



708 Heartland Trl.  
Suite 3000  
Madison, WI 53717

T 608.826.3600  
TRCcompanies.com

December 6, 2021

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

Subject: 2021 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 2021 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 2021.

## **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 16, August 4, October 29, and December 1, 2021, 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 (0.2% V/V and 4% LEL) at GMP-1 during the October event, however, it was not detected in any other probes or monitoring events during this reporting period. Due to this being an isolated detection it is not considered evidence of off-site methane migration and no actions are recommended at this point. VOCs were detected during the June 2021 monitoring event and in one probe during the December event, however, all readings were below 1 part per million and is not sufficient evidence of off-site migration. Oxygen levels were generally near or just below ambient air levels at GMP-1 and GMP-2 during all monitoring events. Carbon dioxide was detected in each probe near or below 1% V/V. GMP-3 oxygen concentrations during the June and August readings were low (13%, 11% respectively) due to an increase in carbon dioxide concentrations (6%, 11% respectively). During the October event oxygen was found near ambient air conditions (19%) with carbon dioxide still elevated (5%) but below previous readings at this probe. During the December inspection, the oxygen level had dropped closer to the June and August levels (15%) with carbon dioxide staying relatively the same at 5%.

## **Expandable Cap Monitoring**

During the June and August 2021 bimonthly site visits, the expandable cap installed on monitoring well MW-7I and MW-8I, to prevent artesian flow, was inspected. The caps were noted to be in place and preventing flow out of each well during these site visits. A mechanical packer was attempted to be installed in monitoring well MW-7I during the October 2021 inspection event but could not be completed due to damage to the well riser. The well riser and protective casing were repaired in November 2021 and the mechanical packer was installed in December 2021 and will be monitored for effectiveness going forward. A mechanical packer was installed in monitoring well MW-8I in October 2021 and will be monitored for effectiveness going forward. The mechanical packer previously installed at MW-10I was noted to be working properly and preventing flow out of well during the 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 29, 2021, 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**

No issues were observed with the landfill cover that require immediate maintenance. Woody vegetation historically observed around the MW-11 well nest, around GV-11, and along the interior fence line along the west side of the landfill was removed during the August 2021 mowing event. The animal burrowing around the gas vents was not noted in the October inspection likely due to vegetation removal in the areas. Annual mowing of the landfill cover was conducted on August 18, 2021.

## **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. Each vent was inspected by TRC and GV-11 was found to be damaged. The PVC vent riser was found broken at the coupling near the ground surface. TRC temporarily placed the PVC riser back in place during the Site inspection and the vent was repaired on November 29, 2021 by Onsite Environmental Services, Inc. The repair was completed by installing a new coupling at the ground surface and the original vent riser pipe was reattached.

## 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 the following observations were found:

- MW-7I is an artisan well, and the expandable cap at the time of this inspection was preventing groundwater flow from the well. TRC attempted to install a mechanical packer into the well on October 28, 2021, to prevent artisan flow. However, due to a deformation along the stainless-steel well riser, the packer could not be installed properly. The well riser and protective casing were repaired on November 29, 2021. The repair was completed by cutting the existing stainless steel riser below the deformation and a new schedule 40 PVC riser was installed using a Fernco coupler fitting. A new protective casing was installed, and sand was placed between the riser and protective casing to stabilize the well. Additionally, new weep holes were drilled to prevent future damage to the well during freeze/thaw. Photo documentation of the damaged well and repaired well is included in Attachment 2. Following repair of the well, the mechanical packer was installed on December 2, 2021, and will continue to be inspected to ensure artesian flow is prevented from the well.
- A packer was installed in MW-8I on October 28<sup>th</sup>, 2021, and is preventing artesian flow from the well.

## 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 two wood slats that were noted to have been broken off along the west side of the landfill have been replaced. 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 relabeled the sign with the WDNR Bureau for Remediation and Redevelopment Tracking System (BRRTS) Site number and United States Environmental Protection Agency (EPA) Site number.

## Access Road

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

## Recommendations

TRC contacted the WDNR following the October Site inspection and documented issues were repaired between November and December 2021 as discussed in this report.

Ms. Erin Endsley  
Wisconsin Department of Natural Resources  
December 6, 2021  
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If you have any questions, please contact me at [astehn@trccompanies.com](mailto:astehn@trccompanies.com) or 608-807-8112.

Sincerely,

TRC



Andrew Stehn, PE  
Project Manager

- Attachments:
1. Bi-monthly Gas Probe Monitoring Forms (June, August, October, and December 2021)
  2. Semi-annual Site Inspection Form – October 2021

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 2021)**



<b>PROJECT NAME:</b>	Stoughton Landfill
<b>PROJECT NUMBER:</b>	375007.0001.0000
<b>PROJECT MANAGER:</b>	Andrew Stehn
<b>SITE LOCATION:</b>	Stoughton, Wisconsin
<b>DATES OF FIELDWORK:</b>	6/16/2021 TO 12/1/2021
<b>PURPOSE OF FIELDWORK:</b>	Bi-monthly and Semi-annual monitoring.
<b>WORK PERFORMED BY:</b>	Wes Braga John Roelke

*Wesley J. Braga*

12/6/2021

*Andrew M. Stehn*

12/6/2021

SIGNED

DATE

CHECKED BY

DATE



### PID FIELD CALIBRATION LOG

PROJECT NAME: Stoughton City Landfill	MODEL: MiniRae 3000
PROJECT NUMBER.: 375007.0001.0000	LAMP VOLTAGE: 10.6
SAMPLER NAME: John Roelke/ Wesley Braga	SERIAL NO.: RENTAL

#### PID CALIBRATION CHECK

	DATE: 6/16/21 TIME: 10:03 INITIALS: JAR	DATE: 8/4/2021 TIME: 11:05 INITIALS: WB	DATE: 10/29/2021 TIME: 13:15 INITIALS: WB	DATE: 12/1/2021 TIME: 13:03 INITIALS: JAR	DATE: TIME: INITIALS:
BATTERY CHECK	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ZERO GAS	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0	0.0 / 0.0	/
SPAN GAS	100.1/ 100.0	100.2/ 100.0	100.5/ 100.0	100.1/ 100.0	/
AUDIBLE FAN MOTOR CHECK	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RESPONSE CHECK	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

NOTES

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION

12/6/2021  


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 SIGNED DATE

12/6/2021  


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 CHECKED DATE











**Attachment 2**  
**Semi-annual Site Inspection Form**  
**October 2021**



<b>PROJECT NAME:</b>	Stoughton Landfill
<b>PROJECT NUMBER:</b>	375007.0001.0000
<b>PROJECT MANAGER:</b>	Andrew Stehn
<b>SITE LOCATION:</b>	Stoughton, Wisconsin
<b>DATES OF FIELDWORK:</b>	6/16/2021 TO 12/1/2021
<b>PURPOSE OF FIELDWORK:</b>	Bi-monthly and Semi-annual monitoring.
<b>WORK PERFORMED BY:</b>	Wes Braga John Roelke

*Wesley J. Braga*

12/6/2021

*Andrew M. Stehn*

12/6/2021

SIGNED

DATE

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: 10/29/2021, 12:00 (Footnote 1)		
PROJECT: STOUGHTON CITY LANDFILL O&M		PROJECT NUMBER: 375007.0001.0000		
WEATHER				
WEATHER	CLEAR	PARTLY CLOUDY	CLOUDY	FOG
TEMPERATURE	51°F	---	---	---
WIND	CALM	MEDIUM	HIGH	---
PRECIPITATION	RAIN	NONE	LIGHT	MODERATE
	SNOW	NONE	LIGHT	MODERATE
INSPECTION ITEMS				
TYPE OF INSPECTION	ROUTINE	SPECIAL		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
PERSONS/EQUIPMENT PRESENT: Wesley Braga/ GEM 2000, Mini Rae 3000 PID, Dwyer Digital Manometer.				
GENERAL DESCRIPTION OF SITE CONDITIONS: Site is in good condition. Cap is wet due to current/recent rain event, no localized ponding observed. Vegetation is well established and is not stressed. No significant animal burrowing noticed during this inspection.				
Woody growth around wells, gas vents, and fence line has been removed. Gas vent GV-11 broken at coupler near ground surface.				
MW-71 well riser was observed to be damaged, possibly by freeze/thawing conditions historically. Gas vent GV-11 and monitoring well MW-71 repaired on November 29, 2021.				
SPECIAL INSPECTION ITEMS	POTENTIAL PROBLEM AREA	STATUS	NOTES	
PERIMETER SECURITY FENCING	BROKEN OR MISSING WOOD SLATS, TORN CHAIN LINK FABRIC	1		
ENTRANCE GATE AND LOCKING MECHANISM	LOCK BROKEN/MISSING, MECHANISM INOPERATIVE	1	Landfill signage on gate faded and illegible. TRC updated sign with BRRTS# and EPA ID.	
MONITORING WELLS AND WELLHEAD COVERS	SIGNS OF TAMPERING, CASING DAMAGED, LOCK MISSING.	1	Locks for well nests MW-6, MW-11, MW-2, MW-1 and OW-4 were replaced in Spring 2021. A packer has been installed in MW-8l to prevent artesian flow out of the well. A Packer install was attempted at MW-7l however, could not be installed due to bend in the riser. TRC notified the WDNR and the well was repaired on November 29, 2021. A mechanical packer was installed on December 2, 2021.	
FINAL COVER VEGETATION	BARE SPOTS, STRESSED VEGETATION, DEEP ROOTED VEGETATION	1	Woody vegetation around wells, gas vents and fence line were removed during Summer 2021 mowing.	
FINAL COVER SLOPE (EXPLAIN BELOW)	GULLIES, LACK OF VEGETATION, SUBSIDENCE, PONDING	1	Gully erosion was not observed between GV-8 and GV-4 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-11 was observed to be broken during the October 2021 inspection. PVC Standpipe was laying on the ground and broken at coupler. The coupler was replaced on November 29, 2021.	
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	Cap mowed on August 18, 2021. Woody vegetation around GV-11, MW-11 well nest, and along western fence line was removed during this event.	
* (1)ACCEPTABLE - NO MAINTENANCE REQUIRED. (2) NOT ACCEPTABLE - IDENTIFY REQUIRED MAINTENANCE				
SUMMARY OF DEFICIENCIES AND/OR CORRECTIVE ACTIONS: The Mechanical packer at well 10l is working properly and preventing artesian flow at the well. A Packer was installed at MW-8l to prevent artesian flow on 10/28/21. Additionally, a packer was attempted to be installed in MW-7l but could not due to deformed well riser. TRC discussed the issue with WDNR, the well was repaired on 11/29/2021 and a packer was installed on 12/2/2021. Woody Vegetation around GV-11, MW-11 nest, and fence line was removed in August 2021. Gas vent GV-11 was observed to be damaged during the time of inspection. The PVC riser was broken at the coupler near the ground surface. TRC contacted the WDNR following the inspection and the vent was repaired on November 29, 2021.				
SIGNATURE OF INSPECTOR: <i>Wesley Braga</i>		DATE: 12/6/2021		

**Footnote**

1. TRC completed the Semi-annual Inspection on October 29, 2021. Damages were observed to gas vent GV-11 and monitoring well MW-7l. Repairs to the vent and well were completed on November 29, 2021. This inspection report has been updated to document the repairs made.


## Photographic Log

<b>Client Name:</b> Wisconsin Department of Natural Resources		<b>Site Location:</b> Stoughton City Landfill	<b>Project No.:</b> 375007.0001
<b>Photo No.</b> 1	<b>Date</b> 10/29/2021		
<b>Time:</b> 14:06  <b>Weather:</b> Sunny / 45°F  <b>Description:</b> Gas vent GV-11 during inspection.  <b>Photographer:</b> <i>Wesley J Braga</i> <hr/> Wes Braga			

<b>Photo No.</b> 2	<b>Date</b> 10/29/2021		
<b>Time:</b> 14:07  <b>Weather:</b> Sunny / 58°F  <b>Description:</b> Gas vent GV-11 PVC coupler broken at ground surface.  <b>Photographer:</b> <i>Wesley J Braga</i> <hr/> Wes Braga			




## Photographic Log


<b>Client Name:</b> Wisconsin Department of Natural Resources		<b>Site Location:</b> Stoughton City Landfill	<b>Project No.:</b> 375007.0001
<b>Photo No.</b> 3	<b>Date</b> 10/29/2021		
<b>Time:</b> 14:09			
<b>Weather:</b> Sunny / 45°F			
<b>Description:</b> Gas vent GV-11 standpipe with broken coupler.			
<b>Photographer:</b> <i>Wesley J Braga</i>			
Wes Braga			

<b>Photo No.</b> 4	<b>Date</b> 11/29/2021		
<b>Time:</b> 8:30			
<b>Weather:</b> Sunny / 30°F			
<b>Description:</b> Gas vent GV-11 new coupler installed.			
<b>Photographer:</b> <i>Wesley J Braga</i>			
Wes Braga			





## Photographic Log

<b>Client Name:</b> Wisconsin Department of Natural Resources		<b>Site Location:</b> Stoughton City Landfill	<b>Project No.:</b> 375007.0001
<b>Photo No.</b> 5	<b>Date</b> 11/29/2021		
<b>Time:</b> 8:35			
<b>Weather:</b> Sunny / 30°F			
<b>Description:</b> Gas vent GV-11 new coupler.			
<b>Photographer:</b> <i>Wesley J Braga</i>			
Wes Braga			


<b>Photo No.</b> 6	<b>Date</b> 11/29/2021		
<b>Time:</b> 8:45			
<b>Weather:</b> Sunny / 30°F			
<b>Description:</b> Gas vent GV-11 repaired.			
<b>Photographer:</b> <i>Wesley J Braga</i>			
Wes Braga			

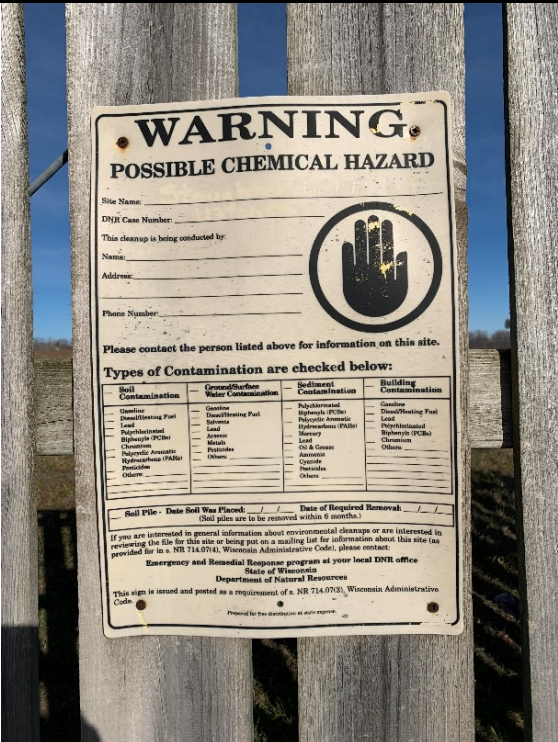


## Photographic Log

<b>Client Name:</b> Wisconsin Department of Natural Resources		<b>Site Location:</b> Stoughton City Landfill	<b>Project No.:</b> 375007.0001
<b>Photo No.</b> 7	<b>Date</b> 11/29/2021		
<b>Time:</b> 9:23  <b>Weather:</b> Sunny / 35°F  <b>Description:</b> Monitoring Well MW-7I with deformed stainless riser.  <b>Photographer:</b> <i>Wesley J Braga</i> <hr/> Wes Braga			
<b>Photo No.</b> 8	<b>Date</b> 11/29/2021		
<b>Time:</b> 9:35  <b>Weather:</b> Sunny / 45°F  <b>Description:</b> Monitoring Well MW-7I repaired with Fernco coupler and PVC riser.  <b>Photographer:</b> <i>Wesley J Braga</i> <hr/> Wes Braga			



## Photographic Log

<b>Client Name:</b> Wisconsin Department of Natural Resources		<b>Site Location:</b> Stoughton City Landfill	<b>Project No.:</b> 375007.0001
<b>Photo No.</b> 9	<b>Date</b> 12/2/2021		
<b>Time:</b> 9:16			
<b>Weather:</b> Sunny / 40°F			
<b>Description:</b> Monitoring Well MW-71 repaired protective casing.			
<b>Photographer:</b> <i>Wesley J Braga</i>			
Wes Braga			

<b>Photo No.</b> 10	<b>Date</b> 12/2/2021		
<b>Time:</b> 10:55			
<b>Weather:</b> Sunny / 45°F			
<b>Description:</b> Faded signage on landfill gate.			
<b>Photographer:</b> <i>Wesley J Braga</i>			
Wes Braga			



## Photographic Log

<b>Client Name:</b> Wisconsin Department of Natural Resources		<b>Site Location:</b> Stoughton City Landfill	<b>Project No.:</b> 375007.0001
<b>Photo No.</b> 11	<b>Date</b> 12/2/2021		
<b>Time:</b> 11:05			
<b>Weather:</b> Sunny / 45°F			
<b>Description:</b> Relabeled signage on landfill gate with BRRTS# and EPA ID#.			
<b>Photographer:</b>  <hr/> Wes Braga			