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December 20, 2022

Ms. Erin Endsley
Hydrogeologist Program Director
Wisconsin Department of Natural Resources
1701 North 4th Street
Superior, WI 54880

Subject: 2022 Semi-annual Inspection Report – Second Report
Stoughton City Landfill, Stoughton, Dane County, Wisconsin
USEPA ID #WID980901219; WDNR BRRTS #02-13-000880

Dear Ms. Endsley:

TRC completed the second semi-annual inspection for the 2022 calendar year for the Stoughton City Landfill (Site). Inspection tasks were completed as described in the December 9, 2019 City of Stoughton Landfill Operation and Maintenance Bidding Documents, follow up correspondences between TRC and the Wisconsin Department of Natural Resources (WDNR), and the April 2020 Quality Assurance/Quality Control Plan (Revision 0) (TRC, 2020). This letter summarizes inspection and monitoring activities completed between May and December 2022.

Bimonthly Site Monitoring

Gas Probe Monitoring

Currently the Site has three gas monitoring probes (GMP-1, GMP-2, and GMP-3) along the southern perimeter of the landfill to evaluate if off site landfill gas migration is occurring. TRC mobilized to the site on June 21, August 22, October 31, and December 1, 2022, to monitor gas concentrations and collect pressure reading at each of these gas monitoring probes. Each probe was field monitored using a Landtec GEM 2000 meter for methane (percent lower explosive limit and percent by volume), carbon dioxide, and oxygen. Volatile organic compounds (VOCs) were field monitored using a Rae Systems MiniRae 3000 and a pressure reading was collected using a Dwyer 475 Series Manometer. Field measurements from these events are included in Attachment 1.

Methane was detected at low volumes (0.1% V/V and 1% LEL) at GMP-1, GMP-2, and GMP 3 during the October event, however, due to the low concentration levels in the probes and no other detections during this reporting, including the December monitoring event, it is not considered evidence of off-site methane migration and no actions are recommended at this point. VOCs were detected during the August 2022 and December 2022 monitoring events with a high reading of 1.4 ppm in GMP-1 during the August event, all other detections were below 1 ppm. Due to the low concentration levels of the detections and isolated nature of them, these detections are not significant evidence of offsite migration. Oxygen levels were generally near or just below ambient air levels at GMP-1 and GMP-2 during all monitoring events. Carbon dioxide (CO) concentrations were at or near 1% in these probes for all monitoring events over this period, with the exception of GMP-1 which reported CO at 3.2% during the December monitoring event. GMP-3 oxygen concentrations reported during the August monitoring event was lower than typical (14%,) likely due to an increase in CO concentrations (8%). During the other monitoring events Oxygen in GMP-3 stayed above 17% and CO concentrations stayed relatively stable between 2-5%.

Flow Prevention Monitoring

Mechanical packers are currently installed in wells MW-7I, MW-8I, and MW-10I and were found to be working properly and preventing flow out of well during the bimonthly inspections.

October Semi-annual Site Inspection

The semi-annual site inspection included a visual evaluation of the landfill cover (including vegetation), storm sewer management system, gas venting system, monitoring well network, security fencing/entrance gate, signage, and the access road (Site features). TRC completed a site walk on October 31, 2022, completing an inspection of the Site features and a summary of the inspection is included in Attachment 2. A photographic log is also included in Attachment 2.

Landfill Cover

The rutting that occurred during the Spring 2022 sampling event and described in the Spring 2022 inspection report was repaired by TRC staff during the October 2022 inspection mobilization. New topsoil was used to fill in areas that were notably affected, then packed down to prevent washout. No new issues were observed with the landfill cover that require immediate maintenance.

Storm Sewer Management System

The storm sewer management system appeared to be functioning as constructed and no significant erosion damage or lack of vegetation was observed.

Landfill Gas Vents

The Site contains 21 gas vents (GV) throughout the limits of the landfill. Following the August 2022 mowing event, each vent was inspected by TRC to ensure that no damage had occurred during the mowing. During this inspection GV-18 was found to be damaged at the polyvinyl chloride (PVC) coupler near the ground surface. TRC temporarily placed the PVC riser back in place and notified the WDNR of the issue and the plan to repair the vent during the October landfill inspection. During the October 2022 inspection, TRC noticed that not only was the coupler at the ground surface damaged but a PVC t-fitting on the vent was also damaged. TRC removed the entire vent assembly and replaced the coupler near the ground surface. The t-fitting which connected the upper portion of the vent, and a 4-inch access flange was taken apart and TRC reassembled the vent with just a single coupler. The WDNR project manager was made aware of the issue with the gas vent and approved the modification to the existing design. Photos of the broken and repaired vent are included in Attachment 2. No other issues with the gas vents were discovered during these site inspections.

Monitoring Well Network

There are currently 37 monitoring, extraction, or observation wells installed surrounding and in close proximity to the landfill. Each well was inspected, and no issues that require maintenance were found.

Security - Fencing/Gate

The chain link fence that surrounds a portion of the landfill was in good condition. It was noted that there is no fabric along the chain link fence. The sections of the wood fence along the west side of the landfill that were broken during the spring 2022 tornado event were replaced in August 2022. The gate was in good condition and the lock was functioning.

Signage

Signs are located along the exterior of the fence surrounding the landfill. The signs were in good condition, however the labeling on the landfill gate sign was fading. TRC replaced the signs at both gated entrances with new ones containing the WDNR Bureau for Remediation and Redevelopment Tracking System (BRRTS) Site number and United States Environmental Protection Agency (EPA) Site number, as well as WDNR contact information.

Access Road

No issues were observed with the Site access road during this inspection.

Recommendations

TRC contacted the WDNR following the October Site inspection, no additional site repairs are required at this time.

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

Sincerely,

TRC

Andrew M. Stehn

Andrew Stehn, PE
Project Manager

Attachments: 1. Bi-monthly Gas Probe Monitoring Forms (June, August, October, and December 2022)
2. Semi-annual Site Inspection Form – October 2022

cc: Giang Van Nguyen – USEPA Region V

References

TRC Environmental Corporation. 2020. Quality Assurance/Quality Control Plan. Stoughton City Landfill. Stoughton, Dane County, Wisconsin. April 13, 2020.

Attachment 1

Bi-monthly Gas Probe Monitoring Forms (June, August, October, and December 2022)

PROJECT NAME:	Stoughton Landfill
PROJECT NUMBER:	375007.0002.0000
PROJECT MANAGER:	Andrew Stehn
SITE LOCATION:	Stoughton, Wisconsin
DATES OF FIELDWORK:	6/21/2022 TO 12/1/2022
PURPOSE OF FIELDWORK:	Bi-monthly Gas Monitoring and October Semi-annual Site Inspection
WORK PERFORMED BY:	Wes Braga John Roelke

Wesley J Braga 12/20/2022

SIGNED DATE

Andrew M. Stehn 12/20/2022

CHECKED BY DATE

PID FIELD CALIBRATION LOG

PROJECT NAME:	Stoughton City Landfill	MODEL:	MiniRae 3000
PROJECT NUMBER.:	375007.0002.0000	LAMP VOLTAGE:	10.6
SAMPLER NAME:	John Roelke/ Wes Braga	SERIAL NO.: 1117091	RENTAL

PID CALIBRATION CHECK

	DATE:6/21/2022 TIME: 7:29 INITIALS: JAR	DATE: 8/22/2022 TIME: 11:15 INITIALS: WB	DATE: 10/31/2022 TIME: 13:45 INITIALS: WB	DATE:12/1/2022 TIME: 9:56 INITIALS: JAR	DATE: TIME: INITIALS:
BATTERY CHECK	☑	☑	☑	☑	☐
ZERO GAS	0.0/ 0.0	0.0/0.0	0.0/0.0	0.0 / 0.0	/
SPAN GAS	100.4/ 100.0	100.7/100.0	100.8/100.0	100.4 / 100.0	/
AUDIBLE FAN MOTOR CHECK	☑	☑	☑	☑	☐
RESPONSE CHECK	☑	☑	☑	☑	☐

NOTES

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION

Wesley J Braga 12/20/2022

SIGNED DATE

Andrew M. Stelz 12/20/2022

CHECKED DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE:	6/21/2022
PROJECT NUMBER:	375007.0000.0000	TECHNICIAN:	John Roelke
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED:	YES: ☑ NO: ☐

WEATHER

WEATHER: Clear
SKY CONDITIONS: Sunny
GROUND CONDITIONS: SNOW: YES: ☐ NO: ☑
FROZEN GROUND/FROST: YES: ☐ NO: ☑
VISIBILITY: Good TIME: 11:20

TEMPERATURE: 75 °F
WIND SPEED: 6 MPH DIR: SSW
RELATIVE HUMIDITY (%): 61
DEW POINT °F 61
BAROMETRIC PRESS (in.Hg): 30 TREND: Rising

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V)	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	7:40		0.0	0.0	0.0	20.6	0.1	0.0	
GMP-2	7:46		0.0	0.0	0.0	20.4	0.2	0.0	
GMP-3	7:54		0.0	0.0	0.0	19	2.1	0.0	

John Roelke — SIGNED — 12/20/2022 DATE

Andrew M. Stelz — CHECKED BY — 12/20/2022 DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE:	8/22/2022
PROJECT NUMBER:	375007.0000.0000	TECHNICIAN:	Wesley Braga
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED:	YES: ☑ NO: ☐

WEATHER

WEATHER: Clear
SKY CONDITIONS: Clear
GROUND CONDITIONS: SNOW: YES: ☐ NO: ☑
FROZEN GROUND/FROST: YES: ☐ NO: ☑
VISIBILITY: Good TIME: 11:20

TEMPERATURE: 80 °F
WIND SPEED: 5 MPH DIR: N
RELATIVE HUMIDITY (%): 45
DEW POINT °F 54
BAROMETRIC PRESS (in.Hg): 29.14 TREND: Rising

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V)	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	11:39		0.0	0.0	0.0	20.9	0.2	1.4	
GMP-2	11:46		0.0	0.0	0.0	20.1	0.8	0.2	
GMP-3	11:30		0.0	0.0	0.0	14.4	7.6	0.7	

Wesley J Braga — SIGNED — 12/20/2022 DATE

Andrew M. Stelz — CHECKED BY — 12/20/2022 DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE:	10/31/2022
PROJECT NUMBER:	375007.0000.0000	TECHNICIAN:	Wesley Braga
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED:	YES: ☑ NO: ☐

WEATHER

WEATHER: Clear
SKY CONDITIONS: Clear
GROUND CONDITIONS: SNOW: YES: ☐ NO: ☑
FROZEN GROUND/FROST: YES: ☐ NO: ☑
VISIBILITY: Good TIME: 11:20

TEMPERATURE: 65 °F
WIND SPEED: 0 MPH DIR:
RELATIVE HUMIDITY (%): 38
DEW POINT °F 40
BAROMETRIC PRESS (in.Hg): 28.90 TREND: Rising

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V)	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	13:52		0.0	1.0	0.1	19.7	1.1	0.0	
GMP-2	14:00		0.0	1.0	0.1	19.4	0.9	0.0	
GMP-3	14:07		0.0	1.0	0.1	17.1	4.9	0.0	

Wesley J Braga — SIGNED — 12/20/2022 DATE

Andrew M. Stelz — CHECKED BY — 12/20/2022 DATE

GAS MONITORING REPORT

SITE NAME:	Stoughton City Landfill	DATE:	12/1/2022
PROJECT NUMBER:	375007.0000.0000	TECHNICIAN:	John Roelke
GAS SENSOR MODEL:	GEMS 2000	FIELD CALIBRATED:	YES: ☑ NO: ☐

WEATHER

WEATHER: Clear
SKY CONDITIONS: Clear
GROUND CONDITIONS: SNOW: YES: ☐ NO: ☑
FROZEN GROUND/FROST: YES: ☑ NO: ☐
VISIBILITY: Good TIME: 11:20

TEMPERATURE: 21 °F
WIND SPEED: 6 MPH DIR: S
RELATIVE HUMIDITY (%): 69
DEW POINT °F 13
BAROMETRIC PRESS (in.Hg): 30.46 TREND: falling

GAS READINGS

Probe/Vent Number	Time	Pressure		CH_4		O_2 (% V/V)	CO_2 (% V/V)	PID (ppm)	Comment
		+ or -	in w.c.	%LEL	% V/V				
GMP-1	10:11		0.0	0.0	0.0	19.5	3.2	0.1	
GMP-2	10:15		-0.5	0.0	0.0	20.3	0.6	0.0	
GMP-3	10:23		0.0	0.0	0.0	18.3	3.7	0.1	

John Roelke — SIGNED — 12/20/2022 DATE

Andrew M. Stelz — CHECKED BY — 12/20/2022 DATE

Attachment 2

Semi-annual Site Inspection Form
October 2022

PROJECT NAME:	Stoughton Landfill
PROJECT NUMBER:	375007.0002.0000
PROJECT MANAGER:	Andrew Stehn
SITE LOCATION:	Stoughton, Wisconsin
DATES OF FIELDWORK:	6/21/2022 TO 12/1/2022
PURPOSE OF FIELDWORK:	Bi-monthly Gas Monitoring and October Semi-annual Site Inspection
WORK PERFORMED BY:	Wes Braga John Roelke

Wesley J Braga 12/20/2022

SIGNED DATE

Andrew M. Stehn 12/20/2022

CHECKED BY DATE

Operation and Maintenance Semi-Annual Inspection Report

Stoughton City Landfill
Stoughton, Wisconsin

INSPECTOR: Wesley Braga	LOCATION: STOUGHTON CITY LANDFILL - STOUGHTON, WI
COMPANY: TRC	DATE/TIME: 10/31/2022
PROJECT: STOUGHTON CITY LANDFILL O&M	PROJECT NUMBER : 375007.0002.0000

WEATHER

WEATHER		**CLEAR**	PARTLY CLOUDY	CLOUDY	FOG
TEMPERATURE		65°F	---	---	---
WIND		**CALM**	MEDIUM	HIGH	---
PRECIPITATION	RAIN	**NONE**	LIGHT	MODERATE	HEAVY
	SNOW	**NONE**	LIGHT	MODERATE	HEAVY

INSPECTION ITEMS

TYPE OF INSPECTION	ROUTINE	SPECIAL
	☑	☐

PERSONS/EQUIPMENT PRESENT: Wesley Braga/ GEM 2000, Mini Rae 3000 PID, Dwyer Digital Manometer.

GENERAL DESCRIPTION OF SITE CONDITIONS: Site is in good condition. Vegetation is well established and is not stressed. Some small animal burrowing noticed during this inspection.

SPECIAL INSPECIAL ITEMS	POTENTIAL PROBLEM AREA	STATUS	NOTES
PERIMETER SECURITY FENCING	BROKEN OR MISSING WOOD SLATS, TORN CHAIN LINK FABRIC	1	The fencing that was noted as damaged in the Spring 2022 inspection has been repaired. No additional damages were noticed during this inspection.
ENTRANCE GATE AND LOCKING MECHANISM	LOCK BROKEN/MISSING, MECHANISM INOPERATIVE	1	
MONITORING WELLS AND WELLHEAD COVERS	SIGNS OF TAMPERING, CASING DAMAGED, LOCK MISSING.	1	
FINAL COVER VEGETATION	BARE SPOTS, STRESSED VEGETATION, DEEP ROOTED VEGETATION	1	
FINAL COVER SLOPE (EXPLAIN BELOW)	GULLIES, LACK OF VEGETATION, SUBSIDENCE, PONDING	1	Rutting during the April 2022 sampling event was fixed by TRC staff during this inspection. Ruts were filled with new topsoil and lightly packed. No new areas of concern were identified during this inspection.
EVIDENCE OF BURROWING ANIMALS	DAMAGE TO FINAL COVER, EVIDENCE OF WASTE	1	Some small animal burrowing seen at various spots around the cap.
STORMWATER DRAINAGE CHANNELS	GULLIES, EROSION, DEBRIS, CULVERT BLOCKED	1	
LANDFILL GAS VENTING SYSTEM	DAMAGED OR BLOCKED VENT RISERS, STRESSED VEGETATION	1	GV-18 noted as broken following the August mowing inspection. TRC staff repaired the gas vent in during the October Inspection.
ACCESS ROAD	PONDING, RUTTING, EROSION	1	
COVER MOWING AND TALL VEGETATION REMOVAL (OCTOBER INSPECTION ONLY)	MOWING AND TALL VEGETATION REMOVAL DONE TO SPECIFIED VEGETATION HEIGHT, ANY MISSED AREAS	1	

* (1)ACCEPTABLE - NO MAINTENANCE REQUIRED. (2) NOT ACCEPTABLE - IDENTIFY REQUIRED MAINTENANCE

SUMMARY OF DEFICIENCIES AND/OR CORRECTIVE ACTIONS: Rutting that occurred during the April 2022 sampling event was repaired by TRC staff during October 2022 inspection. GV-18 stand pipe was found damaged following the annual mowing event in August 2022. TRC staff replaced the stand pipe during the October 2022 inspection.

SIGNATURE OF INSPECTOR: Wesley J Braga DATE: 12/20/2022

Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Stoughton City Landfill	375007.0002

Photo No.	Date
1	10/31/2022

Time: 13:26

Weather: Clear

Description:
Landfill cap conditions looking north from gate entrance.

Photographer:
Wesley Braga

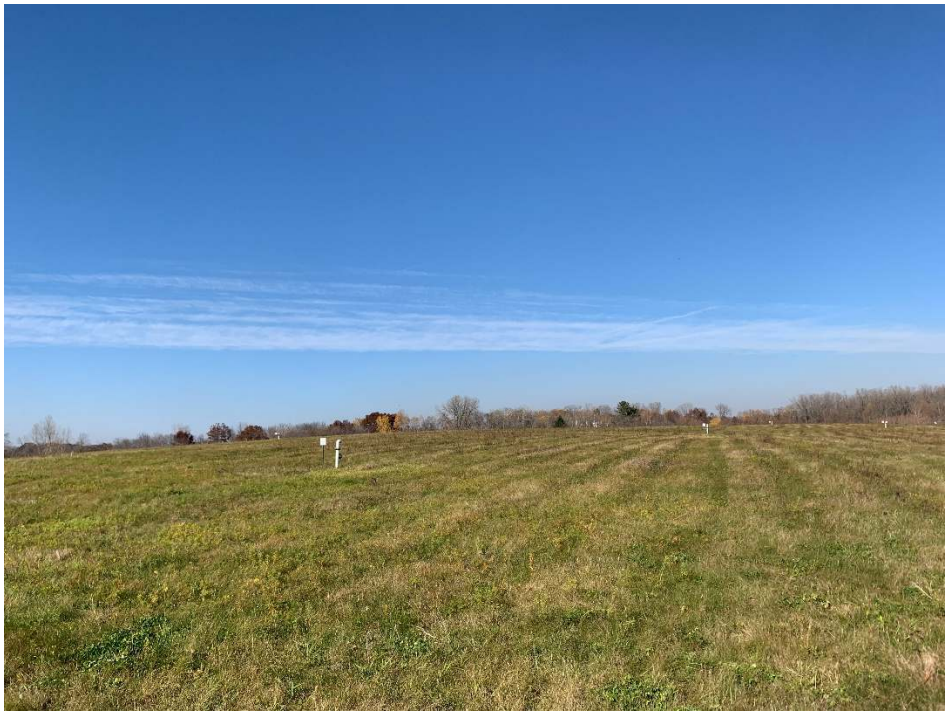


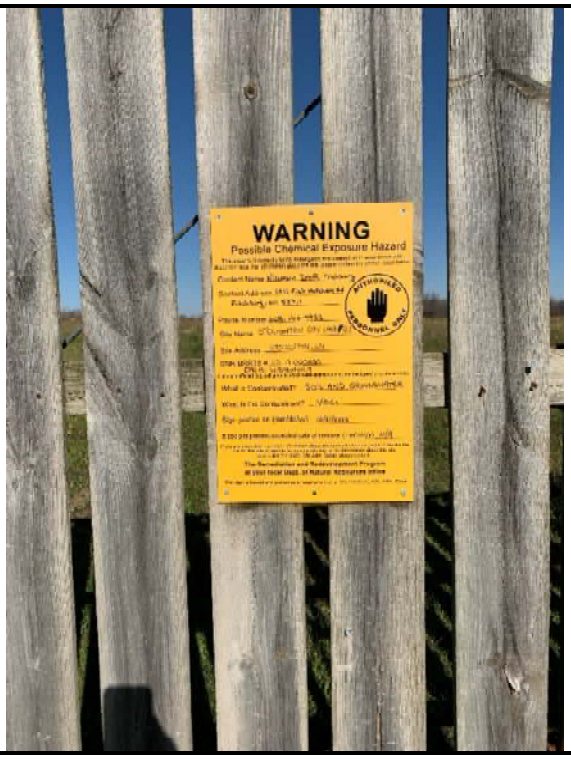
Photo No.	Date
2	10/31/2022

Time: 13:36

Weather: Clear

Description:
New signage on south gate entrance. New sign also placed on western gate.

Photographer:
Wesley Braga



Photographic Log

Client Name:	Site Location:	Project No.:
Wisconsin Department of Natural Resources	Stoughton City Landfill	375007.0002

Photo No.	Date
3	10/31/2022

Time: 14:11

Weather: Clear

Description:
Broken GV-18 gas vent.

Photographer:
Wesley Braga

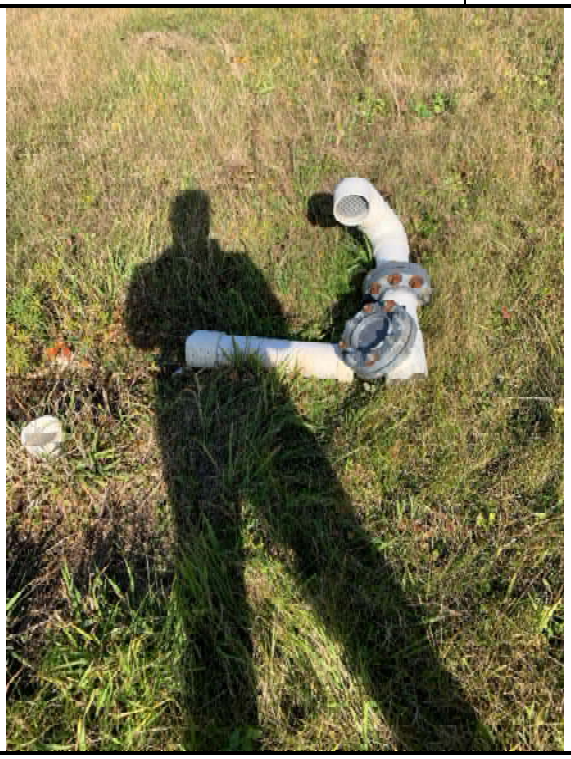


Photo No.	Date
4	11/1/2022

Time: 11:36

Weather: Clear

Description:
GV-18 following repair by TRC staff.

Photographer:
Wesley Braga