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February 24, 2022

Ms. Cindy Koepke
Hydrogeologist
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711

Subject: Refuse Hideaway Landfill
January 2021 Operation Monitoring and Maintenance Activities

Dear Cindy:

TRC completed the following operation, monitoring, and maintenance activities at the Refuse Hideaway Landfill in Middleton, WI in January 2022.

- January 17, 2022 – TRC Restarted Gas Extraction System Following Cold Weather Shutdown
- January 18, 2022 – Monthly Site Visit
- January 20, 2022 – System Operation Check
- January 25, 2022 – System Operation Check – Ice Build Up Removed from Stack
- January 26, 2021 – Bimonthly Site Visit

The gas extraction system was operational between January 17, and January 26, 2022. The leachate extraction system remained off during the month of January. On January 26, while TRC was onsite, low extraction vacuum/flow and high blower temperatures were observed due to freezing conditions. To prevent damage to the blower and gas extraction system, the system was shutdown and the WDNR was notified.

TRC continues to work with WDNR and PEI on improvements to allow for the gas and leachate extraction systems to operate in the colder weather. TRC is working with vendors on quoting the installation of heat trace and insulation for the gas extraction system and for the oil reservoir on the air compressor. Further details regarding recommended improvements will be provided and further discussed with the WDNR and a summary will be provided in the February 2022 monitoring report.

Attached are the monitoring results collected during the site visits completed in January 2022.

If you have any questions, please contact me at astehn@trccompanies.com or 608-807-8112.

Sincerely,

TRC

Andrew Stehn, PE
Project Manager

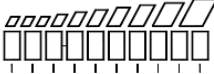
Attachments

January 2022 Monitoring Results

System Inspection Log - Pre Landfill Balancing
Landfill Gas Extraction and Leachate Pump System
WDNR - Refuse Highway Landfill
Middleton, Wisconsin

TRC Operator Name:	J. Roelke/A. Stehn		
Date:	1/18/2022	Arrival Time:	8:00
		Departure Time:	10:30
Visit Type (circle all that apply)	Bi-weekly	Monthly	Quarterly
Weather Conditions:	partly cloudy	Gas/Instrument Type:	GEMS 2000
Ground Condition:	frozen & snow covered	Serial Number:	2658
Barometric Pressure:	29.57 in Hg	Date Last Calibrated:	1/18/2022
Barometric Pressure Trend:	Falling	Method:	standard field calibration
Temperature:	23 deg F	Pressure Instrument:	Dwyer Series 475 Manometer

Landfill Gas Extraction System						
System	Location	Tag #	Equipment Description	Set Point	Typical Range	Field Reading
Blower Motor	Remote	GHS-BLR-301	Amperage	-	3 - 4 amps	3.56
			Speed	-	1800 - 1900 rpm	1736.15
			Frequency	-	30 - 35 Hz	29.19
	HMI		Amperage	-	3 - 4 amps	3.5
			Speed	-		42
HMI		Hours	-	-	4438	
Blower Operating (YES). Note excessive noise or issues observed. none						
Blower Inlet	HMI	PT-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	-7
	HMI	TE-301	Blower Inlet Temperature	-	50 - 90 °F	37
	Local	GHS-PI-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	-6.74
	Local	GHS-TI-301	Blower Inlet Temperature	-	50 - 90 °F	32
	Local	Sample Port	Gas Composition - % Methane	-		14.6%
			Gas Composition - % CO2	-		10.2%
			Gas Composition - % Oxygen	-		14.6%
Gas Composition - % Balance			-		61%	
Demister	Local	GHS-PDI-301	Demister Differential Pressure	-	1-2 in w.c	1.4
	Local		Slight Glass: Liquid Present	-	-	(yes/no)-see Comment 2
	HMI	LS-701	Level Indication	-	-	0
Blower Outlet	HMI	PT-302	Blower Outlet Flow Pressure	-	-	0.2
	HMI	TE-302	Blower Outlet Temperature	-	50 - 90 °F	40
	HMI	PDT-301	Blower Outlet Flow Differential Pressure	-	1-2 in w.c	1.34
	HMI	-	Blower Outlet Flow Rate	-	180 - 190 scfm	174
	Local	GHS-PI-302	Blower Outlet Flow Pressure	-	-	+0.15 - manometer
	Local	GHS-TI-302	Blower Outlet Temperature	-	50 - 90 °F	33
	Local	Sample Port	Gas Composition - % Methane	-		14.6%
			Gas Composition - % CO2	-		10.3%
Gas Composition - % Oxygen			-		15.0%	
Gas Composition - % Balance			-		60%	
Branch Headers	Local	North	North Branch Vacuum	-	6 - 7 in w.c.	-5.60
	Local	North	Valve Position	6 turns open /6	6 turns open	6
	Local	North Sample Port	Gas Composition - % Methane	-		-30.5%
			Gas Composition - % CO2	-		16.6%
			Gas Composition - % Oxygen	-		7.8%
			Gas Composition - % Balance	-		106%
	Local	Central	Central Branch Vacuum	-	6 - 7 in w.c.	-5.35
	Local	Central	Valve Position	-	6 turns open	6
	Local	Central Sample Port	Gas Composition - % Methane	-		11.9%
			Gas Composition - % CO2	-		8.4%
			Gas Composition - % Oxygen	-		15.7%
			Gas Composition - % Balance	-		64%
	Local	South	South Branch Vacuum	-	6 - 7 in w.c.	-5.50
	Local	South	Valve Position	-	6 turns open	6
	Local	South Sample Port	Gas Composition - % Methane	-		16.8%
Gas Composition - % CO2			-		11.9%	
Gas Composition - % Oxygen			-		4.0%	
Gas Composition - % Balance			-		67%	

Air Compressor System ¹ - See Comment 1								
Operational Settings	Pressure Set Points					Condensate Set Points		
	Tank Low (psi)	Tank High (psi)	Well Field (psi)	On (min.)	Off (min.)	Open (sec.)	Closed (min.)	Test Operation
	NOT OPERATING							(yes/no)
Air Dryer System ¹			Electrical Status			HMI Heater/Air Conditioner		
System Operational:		NO	3-Phase Power Indicator:		<u>3</u> of 3	Operational	YES	
Condensate Drain Operational:		YES	GFI 1 Status:		GREEN	Temperature	52	
Alarm Indicator:		OFF	GFI 2 Status:		GREEN	Filter Cleaned	NO	
Condenser Cleaned ² :		NO	Leachate Tank/Loadout					
Dew Point Indicator:		Liquid Level (inches):		NM	Visual Check:			
 <p>Indicate which bars are green(G) or red (R) and note (F) if flashing.</p>		Contact WDNR if level is above			· Evidence of Tank Overflow: NM			
		Leak Detection Test Completed:		(yes/no)	· Inspect concrete pad and storm sewer for damage or backup			
		Overfill Float Functional:		(yes/no)				
		Exhaust Stack						
		Drain Stack Sump (vol. removed)		None present	Stack Condition: Good			

1. Check all air lines and gas extraction lines for leaks during each site visit. Drain inline air filters and replace as needed.
2. Air Dryer - Clean the condenser monthly using an air jet (max. 2 bar / 30 psig) inside out. Make sure not to damage the aluminum lamellae of the cooling package.
3. On a quarterly basis change the oil and check/clean the air filters and intercoolers for the air compressor.
4. Inspect mounting brackets and bolts for the air compressor and effluent stack for tightness.

Comments/Notes:
 NM - Not Measured
 Comment 1: Air Dryer shut off until compressor is operational.
 Comment 2: Moisture observed on demister sight glass. No standing water observed in sump.

Data Entered By: K. Vater 2/23/2022
 Checked By: A. Ruetten 2/23/2022

System Inspection Log - Post Landfill Balancing
Landfill Gas Extraction and Leachate Pump System
WDNR - Refuse Highway Landfill
Middleton, Wisconsin

TRC Operator Name: <u>J. Roelke/A. Stehn</u>	Date: <u>1/18/2022</u>	Arrival Time: <u>8:00</u>	Departure Time: <u>10:30</u>
Visit Type (circle all that apply)	Bi-weekly	Monthly	Quarterly
Weather Conditions:	<u>partly cloudy</u>	Gas/Instrument Type:	<u>GEMS 2000</u>
Ground Condition:	<u>frozen & snow covered</u>	Serial Number:	<u>2658</u>
Barometric Pressure:	<u>29.55 in Hg</u>	Date Last Calibrated:	<u>1/18/2022</u>
Barometric Pressure Trend:	<u>Falling</u>	Method:	<u>standard field calibration</u>
Temperature:	<u>28 deg F</u>	Pressure Instrument:	<u>Dwyer Series 475 Manometer</u>

Landfill Gas Extraction System						
System	Location	Tag #	Equipment Description	Set Point	Typical Range	Field Reading
Blower Motor	Remote	GHS-BLR-301	Amperage	-	3 - 4 amps	3.60
			Speed	-	1800 - 1900 rpm	1809.13
			Frequency	-	30 - 35 Hz	30.43
	HMI		Amperage	-	3 - 4 amps	3.5
	HMI		Speed	-		44
	HMI	Hours	-	-	4439	
Blower Operating (YES). Note excessive noise or issues observed. none						
Blower Inlet	HMI	PT-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	-7
	HMI	TE-301	Blower Inlet Temperature	-	50 - 90 °F	38
	Local	GHS-PI-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	-5
	Local	GHS-TI-301	Blower Inlet Temperature	-	50 - 90 °F	32
	Local	Sample Port	Gas Composition - % Methane	-		16.9%
			Gas Composition - % CO2	-		11.8%
			Gas Composition - % Oxygen	-		14.0%
Gas Composition - % Balance			-		57%	
Demister	Local	GHS-PDI-301	Demister Differential Pressure	-	1-2 in w.c	1.6
	Local		Slight Glass: Liquid Present	-	-	(NO)-see Comment 1
	HMI	LS-701	Level Indication	-	-	none
Blower Outlet	HMI	PT-302	Blower Outlet Flow Pressure	-	-	0.1
	HMI	TE-302	Blower Outlet Temperature	-	50 - 90 °F	42
	HMI	PDT-301	Blower Outlet Flow Differential Pressure	-	1-2 in w.c	1.47
	HMI	-	Blower Outlet Flow Rate	-	180 - 190 scfm	183
	Local	GHS-PI-302	Blower Outlet Flow Pressure	-	-	+0.14 - manometer
	Local	GHS-TI-302	Blower Outlet Temperature	-	50 - 90 °F	40
	Local	Sample Port	Gas Composition - % Methane	-		16.8%
			Gas Composition - % CO2	-		11.8%
Gas Composition - % Oxygen			-		14.0%	
Gas Composition - % Balance			-		57%	
Branch Headers	Local	North	North Branch Vacuum	-	6 - 7 in w.c.	-5.51
	Local	North	Valve Position	6 turns open /6	6 turns open	6
	Local	North Sample Port	Gas Composition - % Methane	-		34.2%
			Gas Composition - % CO2	-		16.4%
			Gas Composition - % Oxygen	-		7.1%
			Gas Composition - % Balance	-		42%
	Local	Central	Central Branch Vacuum	-	6 - 7 in w.c.	-5.29
	Local	Central	Valve Position	-	6 turns open	6
	Local	Central Sample Port	Gas Composition - % Methane	-		11.8%
			Gas Composition - % CO2	-		8.5%
			Gas Composition - % Oxygen	-		15.8%
			Gas Composition - % Balance	-		64%
	Local	South	South Branch Vacuum	-	6 - 7 in w.c.	-5.41
	Local	South	Valve Position	-	6 turns open	6
	Local	South Sample Port	Gas Composition - % Methane	-		20.3%
Gas Composition - % CO2			-		14.7%	
Gas Composition - % Oxygen			-		12.7%	
Gas Composition - % Balance			-		52%	

Comments/Notes:
 NM - Not Measured
 Comment 1: Moisture observed on demister sight glass. No standing water observed in sump.

Data Entered By: K. Vater 2/23/2022

Checked By: A. Ruetten 2/23/2022

LANDFILL GAS MONITORING FORM
REFUSE HIDEAWAY GAS MONITORING PROGRAM (EPA ID: WID980610604, Facility ID: 113112010)

TECHNICIAN(S): J. Roelke
 GAS/INSTRUMENT TYPE: GEM 2000
 SERIAL NO.: 11668
 DATE LAST CALIBRATED: 1/18/2022
 METHOD: Standard Calibration Gases
 PRESSURE INSTRUMENT: Dwyer Digital Manometer
 Project # 335719

STARTING DATE: 1/18/22 ENDING DATE: 1/18/22
 TIME: 8:15 AM TIME: 10:30 AM
 BAROMETRIC PRESSURE [25] 29.57 in. Hg 29.55 in. Hg
 BAROMETRIC TREND [46381] falling falling
 WEATHER CONDITIONS: clear cloudy
 TEMPERATURE [21] 28 °F 28 °F
 GROUND CONDITIONS [No DNR ID]: snow covered snow covered

Well No.	Time	Well Temp. (°F)	Available Header Pressure (in. W.C.)	Applied Well Pressure (in. W.C.)	Differential Pressure (in. W.C.)	Final Well Pressure (in. W.C.)	Final Differential Pressure (in. W.C.)	Estimated Gas Flow (scfm)	Methane (% by vol.)	Carbon Dioxide (% by vol.)	Oxygen (% by vol.)	Initial Valve Setting (% open)	Final Valve Setting (% open)	Pump Counter
GW-1	8:51	42	-5.25	-0.46	0.02	-0.53	0.03	NA	49.6	36.8	0.0	1 / 12	1.5 / 12	Counter #: (2)
GW-2	9:05	28	(1)	-0.79	0.03	-1.97	0.02	NA	43.1	31.8	4.5	1.00 / 12	1.25 / 12	Counter #: (2)
GW-3	9:14	48	-4.54	-3.92	0.03	-3.97	0.05	NA	58.1	38.0	4.5	3.50 / 12	4.00 / 12	Counter #: (2)
GW-4	9:18	28	-4.44	-0.61	0.03	(1)	(1)	NA	34.4	22.1	4.7	0.500 / 12	0.5 / 12	Counter #: (2)
GW-5	9:22	28	-4.34	-3.83	0.02	-2.5	0.02	NA	14.8	10.1	12.9	0.25 / 12	0.125 / 12	Counter #: (2)
GW-6	10:07	44	-4.91	-3.86	0.01	(1)	(1)	NA	54.6	37.3	0.0	3.00 / 12	3.00 / 12	Counter #: (2)
GW-7	9:30	32	-4.84	-4.79	(1)	-4.82	(1)	NA	66.1	31.6	0.0	2.75 / 12	3.75 / 12	Counter #: (2)
GW-8	9:37	28	-4.64	-4.60	0.01	-4.63	0.01	NA	64.7	21.0	0.4	1.75 / 12	2.75 / 12	Counter #: (2)
GW-9	9:42	28	-4.47	0.00	0.00	-0.62	0.01	NA	38.1	8.0	5.9	0.750 / 12	1.250 / 12	Counter #: (2)
GW-10	10:00	24	-5.54	-0.91	0.01	-1.45	0.01	NA	40.9	24.7	1.9	0.5 / 12	0.75 / 12	Counter #: (2)
GW-11	9:45	36	-5.38	-1.51	0.01	-2.76	0.02	NA	63.3	13.7	3.5	0.65 / 12	1.0 / 12	Counter #: (2)
GW-12	9:50	32	-5.41	-0.38	0.01	(1)	(1)	NA	25.2	14.6	10.9	0.350 / 12	0.350 / 12	Counter #: (2)
GW-13	9:54	34	-5.33	0.36	0.01	-1.09	0.02	NA	70.5	28.8	0.0	0.250 / 12	0.750 / 12	Counter #: (2)

Notes:

- (1): Sample port frozen and no measurement taken.
 (2): Air compressor system was down and no counter numbers were reported.

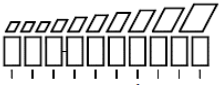
NA = Data Not Available

NM = Not Monitored

System Inspection Log
Landfill Gas Extraction and Leachate Pump System
WDNR - Refuse Highway Landfill
Middleton, Wisconsin

TRC Operator Name: J. Roelke	
Date: 1/27/2022	Arrival Time: 9:10 Departure Time: 11:15
Visit Type (circle all that apply)	<input checked="" type="checkbox"/> Bi-weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Annual
Weather Conditions:	cloudy
Ground Condition:	frozen & snow covered
Barometric Pressure:	30.10 in Hg
Barometric Pressure Trend:	Rising
Temperature:	27 deg F
Gas/Instrument Type:	GEMS 2000
Serial Number:	11668
Date Last Calibrated:	1/27/2022
Method:	standard field calibration gas
Pressure Instrument:	Dwyer Manometer

Landfill Gas Extraction System						
System	Location	Tag #	Equipment Description	Set Point	Typical Range	Field Reading
Blower Motor	Remote	GHS-BLR-301	Amperage	-	3 - 4 amps	11.32
			Speed	-	1800 - 1900 rpm	2633.6
			Frequency	-	30 - 35 Hz	45.29
	HMI		Amperage	-	3 - 4 amps	11.3
	HMI		Speed	-		NM
HMI	Hours	-		NM		
Blower Operating (yes/no). Note excessive noise or issues observed.						
Blower Inlet	HMI	PT-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	7.0
	HMI	TE-301	Blower Inlet Temperature	-	50 - 90 °F	35
	Local	GHS-PI-301	Blower Inlet Vacuum	7 in. w.c.	7 in. w.c.	-0.57
	Local	GHS-TI-301	Blower Inlet Temperature	-	50 - 90 °F	28
	Local	Sample Port	Gas Composition - % Methane	-		9.7%
			Gas Composition - % CO2	-		9.9%
			Gas Composition - % Oxygen	-		14.6%
Gas Composition - % Balance			-		66%	
Demister	Local	GHS-PDI-301	Demister Differential Pressure	-	1-2 in w.c	0.12
	Local		Slight Glass: Liquid Present	-	-	(NO)
	HMI	LS-701	Level Indication	-	-	-
Blower Outlet	HMI	PT-302	Blower Outlet Flow Pressure	-	-	7.0
	HMI	TE-302	Blower Outlet Temperature	-	50 - 90 °F	108
	HMI	PDT-301	Blower Outlet Flow Differential Pressure	-	1-2 in w.c	0.14
	HMI	-	Blower Outlet Flow Rate	-	180 - 190 scfm	53
	Local	GHS-PI-302	Blower Outlet Flow Pressure	-	-	0.09
	Local	GHS-TI-302	Blower Outlet Temperature	-	50 - 90 °F	92
	Local	Sample Port	Gas Composition - % Methane	-		7.1%
			Gas Composition - % CO2	-		7.9%
			Gas Composition - % Oxygen	-		16.0%
Gas Composition - % Balance			-		69%	
Branch Headers	Local	North	North Branch Vacuum	-	6 - 7 in w.c.	-0.75
	Local	North	Valve Position	6 turns open /6	6 turns open	6
	Local	North Sample Port	Gas Composition - % Methane	-		15.9%
			Gas Composition - % CO2	-		11.6%
			Gas Composition - % Oxygen	-		11.9%
			Gas Composition - % Balance	-		61%
	Local	Central	Central Branch Vacuum	-	6 - 7 in w.c.	-0.76
	Local	Central	Valve Position	-	6 turns open	6
	Local	Central Sample Port	Gas Composition - % Methane	-		9.7%
			Gas Composition - % CO2	-		11.8%
			Gas Composition - % Oxygen	-		13.8%
			Gas Composition - % Balance	-		65%
	Local	South	South Branch Vacuum	-	6 - 7 in w.c.	-0.75
	Local	South	Valve Position	-	6 turns open	6
	Local	South Sample Port	Gas Composition - % Methane	-		9.1%
Gas Composition - % CO2			-		8.2%	
Gas Composition - % Oxygen			-		15.8%	
Gas Composition - % Balance			-		67%	

Air Compressor System ¹								
Operational Settings	Pressure Set Points					Condensate Set Points		
	Tank Low (psi)	Tank High (psi)	Well Field (psi)	On (min.)	Off (min.)	Open (sec.)	Closed (min.)	Test Operation
	NOT OPERATING					4	20	NO
Air Dryer System ¹			Electrical Status			HMI Heater/Air Conditioner		
System Operational:		YES	3-Phase Power Indicator:		_____ of 3	Operational	YES	
Condensate Drain Operational:		YES	GFI 1 Status:		(Green / Red)	Temperature		
Alarm Indicator:		OFF	GFI 2 Status:		(Green / Red)	Filter Cleaned	NO	
Condenser Cleaned ² :		NO	Leachate Tank/Loadout					
Dew Point Indicator:			Liquid Level (inches):			Visual Check:		
 <p>Indicate which bars are green(G) or red (R) and note (F) if flashing.</p>		Contact WDNR if level is above			· Evidence of Tank Overflow: NO · Inspect concrete pad and storm sewer for damage or backup			
		Leak Detection Test Completed:		(yes/no)				
		Overfill Float Functional:		(yes/no)				
		Exhaust Stack						
		Drain Stack Sump (vol. removed)		NO	Stack Condition: Good, no ice build-up			

1. Check all air lines and gas extraction lines for leaks during each site visit. Drain inline air filters and replace as needed.
2. Air Dryer - Clean the condenser monthly using an air jet (max. 2 bar / 30 psig) inside out. Make sure not to damage the aluminum lamellae of the cooling package.
3. On a quarterly basis change the oil and check/clean the air filters and intercoolers for the air compressor.
4. Inspect mounting brackets and bolts for the air compressor and effluent stack for tightness.

Comments/Notes:
 NM - Not Measured
 Turned off blower. Blower: HMI: -45.29 Hz, 11.32 Amp
 Header pipe frozen, no vacuum applied to the well field.

Data Entered By: K. Vater 2/23/2022
 Checked By: A. Ruetten 2/23/2022