

January 27, 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  
December 2019 Monitoring Results

Dear Ms. Koepke,

Ayres Associates Inc (Ayres), on behalf of the City of Darlington (City), is providing the December 2019 site sampling results of gas probes on the site perimeter at 149 Wells Street. This monitoring event was conducted on December 5, 2019. This is the ninth 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 GW-20R. Although a metal detector was used to attempt to locate the sampling probe, for the second time in a row, it could not be located due to gravel cover pushed during snow plowing and overgrown grass. We recommend removing this probe (GW-20R) from the sampling protocol moving forward for the following reasons:

- Historically, over the last 7 years, it has been non-detects. The last detectable concentration of methane was in December 2017 (1.2% by volume, less than 25% of LEL). Prior to that, that last monitoring above near-non-detect (0.0, 0.1, or 0.2 percent by volume) was in 2013 where a detect of 1.9% was noted.
- This sample location is the furthest away from the building, over 150 feet away.
- This sample location has had issues over the years of being buried or watered out.

The quarterly monitoring used a calibrated Landtec GEM 2000 landfill gas meter. The attached monitoring results show that two monitoring points had detections of methane in them, one of which was over the lower explosive limit (LEL) of 5% methane. The last sampling event which occurred in July 2019 showed zero methane detections, and compared to last winter's December 2018 monitoring results, the one location (GP-108) which had a methane detect was again detected in the December 2019 monitoring, but at a lower concentration and an additional detection was found at GW-22R, with a concentration of 6% methane, which is 1% over the LEL.

Historically, sampling from August – February has shown a higher rate of methane exceedances. This could be due to the frozen ground during the fall and winter months, which could inhibit gas from escaping through the soil to the atmosphere. It is also 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. Both of these reasons are plausible for explaining the increased methane emissions during the fall and winter months. 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.

### **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. Alarm meter Number 1, located in the former Badgerland Financial office on the northeast side of that tenant space, could not be accessed by Ayres Associates staff during the sampling event since the location has been permanently closed. A new owner operates the retail space north of the grocery store, but the space is currently unoccupied. A copy of the letter sent to the owner to access this building for future monitoring events is attached.

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 July 2020.

Please contact me with any further questions.

Sincerely,

Ayres Associates Inc



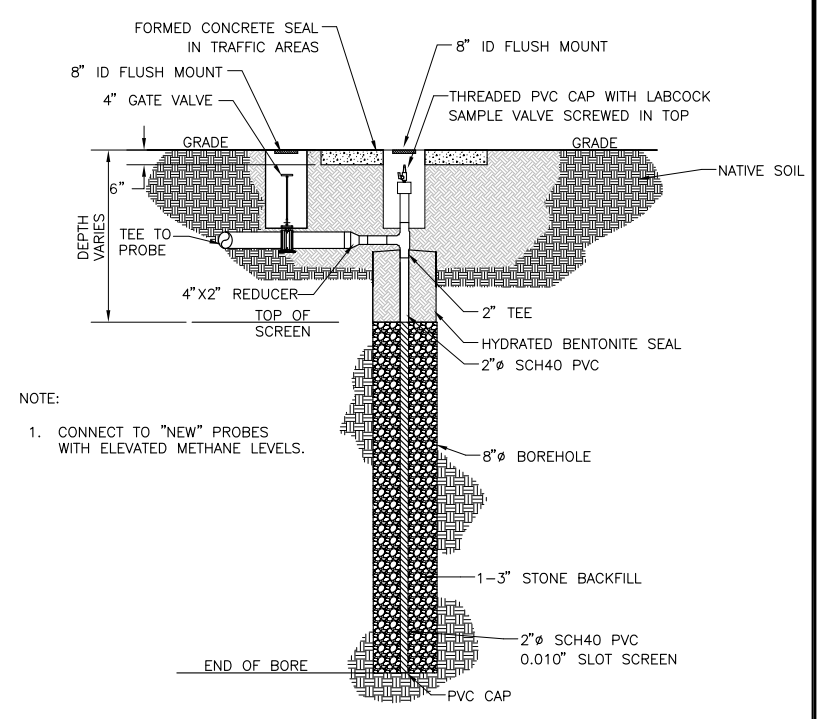
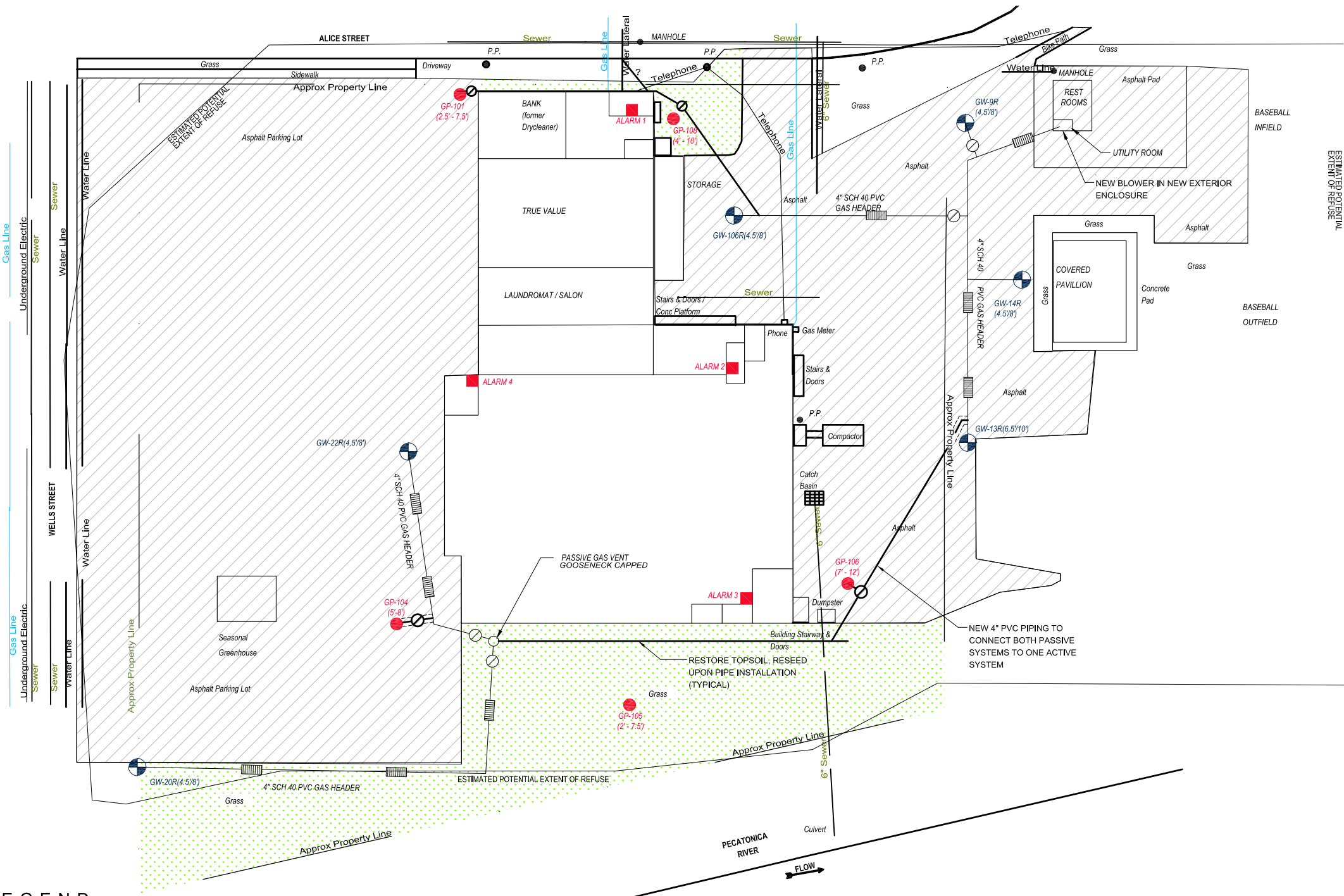
Ben Peotter, P.E.  
Project Manager

Direct: 608.443.1206  
Cell: 608.577.9593  
PeotterB@AyresAssociates.com

BP:ac

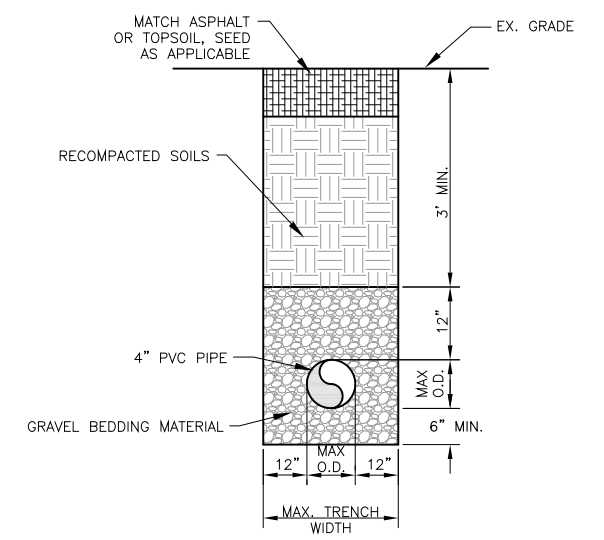
Enclosure

cc: Stewart Wangard – Wangard Partners, Inc.  
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.

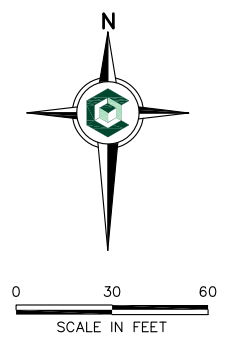
**GAS PROBE  
DETAIL**  
SCALE: NOT TO SCALE



**TYPICAL TRENCH  
DETAIL**  
SCALE: NOT TO SCALE

- LEGEND**
- 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

DATE OF ISSUE: JAN. 2012  
 DRAWN BY: MW  
 DESIGNED BY: BP  
 CHECKED BY: SW  
 APPROVED BY: BP

**CORNERSTONE**  
Environmental Group, LLC

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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 2019 Gas Monitoring Event

Table 2: Summary of Methane Sample Data (July 28, 2008 to December 5, 2019)

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
12/5/2019	0	0	0	0	NA-buried	6	NA	0	0	0	0	0.4	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	0.2	1.2	0.1	1.4	0.1	0	1.7	1.8	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		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	Capped after	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	blower	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	installation	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	since system	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	is no longer	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	passive	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	venting	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
5/4/2012	0.0	0.1	4.2	0.0	Watered Out	0.3		0.0	Blockage	0.1	0.1	0.0	probe
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	installed
3/8/2012	0.2	0.2	0.2	1.8	Watered Out	0.1		0.1	Buried	0.1	4.3	35.8	July 12,
2/14/2012	Under Ice	0.0	0.1	0.1	17.5	25.2		0.1	Buried	0.1	12.2	31.0	2012
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

January 27, 2020

Mr. James Bryson  
Bryson Family Rental LLC  
10175 County Road E  
Darlington, WI 53530

Re: WDNr BRRTS Activity #02-33-544202  
Gas Monitoring, Former Dick's Supermarket Site  
147-151 Wells Street, Darlington, WI

Dear Mr. Bryson,

Ayres Associates Inc (Ayres), on behalf of the City of Darlington (City), would like to inform you of the bi-annual gas monitoring that has been occurring outside of your business since 2008 located at 147-151 Wells Street, Darlington, WI. The site has a passive gas system as a result of historic activities that had occurred on site that was previously operated by the City of Darlington. This site was listed in the Wisconsin Department of Natural Resources (WDNR) Bureau of Remediation and Redevelopment Tracking System (BRRTS) on May 20, 2003 (BRRTS #: 0233544202). The primary site address, 149 Wells Street, which was previously called Dick's Supermarket, is currently operated as a Piggly Wiggly supermarket. The Bryson Family Rental LLC retail space adjoins the north side of the Piggly Wiggly supermarket.

In July 2008, construction was completed on a passive gas venting system at this site. This passive system allows for any residual methane from historic site activities to passively vent to the atmosphere instead of being captured beneath hard surface features such as the parking lots. Gas sampling ports, located outside the Piggly Wiggly and the Bryson Family Rental LLC retail space, are sampled bi-yearly per WDNR requirements to evaluate and monitor the effectiveness of the gas system. For the past two years, gas levels have been historically below the lower explosive limit (LEL) and has a general downward trend. Although gas levels are still on a downward trend, the most recent sampling event on December 5<sup>th</sup>, 2019 showed two detects for methane; one of which was 6%, which is 1% over the lower explosive limit (LEL). Historically, sampling events during August – February have shown a higher rate of methane exceedances. This could be due to the frozen ground during the fall and winter months, which could inhibit gas from escaping through the soil to the atmosphere. It is also 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. Both of these reasons are plausible for explaining the increased methane emissions during the fall and winter months.

For the protection of health and safety, explosive gas alarms were previously installed in buildings on the property. Three of these units are plugged into electrical outlets in the Piggly Wiggly store and one unit was historically in the northernmost retail unit of the Bryson Family Rental LLC property (former Badgerland Financial business). The explosive gas alarm has an audible alarm of at least 85 dB which will go off upon reaching levels near the lower explosive limit. These have been installed and monitored for approximately 10 years with no alarms noted. To allow for future obligations under the City-WDNR agreement, the alarm in the northernmost retail unit should remain. These alarms are readily available at hardware stores or on-line. During our bi-annual sampling, we test the alarms and confirm they are working.

For more information regarding this site, see the WDNR site listing at:  
<https://dnr.wi.gov/botw/GetActivityDetail.do?siteId=11371800&adn=0233544202>

The next regularly scheduled sampling event will be in July 2020. Attached to this letter is an access agreement we would appreciate you filling out and returning to my attention by e-mail or hard-copy to the address in the letter footer.

Please contact me with any further questions.

Sincerely,

Ayres Associates Inc



Ben Peotter, P.E.  
Project Manager

Direct: 608.443.1206

Cell: 608.577.9593

[PeotterB@AyresAssociates.com](mailto:PeotterB@AyresAssociates.com)

BP:ac

Enclosure

cc: Mayor Dave Breunig – City of Darlington  
Jeremy Williams – City of Darlington

ACCESS PERMISSION AGREEMENT

I, \_\_\_\_\_ hereby give permission to the Ayres Associates  
(Print Name)

and its employees, duly authorized representatives, agents and contractors, to enter upon and have access at reasonable times to the home/business located at

(ADDRESS)\_\_\_\_\_

and that is owned by\_\_\_\_\_  
(Print Name)

The property is located in the SE ¼ of the NE ¼ of Section 03, Township 02 North, Range 03 East , Darlington, Lafayette County, Wisconsin. The access permission is for the following purposes: that Ayres Associates may test the methane alarm to ensure it is still working properly. The methane is associated with the Former Dick’s Supermarket site/City of Darlington Historic Landfill located near your property. This permission allows Ayres Associates or its authorized representative to:

- (1) Test the methane alarm twice a year
(2) Abandon the methane alarm when no longer needed.

The permission that is granted shall remain in effect until this site undergoes closure and is no longer in need of monitoring.

The property owner agrees not to damage or interfere with the use of the installed alarm as permitted herein.

IN WITNESS WHEREOF:

\_\_\_\_\_  
Signature of Property Owner

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Email Address

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
Area Code and Telephone Number

TENANT(S) / LESSEE(S) by UNIT NUMBER, ETC.

\_\_\_\_\_  
Name of Tenant(s)/Lessee(s)

\_\_\_\_\_  
Tenant(s) phone number

\_\_\_\_\_  
Tenant(s) email address

Mail or email correspondence regarding this site to:
Ayres Associates
5201 E. Terrace Dr. Suite 200
Madison, WI 53718
peotterb@ayresassociates.com