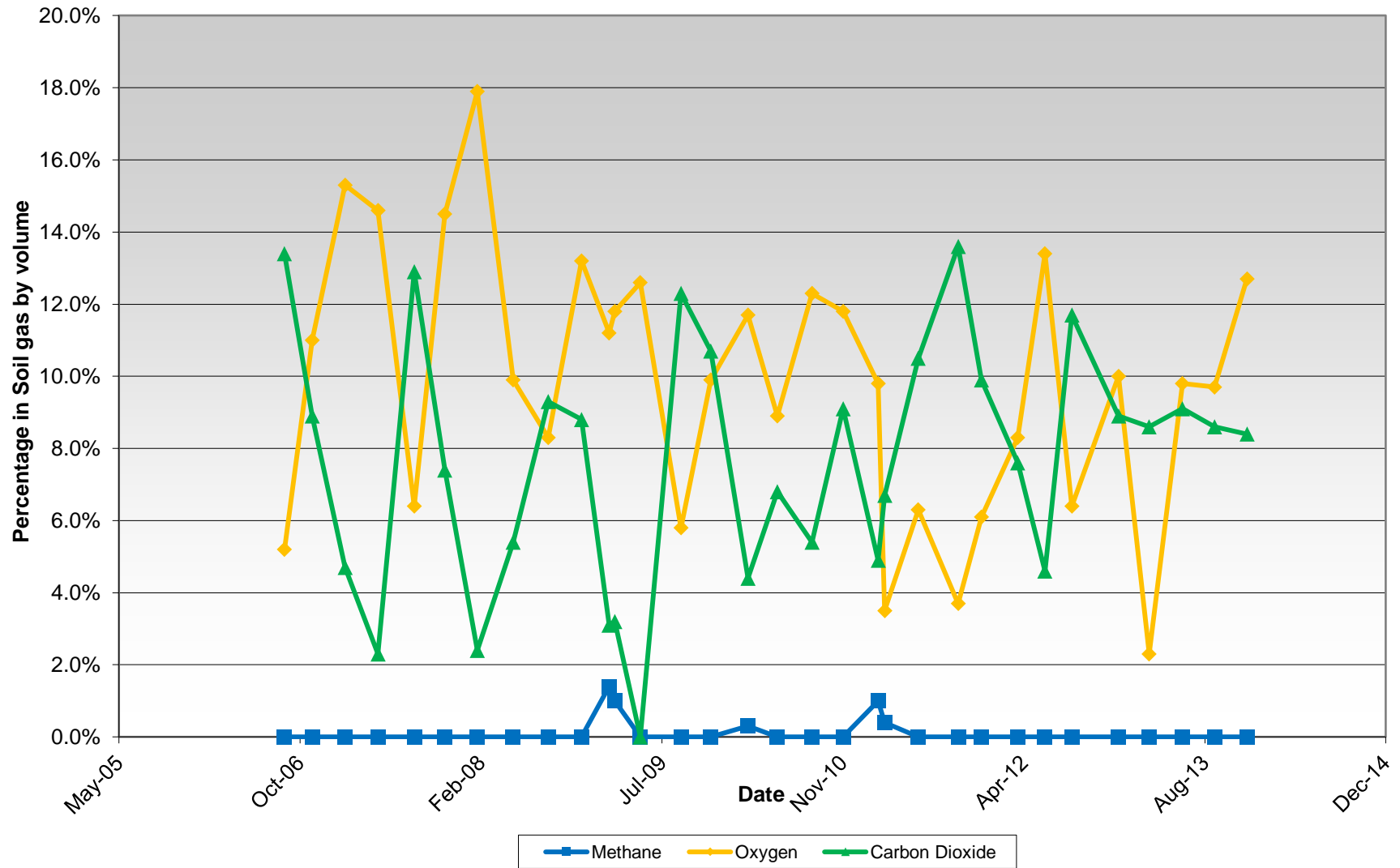
Soil Gas Well WB1  
 Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time  
 Springfield Street School Complex  
 Providence, Rhode Island



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



Soil Gas Well MPL-7 Fluctuations in Methane, Oxygen and Carbon Dioxide



ARCADIS

**Tables**

**Table 1**  
**System Monitoring Notes**  
**Springfield Street School Complex**  
**Providence, Rhode Island**  
**December 9, 2013**

<b>Monitoring Location</b>	<b>Methane % by volume Landtec</b>	<b>Carbon Dioxide % by volume</b>	<b>Oxygen % by volume</b>	<b>Carbon Monoxide PPM</b>	<b>Hydrogen Sulfide PPM</b>	<b>Organic Vapors PPM</b>
Elementary School inlet 1	0.0	0.4	21.1	0	0	1.5
Elementary School inlet 2	0.0	0.4	21.1	0	0	0.7
Elementary School Outlet	0.0	0.4	21.1	0	0	0.0
Middle School front shed inlet	0.0	0.2	20.7	0	0	0.0
Middle School front shed after 2 <sup>nd</sup> carbon	0.0	0.2	20.8	0	0	0.0
Middle School back shed inlet	0.0	0.4	20.7	0	0	0.0
Middle School back shed after 2 <sup>nd</sup> carbon	0.0	0.4	20.7	0	0	0.0
<b>Remedial Action Work Plan Action Levels</b>	<b>0.5</b>	<b>1,000 ppm (0.1%)</b>	<b>NA</b>	<b>9 ppm</b>	<b>10 ppm</b>	<b>5 ppm</b>

**Measurements made with:** Landtec GEM2000 Plus, MiniRae 2000

**Sampling date:** December 9, 2013

**Measured by:** Andrew DaSilva



**Table 2**  
**Soil Gas Samples Collected from System Influent**  
**Springfield Street School Complex**

Parameter	Sample Date	CT DEP Proposed Residential Volatilization Criteria For Soil Vapor (ug/m3)*	OSHA PEL's (ug/m3)	Middle School Back (ug/m3)	Middle School Front (ug/m3)	Elementary School #1 (ug/m3)	Elementary School # 2 (ug/m3)
Benzene	8/23/2012	3,247	3,000	0.87	1	0.7	0.7
	1/4/2013			0.2	0.26	0.37	0.33
	3/20/2013			ND	0.44	0.57	0.54
	6/6/13 and 6/11/13			2.2	2.2	1.7	0.76
	9/11/2013			0.51	0.47	0.49	0.43
	12/10/2013			0.14	0.12	0.2	0.2
Carbon Tetrachloride	8/23/2012	6,395	62,900	ND	ND	0.65	ND
	1/4/2013			ND	ND	ND	ND
	3/20/2013			ND	ND	ND	ND
	6/6/13 and 6/11/13			ND	ND	ND	ND
	9/11/2013			ND	ND	ND	ND
	12/10/2013			ND	ND	ND	ND
Chloroform	8/23/2012	22,334	240,000	ND	ND	1.7	1.7
	1/4/2013			0.26	ND	0.51	0.58
	3/20/2013			ND	ND	0.6	0.6
	6/6/13 and 6/11/13			ND	ND	2.1	1.7
	9/11/2013			1.3	ND	1.9	2.1
	12/10/2013			ND	0.15	0.36	0.39
Chloromethane	8/23/2012	NA	207,000	ND	2	ND	ND
	1/4/2013			0.18	0.23	ND	ND
	3/20/2013			ND	ND	ND	ND
	6/6/13 and 6/11/13			ND	1.2	ND	ND
	9/11/2013			ND	ND	ND	ND
	12/10/2013			0.25	ND	ND	ND
1,4-Dichlorobenzene	8/23/2012	5,805,840	450,000	1.9	ND	1.9	ND
	1/4/2013			ND	ND	ND	ND
	3/20/2013			ND	ND	ND	ND
	6/6/13 and 6/11/13			ND	ND	ND	ND
	9/11/2013			ND	ND	ND	ND
	12/10/2013			ND	ND	ND	ND
Dichlorodifluoromethane (Freon 12)	8/23/2012	NA	4,950,000	7	2.3	11	6.6
	1/4/2013			2.6	1.7	2.6	3.5
	3/20/2013			3.2	2.6	3	3
	6/6/13 and 6/11/13			5.5	2.5	4.4	3.9
	9/11/2013			10	4.6	3.6	3.9
	12/10/2013			1.2	2.8	1.2	1.2
trans- 1,3- Dichloropropene	8/23/2012	4,613	5,000	ND	ND	ND	0.61
	1/4/2013			ND	ND	ND	ND
	3/20/2013			ND	ND	ND	ND
	6/6/13 and 6/11/13			ND	ND	ND	ND
	9/11/2013			ND	ND	ND	ND
	12/10/2013			ND	ND	ND	ND
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	8/23/2012	NA	7,000,000	17	0.78	20	2
	1/4/2013			2.7	1.3	1.7	0.83
	3/20/2013			6.4	1.7	1.2	1.2
	6/6/13 and 6/11/13			7.6	ND	1.1	0.98
	9/11/2013			16	6.1	2	2.2
	12/10/2013			0.71	2.7	0.33	0.32
Ethylbenzene	8/23/2012	7,281,812	435,000	0.49	ND	0.49	ND
	1/4/2013			1.2	1.3	1.6	1
	3/20/2013			3	2.1	2.4	2
	6/6/13 and 6/11/13			0.95	1.2	0.87	0.44
	9/11/2013			ND	ND	ND	ND
	12/10/2013			0.17	0.16	0.19	0.21
Methylene Chloride	8/23/2012	4,237,289	86,750	19	52	18	46
	1/4/2013			5.8	6.8	10	5.9
	3/20/2013			55	33	29	36
	6/6/13 and 6/11/13			38	42	49	24
	9/11/2013			34	32	35	29
	12/10/2013			2.3	2.2	2.4	2.7
Styrene	8/23/2012	34,633	456,000	27	6.6	28	6.7
	1/4/2013			6.8	7.4	7.2	5.3
	3/20/2013			6.8	7.1	9.7	9.2
	6/6/13 and 6/11/13			2.1	1.9	2.3	1.2
	9/11/2013			0.82	0.95	0.89	0.97
	12/10/2013			0.29	0.25	0.3	0.29
Tetrachloroethylene	8/23/2012	75,840	678,000	1.4	ND	29	3.6
	1/4/2013			2.9	3.1	8.6	3.3
	3/20/2013			8.9	5.7	5.5	7.7
	6/6/13 and 6/11/13			2.8	ND	3	8.1
	9/11/2013			8.2	5.5	7.9	7.4
	12/10/2013			1.1	1.4	1.1	1.5
Toluene	8/23/2012	2,910,779	750,000	280	150	300	140
	1/4/2013			31	41	44	25
	3/20/2013			45	32	50	48
	6/6/13 and 6/11/13			63	59	71	16
	9/11/2013			3.8	4.3	4.1	3.9
	12/10/2013			4.6	3.4	4	3.9
Trichloroethylene	8/23/2012	38,237	537,000	ND	ND	4.5	0.63
	1/4/2013			1	1.3	3.7	1.3
	3/20/2013			7	3.1	2.9	3.9
	6/6/13 and 6/11/13			ND	ND	ND	3.2
	9/11/2013			2.1	1.4	1.9	1.6
	12/10/2013			ND	0.11	0.12	0.15
Trichlorofluoromethane (Freon 11)	8/23/2012	NA	5,600,000	8.5	8	17	14
	1/4/2013			1.6	1.1	1.2	0.18
	3/20/2013			3	2.1	2	1.9
	6/6/13 and 6/11/13			4.4	3.4	9.6	6.7
	9/11/2013			10	11	8.3	7.3
	12/10/2013			1.1	1.2	1.1	0.76
1,2,4-Trimethylbenzene	8/23/2012	NA	125,000	ND	ND	ND	ND
	1/4/2013			ND	ND	ND	ND
	3/20/2013			ND	ND	ND	ND
	6/6/13 and 6/11/14			ND	1	ND	ND
	9/11/2013			ND	ND	0.71	0.63
	12/10/2013			ND	ND	ND	ND
M/p-Xylene	8/23/2012	2,215,755#	435,000	1.2	0.9	1.1	ND
	1/4/2013			6	6.3	7.1	4.3
	3/20/2013			11	8.7	9.7	8.1
	6/6/13 and 6/11/13			3.2	3.8	2.8	2.2
	9/11/2013			1.1	1.1	1.1	1.1
	12/10/2013			0.9	0.89	0.93	1.1
o-Xylene	8/23/2012	2,215,755#	435,000	0.45	ND	0.45	ND
	1/4/2013			1.3	1.4	1.4	0.88
	3/20/2013			3.5	2.8	3.2	2.7
	6/6/13 and 6/11/13			1.2	1.4	1.1	0.83
	9/11/2013			ND	0.46	0.45	ND
	12/10/2013			0.28	0.3	0.32	0.36

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 PEL's = Occupational Safety and Health Administration Permissible Exposure Limits  
CT DEP= Connecticut Department of Environmental Protection  
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

**Table 3**  
**Indoor Air Monitoring Results**  
**Springfield Street School Complex**  
**Providence, Rhode Island**  
**December 11, 2013**

<b>Monitoring Location</b>	<b>Methane as % LEL</b>	<b>Carbon Dioxide PPM</b>	<b>Oxygen % by volume</b>	<b>Carbon Monoxide PPM</b>	<b>Hydrogen Sulfide PPM</b>	<b>Organic Vapors PPM</b>
E.S. Front office	0.0	704	21.3	0	0	0.0
E.S. Elevator	0.0	868	21.3	0	0	0.0
E.S. Faculty Work Room	0.0	540	21.4	0	0	0.0
E.S. Gym	0.0	744	21.3	0	0	0.0
E.S. Stairway B	0.0	731	21.4	0	0	0.0
E.S. Stairway C	0.0	744	21.2	0	0	0.0
E.S. Library	0.0	757	21.3	0	0	0.0
E.S. Front Stairs	0.0	744	21.2	0	0	0.0
E.S. Cafeteria	0.0	736	21.1	0	0	0.0
E.S. Hall Near Gym	0.0	625	21.2	0	0	0.0
E.S. Electricity Closet	0.0	718	21.3	0	0	0.0

**Table 3**  
**Indoor Air Monitoring Results**  
**Springfield Street School Complex**  
**December 11, 2013**

<b>Monitoring Location</b>	<b>Methane as % LEL</b>	<b>Carbon Dioxide PPM</b>	<b>Oxygen % by volume</b>	<b>Carbon Monoxide PPM</b>	<b>Hydrogen Sulfide PPM</b>	<b>Organic Vapors PPM</b>
<b>M.S. Front Office</b>	0.0	791	21.2	0	0	0.0
<b>M.S. Elevator</b>	0.0	790	21.2	0	0	0.0
<b>M.S. Stairway near Elem. School GS-01</b>	0.0	863	21.2	0	0	0.0
<b>M.S. Near sensor #16 in hall outside cafeteria</b>	0.0	765	21.2	0	0	0.0
<b>M.S. Faculty Work Room</b>	0.0	673	21.1	0	0	0.0
<b>M.S. Sensor #15 Outside Gym</b>	0.0	757	21.2	0	0	0.0
<b>M.S. GS-03 Across from Boys Bathroom</b>	0.0	862	21.2	0	0	0.0
<b>M.S. Second Floor - Library</b>	0.0	795	21.2	0	0	0.0
<b>M.S. Janitor Office</b>	0.0	635	21.3	0	0	0.0
<b>M.S. Cafeteria</b>	0.0	865	21.1	0	0	0.2
<b>M.S. GS-13 Gym</b>	0.0	832	21.2	0	0	0.0

**Table 3**  
**Indoor Air Monitoring Results**  
**Springfield Street School Complex**  
**December 11, 2013**

<b>Monitoring Location</b>	<b>Methane as % LEL</b>	<b>Carbon Dioxide PPM</b>	<b>Oxygen % by volume</b>	<b>Carbon Monoxide PPM</b>	<b>Hydrogen Sulfide PPM</b>	<b>Organic Vapors PPM</b>
<b>M.S.</b> Front Hall near sensor #4	0.0	747	21.0	0	0	0.0
<b>M.S.</b> Hallway across from elevator near sensor #9	0.0	770	21.2	0	0	0.0
<b>M.S.</b> Near sensor GS 06 hallway right end	0.0	710	21.2	0	0	0.0
<b>M.S.</b> stairway near Hartford Ave. sensor GS-7	0.0	670	21.2	0	0	0.0
<b>Remedial Action Work Plan Action Levels</b>	<b>0.5</b>	<b>1,000 ppm (0.1%)</b>	<b>NA</b>	<b>9 ppm</b>	<b>5 ppm</b>	<b>5 ppm</b>

**Notes:**

E.S. indicates Elementary School, M.S. indicates Middle School  
Measurements made with: MiniRae photoionization detector, Fluke 975 Airmeter, Landtec Gem 2000 Plus  
PPM = Parts per million  
Outdoor conditions: Carbon dioxide = 506 ppm Temperature = 29 degrees F

**Table 4  
Groundwater Monitoring Results  
Springfield Street School  
Providence, Rhode Island**

Well ID	Detected Compounds	Sampling Dates and Results in ug/L																RIDEM GB Groundwater Objective
		3/1/2010	5/20/2010	8/25/2010	11/19/2010	2/24/2011	6/16/2011	10/3/2011	12/6/2011	3/15/2012	5/29/2012	8/21/2012	12/19/2012	3/21/2013	6/6/2013	9/11/2013	12/10/2013	
ATC-1	Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
	n-butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	sec-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	tert-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
	Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	n-Propylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	MTBE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5000
	Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	540
	Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
	1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
ATC-2	Chloroform	NS	NS	NS	NS	NS	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	NA
MW-6	Chloroform						ND	2.0	ND	ND	ND	2.2	ND	ND	2.9	2.5	NS	NA
	Installed 4/2011																	
ATC-3	Toluene	NS	NS	NS	NS	NS	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	1700
MW-7							ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Installed 4/2011																	
ATC-4	Benzene	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
	Chlorobenzene	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	70
	1,4-dichlorobenzene	ND	ND	ND	1.5	NS	NS	ND	ND	ND	1.9	ND	2.1	1.2	1.7	1.8	2.3	NA
	MTBE	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5000
	1,2,4-Trimethylbenzene	ND	ND	ND	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	tert-Amyl Methyl Ether (TAME)	ND	ND	0.5	ND	NS	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Trichloroethylene	ND	ND	ND	ND	NS	NS	1.1	1.3	ND	ND	ND	ND	ND	ND	ND	ND	540
ATC-5	MTBE	ND	ND	NS	NS	NS	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	5000
	Chloroform	ND	ND	NS	NS	NS	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	Closed 4/2011	NA
MW-8							ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Installed 4/2011																	
Sampled By:		ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	ARCADIS	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

**Table 5**  
**Soil Gas Survey Field Notes**  
**Springfield Street School Complex**  
**Providence, Rhode Island**  
**December 9, 2013**

<b>Monitoring Well</b>	<b>Methane % by volume</b>	<b>Carbon Dioxide % by volume</b>	<b>Oxygen % by volume</b>	<b>Carbon Monoxide PPM</b>	<b>Hydrogen Sulfide PPM</b>	<b>Organic Vapors PPM</b>
WB-1	0.0	2.8	11.3	0	0	0.0
WB-2	0.0	0.7	21.1	0	0	0.0
WB-3	0.0	0.3	21.6	0	0	0.0
WB-4	0.0	0.2	21.7	0	0	0.0
WB-5	0.0	0.1	21.8	0	0	0.0
WB-6	0.0	0.1	21.8	0	0	0.0
WB-7 R	0.0	0.3	21.3	0	0	0.0
WB-8	0.0	0.8	21.2	0	0	0.0
WB-12	0.0	1.0	20.7	0	0	0.0
WB-13	0.0	0.8	20.3	0	0	0.0
WB-14	0.0	0.3	21.3	0	0	0.0
WB-15	0.0	1.0	20.2	0	0	0.0
EPL-1	0.0	0.4	21.3	0	0	0.0
EPL-2	0.0	0.8	20.6	0	0	0.0
EPL-3	0.0	1.3	19.9	0	0	0.0
EPL-4	0.0	4.6	16.0	0	0	0.0
EPL-5	0.0	3.6	17.0	0	0	0.0
ENE-1	0.0	4.5	16.7	0	0	0.0

**Table 5**  
**Soil Gas Survey Field Notes**  
**Springfield Street School Complex**  
**Providence, Rhode Island**  
**September 10, 2013**

Monitoring Well	Methane % by volume	Carbon Dioxide % by volume	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
MG1	0.0	3.3	17.7	0	0	0.0
MG2	0.0	0.5	20.9	0	0	0.0
MG3	0.0	2.5	19.0	0	0	0.0
MG4	0.0	1.7	19.2	0	0	0.0
MG5	0.0	4.5	16.0	0	0	0.0
MPL2	0.0	5.1	16.3	0	0	0.0
MPL3	0.0	8.3	12.6	0	0	0.0
MPL5	0.0	8.6	13.2	0	0	0.0
MPL6	0.0	10.8	4.5	0	0	0.0
MPL7	0.0	8.4	12.7	0	0	0.0
MPL8	0.0	3.5	17.4	0	0	0.0
<b>Remedial Action Work Plan Action Levels</b>	<b>0.5%</b>	<b>0.1% (1,000 PPM)</b>	<b>NA</b>	<b>9 PPM</b>	<b>10 PPM</b>	<b>5 PPM</b>

**Sampled by:** Andrew DaSilva

**Weather Conditions:** Snowing/raining, 40 degrees Fahrenheit

**Sampling Equipment:** Landtec GEM 2000 Plus, MiniRae 2000 PID

**Figure**
















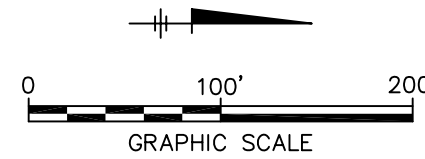
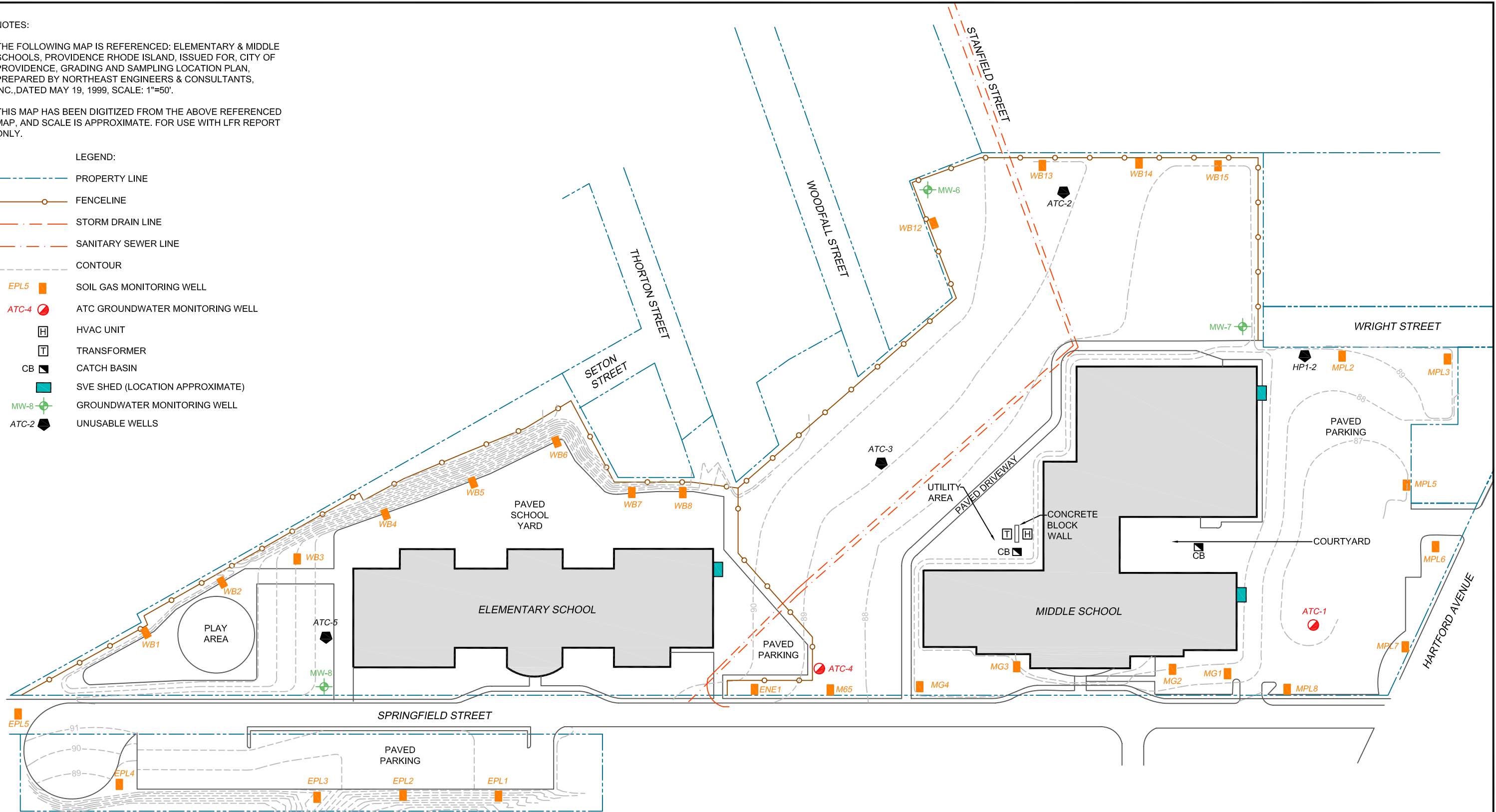
NOTES:

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	
<b>SITE PLAN</b>	
	FIGURE <b>2</b>

CITY: MANCHESTER, CT DIV/GROUP: ENVCAD DR: B. SMALL PW: TM: PLOTTED: 11/11/2011 8:17 AM BY: SMALL, BRIAN  
G:\ENVCAD\Manchester\ACT\WK0121520007\0001\WK0121520007.dwg LAYOUT: 2 SAVER: 7/28/2011 2:32 PM ACADVER: 18.1S (LMS TECH) PAGES: 2 PAGES: 2 PAGES: 2 PAGES: 2