

August 3, 2020

Ms. Cindy Koepke
Bureau for Remediation and Redevelopment
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Re: DNR BRRTS Activity #02-33-582970
Landfill Gas Monitoring, Darlington City Historic Landfill
149 Wells Street, Darlington, WI
July 2020 Monitoring Results

Dear Ms. Koepke:

Ayres Associates Inc (Ayres), on behalf of the City of Darlington (City), is providing the July 2020 site sampling results of gas probes on the site perimeter at 149 Wells Street. This monitoring event was conducted on July 8, 2020. This is the tenth event conducted under the July/December monitoring events as noted in September 10, 2015, Wisconsin Department of Natural Resources letter detailing revised monitoring frequency.

Results Discussion

All monitoring locations were accessible, dry, and the probes and sample ports appeared in good working order, except for GP-104. Due to recent storm events, the entire box was filled with water, making it impossible to sample. Ayres received permission to remove GW-20R from the sampling protocol in an email dated February 24, 2020. This was the first sampling event that did not need to include GW-20R, but another attempt was made to locate the probe. Although a metal detector was used to attempt to locate the probe, for the third time in a row, it could not be found.

The quarterly monitoring used a calibrated Landtec GEM 2000 landfill gas meter. The attached monitoring results show that six of the ten monitoring points sampled had detections of methane in them, two of which were over the lower explosive limit (LEL) of 5% methane and one of which was over the upper explosive limit (UEL) of 15%. The probe that showed levels over the UEL was located at GW-106R, which is just east of the storage area behind the shopping center. The last sampling event which occurred in December 2019 showed two methane detections, one of which was over the LEL, and last year's July 2019 monitoring event exhibited zero methane detections.

It is known that methane has higher emission rates at landfills during wet seasons due to a decreased methane oxidation environment; meaning methane emissions increase in anaerobic environments, such as wet soil. Due to recent storm events resulting in 6.76 inches of rainwater since the beginning of June¹, this could be a plausible explanation for the increased methane emissions during the most recent monitoring event. Detailed sample results for this event are shown on attached Table 1.

Passively venting the system continues to provide an avenue for any subsurface gas to be released from beneath the site. Many of the sampling points that have had historical measurable levels of methane have been significantly reduced, with most having non-detects or non-detect equivalents in more recent sampling events. Attached Table 2 details historical sampling results noting these trends.

¹ <https://www.ncdc.noaa.gov/cdo-web/quickdata>

Indoor Air Monitoring

Alarms are installed within the building at various locations to alert personnel of the presence of methane should any venting occur within the building from subsurface conditions. New meters were installed in November 2014 and continue to appear to be operating properly. Access was received to check alarm meter Number 1, located in the former Badgerland Financial office on the northeast side of that tenant space, but it could not be located within the building. A new alarm will be sent to the tenant to install and will be checked at the next monitoring event.

Other meters were tested and confirmed to be working. To date, no audible alarms have been noted within the building. If any audible alarms are noted within the building, the WDNR will be notified of this event, and response actions will be taken according to the Explosive Gas Alarm Contingency Plan.

The next regularly scheduled sampling event will be in December 2020.

Please contact me with any further questions.

Sincerely,

Ayres Associates Inc



Ben Peotter, P.E.
Manager – Environmental Services

Direct: 608.443.1206

Cell: 608.577.9593

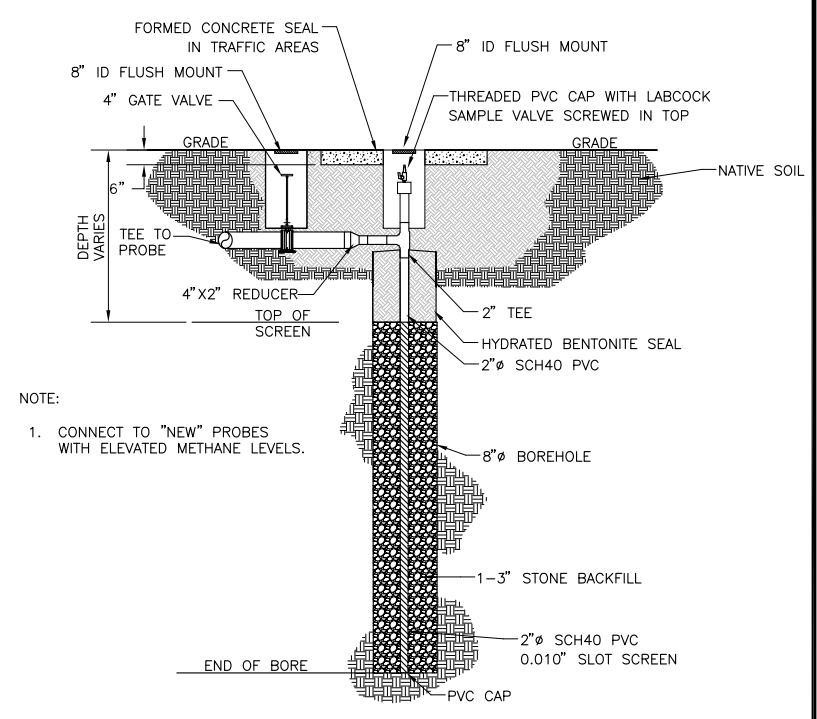
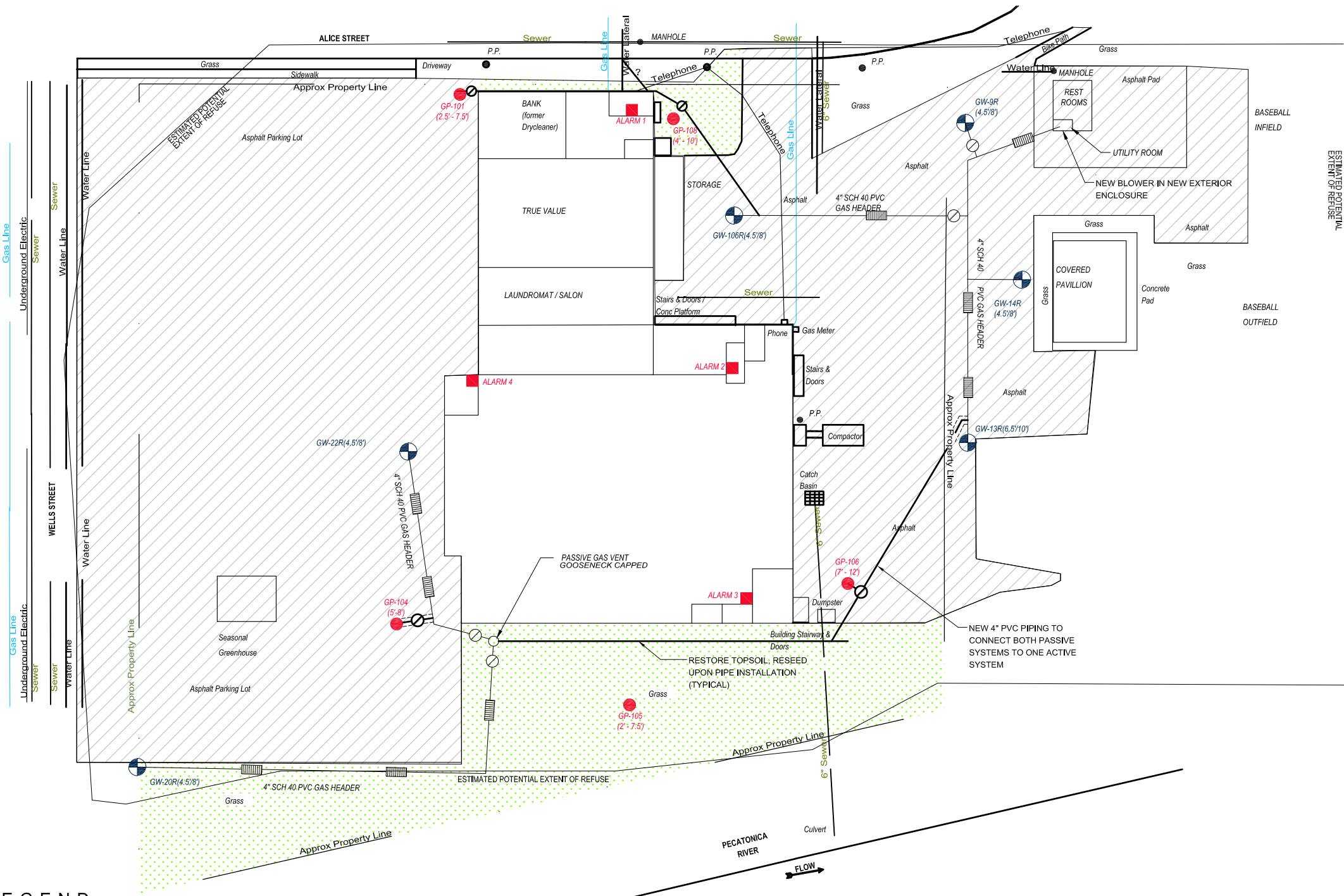
PeotterB@AyresAssociates.com

BP:ac

Enclosures

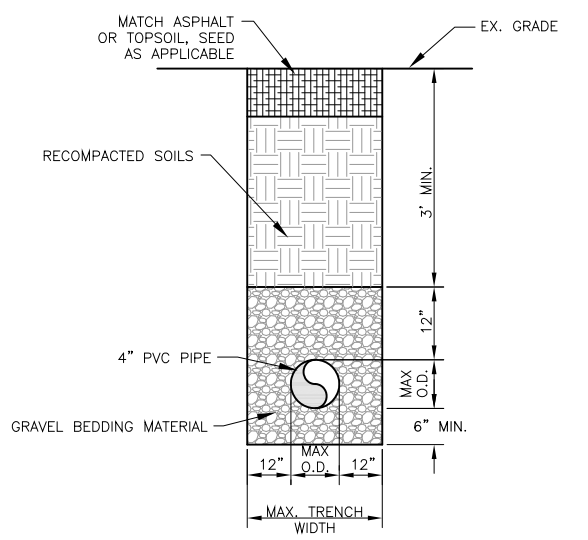
cc: Bryson Family Rental LLC
Mayor Dave Breunig – City of Darlington
Jeremy Williams – City of Darlington





NOTE:
1. CONNECT TO "NEW" PROBES WITH ELEVATED METHANE LEVELS.

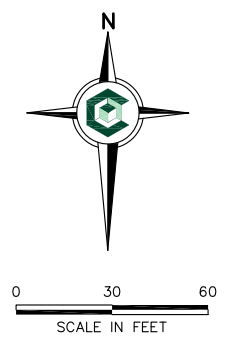
GAS PROBE
DETAIL 1
SCALE: NOT TO SCALE



TYPICAL TRENCH
DETAIL 2
SCALE: NOT TO SCALE

- LEGEND**
- GW-9R** REINSTALLED PASSIVE GAS EXTRACTION WELL WITH (SCREEN LENGTH/WELL DEPTH)
 - EXISTING VALVE
 - EXISTING ASPHALT
 - EXISTING GRASS
 - 4" PVC SLOTTED PIPE (10' LONG SECTIONS)
 - 4" PVC SOLID PIPE
 - EXPLOSIVE GAS ALARM LOCATION
 - NEW PROBE LOCATION (TOP OF SCREEN DEPTH - BOTTOM OF SCREEN / WELL BELOW GROUND SURFACE)
 - NEW VALVE
 - NEW 4" PVC SOLID PIPE

- NOTES**
1. EXISTING SYSTEM "A" INCLUDES GW-9R, 13R, 14R AND 106R.
 2. EXISTING SYSTEM "B" INCLUDES GW-20R, 22R.
 3. NEWLY INSTALLED PROBES ARE GP-101, 104, 105, 106 AND 108.



REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

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CITY OF DARLINGTON LANDFILL
DARLINGTON, WISCONSIN

AS-BUILT GAS PIPING MODIFICATIONS

SHEET NO.
1
PROJECT NO.
100207

Dick's Supermarket Site - Darlington, WI

July 2020 Gas Monitoring Event

Table 2: Summary of Methane Sample Data (July 28, 2008 to July 8, 2020)

Percent by Volume Methane (LEL=5%, UEL=15%)													
Date	GW-9R	GW-13R	GW-14R	GW-106R	GW-20R	GW-22R	Gooseneck	GP-101	GP-104	GP-105	GP-106	GP-108	BLOWER
7/8/2020	0.1	0.0	11.2	17.6	NA-buried	13.9	NA	0.0	NA-H ₂ O	0.0	0.2	0.6	0.0
12/5/2019	0.0	0.0	0.0	0.0	NA-buried	6.0	NA	0.0	0.0	0.0	0.0	0.4	0.0
7/19/2019	0.0	0.0	0.0	0.0	NA-buried	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0
12/6/2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
7/10/2018	0.0	0.0	1.7	4.0	0.0	4.3	0.0	0.0	0.0	1.9	0.2	0.1	0.0
12/7/2017	0.0	0.0	0.0	0.2	1.2	0.1	1.4	0.1	0.0	1.7	1.8	0.0	0.0
7/11/17	0.0	0.2	0.1	0.1	0.1	0.2	--	0.1	0.1	0.2	0.2	0.0	0.0
12/2/2016	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
7/13/2016	0.0	0.0	16.4	1.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12/9/2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7/1/2015	0.0	0.0	10.7	0.0	0.0	3.7	--	0.0	0.0	0.0	10.6	0.0	0.0
4/14/2015	0.0	0.1	0.0	0.1	0.0	0.1	--	0.1	0.3	0.1	23.9	0.1	0.0
1/20/2015	0.0	Buried	0.0	0.0	Buried	0.0	0.1	0.0	0.0	0.0	Frozen	0.0	0.0
10/21/2014	0.2	0.2	5.6	0.2	0.2	0.2	--	0.3	0.3	0.3	3.1	0.3	0.2
8/19/2014	PASSIVE VENTING RESUMED												
7/9/2014	0.2	0.3	5.3	0.3	0	7.6	Capped after blower installation since system is no longer passive venting	0.2	4.1	0.3	1.0	29.4	0.2
4/8/2014	0.0	1.2	0.9	0.4	0.2	0.2		0.1	0.4	0.2	13.0	15.1	0.2
1/24/2014	0.0	12.7	--	--	--	0.0		0.0	0.1	0.0	--	22.2	0.6
10/4/2013	0.0	7.2	11.9	7.3	0.0	13.5		0.0	0.0	0.0	40.0	24.3	0.5
7/9/2013	0.2	0.3	9.4	5.7	0.1	7.0		0.2	0.2	0.1	Watered Out	19.1	0.3
4/10/2013	0.0	0.0	0.0	0.0	Watered Out	2.0		0.0	0.6	0.0	0.0	12.5	0.1
1/11/2013	0.0	4.5	--	0.5	1.9	0.0		0.6	0.1	0.0	--	0.2	0.0
12/5/2012	0.0	0.6	0.1	0.8	0.0	8.8		0.0	1.0	0.0	5.0	13.3	0.1
11/8/2012	0.0	0.7	8.5	1.4	0.1	15.5		0.0	0.6	0.1	5.8	13.6	0.2
10/8/2012	0.3	0.9	0.0	2.1	0.1	22.6		0.0	0.0	0.0	9.5	9.3	0.1
9/6/2012	0.1	0.4	16.8	0.1	0.1	17.6		0.2	0.4	0.1	12.3	N/A	0.4
8/7/2012	0.2	0.1	27.3	2.8	0.1	17.5		0.2	0.8	0.1	16.3	0.2	0.4
7/12/2012	0.0	0.0	11.0	2.3	28.7	8.0		0.0	1.0	0.0	20.0	5.8	0.0
6/11/2012	0.1	0.0	14.7	0.0	Watered Out	1.2		0.0	Blockage	0.0	40.1	5.8	New probe installed July 12, 2012
5/4/2012	0.0	0.1	4.2	0.0	Watered Out	0.3		0.0	Blockage	0.1	0.1	0.0	
4/12/2012	0.0	0.0	0.0	0.1	Watered Out	0.1		0.5	0.0	0.0	0.0	32.9	
3/8/2012	0.2	0.2	0.2	1.8	Watered Out	0.1		0.1	Buried	0.1	4.3	35.8	
2/14/2012	Under Ice	0.0	0.1	0.1	17.5	25.2		0.1	Buried	0.1	12.2	31.0	
1/9/2012	0.1	0.3	0.1	1.0	0.2	0.5	0.2	N/A	0.2	29.9	8.5		
1/9/2012	BLOWER SYSTEM INSTALLED												
12/5/2011	0.8	0.0	Car	11.0	0.0	24.4	0.0	15.8	52.3	0.0	78.4	7.8	
11/10/2011	2.1	0.0	10.2	8.8		27.8	0.2	15.4	49.8	0.0	89.9	50.1	
10/7/2011	0.0	0.0		0.1	0.0	16.4	0.0	6.1	44.9	0.1	88.0	52.4	
9/8/2011			11.6	10.3		19.9		5.8	38.3		83.5	49.2	
8/12/2011	0.2	0.1	18.1	11.2	7.3	7.0	0.1	0.1	32.1	0.2	85.5	42.9	
7/6/2011	0.2			2.4	9.8	4.7		3.9	15.8		72.1	13.8	
6/9/2011			7.8	0.8		0.4		0.3	0.8			0.1	
4/12/2011	0.1				0.1								
4/20/2010				0.9									
3/30/2010				0.2									
2/24/2010					19.5	20.5	0.3						
1/26/2010				0.4	0.8	6.7							
12/29/2009													
11/15/2009	0.4	6.3		6.0	0.4	24.9							
10/27/2009	1.1		4.1	11.3	50.0		0.9						
9/29/2009	3.9		3.0										
8/25/2009	2.8			4.6	1.0	39.1							
7/28/2009	1.1		0.4		0.2	30.2							
6/30/2009	1.1				28.5		0.3						
5/27/2009					0.3	19.1							
4/28/2009			0.9			3.7							
3/31/2009		2.5				6.1	0.5						
2/24/2009					5.8	27.7	0.1						
1/27/2009			0.2		28.9		0.8						
12/23/2008				10.5	41.8	22.4	0.2						
11/25/2008	0.2			0.1	31.1	22.8	0.4						
10/3/2008	32.4		9.2	2.6	18.8	29.8							
9/26/2008	45.1	10.5	16.3		59.1	41.8	6.8						
8/28/2008	43.6	0.1	21.0	11.3	27.2	27.3	0.2						
7/28/2008	10.4				0.2		1.0						

Note: all blanks indicated non-detect for methane during sampling event