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

SER-1

Subject:
August 2010 Quarterly Monitoring Report for Springfield Street School Complex

Date:
September 16, 2010

Contact:
Donna H. Pallister, PE

Phone:
401-738-3887

Email:
Donna.pallister@arcadis-us.com

Our ref:
WK012152.0007

Dear Mr. Crawford:

ARCADIS Inc. (ARCADIS, formerly LFR, Inc.) conducted quarterly monitoring of soil gas, indoor air, the cap, and the sub-slab ventilation system between August 23 and 27, 2010. 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.

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

COVER MONITORING

ARCADIS conducted a visual survey of the site on August 26, 2010 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. Some small holes were observed adjacent to the Middle School foundation on the east side of the building near the transformer, on the east side near the door to the gymnasium, and in the courtyard on the north end of the school near the boiler room.

The Providence School Department will repair these areas and documentation of the repairs will be submitted.

SUB-SLAB VENTILATION SYSTEM

The sub-slab ventilation system was inspected by ARCADIS during the quarterly monitoring on August 26, 2010. The subslab ventilation system blowers at the elementary school were operating normally upon arrival at the Site. The blower in the front shed at the middle school was off upon arrival; water was drained from the knockout tank, and the blower was restarted on August 26. The blower in the back shed at the middle school was not operating on August 26, 2010 because repairs were in progress.

Carbon dust was observed in the rear blower shed during 2010. Several repairs were made to the PVC piping connecting the blowers and carbon vessels to repair leaks. During the summer of 2010 the janitor at the school reported observing black dust coming out of the stack for the rear blower. In response, the system was shut down, and Service Tech was retained to remove the carbon from the vessels so the interior could be inspected.

Service Tech removed the carbon from the vessels on August 24, 2010. Inspection of the interior of the vessels revealed that the piping inside the carbon vessels was PVC, with holes large enough to allow the passage of carbon pellets. The piping had apparently been wrapped with window screen when it was initially installed, but the window screen had fallen off or deteriorated such that it no longer prevented the carbon pellets from entering the piping. On August 27, the vessels were entered (in accordance with appropriate confined space entry precautions) and the piping was replaced with slotted PVC which will not allow carbon pellets to enter the piping. The shed was also cleaned by power washing to remove carbon dust, and wash water was collected and disposed of properly off-site. The blower was then restarted.

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, a MiniRae 2000, and a Q-Rae multigas meter. Results of screening are provided on Table 1. Methane, hydrogen sulfide and organic vapors were not detected in any of the samples. Carbon dioxide was detected at concentrations ranging from 0.0% to 0.6%; four of the five sample concentrations were greater than the RAWP Action Level of 1000 ppm. Carbon monoxide was detected at concentrations of 3 to 6 ppm, which is below the RAWP action level of 9 ppm.

INDOOR AIR MONITORING

Indoor air monitoring was conducted on August 26, 2010 using a QRAE plus multi-gas meter (methane, hydrogen sulfide, oxygen), a Mini Rae photoionization detector (organic vapors), and a Fluke 975 Airmeter (carbon dioxide, carbon monoxide). School was not in session during the monitoring event. Results of monitoring are provided in the Table 2. 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.

All readings were below the RAWP Action Levels. The outside temperature on August 26th was 73.4 ^{o}F. Carbon dioxide was measured outside in the school parking lot at 380 ppm.

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_2 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 August 26, 2010. 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

Two of five groundwater monitoring wells were sampled by ARCADIS on May 20, 2010. Three monitoring wells, ATC-2, ATC-3, and ATC-5 were not able to be sampled because they were obstructed. Prior to sampling, the depth to water was gauged, and a volume of water equivalent to approximately three well volumes was removed from each 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 3.

The only compound detected in the samples collected during this round of monitoring was tert-Amyl Methyl Ether (TAME) detected at 0.5 µg/L. TAME is a fuel oxygenate found in gasoline. The concentration detected, 0.5 µg/L was equal to the detection limit of the method used.

SOIL GAS MONITORING

Soil gas monitoring was conducted at 28 locations on August 25, 2010. 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, a QRAE 4-gas meter and a MiniRae Photoionization Detector (PID).

Air samples were also collected in Tedlar bags from wells WB-2 and MPL-6. The Tedlar bags were submitted to Con-test Analytical Laboratory for analysis for VOC via EPA method TO-14.

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 4. Methane, organic vapors and hydrogen sulfide were not detected in any samples. Carbon monoxide was detected at one location, EPL-2, at a concentration of 4 ppm, which is less than the RAWP action level of 9 ppm. Carbon monoxide was not detected any other soil gas sampling locations.

Carbon dioxide was detected in soil gas at concentrations ranging from 0.1% to 9.7%. The carbon dioxide Remedial Action Work Plan Action Level is 0.1% and 24 readings exceeded the action level. The maximum concentration detected during this round, 9.7%, is higher than the maximum detected during the May 2010 monitoring round when the maximum concentration detected was 7.8%. This is consistent with the pattern shown during previous rounds of declining carbon dioxide concentrations in the winter, and increasing concentrations in the summer. Graphs presenting carbon dioxide, oxygen, and methane concentrations over time for seven 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 adjacent to the parking lot. 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.

Soil Gas Laboratory Results

Soil gas samples were collected from soil gas wells MPL-6 and WB-2 in Tedlar bags and submitted to Con-Test Analytical Laboratories for analysis by method TO-14. Results of the analysis are summarized in Table 5, and the laboratory report is provided in Attachment B. The results of analysis were generally consistent with the concentrations and compounds which have been detected in previous monitoring events.

The Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) are provided in Table 5 for comparison purposes even though they are not 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.

CONCLUSIONS

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

Inspection of the cap detected some small areas requiring repairs. Documentation of the repairs will be submitted separately.

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

Copies:
S. Tremblay, Providence Schools
A. Sepe, City of Providence
Providence Public Building Authority

Tables

Table 1
System Monitoring Notes
Springfield Street School Complex
Providence, Rhode Island
August 26, 2010

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	0.6	20.6	4	0	0.0
Elementary School inlet 2	0	0.4	20.8	6	0	0.0
Elementary School Outlet	0	0.4	20.7	4	0	0.0
Middle School front shed inlet	0	0.3	20.9	3	0	0.0
Middle School front shed after 2nd carbon	0	0.0	20.9	3	0	0.0
Middle School back shed inlet	Not operating					
Middle School back shed after 2nd carbon	Not Operating					
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, a MiniRae 2000, and a Q-Rae multigas meter

Sampling date: August 26, 2010

Measured by: D.H. Pallister

Table 2
Indoor Air Monitoring Results
Springfield Street School Complex
Providence, Rhode Island
August 26, 2010

Monitoring Location	Methane as % LEL	Carbon Dioxide PPM	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
E.S. Front office	0	411	20.9	0	0	0.0
E.S. Elevator	0	393	20.9	0	0	0.0
E.S. Faculty Work Room	0	379	20.9	0	0	0.0
E.S. Gym	0	369	20.9	0	0	0.0
E.S. Stairway B	0	375	20.9	0	0	0.0
E.S. Stairway C	0	366	20.2	0	0	0.0
E.S. Library Entrance	0	372	20.9	0	0	0.0
E.S. Room 111 Music Room	0	381	20.9	0	0	0.0
E.S. Cafeteria	0	375	20.2	0	0	0.0
E.S. Mechanical Room	0	391	20.9	0	0	0.0

Table 2
Indoor Air Monitoring Notes
Springfield Street School Complex
August 26, 2010, 2010

Monitoring Location	Methane as % LEL	Carbon Dioxide PPM	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
M.S. Front Office	0	552	20.9	0	0	0.0
M.S. Elevator	0	433	20.9	1	0	0.0
M.S. Stairway near Elem. School GS-01	0	441	20.9	0	0	0.0
M.S. Near sensor #16 in hall outside cafeteria	0	450	20.9	0	0	0.0
M.S. Faculty Work Room	0	450	20.9	0	0	0.0
M.S. Music/Act Rm	0	442	20.9	0	0	0.0
M.S. GS-03 Across from Boys Bathroom	0	419	20.9	0	0	0.0
M.S. Room 105	0	425	20.9	0	0	0.0
M.S. Second Floor Hall near central stairs	0	423	20.9	0	0	0.0

Table 2
Indoor Air Monitoring Notes
Springfield Street School Complex
August 26, 2010, 2010

Monitoring Location	Methane as % LEL	Carbon Dioxide PPM	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
M.S. Cafeteria	0	440	20.9	0	0	0.0
M.S. Front Hall near sensor #4	0	422	20.9	0	0	0.0
M.S. Hallway across from elevator near sensor #9	0	417	20.9	0	0	0.0
M.S. Near sensor GS 06 – hallway right end	0	415	20.9	0	0	0.0
Remedial Action Work Plan Action Levels	**0.5**	**1,000 ppm (0.1%)**	**NA**	**9 ppm**	**10 ppm**	**5 ppm**

Notes:

E.S. indicates Elementary School, **M.S.** indicates Middle School

Measurements made with: Landtec GEM2000 Plus, a MiniRae 2000, and a Q-Rae multigas meter

PPM = Parts per million

Outdoor conditions: carbon monoxide = 0, carbon dioxide = 380, temperature = 73.4 ºF.

Table 3
Summary of Ground Water Sampling Results
Springfield Street School Complex
Springfield Street
Providence, Rhode Island

Monitoring Wells	Detected Compounds	Sampling Dates and Results in µg/L																																			RIDEM GB Groundwater Objective
		2/28/2001	7/20/2001	*9- 12/2001	8/1/2002	8/28/2002	12/19/2002	3/18/2003	7/17/2003	11/5/2003	1/22/2004	5/21/2004	8/17/2004	12/2/2004	4/6/2005	7/27/2005	10/27&28/2005	2/2/2006	4/27/2006	8/31/2006	11/15/2006	3/27/2007	5/21/2007	8/20/2007	11/13/2007	2/12/2008	5/21/2008	8/26/2008	11/18/2008	2/17/2009	5/7/2009	8/25/2009	11/18/2009	3/1/2010	5/20/2010	8/25/2010	
ATC-1																																					
	Benzene	6.1	ND	18.9	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
	n-butylbenzene	1.7	ND	2.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	sec-Butylbenzene	1.1	ND	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Ethylbenzene	4.5	ND	12.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1600
	Isopropylbenzene	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	n-Propylbenzene	ND	ND	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	MTBE	12.4	7.0	28.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	5000
	Trichloroethylene	ND	ND	ND	ND	ND	ND	ND	1.27	ND	ND	ND	ND	ND	1.10	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	540
	Toluene	2.5	ND	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700
	1,2,4-Trimethylbenzene	2.2	ND	8.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	1,3,5-Trimethylbenzene	3.4	ND	5.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	Xylenes	14.6	ND	37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
ATC-2																																					
	Chloroform	0.9	ND	ND	1.0	ND	ND	ND	ND	ND	NS	1.1	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NA
ATC-3																																					
	Toluene	ND	ND	ND	ND	NS	ND	ND	ND	ND	3.03	ND	ND	ND	ND	ND	ND	3.0	ND	4.5	13.1	ND	2.3	1.3	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ATC-4																																					
	Benzene	ND	ND	2.5	0.6	ND	ND	ND	ND	ND	ND	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140
	Chlorobenzene	2.6	ND	57.3	2.7	5.18	ND	ND	ND	ND	ND	ND	ND	0.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.80	1.90	ND	ND	1.2	ND	ND	ND	1	ND	ND	ND	ND	70
	1,4-dichlorobenzene	4.2	ND	9.2	3.4	3.36	ND	ND	ND	ND	ND	0.80	1.6	2.1	ND	ND	ND	ND	ND	1.2	1.1	ND	1.2	2.1	2.1	ND	ND	2.1	1.4	ND	1.7	1.5	ND	ND	ND	ND	NA
	MTBE	ND	ND	ND	ND	ND	ND	ND	1.19	9.55	1.06	2.90	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5000
	1,2,4-Trimethylbenzene	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	tert-Amyl Methyl Ether (TAME)																																			0.5	NA
ATC-5																																					
	MTBE	ND	ND	2.2	NS	ND	ND	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	5000
	Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	NA
Sampled By:		ATC	ATC	ATC	ATC	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	LFR	ARCADIS	ARCADIS	ARCADIS	

*ATC Monitoring Report for September through December 2001 did not list date samples were collected.
ND is not detected above method detection limit
NS is not sampled
NA= No applicable standard published
MTBE is Methyl tert-Butyl Ether
µg/L = micrograms per liter

Table 4
Soil Gas Survey Field Notes
Springfield Street School Complex
Providence, Rhode Island
August 25, 2010

Monitoring Well	Methane % by volume	Carbon Dioxide % by volume	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
WB-1	0.0	0.1	21.2	0	0	0.0
WB-2	0.0	1.3	19.8	0	0	0.0
WB-3	0.0	0.2	21.2	0	0	0.0
WB-4	0.0	0.1	21.2	0	0	0.0
WB-5	0.0	0.1	21.3	0	0	0.0
WB-6	0.0	0.6	20.7	0	0	0.0
WB-7	NM	NM	NM	NM	NM	NM
WB-8	0.0	0.1	21.2	0	0	0.0
WB-12	0.0	1.5	19.9	0	0	0.0
WB-13	0.0	1.0	19.4	0	0	0.0
WB-14	0.0	0.8	19.8	0	0	0.0
WB-15	0.0	5.4	12.3	0	0	0.0
EPL-1	0.0	1.1	20.5	0	0	0.0
EPL-2	0.0	2.5	18.6	4	0	0.0
EPL-3	0.0	3.6	17.8	0	0	0.0
EPL-4	0.0	2.8	17.7	0	0	0.0
EPL-5	0.0	4.6	15.3	0	0	0.0
ENE-1	0.0	0.6	20.4	0	0	0.0

Table 4
Soil Gas Survey Field Notes
Springfield Street School Complex
Providence, Rhode Island
August 25, 2010

Monitoring Well	Methane % by volume	Carbon Dioxide % by volume	Oxygen % by volume	Carbon Monoxide PPM	Hydrogen Sulfide PPM	Organic Vapors PPM
MG1	0.0	0.5	20.0	0	0	0.0
MG2	0.0	2.6	18.5	0	0	0.0
MG3	0.0	0.5	20.9	0	0	0.0
MG4	0.0	0.8	20.0	0	0	0.0
MG5	0.0	0.2	21.0	0	0	0.0
MPL2	0.0	9.7	6.2	0	0	0.0
MPL3	0.0	7.8	10.8	0	0	0.0
MPL5	0.0	0.7	20.0	0	0	0.0
MPL6	0.0	8.6	12.7	0	0	0.0
MPL7	0.0	8.6	12.5	0	0	0.0
MPL8	0.0	4.6	16.0	0	0	0.0
Remedial Action Work Plan Action Levels	**0.5%**	**1,000 PPM**	**NA**	**9 PPM**	**10 PPM**	**5 PPM**

Sampled by: Chris Jamison

Weather Conditions: Overcast, drizzle, 75-80F

Sampling Equipment: Landtec GEM 2000 Plus, MiniRae 2000 PID, QRae 4 gas meter

NM = Not measured. Well WB-7 contained water to top of casing on day of sampling.

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Appendix 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's 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.

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Appendix B

Laboratory Results

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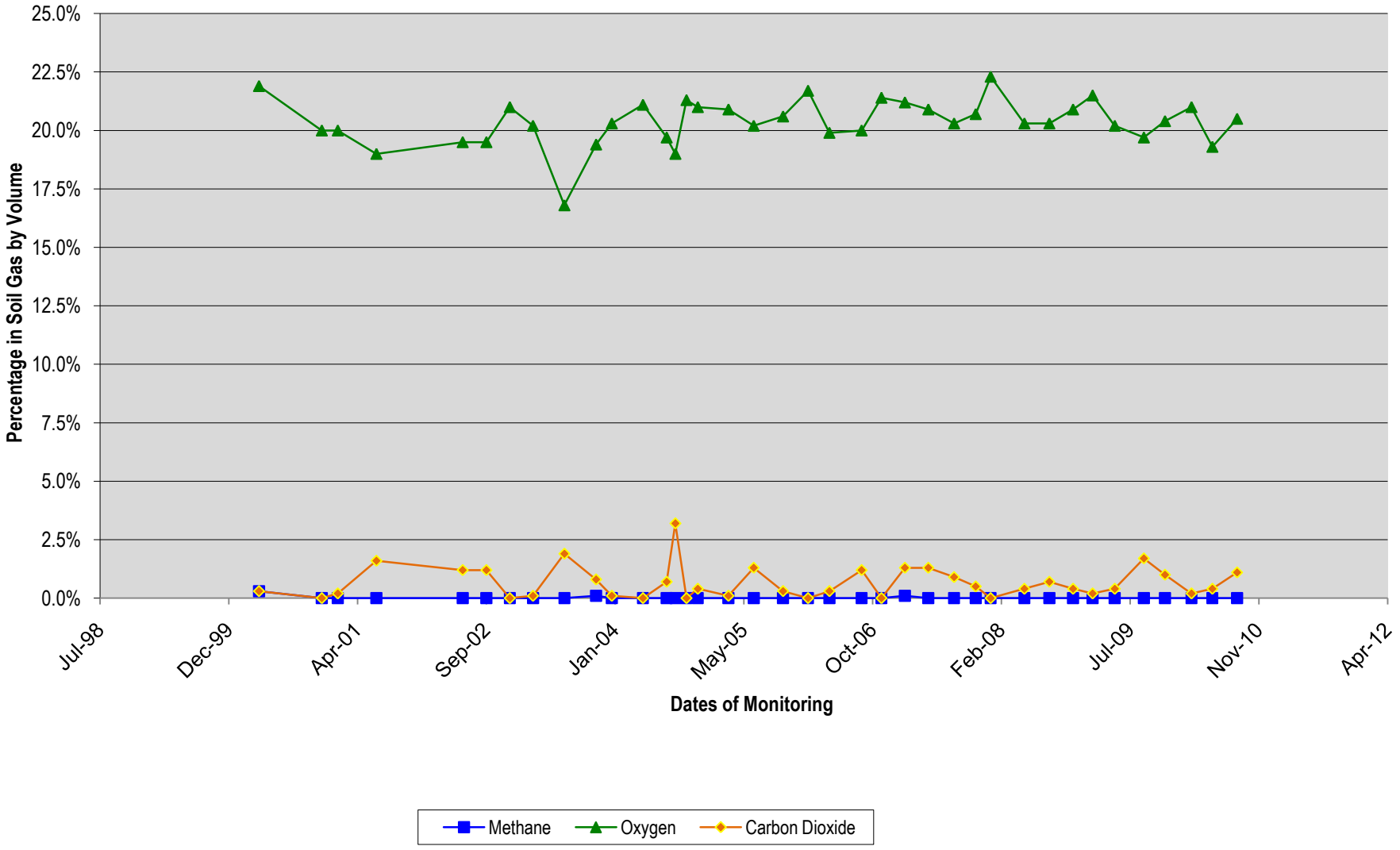
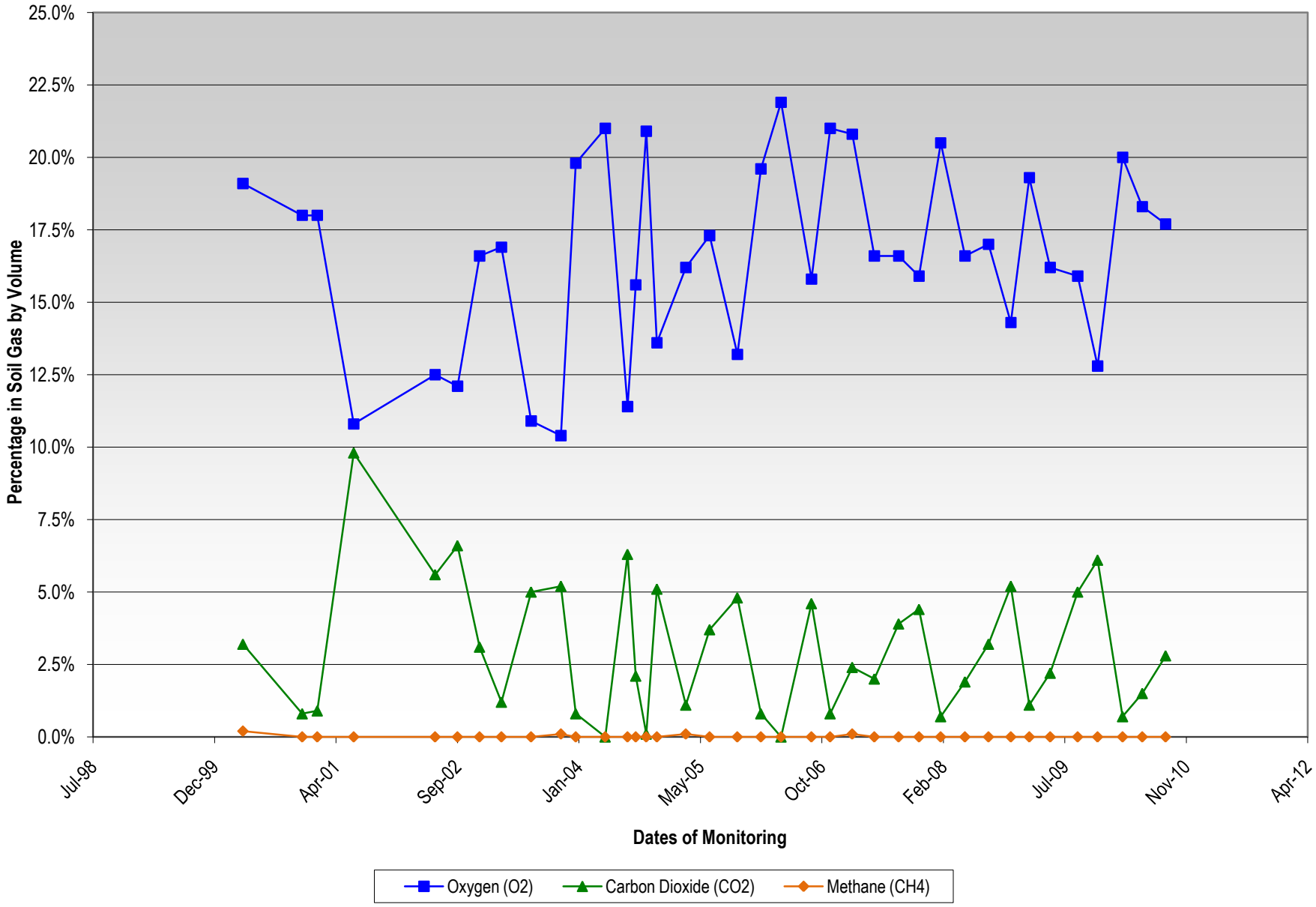
Appendix C

Soil Gas Parameter Graphs

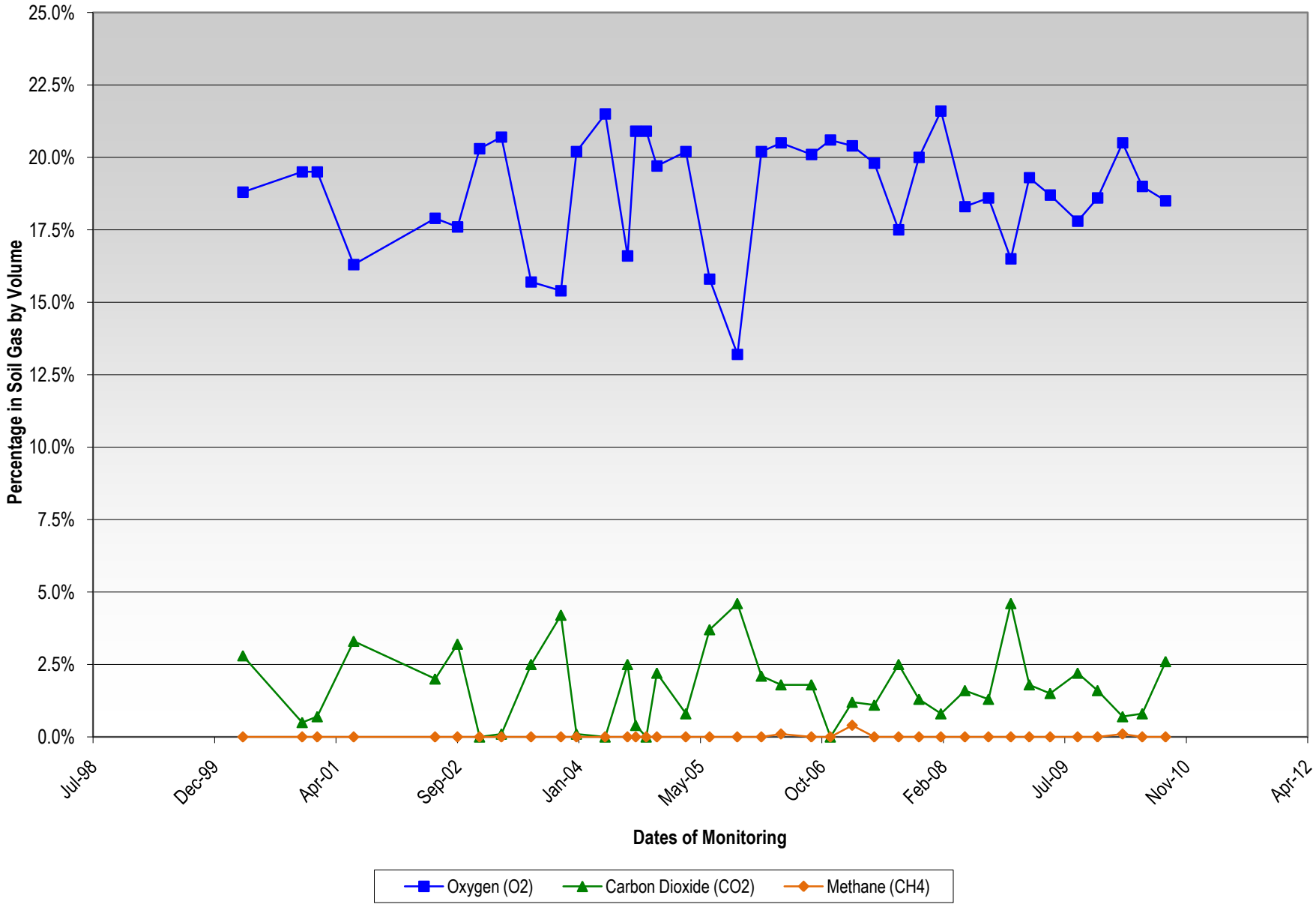
Soil Gas Well EPL1
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



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



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



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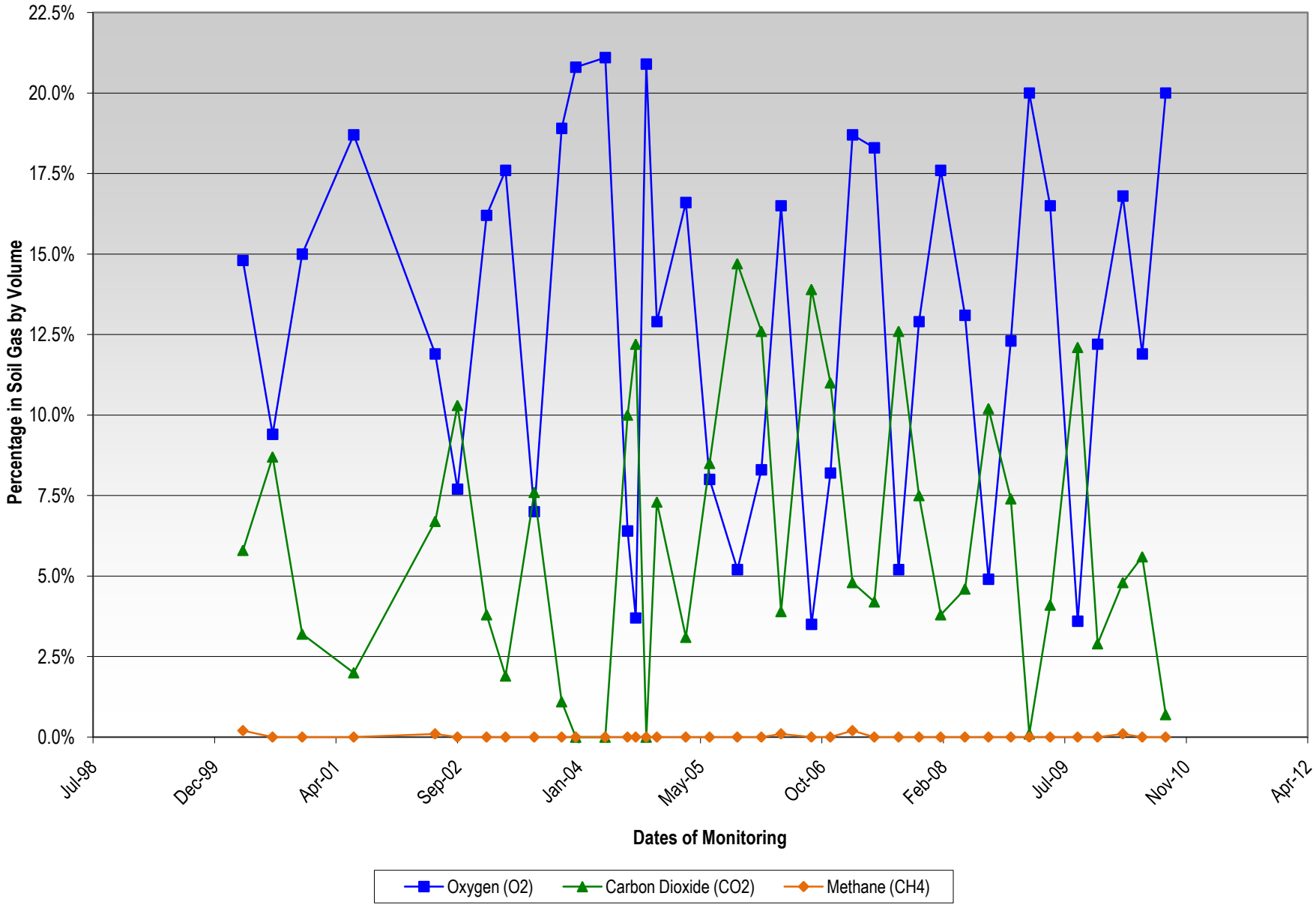
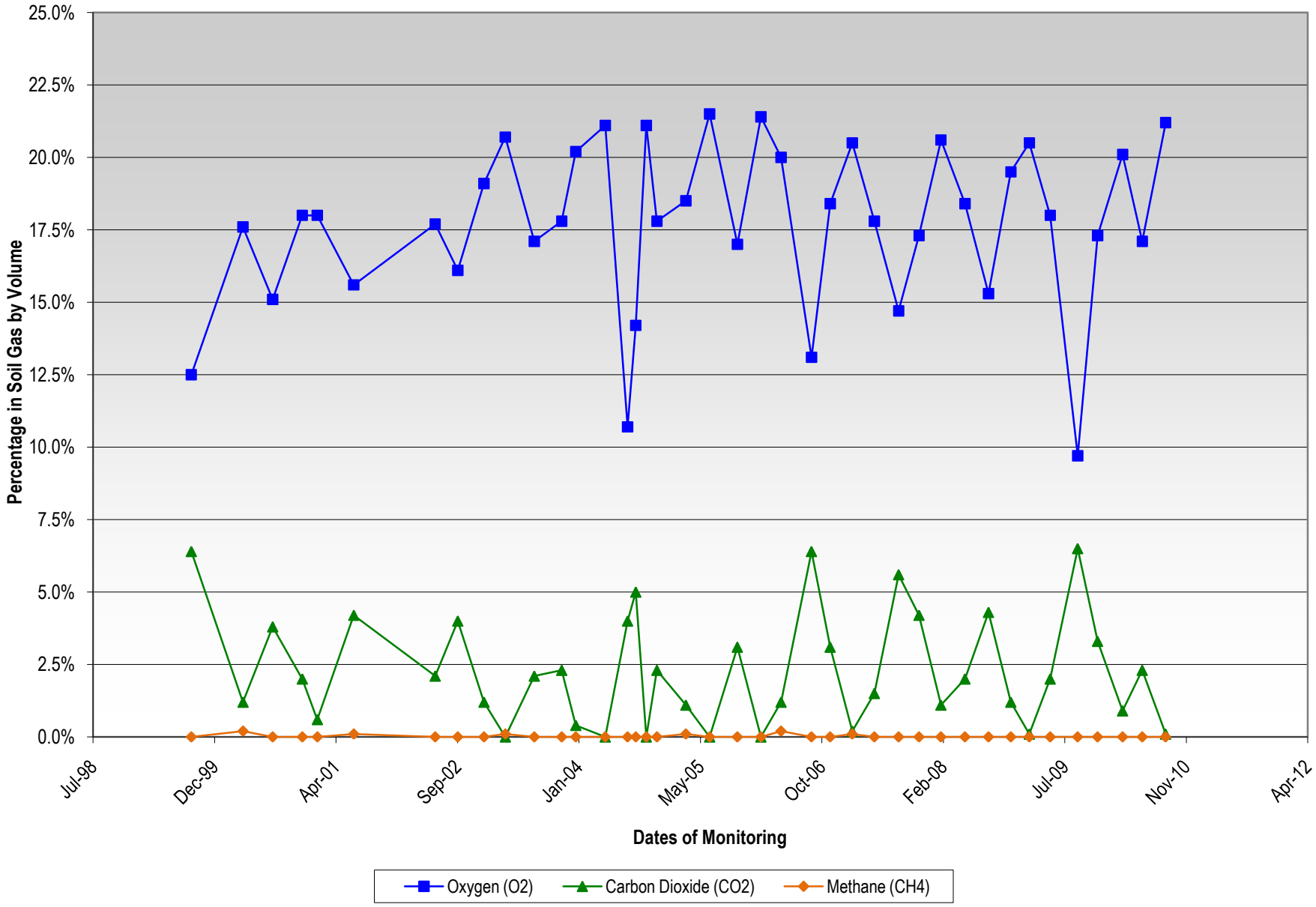
Soil Gas Well MPL5
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island



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



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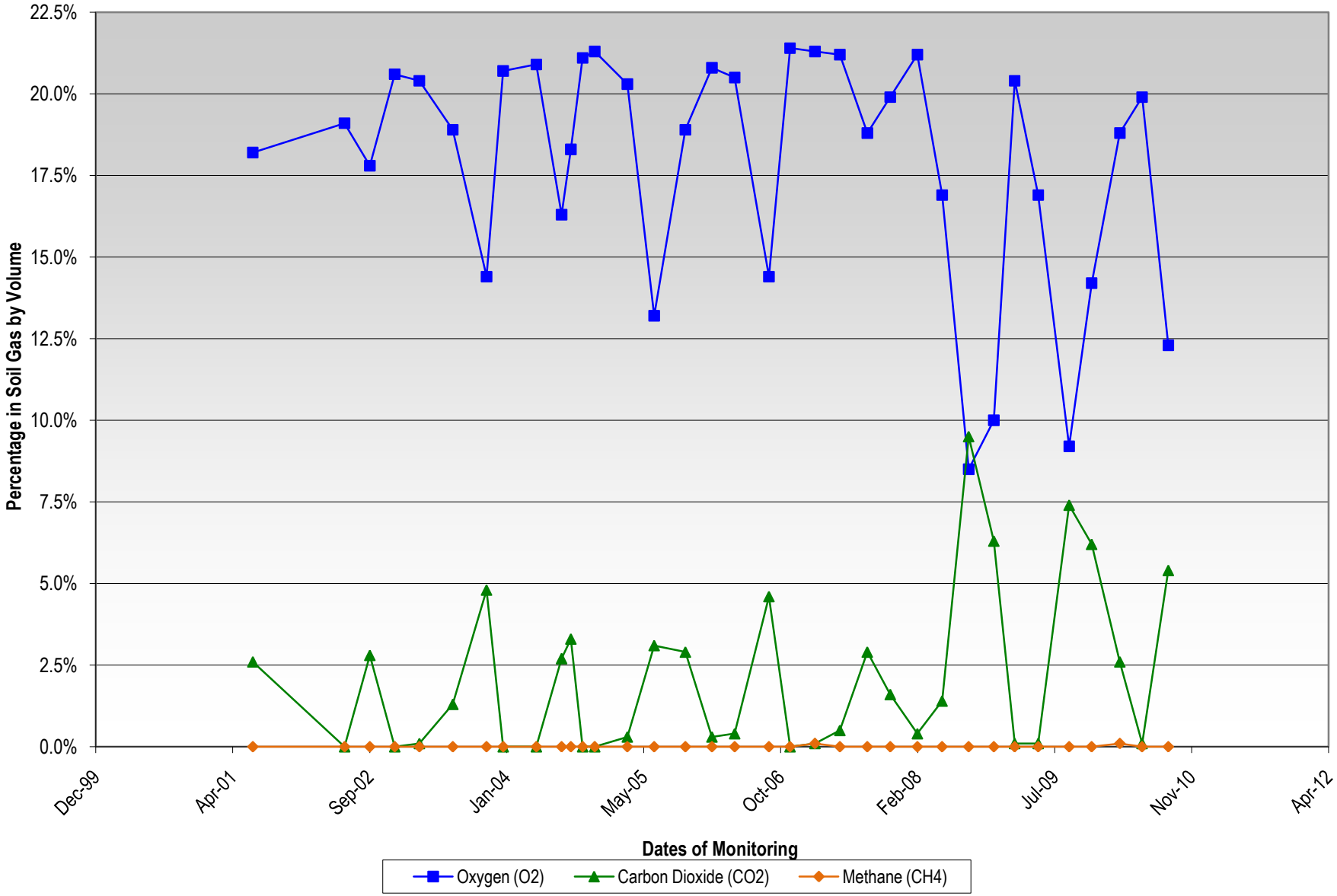
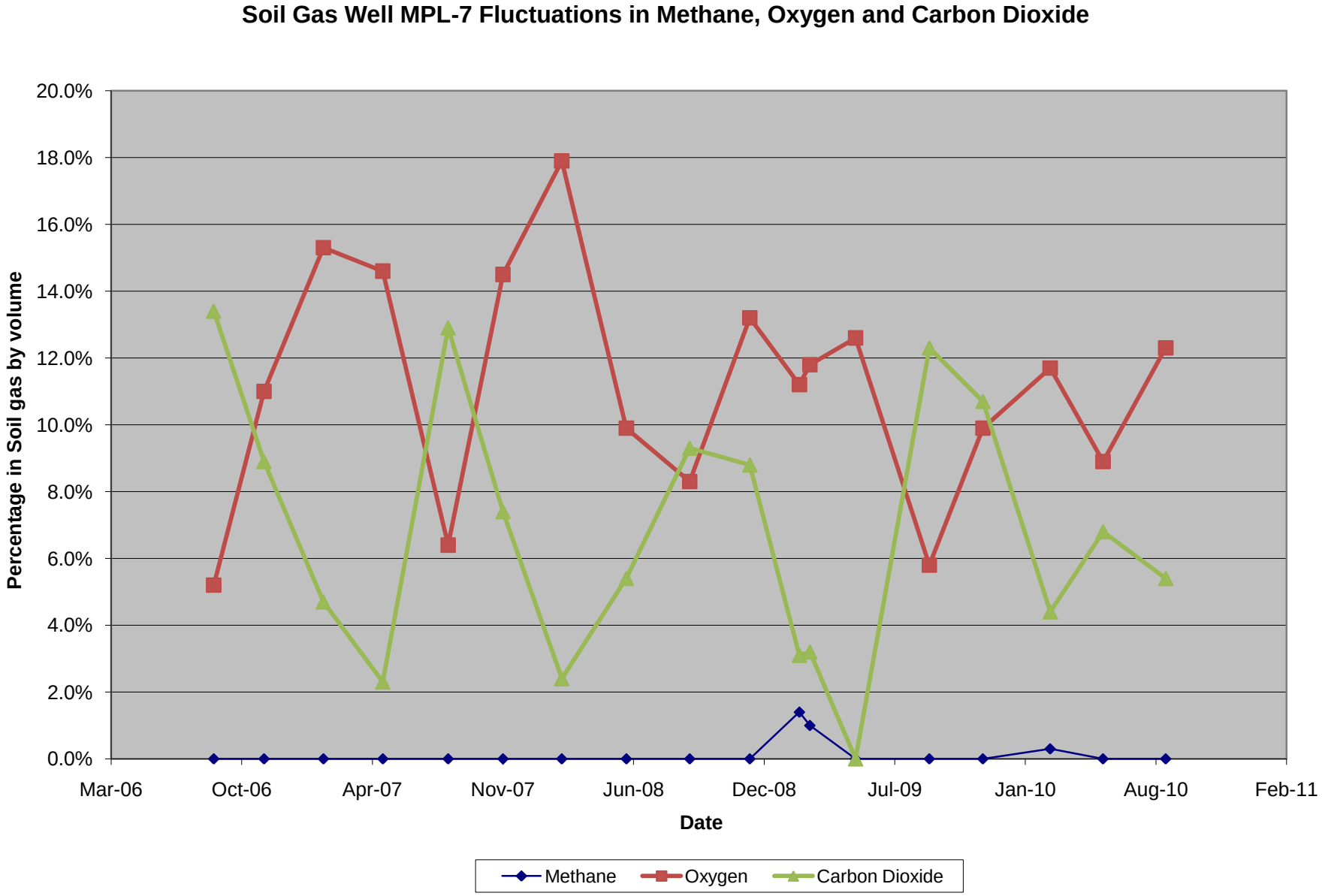
Soil Gas Well WB15
Fluctuation in Methane, Oxygen, and Carbon Dioxide Percentages over Time
Springfield Street School Complex
Providence, Rhode Island




Soil Gas Well MPL-7 Fluctuations in Methane, Oxygen and Carbon Dioxide
Percentage in Soil gas by volume
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
Jan-10
Aug-10
Feb-11
Date
Methane
Oxygen
Carbon Dioxide