UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

DATE:	See date of Section Chief signature
SUBJECT:	CLEAN AIR ACT INSPECTION REPORT Waste Connections Brent Run Landfill, Montrose Township, MI
FROM:	Daniel Heins, Environmental Scientist AECAB (IL/IN)
THRU:	Nathan Frank, Section Chief AECAB (IL/IN)
TO:	File

BASIC INFORMATION

Facility Name: Waste Connections Brent Run Landfill

Facility Location: 8335 Vienna Road, Montrose Township, MI 48457

Date of Inspection: August 16, 2021

EPA Inspector(s):
1. Daniel Heins, Environmental Scientist
2. Emma Leeds, Environmental Engineer
3. Brianna Fenzl, Environmental Engineer

Other Attendees:
1. Tim Church, District Manager – Waste Connections
2. Tanner Cavender, Gas Technician – Monitoring Control & Compliance (MCC)
3. Alex Schreiber, Project Scientist – Tetra Tech
4. Khaled Mahmood, Project Scientist – Tetra Tech

Contact Email Address: timothy.church@wasteconnections.com

Purpose of Inspection: To determine Clean Air Act (CAA) compliance and perform a comparative Surface Emissions Monitoring (SEM) survey

Facility Type: Muncipal solid waste (MSW) landfill

Regulations Central to Inspection: 40 C.F.R. Part 60, Subpart WWW; 40 C.F.R. Part 62, Subpart OOO; 40 C.F.R. Part 63, Subpart AAAA, Title V Permit Requirements

Arrival Time: 09:00 ET
Departure Time: 17:30 ET

Inspection Type:
☐ Unannounced Inspection
☒ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials
☒ Stated authority and purpose of inspection
☐ Provided Small Business Resource Information Sheet
☒ Small Business Resource Information Sheet not provided. Reason: Not a small business
☒ Provided CBI warning to facility

The following information was obtained verbally from Waste Connections representatives.

Process Description:
Brent Run Landfill (the Landfill) is a municipal solid waste (MSW) landfill located in Montrose Township, Michigan. The Landfill is a lined RCRA Subtitle D site, having started operations in 1993. Its design capacity is approximately 33 million cubic yards, with approximately 30 years of operation projected and no current expansions planned. The Landfill receives approximately 1,000 tons of waste per day, a majority of which is MSW. The Landfill accepts asbestos but not refrigerants. The Landfill is permitted for various alternate daily covers (ADC). The site primarily uses onsite soils, auto shredder fluff, and tarps as daily cover, with occasional use of contaminated soils and tire chips. There is approximately 30 acres of final cover, on the west and northwest sides of the site. Approximately 70 acres are under intermediate cover with gas collection. Approximately 10 acres are under daily cover with gas collection, on the south side, and another 23 acres are without gas collection, regardless of cover type, also on the south side. There are a final 22 acres permitted for waste that has not yet been developed. Leachate is directly routed to a neighboring publicly owned treatment works (POTW), with approximately 12 million gallons per year. Leachate is not recirculated.

The gas collection and control system (GCCS) has 121 wells, including approximately 10 horizontal collectors. In areas of current waste placement where gas is collected, Waste Connections typically places vertical wells and raises them, re-drilling as needed for pinches and to potentially incorporate horizontal collectors. Waste Connections has gas collection off of the leachate system, and uses approximately 23 gas migration probes that are monitored on a quarterly basis. There are collectors for odor control outside of the footprint of the landfill that are not treated as collectors subject to full regulatory requirements. There is a pressure variance approved for the closed area of up to 19 inches of water, though Waste Connections still aims to

maintain negative pressure on these areas. Waste Connections has done surveys of liquid levels in the wells, with a survey of most wells in June 2021. There are no de-watering pumps on site.

Collected gas primarily goes to a gas to energy plant owned and operated by a third party, EDL. EDL operates five reciprocating internal combustion engines. EDL does not have control over the gas collection, though EDL and Waste Connections are in communication about gas quality. The purchase agreement between the two companies incentivizes gas quality. Waste Connections has two flares at the Landfill operated on an as need basis, typically less than four weeks per year. One flare is enclosed with a capacity of 1,389 standard cubic feet per minute (scfm), and the other is open with a capacity of 1,350 scfm.

Staff Interview:
To determine if wells are performing adequately, technicians rely on the gas quality and pressure data from the monthly wellhead monitoring, and rely on the quarterly surface emissions monitoring (SEM) to determine if the well is collecting all of the gas that it should be. Redrills are occasionally done based off need as determined by this monitoring. Well water levels are also checked based off this monitoring.

For surface emissions monitoring, contractors for Waste Connections do monitor penetrations. When EPA asked if they ever go off the planned SEM path, the contractor stated that they do not. Technicians use an Elkins IRwin, but do not log the full data, only areas above 500 ppm. SEM excludes the "hot zone" of active waste placement and any active construction area. There is no standard operating procedure (SOP) for cover integrity monitoring. EPA asked what type of cover integrity issues would warrant corrective action, and Waste Connections personnel explained that issues would need to be "excessively deep" or have exposed waste to be flagged for correction. Repairs are pending weather/season, and delayed repairs are not necessarily documented.

The site is currently in the process of updating its permit to reflect regulatory changes with Part 62 Subpart OOO coming into effect and replacing Part 60 Subpart WWW.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:
EPA conducted a partial SEM survey of the facility, primarily split into two teams. Emma Leeds and Brianna Fenzl confirmed eachother's exceedances, with Khaled Mahmood providing visual confirmation of the readings taken on EPA instruments. Daniel Heins monitored as the second team with Tanner Cavender, a technician from Monitoring Control & Compliance, providing confirmation readings. Tim Church provided visual confirmation of readings when Mr. Cavender was unavailable or unable to confirm EPA's readings. EPA used three ThermoFisher Toxic Vapor Analyzers 2020 (TVA2020) to perform EPA Reference Method 21 for the SEM.

Mr. Cavendar was frequently unable to confirm readings, even of leaks exhibiting steady leak concentrations. After returning for lunch, EPA and MCC measured each other's calibration gases

with their respective instruments. EPA's three instruments found MCC's span gas, with a stated concentration of 522 parts per million (ppm), to be approximately 770 ppm. MCC's instrument, calibrated on said gas, measured EPA's calibration gases at significantly below their stated values. These readings and analysis are included in Appendix B.

EPA inspectors detected and documented 38 points on the landfill with concentrations of methane above 500 ppm. Some documented points involved multiple exceedances in close proximity, such as at clustered wellheads. Multiple exceedances were at locations flagged from prior surveys that Waste Connections stated had already seen corrective action. Throughout the landfill, and particularly on the southern slope of the intermediate cover area, EPA observed recurring areas of distressed vegetation and erosion gullies. Many of these areas are documented in the Appendices A and B. EPA observed cracks, tears, and holes in GCCS equipment, as documented in Appendix A. Towards the end of the day, EPA found an increasing frequency of exceedances on the south central side of the landfill, but was only able to conduct a cursory survey of this area in the interest of concluding the inspection out of respect for the time of the site employees. Some exceedances were found at marker pipes, which were found to be effectively serving as a conduit for landfill gas to escape through the cover.

Photos and/or Videos: were taken during the inspection. See Appendix A
Field Measurements: were taken during this inspection. See Appendix B.

RECORDS REVIEW

Requested and reviewed prior to inspection:

- GCCS map
- Cover map
- Leachate collection system map
- SEM reports 2019 Q3 to 2021 Q3
- 2019 and 2020 semi-annual compliance reports
- 2020 and 2021 to date cover integrity reports
- 2020 wellfield data

Reviewed during inspection, copy taken:

- Calibration gas certificate for MCC's 500 ppm gas

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Requested documents:

- Filling in the rest of the past 5 years of SEM reports, semi annuals, and cover integrity reports
- Current GCCS design plan
- Most recent performance test (as applicable) and design specifications for the flares

- Past year of control device parameter monitoring (e.g. temperature and LFG flow to flare), in a spreadsheet format
- Summary of past 5 years of volume of gas collected (in whatever format / timeframe is easiest, be it daily, weekly, or monthly volumes)
- Waste accepted by category over the past year, in a spreadsheet format
- Most recent LandGEM report run used for estimating gas generation at the facility
- The June survey of well water levels discussed during the inspection
- Summary of the redrills & added wells that have been done over the past 5 years

Compliance Assistance: EPA gave input on how to properly conduct Method 21.

Concerns:
EPA found a high rate of SEM hits, distinctly above historic rates. Some hits were at locations that were supposed to have been recently corrected. EPA was concerned that pipes being used as markers were effectively routing landfill gas directly to the atmosphere. Cover integrity logs were minimal, appearing to overlook issues on the landfill, and no documentation of corrective action was included.

Based off the comparative readings of the calibration gases with each of the instruments, there appeared to be an issue with MCC's calibration gas, which impeded MCC's ability to take accurate readings of methane concentration.

DIGITAL SIGNATURES

DANIEL HEINS
Digitally signed by DANIEL HEINS
Date: 2021.10.13 17:38:35 -05'00'

Daniel Heins, Report Author

NATHAN FRANK
Digitally signed by NATHAN FRANK
Date: 2021.10.15 13:14:13 -05'00'

Nathan Frank, Section Chief (IL/IN)

APPENDICES AND ATTACHMENTS

Appendix A: Digital Image Log

Appendix B: Field Measurement Data, Including Maps

Facility Name: Waste Connections Brent Run Landfill
Facility Location: 8335 Vienna Road, Montrose Township, MI 48457
Date of Inspection: August 14, 2021

APPENDIX A: DIGITAL IMAGE LOG

1. **Inspector Name:** Daniel Heins	2. **Archival Record Location:** ERC - Enf_BrentRunWC_MI_21 "Dan Pics"

Image #	File Name	Date/Time (Eastern)	Description of Image
1	20210816_111056.JPG	2021-08-16 11:10	A1 – GW91R, distressed vegetation at base
2	20210816_111937.JPG	2021-08-16 11:19	Example of cover integrity issues that would not be flagged for correction
3	20210816_113744.JPG	2021-08-16 11:37	HC07 – crack in hose line
4	20210816_115212.JPG	2021-08-16 11:52	A3 – turnaround above HC08
5	20210816_122620.JPG	2021-08-16 12:26	A5 – erosion/distressed vegetation
6	20210816_123400.JPG	2021-08-16 12:34	A6 – Eroded rivulets with multiple exceedances excluded from monitoring
7	20210816_150606.JPG	2021-08-16 15:06	Consultant's calibration gas, nominally 522 ppm.
8	20210816_153645.JPG	2021-08-16 15:36	GW68 tear in boot
9	20210816_154639.JPG	2021-08-16 15:46	A8 – GW81R2, distressed vegetation at base of well
10	20210816_155722.JPG	2021-08-16 15:57	A9 – GW89R2, exceedances across entire cluster
11	20210816_160109.JPG	2021-08-16 16:01	GW110, animal burrow
12	20210816_160620.JPG	2021-08-16 16:06	A11 – GW111
13	20210816_161847.JPG	2021-08-16 16:18	A12 – Distressed vegetation/bare
14	20210816_162313.JPG	2021-08-16 16:23	A13 – HC2 complex of exceedances
15	20210816_162633.JPG	2021-08-16 16:26	A14 – Meeting of daily/intermediate cover dirt
16	20210816_162950.JPG	2021-08-16 16:29	A15 – GW6B/7B mound, multiple hits
17	20210816_163711.JPG	2021-08-16 16:37	A16 – dirt cover
18	20210816_164059.JPG	2021-08-16 16:40	A17 – GW78. Had dirt added as corrective action post Quarter 2
19	20210816_164427.JPG	2021-08-16 16:44	A18 – GW56
20	20210816_165140.JPG	2021-08-16 16:51	A19 – Edge of tarp
21	20210816_165229.JPG	2021-08-16 16:52	A19 – Edge of tarp
22	20210816_165529.JPG	2021-08-16 16:55	A20 – GW55, flagged from previous attempt at correction
23	20210816_165854.JPG	2021-08-16 16:58	A21 – GW54, at both points
24	20210816_170415.JPG	2021-08-16 17:04	A22 – GW57

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1. **Inspector Name:** Emma Leeds	2. **Archival Record Location:** ERC - Enf_BrentRunWC_MI_21 – "Emma Pics"

Image #	File Name	Date/Time (Eastern)	Description of Image
1	IMG_0508	2021-08-16 11:22	B1 – distressed vegetation 50 ft NW of GW-106
2	IMG_0509	2021-08-16 11:43	B2 – distressed area 40 ft NE of GW-107
3	IMG_0510	2021-08-16 12:01	B3 – HC06 distressed patch east of well
4	IMG_0511	2021-08-16 12:14	B4 – erosion crack in cover, 100 ft SE of GW104
5	IMG_0512	2021-08-16 12:19	B5 – GW104
6	IMG_0513	2021-08-16 12:26	B6 – GW105, leak in air pump for valve
7	IMG_0514	2021-08-16 12:35	X1 – follow up point – recently reseeded and covered with hay
8	IMG_0515	2021-08-16 3:43	B7 – marker pipe NE of GW 72R
9	IMG_0516	2021-08-16 3:45	Location of B7 leaking marker pipe, looking NW downhill towards scalehouse
10	IMG_0517	2021-08-16 4:02	B8 – distressed grass 150 ft NW of GW81R2
11	IMG_0518	2021-08-16 4:09	B9 – erosion gully, 100 ft W of GW81R2
12	IMG_0519	2021-08-16 4:15	B10 – distressed vegetation, multiple exceedances in area. 50 ft NW of 108.
13	IMG_0520	2021-08-16 4:19	B11 – GW108
14	IMG_0521	2021-08-16 4:24	B12 – HC09
15	IMG_0522	2021-08-16 4:34	B14 – 100 ft N of GW83R. Large erosion patch with gullies
16	IMG_0523	2021-08-16 4:39	B13 – Large hole (1 ft wide, 1 ft deep) around GW83R
17	IMG_0524	2021-08-16 4:58	B15 – erosion patch 100 ft S of GW88

APPENDIX B: FIELD MEASUREMENT DATA

Measured Exceedances

Flag #	Well / Location Description	Read. 1	Inst. 1	Read. 2	Inst. 2	Vis. Conf.	Latitude	Longitude	Notes
A1	GW 91R	2700	DJH	565	TCa		43.175524	-83.837821	Distressed veg.
A2	GW 102	1000	DJH	120	TCa	TCh	43.174512	-83.835853	
A3	Turnaround on road above HC08	600	DJH	200	TCa		43.173368	-83.835934	
A4	End of SE Header (complex, including tops /bottoms of marker pipes)	15%	DJH	0.70%	TCa		43.172306	-83.836587	Conduit, hits at all 5 penetrations, Horizontal collector below this is "not designed to get this gas"
A5	Downslope of SE Header, in erosion	700	DJH	170	TCa	TCh	43.172085	-83.8364	Consistent readings above 100 in surrounding area
A6	Mid SE Slope, multiple points in eroded rivulets	900	DJH	1200	TCa	TCh	43.172066	-83.835187	Not monitored due to steepness, multiple points in vicinity above 500
A7	HC06 access riser and nearby crack	1000	DJH				43.174378	-83.83443	
A8	GW 68	1.10%	DJH	520	TCa		43.174344	-83.840104	Base of well
A9	GW 89R2 (complex)	1800	DJH	2700	TCa	TCh	43.174213	-83.839151	Exceedances across cluster
A11	GW 111	2600	DJH	626	TCa		43.174466	-83.83671	
A12	Above HC01, south mid slope	700	DJH	506	TCa		43.173274	-83.838166	Distressed vegetation/bare
A13	HC2 (complex)	2200	DJH	150	TCa	TCh	43.172795	-83.838329	
A14	South of haul road	900	DJH	70	TCa		43.172538	-83.838419	Meeting of daily/intermediate cover dirt
A15	GW 6B/7B Complex mound	1200	DJH	600	TCa		43.172539	-83.838428	Strong odors
A16	SW of well 78, south of haul road	1400	DJH	467	TCa	TCh	43.172197	-83.839768	In dirt. Strong odor
A17	GW 78	3.60%	DJH	1434	TCa		43.172444	-83.839335	Just hard dirt added as correction post Q2 (maybe Q1)
A18	GW 56	2200	DJH	1178	TCa		43.172722	-83.840877	

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Flag #	Well / Location Description	Read. 1	Inst. 1	Read. 2	Inst. 2	Vis. Conf.	Latitude	Longitude	Notes
A19	Edge of tarp	600	DJH	460	TCa	TCh	43.172697	-83.841615	Elevated readings elsewhere along tarp edge between 100 and 500
A20	GW 55	1%	DJH	450	TCa	TCh	43.173295	-83.841386	Has flag from prior survey, was "fixed"
A21	GW 54	4400	DJH	1656	TCa		43.173376	-83.841976	Strong odor, exceedances at both sides
A22	GW 57	800	DJH			TCh	43.173276	-83.840708	
B1	50 ft NW of GW-106	1100	ELJ	801	BF	KM	43.176411	-83.837367	Distressed vegetation
B2	40 ft NE of GW-107	700	ELJ	2000	BF	KM	43.176325	-83.835518	Distressed vegetation
B3	HC06, distressed patch directly east of well	515	ELJ	930	BF	KM	43.174536	-83.834731	Distressed patch
B4	100 ft SE of GW104	1200	ELJ	1900	BF	KM	43.173707	-83.834444	Erosion crack in cover
B5	GW104	600	ELJ	790	BF	KM	43.173983	-83.834901	
B6	GW105	1900	ELJ	1300	BF	KM	43.17341	-83.835049	
B7	base of marker pipe 10 ft NE of GW 72R	700	ELJ	840	BF	KM	43.174568	-83.841978	Marker pipe leaking directly to atmosphere
B8	150 ft NW of GW 81R2	600	ELJ	700	BF	KM	43.174298	-83.840477	Distressed vegetation patch
B9	erosion gully 100 ft W of GW81R2	600	ELJ	1500	BF	KM	43.174102	-83.840193	Erosion gully
B10	Large patch of distressed vegetation 50 ft NW of GW108	550	ELJ	560	BF	KM	43.173945	-83.839855	Multiple exceedances found within patch
B11	GW108	4000	ELJ	4000	BF	KM	43.173932	-83.839639	
B12	HC09	3000	ELJ	1033	BF	KM	43.17374	-83.839939	
B13	GW83R, large hole around well (1ft wide, 1ft deep)	2%	ELJ	1.30%	BF	KM	43.173744	-83.839581	
B14	100 ft N of GW83R	700	ELJ	740	BF	KM	43.173465	-83.839142	Large erosion patch with gullies
B15	Erosion patch 100 ft S of GW88	610	ELJ	550	BF	KM	43.17333	-83.840391	Erosion patch

Flag #	Well / Location Description	Read. 1	Inst. 1	Read. 2	Inst. 2	Vis. Conf.	Latitude	Longitude	Notes
X1*	Distressed vegetation patch recently reseeded			500	BF		43.173009	-83.834733	
X2*	By clay stockpile	550	DJH				43.172787	-83.835998	

*Points not flagged but noted here for completeness.

Calibration and Instrument Information

EPA used three ThermoFisher Toxic Vapor Analyzers 2020 (TVA2020). The EPA TVA2020 response times are in the 4 to 5 second range.

- Emma Leeds (EL) used A56584 for the duration of the survey.
- Daniel Heins (DH) used C09562 for the duration of the survey.
- Brianna Fenzl (BF) used A56575 for the duration of the survey.
- Tanner Cavendar (TCa) used an Elkins IRwin for the duration of the survey.
- Tim Church (TCh) and Khaled Mohmood (KM) were shown readings on EPA instruments for visual confirmation of exceedances.

	A56584	C09562	A56575
10:00 average calibration reading, 500 ppm gas	490	495	492
14:50 drift check reading, 500 ppm gas	400	483	446
14:50 post re-calibration reading, 500 ppm gas	503	No Recalibration	494
17:15 end of day drift check, 500 ppm gas	500	485	520

EPA calibration gases

Manufacturer	Composition	Lot #	Expiration
CALGAZ	Air zero grade THC <1 ppm	1486172	May 2026
GASCO	Methane in air 500 ppm	304-402110297-2	May 2025
GASCO	Methane in air 1960 ppm	304-402110299-1	May 2025
GASCO	Methane in air 10,000 ppm	304-402110296-1	May 2025

Background readings:

Upwind: -1 ppm
Downwind: 1 ppm

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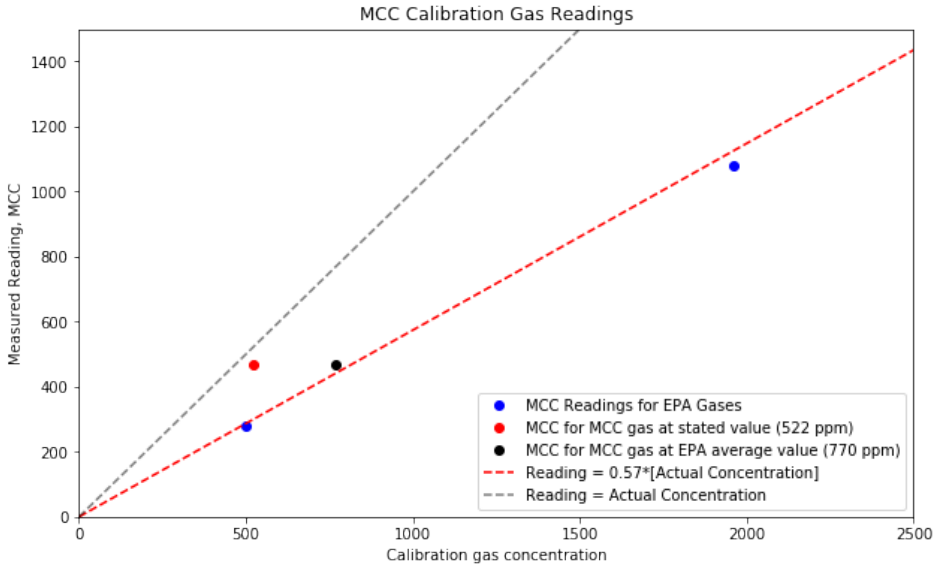
Midday instrument/calibration gas comparisons with MCC
Readings of the MCC span gas (stated concentration: 522 ppm):

Cal Gas Source	Cal Gas Stated PPM	Instrument	Instrument Reading
MCC	522	EPA – A56584	784
MCC	522	EPA – C09562	782
MCC	522	EPA – A56575	745
MCC	522	MCC Elkins IRwin	470
EPA	500	MCC Elkins IRwin	280
EPA	1960	MCC Elkins IRwin	1082

Average EPA reading for MCC gas: 770 ppm
Average ratio of MCC reading to calibration gas concentration, using EPA average instead of stated for MCC's gas: 0.57

In the below figure, the grey dashed line shows where a properly calibrated instrument should read for a given concentration of calibration gas. The red line shows the actual relationship between the MCC measurements and the EPA calibration gases, where on average it detects 57% of the actual concentration. When comparing against the average EPA reading for the MCC calibration gas, the response of the MCC instrument is consistent in behavior with its incorrect readings for the EPA calibration gases. Together, this indicates that the MCC calibration gas was actually approximately 770 ppm methane, rather than 522 ppm methane as stated.



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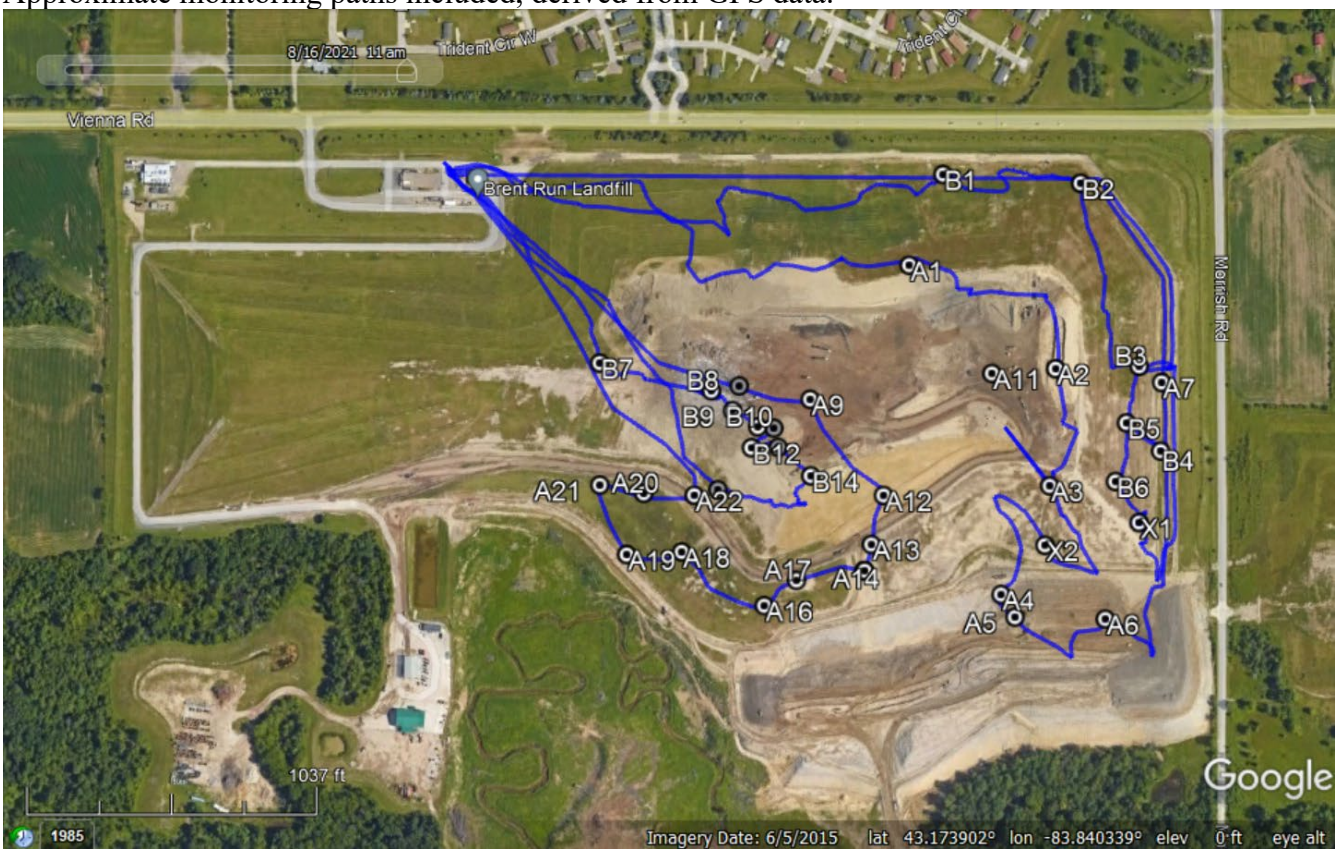
Map of Detected Hits
SEM hit locations plotted over satellite imagery from June 7, 2015 as depicted on Google Earth. Approximate monitoring paths included, derived from GPS data.



Detail view on south central portion of landfill