

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection**

N598765816

<b>FACILITY:</b> Brent Run Landfill		<b>SRN / ID:</b> N5987
<b>LOCATION:</b> 8335 W. Vienna Rd, MONTROSE		<b>DISTRICT:</b> Lansing
<b>CITY:</b> MONTROSE		<b>COUNTY:</b> GENESEE
<b>CONTACT:</b> Tim Church , District Manager		<b>ACTIVITY DATE:</b> 12/16/2022
<b>STAFF:</b> Michelle Luplow	<b>COMPLIANCE STATUS:</b> Non Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Onsite compliance inspections to determine compliance with the MACT Subpart AAAA, NESHAP Subpart M, and PTI 176-18.		
<b>RESOLVED COMPLAINTS:</b>		

**Inspected by:** Michelle Luplow (author) and David Rauch (AQD LDO)

**Brent Run Landfill Personnel Present:**

Tim Church (timothy.church@gflenv.com), General Manager

Danny Machinski, Operations Manager

**EDL Personnel Present:**

Doug Hines, Operations Technician

Jenna Hiltz, Operations Technician

Mike Shaper, Manager

Patrick Walters, Regional Ops Support Specialist

Rob Stewart, Operations Supervisor

**Offsite EDL Personnel:**

Courtney Truett (courtney.truett@edlenergy.com), Compliance Specialist

Meghan Stackhouse (meghan.stackhouse@edlenergy.com), Senior Environmental Manager

**Purpose**

Conduct an unannounced, onsite, partial compliance evaluation (PCE) inspections of the Brent Run Landfill (BRL) and EDL Generating Station Plant to determine compliance with the MACT Subpart AAAA, NESHAP Subpart M, and PTI 176-18. The NSPS Subpart WWW requirements contained within MI-ROP-N5987-2015a for the landfill became obsolete in June 2021. The engine requirements contained within this same ROP have also been replaced with the requirements in PTI 176-18. This inspection was conducted as part of a full compliance evaluation (FCE).

**Facility Background/Regulatory Overview**

The Brent Run Landfill (BRL) is a municipal solid waste landfill with an associated gas-to-energy plant that is owned and operated by Energy Developments (EDL). The primary activity of this source is accepting municipal solid waste, consisting mostly of residential and commercial waste materials, including sporadic receipt of municipal solid sludge. They also take in contaminated soils. Construction and demolition waste are also accepted. This site also accepts asbestos-containing materials (ACM) and is subject to the NESHAP for asbestos, 40 CFR, Part 61, Subpart M. The landfill was installed December 13, 1995, initially making it subject to 40 CFR Part 60, Subpart WWW, as it had been constructed after May 30, 1991. The NSPS Subpart WWW was replace with Part

62, Subpart OOO in June of 2021. BRL is currently subject to Part 62, Subpart OOO and the Part 63, MACT Subpart AAAAA.

The NSPS Subpart XXX EPA ruling for landfills was finalized October 28, 2016. The NSPS Subpart XXX applies to all landfills that are modified, new, or reconstructed **after** July 17, 2014. For all other landfills, there is a Federal Plan, Part 62, Subpart OOO that applies to landfills accepting waste between November 8, 1987 and constructed, modified or new **before** July 17, 2014. The Federal Plan became effective June 21, 2021; BRL is required to comply with Part 62 Subpart OOO as well as the 2020 revised MACT Subpart AAAAA regulation (they have not modified or reconstructed the landfill after July 17, 2014 at this time). These two regulations have replaced the NSPS Subpart WWW and the NSPS Subpart Cc, respectively. EGLE's Materials Management Division (MMD) provided AQD with information that Brent Run's construction permit was issued on 12/20/2013, and that Brent Run commenced construction on Cell 11 in the spring of 2014. T. Church said that there are no current plans to obtain a new construction/expansion permit from MMD. Based on this information, Brent Run is not subject to the NSPS Subpart XXX.

MI-ROP-N5987-2015 was issued in October 2015. On August 18, 2016, PTI 78-16 was approved for EUENGINE6 (CAT 3520C engine), to replace EUENGINE2 (G3516 engine). A Minor Modification was issued on April 28, 2017 under MI-ROP-N5987-2015a, to add EUENGINE6 into the ROP and remove EUENGINE2. This action resulted in removing flexible group FGICEENGINES2 and keeping EUENGINE1 as an emission unit, maintaining all requirements that were included in FGICEENGINES2.

PTI 176-18 was issued in April 2019 for the replacement of EUENGINE1 (G3516 engine) with a G3520C engine (EUENGINE7). FGICEENGINES, FGRICENSPS, and FGRICEMACT were therefore rewritten to include EUENGINE7. A Minor Modification was issued alongside issuance of MI-ROP-N5987-2023 on January 26, 2023 to incorporate PTI 176-18 into the ROP. Brent Run Landfill's renewed ROP contains the Federal Plan Subpart OOO requirements as well as the revised MACT Subpart AAAAA requirements.

BRL has a gas collection and control system (GCCS) that routes all collected landfill gas to 2 flares or to EDL's engine plant where the landfill gas is treated via filtration, dewatering, and compression. Except for EUENGINE5 (3512 "cat-in-the-box") all engines onsite are G3520C. All engines are subject to the conditions under FGICEENGINES and the RICE MACT Subpart ZZZZ. EUENGINE3, EUENGINE4, EUENGINE6, and EUENGINE7 are subject to the NSPS Subpart JJJJ.

Collectively, BRL and EDL have the Potential to Emit (PTE) greater than 250 tons of CO at 433.7 tons per year. The table below contains the PTE of each Criteria Air Pollutant. Collectively, EDL and BRL are therefore an existing major PSD source because it emits more than 250 tpy of a regulated pollutant (CO). According to Permit Engineer, Melissa Byrnes, a modification at an existing major PSD source where the emissions of any regulated pollutant will increase by more than the Significant Emission Rate (SER) for any regulated pollutant, would be subject to PSD. The potential to emit of the PTI 176-18 project (based on the GCCS gas production in the year 2027), two new engines and the increase in sulfur in the gas for the source, are greater than the SER for CO, NOx, SO<sub>2</sub>, and VOC's. The emissions were calculated assuming a continuous operating schedule of 8,760 hours per year for the two new engines. However, BRL used the A2P Applicability Test to show there will not be a significant emissions increase. The Project Emissions Change equals the Potential Emissions (existing + new) minus the existing units Baseline Actual Emissions (existing Only) as described in R 336.2802(4)(d). For the new engines, the baseline was considered to be zero.

#### Sections 1 & 2 Combined PTE Emissions

CO (TPY)	NOx (TPY)	PM <sub>10</sub> (TPY)	PM <sub>2.5</sub> (TPY)	SO <sub>2</sub> (TPY)	VOC (TPY)
433.7	134.34	20.69	20.69	148.63	216.74

## Inspection

On December 16, 2022, at approximately 8:50 a.m., David Rauch and I met with Tim Church and Danny Machinski to conduct an onsite inspection of the Brent Run Landfill, and on November 29, 2022 I conducted an onsite inspection of EDL's energy generation plant (conducted during engine stack testing).

Upon arrival to BRL, I noted that the unpaved roads were well-watered. No fugitive dust was visible from these roads from truck traffic or wind. T. Church said that the paved roads are swept daily using a street sweeper with water; unpaved roads are watered as needed and application is temperature-dependent.

At the time of the inspections, the Brent Run Landfill ROP had not yet been renewed with the new MACT Subpart AAAA and Part 62, Subpart OOO requirements; however, BRL and EDL are required to comply with the MACT Subpart AAAA even if the regulation is not contained within the ROP because the State of Michigan has delegated authority for this standard. The State of Michigan does not have delegated authority to determine compliance with Part 62, Subpart OOO until its requirements are contained within the ROP.

The ROP MACT Subpart AAAA template was used to determine compliance at both facilities. All references to special conditions contained within this report can be found in AQD's MACT Subpart AAAA template.

These facilities were inspected under the requirements established within 40 CFR 63 Subpart AAAA (BRL and EDL), PTI 176-18 (EDL), and the NESHAP Subpart M (BRL).

T. Church said they have a 1 ppt citrus odor control agent and water odor misting system that could be used to control odors but is not hooked up at this time. Instead of the misting system they use a water truck containing the 1 ppt citrus solution to "spot treat" the landfill for odors, and the spot treatments typically used on loads that are particularly odorous. T. Church indicated that the deodorizer addresses both landfill gas odors and landfill trash odors, but that it works better to control the odors from trash. He explained that landfill gas odors typically move with changes in barometric pressure (pressure pushes landfill gases to low-lying areas and tends to occur more frequently when the air is heavy and/or foggy), and landfill trash odors typically move with wind direction. In addition to odor control systems, BRL also engineers horizontal wells in active areas of the landfill to control odors. T. Church said they also will immediately cover up odorous loads and some odorous loads they no longer take.

T. Church said that within the past several years they have had no odor complaints, except for in July 2022 when they received sludge from a wastewater treatment plant; the atmospheric conditions at the time of receipt were just right to carry onsite odors from the sludge to a residence. T. Church said he visited the residence within 10 minutes and the odor issue was addressed at that time.

## SECTION 1: BRENT RUN LANDFILL INSPECTION

### EUASBESTOS

T. Church said that Brent Run Landfill receives friable and non-friable asbestos containing material (ACM) on an infrequent basis. T. Church estimated that they take in an approximate maximum of 12 loads of ACM a year (each load contains multiple waste manifests for various projects). There were no asbestos pits (active/open for asbestos waste disposal) at the time of inspection. T. Church said that receipt of asbestos loads are booked 24 hours in advance to ensure they know when the ACM load is coming; by doing so, Brent Run can prepare a location where the ACM can be disposed and log the GPS coordinates of the disposal location.

*There are no Emission Limits, Material Limits, or Testing/Sampling requirements for EUASBESTOS at this time.*

### Process/Operational Restrictions

ACM is required to be covered with at least 15 cm of non-ACM compacted material at the end of each operating day or once every 24-hour period if the use of warning signs or natural barriers are not used to deter public access. Brent Run has fencing only at its northern and eastern perimeters and there are no asbestos warning signs posted; therefore, Brent Run is required to meet cover requirements for the ACM. To meet this requirement, T. Church said ACM is immediately covered with landfill waste once they receive all scheduled ACM loads for the day. T. Church said they schedule multiple ACM loads together, which ensures that the ACM pit can be covered as soon as possible within the day that the ACM is received.

### Design/Equipment Parameters & Monitoring/Recordkeeping

Under 40 CFR 63 Subpart AAAA, gas collection devices are required to control all gas-producing areas except segregated areas of asbestos or non-degradable materials, and records of the nature, date of deposition, amount and location of asbestos-containing waste excluded from collection is required to be maintained. T. Church explained that Brent Run's ACM is distributed throughout the landfill; there is no designated location for ACM deposits, and therefore all gas-producing areas are controlled; there are no areas excluded from gas collection.

Waste shipment records (manifests) are required to be kept for all ACM waste material, containing the name, address, and phone number of the waste generator and transporter(s); the quantity of asbestos-containing waste material in cubic yards (or cubic meters); and the date of receipt, in addition to the presence of improperly enclosed or uncovered ACM waste or any ACM not sealed in leak-tight container. Additionally, Brent Run is required to keep documentation of the location, depth and area, and quantity in cubic meters (or cubic yards) of the ACM waste material within the disposal site, on a map or diagram.

T. Church said that Brent Run generates ticket numbers on their "RACM Load Inspection Report Form" for all ACM waste loads that enter the site. Each "load" of ACM can contain multiple waste manifests. The ticket numbers are used as a reference to find further information on a particular load, including the location the load was deposited on a map, and the northing, easting, and depth coordinates (created by converting Garmin GPS latitude/longitude coordinates to northing, easting and elevation coordinates), as well as the date of deposition. As the landfill waste settles, the elevation of the ACM will change over time, but the logged coordinates remain the same.

The RACM Report form includes a checklist for the ACM waste to use by those disposing of it in the ACM pit. This includes ensuring the ACM is contained within in-tact, leak-tight containers; the containers are labeled with the appropriate hazard warning label and have the name of the generator/operator and location of ACM generation; and ensuring the load is sufficiently enclosed and covered. In the event these items are not met, procedures are in place to address and correct the issue. T. Church said if they find any improperly enclosed or uncovered ACM not sealed in leak-tight containers they leave the ACM undisturbed, take a photo of the issue, water it down, and then call the Materials Management Division (first point of contact) and the AQD to inform them of the issue, as required by the ROP.

While onsite I reviewed all of the waste manifests contained under RACM Ticket # 40700009784, received 3/9/22 (see attached). All waste manifests appeared to be filled out properly (waste generator, transporter #1 information, cubic yards, and date of receipt included), except for "Transporter 2" on each of the 15 waste manifests. The "Transporter 2" boxes only contain the signature and date of the transporter, the name, address, and phone number for Transporter 2 were not filled out. I brought this to T. Church's attention: Brent Run staff signed off on these manifests, certifying receipt, without ensuring all required boxes were filled out in their entirety. T. Church acknowledged this and stated that he would speak with Gatehouse staff on how to properly review waste manifests to ensure the forms are filled out completely.

T. Church said that multiple waste manifests will come contained in one 40-yard container. Brent Run then overestimates the amount of ACM coming in by assuming the entire 40-yard container is full. They log the number of yards received on their RACM Load Inspection Form based on the yardage of the container.

Six loads of ACM were received in calendar year 2022. T. Church provided a map containing the dots where each of the 6 loads was deposited, as well as its associated ticket number. He also provided the coordinates for each of those waste deposits (based on ticket number). Each dot represents a load of ACM comprised of multiple waste manifests; the ticket number is used to find the location coordinates and quantity of ACM disposed of at that location. The northing, easting and depth can be used to determine the total area within which the waste was placed.

### Reporting



Brent Run is required to notify AQD at least 45 days prior to excavating or disturbing ACM in the landfill. Brent Run accomplishes this by submitting an electronic notification through AQD's Asbestos Notification System (ANS) at the beginning of each calendar year explaining that excavations will occur on a continuous basis throughout the year. The excavations are predominantly to install vertical and horizontal collectors. Vertical wells are made by drilling holes into the waste and wetting the waste that has been drilled out of the hole to ensure any disturbed ACM is not released to the ambient air. Horizontal wells are installed by trenching through the waste to install the collectors. T. Church explained on the off-chance that there is an emergency situation (if they hit a vacuum line, for example, and have to drill through asbestos to mitigate the issue) the ANS submittal also includes these situations. Locations for installing vertical wells are chosen in less concentrated areas of ACM disposal.

I reviewed Brent Run's submittals in the ANS system and the last submittal was received in July 2021. I confirmed with Brent Run that they did not drill wells or conduct any excavations at the landfill during the 2022 calendar year, and therefore ANS reporting was not required. T. Church said they average 0 – 6 well drills per year.

Brent Run appears to be in compliance with EUASBESTOS at this time.

## **FGLANDFILL-AAAA**

This flexible group contains requirements from 40 CFR Part 63, Subpart AAAA. Although the active ROP at the time of inspection (MI-ROP-N5987-2015a) contains NSPS Subpart WWW requirements, the NSPS Subpart WWW became obsolete in June 2021 and therefore compliance was not checked with the NSPS, but only with the applicable MACT Subpart AAAA.

### Emission Limits, Testing/Sampling & Monitoring/Recordkeeping

Brent Run is required to conduct surface emission monitoring around the perimeter of the collection area and along a pattern that traverses the landfill at 30-meter (~100 ft) intervals in addition to where visual observations indicate elevated concentrations of landfill gas (such as distressed vegetation and cracks or seeps in the cover). The surface testing should also be conducted at all surface penetrations as well as the area of the landfill where waste has been placed and gas collection system is required. This monitoring includes documenting the monitoring route on a topographical map of the landfill. Surface monitoring is required to be conducted quarterly to determine compliance with the methane concentration limit of 500 ppm above background level.

T. Church said that rainfall impacts the results of the SEM surveys. Dry days typically will have more hits than rainy days or days when the SEM surveys are conducted after a rain, as rain will "plug" landfill cracks, rills, etc where gas can escape. BRL is required by MMD to conduct annual liquid level (depth-to-liquid) surveys, where they measure the well water levels as well. Using this method, they can also find pinches in the wells. T. Church said BRL is a very dry site and they haven't had any watered-in wells (water covering the well penetrations). Tiffany Johnson, MMD, stated that BRL has not had any leachate head exceedances, which is also an indicator that landfill leachate/water management is being conducted properly.

All quarterly SEM reports are reviewed for compliance with the 500-ppm methane limit during the semi-annual report submittals. During the inspection, Brent Run provided the 2022 Q4 survey results (see attached), which was conducted in October 2022 by Monitoring Control and Compliance, Inc (MCC). The Q4 2022 SEM report supplied indicates compliance with the 500 ppm surface methane concentration (no exceedances). The report also indicates that they checked the calibration gas certification to ensure the calibration gas is certified to 500 ppm. These reports include a map of the route that is traversed for surface monitoring, the locations and concentrations where 500 ppm is exceeded and weather conditions. The SEM map itself can change every year because the landfill topography continues to change as active and filled areas develop. In these cases, a new map with new traverse lines is created.

Q1 and Q2 2022 SEM survey results were also reviewed within the 2022 1st Semi-Annual Report. No exceedances of the 500-ppm standard were reported in Q1. In Q2, 3 exceedances of the 500-ppm standard were detected on 5/24/22. All exceedances passed the 10-day recheck at <500 ppm (due by 6/3/22, checked 6/2/22), no violation exists as a result of this action. All locations were rechecked again within 1 month of the initial exceedance (30-day required recheck) on 6/17/22; Well 78 still showed an exceedance at 785.14 ppm CH4 at the 1-month recheck. Well 78 was rechecked per Testing/Sampling SC V.3.c within 10 additional days from the date of the second exceedance; no exceedance was detected on 6/24/22 and no further action needed to be taken based on these results. Brent Run followed proper protocol to address these exceedances and is therefore in compliance with the Testing/Sampling recheck requirements.

T. Church said that MCC includes all surface penetrations in their SEM surveys. A map containing the actual route is traversed or a surface monitoring design plan that includes a rationale for any deviations made in the planned route (steep slopes, hazardous waste, including active face and unsafe conditions), and the locations (lat/long) and concentrations for exceedances of 500 ppm. The design plan submitted with the semi-annual reports include the planned route traversed, rather than actual route. I requested that T. Church consider making a statement in their SEM survey reports that confirms that MCC will deviate from the actual path traversed to check for any surface penetrations or any areas that indicate stressed vegetation, crack, or seeps in the cover. T. Church indicated he would use this during the next SEM survey quarterly reporting, as a way to demonstrate compliance with the MACT Subpart AAAAA. T. Church stated that the active face of the landfill is excluded from the SEM surveys due to safety concerns.

The SEM survey is required to be conducted using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications in 40 CFR 63.1960(d) (e.g. infrared absorption & photoionization). The 2022 Q1, Q2 and Q4 reports indicate that an Inficon Irwin (infrared absorption detector with gas chromatography) was used for the surveys.

The testing conditions also require background concentrations be determined by sampling upwind and downwind. Each of the quarterly reports is reviewed to ensure that upwind and downwind sampling has been conducted. The "Part 3: Stabilized Reading & Background Determination" shows the procedure and results of the background concentration at the surface of the landfill, upwind and downwind, as well

#### Monitoring/Recordkeeping

A program to monitor the cover integrity and to implement cover repairs as necessary is required to be implemented on a monthly basis. T. Church said landfill staff check for cover integrity on a daily basis. In addition to this, MCC conducts monthly inspections of the landfill's cover integrity, during the monthly well tuning events.

T. Church explained that if holes are found during the daily checks, they will usually fill the holes with clay, depending on the severity; the checks also serve as "leak checks" for the landfill liquids by watching for dead grass patches, etc. He said that the problems are always fixed by the subsequent month's inspection. Any leachate leaks from the landfill would be reported under their surface/storm water permit requirements.

T. Church said that in addition to holes and leachate leak issues, they also survey the landfill's cover for flagging trash, discolored cover (landfill gas can blacken the cover soil), stressed vegetation or no vegetation, erosion rills, and deformations (animal burrows, sunken areas or dips in the landfill's terrain). T. Church said that discolored cover and stressed vegetation/no vegetation are signs of insufficient cover.

Their “Monthly Soil Integrity Report” contains notes on the cover integrity of the landfill throughout the calendar year, as well as notes on issues spotted, and if there were no issues, it is documented as such. If a fix in the cover was required, the fix was also documented.

Brent Run’s cover integrity evaluation is similar to how EGLE’s Materials Management Division (MMD) evaluates cover integrity per the following (Part 115 Rule 299.4429):

- Daily Cover – cover of active face at the end of each operating day
  - Minimum of 6 inches thick soil or other approved alternate daily cover
- Interim Cover – placed on an area that has not received new waste in 90 days
  - Minimum of 12 inches thick and have low permeability (1E-5 cm/s)
  - Any of the following in the interim cover would be considered an interim cover integrity issue by MMD:
    - Erosion rills
    - Flagging (waste sticking out of the cover)
    - Vegetation discoloration
    - Dead vegetation
    - Bare soil

The Region V Environmental Protection Agency (EPA), Nathan Frank & Brianna Fenzl, confirmed with me that the cover integrity indicators, as provided by MMD, are what the EPA looks for also.

During the inspection, T. Church drove us through the landfill and I saw no signs of cover integrity issues (as defined by MMD and Brent Run) from the vantage point of the vehicle. Future inspections may involve walking the interim cover of the landfill to check for cover integrity issues. As of January 2023, Tiffany Johnson (MMD), stated that there have been no cover integrity issues noted for Brent Run within MMD’s files for many years.

With the issuance of MI-ROP-N5987-2023, Brent Run will be required to keep records of the monthly cover integrity checks and associated repairs as required under FGLANDFILL-AAAA VI.2.

Brent Run is required to keep records of the current amount of solid waste in place and the year-by-year waste acceptance rate onsite, as well as the original design capacity report that triggered NSPS. The current amount of solid waste in place and year-by-year acceptance rates are reported to MMD under the Waste Database System (WDS) (<http://www.deq.state.mi.us/wdsp/SolidWaste/AnnualLandfillReports.aspx?w=406671>). See attached for year-by-year waste acceptance rates. The current amount of solid waste in place, according to the WDS report, (1996-Sept 2022) is 44,109,808.29. T. Church said that waste receipt levels at Brent Run are down compared to previous years due to the increased cost of disposal.

The landfill opened in December 1995, so it is appropriate that the waste acceptance log started in 1996. The maximum design capacity for Brent Run Landfill that triggered the NSPS threshold of 2.5 million megagrams, per the design capacity report, is 9.3 million megagrams. The permit issued by MMD in 2013 increased the maximum design capacity of the Brent Run Landfill from 17.1 million cubic yards to 33.2 cubic yards.

If Brent Run adds liquids other than leachate into the waste mass, they must comply with the bioreactor requirements of 40 CFR 63.1947, 1955(c) and 1980(c) through (f), or keep record of calculations showing that the moisture wt% expected in the waste to which liquid is added is less than 40%. T. Church said that Brent Run does not dispose of liquid waste into the landfill. He explained that they receive liquid waste but solidify it before sending it to the landfill; they have been practicing this method of liquid disposal since 2011. He also said that the leachate from the waste mass is not recycled back into the waste mass but pumped into the wastewater

treatment plant instead. The requirement to comply with bioreactor requirements or liquid content recordkeeping therefore does not apply at this time.

### Other Requirements

Brent Run is required to submit a revised design plan before expanding operations to an area not covered by the previously approved design plan, or prior to installing or expanding the gas collection system in a way that is not consistent with the design plan that was submitted. Per the timeline provided by MMD, multiple expansions via permits have been granted since 2004 GCCS Design Plan.

- Brent Run's original permit was issued in 1997 and included Cells 1 through 10 (Cells 1 through 3 were already constructed at the time of that original permit).
- 2005 Permit – This was a modification of a permit for previously permitted cells, which added no additional waste disposal capacity, and created no new cells (decreased total airspace).
- 2007 permit – This was a vertical expansion, mostly over Cells 8, 9, and 10. It added 24 acres of additional airspace.
- 2013 permit – This was a lateral and vertical expansion. Lateral expansion was 51.7 acres to the south, and vertical expansion was 47 acres. Cells 12, 13, 15, 11A and 11B were constructed (expansion to the south), and there was vertical expansion of the existing footprint. For the 2013 Permit for Brent Run, the permit included Cells 11 through 15 however, only Cell 11 and portions of Cell 12 have actually been constructed.

Based on a comparison of the 2004 GCCS design plan and the 2021 GCCS Construction map, it does not appear that Cells 11A, 11B, 12, 13, and 15 were included in the approved 2004 GCCS design plan. Additionally, the well placement and density of wells in Cells 4, 5A,5B, 6A, 6B, 6C, 7A, 7B, 8, 9, 10 NE, 10 NW, and 10S are greater than, and in most cases located at positions within the landfill that are markedly different than, the well placement and density of wells in the 2004 GCCS design plan. T. Church stated that Brent Run has chosen more dense gas collection than the 2004 GCCS design plan. T. Church said they evaluate the need for wells every year, based on the 2-year and 5-year waste-in-place rules, as well as SEMs survey data, and odors.

The intent of the MACT Subpart AAAAA requiring GCCS design plans be revised whenever expanding to or placing wells in the landfill mass that are not covered in the current approved GCCS design plan is to ensure that all wells and expansions are first reviewed and approved by a professional engineer to ensure efficient gas collection.

BRL has not updated their GCCS design plan to meet the requirements in the MACT Subpart AAAAA and therefore this is a violation of the MACT Subpart AAAAA and, therefore, appears to be in non-compliance with FGLANDFILL-AAAAA at this time. A violation notice will be sent to address the issue.

### **FGACTIVECOLL-AAAA**

This flexible group contains the requirements from 40 CFR Part 63, Subpart AAAAA for active collection systems. Although the active ROP at the time of inspection (MI-ROP-N5987-2015a) contains NSPS Subpart WWW requirements, the NSPS Subpart WWW became obsolete in June 2021 and therefore compliance was not checked with the NSPS, but rather, only with the applicable MACT Subpart AAAAA.

This emission unit encompasses the landfill gas collection system with its associated “control equipment”: EUOPENFLARE, EUENCLOSEDFLARE, and EUTREATMENTSYS. EUTREATMENTSYS was moved to Section 2 of the ROP during the 2015 renewal, as the pre-engine gas treatment system is owned and operated by EDL. The 2 flares are used when the engines need maintenance or when an engine breaks down, to burn off the excess gas that the remaining engines don't have the capacity to burn.

There are no Emission Limits, Material Limits, Testing/Sampling or Stack/Vent Restrictions at this time.

### Process/Operational Restrictions, Design/Equipment Parameters & Monitoring/Recordkeeping

Brent Run is required to collect gas from cells when the waste has been in place for 5+ years for active cells and 2+ years for closed or final grade cells. T. Church said all final grade cells contain gas collection (as indicated in

their 2021 GCCS plan); although, he said wells are always placed much sooner than the 2- and 5-year requirement: Horizontal collectors are placed in the active sites sooner than the 5-year requirement in order to better control odors and be a good neighbor. He explained that horizontal collectors, in these cases, are “sacrificed,” as after a few years they become pinched, etc as a result of the compaction of the garbage with heavy machinery. He said that within 1.5 – 2 years of opening an active cell, horizontal collectors will be installed to capture gas, and, if the layout makes sense, they will also install horizontal collectors prior to waste being deposited in a new active cell in preparation for collection. They have been installing horizontal collectors in this fashion since 2012. T. Church said horizontal collectors in the active sites of the landfill are more inclined to have higher oxygen levels than others because they are relatively closer to the surface of the landfill. T. Church said that Brent Run closes their collection wells when they no longer produce gas (when CH<sub>4</sub>% levels off at around 5-10%). T. Church also said that they will typically place vertical wells within 1 year of putting initial waste in place, but will not put vacuum on these wells for at least a year to ensure quality methane is being generated.

The newest constructed cells (Cells 11A, 11B, 11C, 11-wedge, and portions of 12) all appear to have GCCS installed within them according to the 2021 GCCS construction plan. Table 1 contains cell construction data and initial waste disposal dates per cell, as provided by MMD. A “ - “ indicates AQD did not request the data from MMD. The earliest receipt of waste among these cells was November 2016. Because these are active cells, GCCS is required to be installed with 5 years of solid waste being in place (by November 2021). The 2021 GCCS construction plan was created in June 2021 and shows GCCS is present in these newly constructed active cells, within the 5-year timeframe.

**Table 1. Brent Run Landfill Construction History**

<b>Cell Name</b>	<b>Approximate Cell Plan Area (acres)</b>	<b>Construction Year</b>	<b>Permit Coverage</b>	<b>Year Cell approved for Waste Placement by EGLE</b>	<b>Approximate Month/Date of Initial Waste Placement</b>
1 through 3	26.1	Pre-1997	-	Pre-1997	-
4	13.5	1997	-	1998	-
5A	6.8	2001	-	2002	-
5B	4.3	2002	-	2003	-
5C	0.3	2007	-	2007	-
6A	6.6	2003	-	2004	-
6B	6.2	2004	-	2005	-
6C	2.2	2007	-	2007	-
7A	5.4	2005	-	2006	-

7B	1.1	2007	-	2007	-
8	6.7	2007/2008	-	2008	-
9A	4.9	2009	-	2009	-
9B	2.1	2010	-	2010	-
10NW	3.8	2010	-	2010	-
10NE	7.6	2011	-	2012	-
10S	5.4	2012	-	2012	-
10D	0.3	2015	-	2015	-
11A	8.6	2014-2016	2013	2016	November 2016
11B	1.5	2016/2017	2013	2017	December 2017
11C	0.4	2018	2013	2019	February 2019
11-WEDGE	0.7	2020	2013	2020	July 2020
12A	10.2	2016/2017	2013 (w/ upgrade in 2017)	2017	December 2017
12B	1.0	2018	2013 (w/ upgrade in 2017)	2019	February 2019
13	Not constructed	Not constructed	2013	NA	NA
14	Not constructed	Not constructed	2013	NA	NA
15	Not constructed	Not constructed	2013	NA	NA

Wells are required to be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 + years, and records of the plot map showing where each existing and planned collector

is, as well as a unique ID label for each collector and the installation date and location of each newly installed collector is required to be kept. Brent Run has provided these documents. Table 2 lists the collectors installed post September 27, 2021 (date by which the new MACT Subpart AAAAA standard became applicable to this facility). Wells GW-133 through GW-147 are wells that were installed within initial solid waste that has been in place for a period of 5+ years. Based on the installation dates, the wells have all been installed within 60 days of the date that initial waste was put in place in these cells.

**Table 2.** Well installation dates within respective cells.

<b>Well ID</b>	<b>Date of Installation</b>	<b>Cell Placement</b>
GW-119	11/9/2021	6A
GW-122	11/3/2021	5A
GW-123	11/5/2021	5A
GW-124	11/8/2021	4
GW-126	11/4/2021	5A
GW-127	10/20/2021	8
GW-128	10/15/2021	8
GW-129	10/19/2021	9
GW-130	10/18/2021	9
GW-131	11/2/2021	7A
GW-132	10/28/2021	6B
<b>GW-133</b>	<b>10/26/2021</b>	<b>11B</b>
<b>GW-134</b>	<b>10/27/2021</b>	<b>12</b>
<b>GW-135</b>	<b>10/28/2021</b>	<b>12</b>
<b>GW-136</b>	<b>10/27/2021</b>	<b>12</b>

<b>GW-137</b>	<b>10/27/2021</b>	<b>12</b>
<b>GW-138</b>	<b>10/28/2021</b>	<b>12</b>
<b>GW-139</b>	<b>10/29/2021</b>	<b>12</b>
<b>GW-141</b>	<b>10/22/2021</b>	<b>11A</b>
<b>GW-142</b>	<b>10/25/2022</b>	<b>11A</b>
<b>GW-143</b>	<b>10/14/2021</b>	<b>11A</b>
<b>GW-144</b>	<b>10/13/2021</b>	<b>11A</b>
<b>GW-145</b>	<b>10/13/2021</b>	<b>11A</b>
<b>GW-146</b>	<b>10/12/2021</b>	<b>11A</b>
<b>GW-147</b>	<b>10/14/2021</b>	<b>11A</b>

#### Design/Equipment Parameters & Monitoring/Recordkeeping

In the event the collection system is not operating, the gas mover system must be shut down and all valves in the collection system contributing to venting of the gas to atmosphere must be closed within 1 hour of the collection system not operating. T. Church said blower vacuums are used to pull the landfill gas from the landfill to the treatment system. Brent Run has several blowers that are alternately used during gas collection. The blowers operate on electricity, and it was explained to me that if the power goes out they have an emergency generator (not located onsite) to provide power for the blowers to continue to collect the gas rather than have landfill gas vented to the atmosphere.

The active collection system is required to be designed to minimize off-site migration of subsurface gas and Brent Run is required to maintain the provisions for control of offsite gas migration. T. Church said that the first preventative of offsite migration of subsurface gas is the landfill's liner system; if the liner fails, there are perimeter gas probes that will pick up on his subsurface gas migration. He also said MMD's Part 115 Rules requires a landfill design that takes subsurface gas into account within the well configurations. T. Johnson (MMD) provided AQD with the write-up that accompanied Brent Run's most recent MMD permit application (2013). It states that Brent Run has a landfill gas monitoring system consisting of perimeter probes capable of detecting offsite migration of combustible gases. A professional engineer stamped this application and the application was approved by MMD.



In order to ensure the GCCS is collecting gas at a sufficient extraction rate, Brent Run is required to measure the gauge pressure in the gas collection header at each individual well on a monthly basis to determine if positive pressure exists (i.e., each wellhead is required to be operated under negative pressure). Negative pressures are not required if there is a fire or increased well temperature, if a geo-membrane or synthetic cover are used, or if the well is decommissioned. Since the institution of the MACT Subpart AAAA at this facility September 27, 2021, there have been several positive pressure incidents.

<b>Well ID</b>	<b>Date of Initial Exceedance</b>	<b>5-Day Action Taken</b>	<b>15-Day Check</b>	<b>Root Cause Analysis &amp; Exceedance Correction</b>	<b>Corrective Action Analysis &amp; Implementation Timeline</b>
BRLF075R	10/7/21	10/7/21 – Action resulted in no change	10/20/21 – no change; root cause analysis required	Due 12/7/21. Submitted in Semi-annual report, corrected 11/17/21	NA
BRLF045R	4/8/22	4/8/22 – Action resulted in no change	4/22/22 – no change; root cause analysis required.	Due 6/8/22. Corrections could not be completed by 6/8/22. Corrective Acton Analysis Required, notification to AQD required by 6/23/22.	Corrective Action Analysis & Implementation Schedule submitted 6/22/22. Expected completion date for repairing lateral line is 7/1/22
BRLF083R	5/9/22	5/9/22 – Action resulted in no change	5/23/22 – no change; root cause analysis required	Due 7/9/22. Corrections were completed by 7/9/22. Pressure corrected on 7/1/22.	NA
BRLF088R	5/9/22	5/9/22 – Action resulted in no change	5/23/22 – no change; root cause analysis required	Due 7/9/22. Corrections were completed by 7/9/22. Pressure corrected on 7/1/22	NA

In addition to monthly wellhead pressure monitoring, monthly interior wellhead temperature monitoring is also required to ensure the landfill gas temperature either at the wellhead or at any point in the well is not greater than or equal to 145°F (62.8°C). To-date Brent Run has not reported any temperature exceedances.

Brent Run currently has approved Higher Operating Values (HOVs) for temperature at BRLF0115 (140°F, approved 8/17/18); BRLFHC04 (145°F, approved 1/3/18); BRLFHC07 (140°F, 2019). Currently all approved temperature HOV's are at or below the standard of 145°F.

### Reporting

Brent Run has submitted all FGACTIONCOLL-AAAA records, as applicable under the MACT Subpart AAAA, via semi-annual reporting through the first semi-annual period of 2022.

Brent Run appears to be in compliance with FGACTIONCOLL-AAAA at this time.

### **FGOPENFLARE-AAAA**

This flexible group contains the requirements from 40 CFR Part 63, Subpart AAAA for all open flares located at the facility. Brent Run owns and operates 1 open flare, EUOPENFLARE. EUOPENFLARE was not operating during the inspection; however, T. Church said that the flare was operated within the previous 6 weeks.

The open flare was installed in 2012 and was incorporated into the ROP during the 2015 renewal cycle. According to T. Church, the flare is considered to be non-assisted and is capable of handling 1350 scfm of landfill gas. The pilot light is lit with propane. An electronic data recorder is used to capture temperature and flow data. T. Church explained that the flare is used when there is excess gas that exceeds the engines' capacities, or when the engines are down; this involves communication between Brent Run and EDL to ensure gas from the landfill is either being combusted in the landfill gas engines for electricity or being combusted in the flare, so as to prevent fugitive emissions to the ambient air.

There are no Material Limits or Stack/Vent Restrictions for EUOPENFLARE at this time.

### Emission Limits & Testing/Sampling

EUOPENFLARE is required to operate so that there are no visible emissions except for periods not to exceed a total for 5 minutes during any 2 consecutive hours. Brent Run is required to verify these visible emissions meet this Emissions standard within 180 days of MI-ROP-N5987-2023 issuance (January 26, 2023); therefore, Brent Run is required to test EUOPENFLARE visible emissions via Method 22 by July 25, 2023.

EUOPENFLARE was last tested for visible emissions in March 2016 under the NSPS Subpart WWW. The performance test, required per 40 CFR 60.18, was conducted on March 16, 2016 at a flow rate of 70%-95% of its rated capacity (950 – 1250 scfm). The test report was submitted May 16, 2016 and included visible emission readings, determination of the Net Heating Value, the stack, gas velocity and volumetric flow rate. According to Method 22, Alternative 42, visible emission readings can be performed for 30 minutes rather than the 2-hour period required under the NSPS Subpart WWW. Brent Run utilized Method 22, Alternative 42 for the visible emissions test and found that no visible emissions were observed during the 30-minute testing period.

Brent Run is also required to test for the net heating value of the gas combusted in the flare and the exit velocity of the non-assisted flare by July 25, 2023. During the March 2016 test event, a net heating value of 18.7 MJ/m<sup>3</sup> was determined using Method 3C, Alternative 42. The March 2016 performance test concluded that the exit velocity was 32.7 ft/s.

### Process/Operational Restrictions & Design/Equipment Parameters

The flare is designed to operate at a certain vacuum set-point that can be auto (via frequency drive) or manually set to ensure the pull on the landfill stays consistent. For example, if 2+ engines go down, EDL will call T. Church to let him know they need him to manually adjust the flare to handle the extra landfill gas that the down engines would have been combusting. He explained that once the flare reaches a certain temperature, the automated valves open and the blower turns on simultaneously over a period of 45 seconds to direct landfill gas to the flame and combust the excess landfill gas. During this time, the pilot flame remains lit for a certain amount of time before shutting off. It takes approximately 5-15 minutes to get EUOPENFLARE operating at a temperature which will support combustion of landfill gas.

Additionally, T. Church explained that a mechanical check valve is installed after the blower, but before the stack. The forced air from the blower forces open the valve to allow landfill gas to the flame, a safety feature.

Brent Run is also required to install, calibrate, maintain, and operate the open flare according to manufacturer's specifications, including a heat sensing device (such as a UV beam sensor or thermocouple), at the pilot light or the flame itself to monitor and continuously detect the presence of a flame. T. Church verified that the flare is equipped with a UV monitor to monitor the pilot flame. T. Church explained that the pilot flame is not lit all the time, and that the pilot light is only lit during startup of the flare. He said the flame sensor is only used for the detection of the flare, and further explained that if at any time the flame sensor doesn't detect the flare flame, it automatically shuts down the blower and shuts the valve which allows landfill gas into the combustion chamber.

Brent Run does not operate this flare with a bypass line; the flare is a "T" off of the main header of the landfill.

### Monitoring/Recordkeeping & Reporting

Brent Run is required to keep monthly records of continuous gas flow to the flares, as well as continuous records of the flare pilot flame or open flare flame and periods where the pilot flame or the flare flame is absent.

Brent Run provided monthly records of gas flow to the flare for January – October 2022, as requested. Data is captured every 10 minutes. T. Church explained that with the digital recording system, both temperature and flow are continuously monitored and recorded. He explained that MCC retrieves this data from a memory card that the data is logged on.

Semi-annual reports containing a description and duration of all periods when the flare was not operating and the length of time the control device was not operating are required to be submitted. The 1<sup>st</sup> 2022 semi-annual report was reviewed and all logged flare downtime events appear to correspond to the data provided by Brent Run for the inspection. See attached for an example of EUOPENFLARE excel spreadsheet data for January 2022 containing the flare temperature and flow to the flare.

Brent Run appears to be in compliance with FGOPENFLARE-AAAA at this time.

### **FGENCLOSEDFLARE-AAAA**

This flexible group contains the requirements from 40 CFR Part 63, Subpart AAAA for all enclosed combustors located at the facility. Brent Run owns and operates 1 enclosed combustor, EUENCLOSEDFLARE. EUENCLOSEDFLARE was not operating during the inspection; however, Brent Run aims to operate EUENCLOSEDFLARE once per month for maintenance and readiness testing. EUENCLOSEDFLARE's purpose is to serve as backup to EUOPENFLARE.

The flare is rated at 1389 scfm and, according to T. Church, the was installed in the 1990's. Between the open flare and enclosed combustor capacities, the flares can handle 2,739 scfm landfill gas. The LandGem model indicates the gas generation rate for 2022 is 3,663 scfm. The gas collection system operates at 70% collection efficiency, and therefore the maximum flow to the flares is approximately 2,564 scfm. K. Mahmood said in addition to the 2 flares' combined capacity, the EDL engine plant also offers an additional 2,466 scfm of landfill gas control.

T. Church explained that the enclosed flare is equipped with a purge system to purge the enclosure of any residual landfill gas that has collected at the bottom of the flare, thus removing any explosive environment hazards prior to igniting the pilot light. Once this is done it takes approximately 1.5 hours to get the flare started and up to temperature before it can burn the landfill gas. The enclosed flare temperature is controlled by manual adjustment of the air intake. T. Church is primarily responsible for this adjustment.

### Emission Limits and Testing/Sampling

The enclosed combustor is required to have an NMOC reduction of 98 wt% or an NMOC outlet concentration of 20 ppmv dry at 3% oxygen. Brent Run is required to verify the NMOC weight-percent efficiency or the ppmv outlet concentration from EUENCLOSEDFLARE within 180 days of MI-ROP-N5987-2023 issuance (January 26, 2023); therefore, Brent Run is required to test EUENCLOSEDFLARE by July 25, 2023.

The April 12, 2002 performance test results showed an average of 1.27 ppmv NMOC outlet concentration on EUENCLOSEDFLARE.

### Process/Operational Restrictions, Design/Equipment Parameters, Monitoring/Recordkeeping & Reporting

Brent Run is required to operate EUENCLOSEDFLARE within the parameter ranges established during the 2002 performance test. Testing data from the test report show that the flow rates were around 375 scfm and the temperatures were around 1320°F. Also, any operations where there are 3-hour block averages where the combustion temperature is more than 28°C (82.4°F) below the average combustion temperature determined during the performance test, are an exceedance and are required to be recorded and reported. T. Church said that they have a low temperature cut-out programmed on the enclosed combustor. The flare will shut itself off if the temperature is below the allowed temperature range. He said that the cut off temperature ranges somewhere between 1350 and 1380°F.

Records are required to be kept on a monthly basis for the indication of flow and gas flow rate to the enclosed combustor. Brent Run provided these records for January – October 2022. Records indicate that from January – October 2022, EUENCLOSEDFLARE was operated on July 21, 2022. Data points are logged every 10 minutes and include flare temperature and flow rate to the flare.

MCC conducts calibration checks on the temperature and flow rate monitors. In June 2022, MCC was unable to conduct the calibration checks because EUENCLOSEDFLARE was non-operational (repairs were needed). After repairs were made, programming issues were found which did not allow the calibration checks to occur. A factory reset/calibration on the flow monitor was required. As of July 21, 2022 the system was officially recalibrated and readiness testing of EUENCLOSEDFLARE occurred at this time. During the July 21 operating event, the 3-hour average temperature was maintained at ~1600°F, which is greater than the operating temperature during the 2002 performance test and therefore EUENCLOSEDFLARE is being operated in compliance at this time. See attached for the July 21 recordkeeping. The June 2022 and July 2022 calibration events were included in the 1<sup>st</sup> 2022 Semi-annual report.

The enclosed flare is required to always be operated when the collected gas is routed to the system. If the GCCS is inoperable, Brent Run is required to shut down the gas mover system and all valves in the GCCS that contribute to venting of the gas to atmosphere within one hour. T. Church explained that the flares run off electricity from EDL's Electric Generation Plant. If the power is out for an extended period of time (4+ hours) they bring in a portable generator to run the flare. If EDL's Electric Generation Plant blacks out for maintenance, Consumer's power provides back-up power for the flares. During these times when EDL is offline, Brent Run will continue to pull gas off the field, but only as much as the flare can handle. He further explained that when the plant has power, the flare valves remain open. When power is lost, the flare valves automatically close. He explained that the only place in the GCCS where gas could escape via valves is through the flare valves, which can be manually closed as well.

Brent Run does not operate this flare with a bypass line; the flare is a "T" off of the main header of the landfill.

Brent Run appears to be in compliance with FGENCLOSEDFLARE-AAAA at this time.

## **FGCOLDCLEANERS**

Brent Run Landfill has one parts washer present onsite in their maintenance building. The parts washer is considered “new” under Part 7 rules because it was installed after July 1, 1979. (T. Church said it was installed in 1994). Brent Run uses mineral spirits in this unit and Safety Kleen maintains the unit.

### **Material Limits**

Brent Run is only allowed up to 5% of various halogenated compounds in their cold cleaner. Brent Run meets this requirement, as the mineral spirits do not contain halogenated compounds.

### **Design/Equipment Parameters**

The cleaner is required to have an air/vapor interface no more than 10 square feet to operate under exemption Rule 281(2)(h). T. Church measured the dimensions of the cold cleaner to be 36”x26”, approximately 6 square feet.

Mechanical assistance of the cover is required if the Reid Vapor Pressure (RVP) of the solvent is more than 0.3 psia. According to Cameo Chemical’s SDS, mineral spirits has a RVP of 0.13 psia. The parts washer is therefore not subject to this requirement at this time.

Condition IV.5 has requirements for those new cold cleaners using solvents with a RVP greater than 0.6 psia. Brent Run’s cold cleaner is not subject to this condition at this time.

### **Monitoring/Recordkeeping**

Written operating procedures are required to be maintained for each cold cleaner and located conspicuously near the cleaner. Operating procedures are present. Brent Run is in compliance with this condition.

Brent Run appears to be in compliance with FGCOLDCLEANERS at this time.

**Section 1 Compliance Statement:** Brent Run Landfill appears to be in non-compliance with 40 CFR 63 Subpart AAAA at this time.

## **SECTION 2: EDL GENERATING STATION INSPECTION**

The EDL Generating Station inspection was conducted on November 29, 2022 during EDL’s annual stack test on their engines. I arrived at the site at ~9:30 am. This is the first time the facility is being inspected under the new MACT Subpart AAAA requirements.

Upon entry to EDL’s plant yard, I saw no signs of opacity being emitted from any of the engine stacks. All engines were operating except for EUENGINE5.

### **FGICEENGINES (PTI 176-18)**

FGICEENGINES consists of all engines installed at the generating station: EUENGINE3, EUENGINE4, EUENGINE5, EUENGINE6 and EUENGINE7.

Table 1 contains a list of all engines and their associated specifications. Table 2 contains a list of operating parameters captured during the inspection (EUENGINE4 was being tested when this data was recorded, thus the higher landfill gas flow to this unit than the others. The other engines were “derated” during the stack test to ensure enough gas was available for EUENGINE4 to operate at maximum routine conditions). Serial numbers and total operating hours were verified onsite per engine. I was told by the plant operators and Adam Kamaretsos during the last site visit that the hours meter tracker on EUENGINE4 and EUENGINE6 failed, and they had to replace the failed trackers with a new ones. The new trackers start the engine-hour tracking at 0; however, all engine operating hours are sent to and logged via the computer system. All accurate operating hours for these two engines, as well as the other 4 engines, are represented on the computer/ PLC.

Overhaul dates listed are those that were conducted at the EDL Generating site at Brent Run; it does not take into account overhauls conducted on the engine previous to be installed at this site.

**Table 1. Engine Specifications**

<b>EU</b>	<b>Serial #</b>	<b>HP (2,242)</b>	<b>Model #</b>	<b>EDL Engine ID</b>	<b>kW Rating</b>	<b>Build Date</b>	<b>Date Online</b>	<b>Last Major Overhaul</b>
EUENGINE3	GZJ00550 swapped out for GZJ00336	2,233	G3520C	3	1600	9/27/2007	3/9/2018	3/16/18
EUENGINE4	GZJ00394	2,233	G3520C	4	1600	5/7/2008	6/18/18	6/18/18
EUENGINE5	4KC00096	861	G3512	5	600	10/27/1986	11/19/2010	November 2022
EUENGINE6	GZJ00387	2,233	G3520C	2	1600	4/4/2008	10/8/2016	10/8/16
EUENGINE7	GZJ00709	2,242	G3520C	1	1600	12/2/2015	3/8/2019	NA

**Table 2. November 29, 2022 Operating Parameters**

<b>EU</b>	<b>kW</b>	<b>Flow Rate (lb/hr)</b>	<b>Total Operating Hours 11/29/22 (from PLC)</b>	<b>Actual Stack Height (feet)</b>	<b>Permitted Stack Height (feet)</b>
EUENGINE3	983	1,823	40,019	75.9	75

EUENGINE4	1471	2,725	96,742	75.3	75
EUENGINE5 Not Operating	NA	NA	74,649.4	30.9	30
EUENGINE6	1295	2,230	108,905	75.8	70
EUENGINE7	1221	2,249	31,094	74.6	70

#### Emission Limits, Testing/Sampling, & Monitoring/Recordkeeping

By December 31, 2019, EDL was required to verify lb/hr emission rates for each engine for NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and formaldehyde and subsequently, every 5 years thereafter, from the most recent stack test. The stack test was conducted December 3 – 6, 2019. Emissions from all engines passed for all engines except for the following: SO<sub>2</sub> on EUENGINE3, EUENGINE4 and EUENGINE6. The limit is 3.56 lb/hr SO<sub>2</sub> and the reported emissions were 3.79 lb/hr, 3.64 lb/hr and 3.76 lb/hr, respectively. The retest was conducted July 30 – 31, 2020 and results indicated compliance with the SO<sub>2</sub> limits for these 3 engines.

EDL's next 5-year test for NO<sub>x</sub>, CO, VOC, SO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and formaldehyde lb/hr emissions is due by December 31, 2024 for all permitted engines.

During the all test events from 2019 - 2022, EDL, although not required during that test event, demonstrated compliance with the lb/hr emission limits for CO, NO<sub>x</sub> and VOC for EUENGINE3, EUENGINE4, EUENGINE6, and EUENGINE7 under FGICEENGINES. See Table 4 for a summary of the results.

In addition to conducting stack tests to verify compliance with the emission limits, EDL is also required to verify hydrogen sulfide (H<sub>2</sub>S) or total reduced sulfur (TRS) concentrations in the landfill gas on a monthly basis via Draeger tubes (H<sub>2</sub>S only), Tedlar sampling bags (TRS), etc, and semi-annually by gas sampling using an EPA-approved method and lab analysis (TRS). If at any time the H<sub>2</sub>S or TRS equivalent exceeds 640 ppmv, EDL is required to sample and record the H<sub>2</sub>S or TRS equivalent concentration on a weekly basis and log corrective actions taken. Once 4 consecutive weekly samples are below 640 ppmv, monthly monitoring and recordkeeping can resume. If monthly concentrations are below 640 ppmv for one year, EDL may petition AQD District Supervisor to reduce the frequency of gas sampling, and must be approved before EDL can initiate reducing sampling frequency.

I reviewed the monthly H<sub>2</sub>S concentration records and semi-annual gas analysis records from January 2020 – October 2022. All required sampling was conducted. Table 3 contains exceedances of the 640 ppm limit that were identified, as well as the associated increased testing frequency. EDL appears to be in compliance with the H<sub>2</sub>S and TRS sampling requirements at this time.

**Table 3.** TRS or H<sub>2</sub>S Exceedances (January 2020 – October 2022)

Date sampled	H <sub>2</sub> S or TRS Exceedance value	Retest weekly?
5/18/2020	642 ppm TRS	Yes, 4 weeks of data indicating at or below 500 ppm H <sub>2</sub> S via Draeger Tube testing.
<b>Lab Analysis – Semi-annual</b>		
10/21/2020	645 ppm TRS	Yes, 4 weeks of data indicating less than 600 ppm H <sub>2</sub> S via Draeger Tube testing
<b>Lab Analysis – Semi-annual</b>		
4/6/2021	651 ppm TRS	Yes, 4 weeks of data indicating at or below 500 ppm H <sub>2</sub> S via Draeger Tube testing.
<b>Lab Analysis – Semi-annual</b>		

SO<sub>2</sub> monthly and 12-month rolling emission rates are required to be calculated based Appendix A in PTI 176-18. During review of records during the previous inspection, the ratio of TRS to sulfur as H<sub>2</sub>S was not included in EDL’s SO<sub>2</sub> emission calculations; however, EDL did calculate the SO<sub>2</sub> emissions according to the equation in Appendix A of the PTI, as the equation in Appendix A does not contain the ratio of TRS to H<sub>2</sub>S as sulfur variable. In 2021 after the inspection, I had a discussion with EDL representatives Dan Zimmerman (EDL) and Khaled Mahmood (Tetrattech) concerning what the appropriate equation should be when calculating SO<sub>2</sub> monthly and 12-month rolling emissions. The following equation, provided by AQD permit engineer, Melissa Byrnes, is the equation we had agreed should be used for calculations going forward:

**SO<sub>2</sub> Emissions for the Facility**

The following calculation for SO<sub>2</sub> emissions shall utilize the monthly average of the weekly (or daily, if required) H<sub>2</sub>S concentration measurements from gas sample data collected, the monthly gas usage, monthly hours of operation, and the ratio of total sulfur to sulfur as H<sub>2</sub>S from the most recent laboratory test.

**Note:** The TRS to H<sub>2</sub>S ratio must be used in the calculation when a Draeger Tube or other sampling method does not measure the total sulfur in the gas.

*SO<sub>2</sub> Emissions (tons per month)*

$$= \frac{(X \text{ scf } H_2S)}{MMcf \text{ LFG}} \times \frac{1.1733 \text{ mols } S}{1 \text{ ft}^3 \text{ H}_2S} \times \frac{34.08 \text{ grams } H_2S}{1 \text{ mol } S} \times \frac{1 \text{ lb}}{453.59 \text{ grams}} \times \frac{1 \text{ ton}}{2,000 \text{ lbs}} \times \frac{1.88 \text{ SO}_2}{H_2S} \text{ MW} \times \text{LFG} \times \text{Ratio} \frac{TR}{H_2}$$



**Where:**

**X = ppm sulfur content, as H<sub>2</sub>S**

**S = Sulfur**

**MW = Molecular Weight of SO<sub>2</sub> to H<sub>2</sub>S**

**LFG = Actual Landfill Gas Usage per month (ft<sup>3</sup>/month)**

**Ratio TRS to H<sub>2</sub>S = Determined from most recent laboratory test**

A review of the calculations for the January 2020 – October 2022 monthly and 12-month rolling records indicated that implementation of the above equation into the SO<sub>2</sub> emission calculations was not conducted; the equation present in Appendix A of PTI 176-18 was used instead. I discussed this with M. Stackhouse over the phone, who was unaware of the “new” equation provided by M. Byrnes. She stated that EDL is currently working with consultants to provide revised calculation spreadsheets to ensure the calculations are conducted according to the above equation. I will request SO<sub>2</sub> recordkeeping in the future, as a partial compliance evaluation, to ensure that the correct equation and associated data is being utilized. For this inspection, I used EDL’s data “as is” to determine compliance with the SO<sub>2</sub> emission limits.

The SO<sub>2</sub> limit is 71.0 tons per 12-month rolling period total, for all engines in FGICEENGINES combined.

The SO<sub>2</sub> monthly and 12-month rolling calculation spreadsheets for January 2020 – October 2022 were reviewed. The 12-month rolling period with the highest emissions of SO<sub>2</sub> was April 2019 - March 2020 at 58.0 tons SO<sub>2</sub>. EDL did provide their TRS to H<sub>2</sub>S ratio for all lab analysis samples. The highest ratio was 1.07, which adds approximately 4 tons more of SO<sub>2</sub> to what was reported, but the SO<sub>2</sub> emissions are still within the limits of the permit.

NOx, PM2.5 and VOC (including formaldehyde) are also required to be calculated on a monthly and 12-month rolling basis using the emission rates from stack test data. Stack test data is contained in Table 4 for reference. The December 2019 stack test data for VOC (including formaldehyde) and PM2.5 was used to calculate all VOC emissions from 2019 - present. NOx 12-month rolling emissions were calculated based on the emission rates determined during the December 2019 stack test and each subsequent annual test event.

Table 5 contains the VOC (including formaldehyde), NOx and PM2.5 limits and the highest emission rate between January 2020 and October 2022. EDL appears to be in compliance with their VOC (including formaldehyde), NOx, and PM2.5 limits at this time.

**Table 4. 2019 – 2021 Engine Stack Test Results**

<b>December 3 – 6, 2019 Test Results</b>					
<b>Pollutant</b>	<b>EUENGINE3</b>	<b>EUENGINE4</b>	<b>EUENGINE5</b>	<b>EUENGINE6</b>	<b>EUENGINE7</b>
	<b>lb/hr (g/bhp-hr)</b>	<b>lb/hr (g/bhp-hr)</b>	<b>lb/hr</b>	<b>lb/hr (g/bhp-hr)</b>	<b>lb/hr (g/bhp-hr)</b>
<b>NOx</b>	3.92 (0.78)	3.86 (0.78)	0.65	3.75 (0.75)	3.53 (0.71)
<b>CO</b>	14.05 (2.80)	12.69 (2.56)	3.97	13.57 (2.72)	13.06 (2.62)

Formaldehyde	1.56	1.68	0.54	1.80	1.82
VOC (includes formaldehyde for lb/hr emission rates)	2.10 (0.11)	2.24 (0.11)	0.95	2.34 (0.11)	2.56 (0.15)
PM10	0.47	0.49	0.20	0.52	0.56
PM2.5	0.47	0.49	0.20	0.52	0.56
<b>December 29, 2020 Test Results</b>					
NOx	2.42 (0.48)	1.77 (0.36)	NA	2.72 (0.54)	2.47 (0.49)
CO	14.1 (2.8)	11.6 (2.4)	NA	12.6 (2.5)	14.3 (2.8)
VOC (excluding formaldehyde)	0.71 (0.14)	0.67 (0.14)	NA	0.65 (0.13)	0.75 (0.15)
<b>December 1 – 2, 2021 Test Results</b>					
NOx	2.05 (0.41)	2.67 (0.55)	NA	2.47 (0.51)	3.53 (0.73)
CO	14.1 (2.8)	13.9 (2.9)	NA	15.0 (3.1)	13.9 (2.9)
VOC (excluding formaldehyde)	0.86 (0.17)	0.77 (0.16)	NA	0.99 (0.21)	0.62 (0.13)
<b>November 29 – December 1, 2022 Test Results</b>					
NOx	1.56 (0.3)	1.77 (0.4)	NA	1.85 (0.4)	1.77 (0.4)
CO	14.9 (3.1)	15.3 (3.2)	NA	14.9 (3.1)	13.3 (2.8)
VOC (excluding formaldehyde)	1.01 (0.2)	0.96 (0.2)	NA	1.7 (0.2)	0.83 (0.2)

**Table 5. FGICEENGINES NOx, PM2.5, VOC Emissions January 2020 – October 2022 & Permit Limit Comparison**

Pollutant					
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	<b>Permit Limit (ton/12-month rolling period)</b>	<b>Highest Emissions (ton/12-month rolling period)</b>
NOx	108.7	65.9 (Jan – Dec 2020)
VOC (including formaldehyde)	91.1	44.8 (Nov 2021 – Oct 2022)
PM2.5	14.5	10.8 (April 2019 – March 2020)

#### **Material Limits & Monitoring Recordkeeping**

A limit of 1,546.26 MMscf landfill gas per 12-month rolling time period has been established for all engines combined. EDL is required to continually monitor and record the landfill gas usage and calculate monthly and 12-month rolling usage. The monthly and 12-month rolling landfill gas usage records were reviewed for January 2020 – October 2022. The 12-month rolling period with the highest landfill gas usage was February 2020 – January 2021, at 1,160.21 MMscf.

#### **Process/Operational Restrictions & Monitoring/Recordkeeping**

A previously approved malfunction abatement plan (MAP)/preventative maintenance plan (PMP) is required to be implemented and maintained if EDL wishes to operate these engines. The most recent plan was updated in July 2022, and this plan was provided as a record for the inspection (see attached).

The MAP/PMP is required, at a minimum, to contain the following: the ID of the equipment and the personnel responsible for overseeing the inspection and maintenance and repair of the engines; a description of the items to be inspected and the frequency of inspection; ID of the equipment monitored to detect a malfunction, normal operating ranges of the parameters, and a description of the method of monitoring/surveillance procedures; ID of major replacement parts in inventory; and a description of corrective procedures in the event of a malfunction. The July 2022 MAP/PMP has some deficiencies regarding MAP requirements. I am requesting that EDL update their MAP according to the following:

- 4.1 Description of Equipment needs to be updated.
- Maintenance board during the 2021 inspection showed the following:
  - Frequency for top-ends (every 12,000 hours)
  - Scraping decoke (remove cylinder heads, clean insides, install new gaskets), air filters, valve lash – adjusting tension on the valves to ensure they open at proper times (every 2,000 hours)
  - spark plug cleanings (every 1,000 hours)
  - oil and filters (every 1,000 hours)

**Update MAP to include these specific maintenance activities with their respective hourly maintenance frequencies.**

- Update the MAP to include an inventory list of major replacement parts.

Records of all maintenance activities conducted according to the MAP/PMP are required to be kept. MAP/PMP records were provided for January 2020 – October 2022. I reviewed several of these records to ensure that routine maintenance activities were being conducted, particularly looking for maintenance on spark plugs, oil and oil filter maintenance, top-ends, etc. The records indicate that maintenance is being conducted accordingly on a routine basis.

In addition to the MAP/PMP activities, EDL staff also conduct daily walkthroughs of the plant to check for leaks, odors, noises and overall visuals, at least two times per day. Attached is an example of their daily walkthrough checklist.

#### Process/Operational Restrictions & Design/Equipment Parameters

EDL is required to adjust the air:fuel ratios on the engines as needed, based on the engine's kilowatt output. Each engine automatically regulates its own air:fuel ratio in order to maintain a specific output. The air:fuel ratio on EUENGINE5 is manually adjusted.

EDL is required to equip and maintain FGICENGINES with a device to monitor and record the daily fuel usage. Fuel flow from each engine is monitored continuously through a PLC (data points collected once every 15 minutes). The plant operators will log the flow readings at the beginning of each day for every engine.

#### Reporting

EDL is required to notify AQD within one week of when the frequency of gas sampling is planned to change for any reason. At this time, EDL is still conducting monthly gas sampling. In the event that monthly concentrations are below 640 ppmv for one year, EDL may request a reduction in the frequency of gas sampling (but must be approved prior to the change).

EDL is also required to notify AQD within 30 days of an engine swap out (as conducted under routine maintenance). EUENGINE3 was swapped for a like-kind engine on 3/9/2018. The previous engine serial number was GZJ00550, the current serial number is GZJ00336. The swap occurred prior to PTI 176-18 being issued and therefore this condition did not apply at the time of swap-out. I reminded EDL staff onsite during the inspection that going forward, all engine swap-outs must be accompanied by a report to AQD identifying the replacement.

#### Stack/Vent Restrictions

Table 2 includes a listing of the permitted stack height, and the measured stack height completed during a previous inspection. A Nikon Forestry Pro II Rangefinder was used to take measurements on all stack heights. Based on the data collected from the rangefinder, all stack heights were in compliance with the permitted stack height minimums.

#### FGRICENSPS (PTI 176-18)

The NSPS Subpart JJJJ requirements apply to EUENGINE3, EUENGINE4, EUENGINE6, and EUENGINE7.

There are currently no Material Limits or Stack/Vent Restrictions for FGRICENSPS at this time.

#### Emission Limits & Testing/Sampling

EDL is required to conduct performance testing within one year after startup and every 8760 hours (or every 3 years, whichever occurs first) after that to determine compliance with the NSPS g/bhp-hr limits for NO<sub>x</sub>, CO, and VOC.

EDL conducts engine testing annually to demonstrate compliance with the requirement to test every 8760 hours on EUENGINE3, EUENGINE4, EUENGINE6 and EUENGINE7. EUENGINE7 was brought online March 8, 2019 and was tested in December 2019.

Table 4 contains the test results for all annual tests conducted since 2019. The NSPS limits are as follows and all test results indicate compliance with these limits:

NOx: 2.0 g/hp-hr (engines manufactured after 7/1/2010)

CO: 5.0 /hp-hr

VOC (w/o formaldehyde): 1.0 g/hp-hr

#### Process/Operational Restrictions & Monitoring/Recordkeeping

Non-certified engines are required to be maintained to minimize emissions. The implementation of the MAP/PMP and the associated maintenance records satisfies this requirement.

#### Design/Equipment Parameters

All 4 engines are required by the NSPS to have non-resettable hours meters installed. Each engine has its own non-resettable hours meter via the computer/PLC system.

#### Reporting

All required annual and semi-annual reports have been submitted in a timely matter and reviewed for compliance.

#### FGRICEMACT (PTI 176-18)

The RICE MACT Subpart ZZZZ requirements apply to all engines onsite.

There are no Emission Limits, Material Limits, Testing/Sampling, or Stack/Vent Restrictions for the engines in FGRICEMACT at this time.

#### Process/Operational Restrictions

HAP emissions are required to be minimized by operating the engines in a manner to minimize HAP emissions. Because EDL meets the formaldehyde emission limits under state Rules, HAPs emissions are considered to be minimized in an appropriate manner.

#### Design/Equipment Parameters & Monitoring/Recordkeeping

Fuel meters are required to be installed on each engine in FGRICEMACT to monitor and record the daily fuel usage and volumetric flow rate of each fuel used if the engines fire landfill gas at 10% or more of the gross heat input. The continuous, real-time volumetric flow rates are made available through CAT computer software for each engine. This program also records the flow rate, which is used for EDL's recordkeeping.

#### Reporting

EDL is required to submit annual reports which include the fuel flow rate and heating values that were used in the calculations to determine gross heat input on an annual basis, and demonstrate that the percentage of heat input provided by landfill gas or digester gas is equivalent to 10% or more of the total fuel consumption on an annual basis. They are also required to report any problems or errors suspected from the fuel flow rate meters.

All reports have been submitted and reviewed for compliance.

### **FGTREATMENTSYS-AAAA (EUTREATMENTSYS)**

This flexible group covers the treatment system that is regulated under 40 CFR Part 63, Subpart AAAA. The treatment system is defined as filtration, dewatering and compression of landfill gas. EDL owns and operates a landfill gas treatment system this is used to treat the landfill gas prior to combustion in EDL's 5 engines. The compressor within the treatment system limits how much of the gas can be treated at a time. EDL has 2 compressors which can each handle 1800 scfm, which provides an excess capacity to fuel all engines (each G3520C engine handles ~500 - 550 scfm).

The cooling system utilizes coalescent filters which are equipped with pressure drop monitors. These filters remove water prior to the gas being sent to the dryers. Once the gas has been dried, it is sent to the compressors to be utilized in the engines. Staff said that wetter fuel going into the engines can cause unwanted buildup in the engine cylinders.

There are no Emission Limits, Material Limits, or Testing/Sampling requirements at this time.

#### **Process/Operational Restrictions**

The treatment system is required to be operated at all times when the collected gas is routed to the system. The treatment system is a necessary component in the gas routing process prior to sending the gas to the landfill gas engines. Without treatment, damage to the engines would occur. D. Zimmerman (former EDL representative), during a previous inspection, explained that if the compression, cooling, or filtration systems malfunction, the engines will be shut down and communications between the landfill and generating station will occur to ensure that the flares are lit to combust the landfill gas.

The treatment system does not have any vents or stacks that release gasses from the treatment system; however, M. Schaper said that in the event there is overpressure, the system does have a pressure relief valve to meet code.

EDL is required to develop a site-specific treatment system monitoring plan which addresses monitoring of the filtration, dewatering and compression parameters; methods, frequencies and operating ranges for each monitoring operating parameter; documentation of the monitoring methods and ranges; a list of responsible staff; processes and methods used to collect the necessary data; and a description of the procedures and methods used for quality assurance, maintenance and repair of all continuous monitoring systems.

Prior to the inspection, EDL provided me with a copy of their site-specific treatment system monitoring plan (dated August 3, 2021, attached), which I reviewed to ensure it met all the aforementioned requirements. The monitoring plan appears to meet the MACT Subpart AAAA requirements at this time.

Table 6 contains the parameters that are monitored and the range of operation each parameter is required to be maintained, as established within treatment system monitoring plan, as well as the reading I took during the inspection on 11/29/22 for each parameter.

Review of the pressure drop onsite as well as a record from October 27, 2022 (attached) indicate that the pressure drop is less than the required operating range of 6" w.c., as defined in the treatment system monitoring plan. M. Stackhouse confirmed that there was a typo in the operating range for the pressure drop. The site-specific treatment system monitoring plan for Particulate Filter pressure drop should read as following for the "Range of Operation" and "Basis," respectively: "≤6 in wc" and "Filters are changed when the pressure exceeds 6 in wc which indicates the efficacy of the filter media is reduced." M. Stackhouse stated that she would work on updating the treatment system plan to include these corrections, as well as establish a lower limit to the pressure drop operating range.

**Table 6. Treatment System Operating Parameters**

<b>Equipment</b>	<b>Treatment Process Description</b>	<b>Monitored Parameter</b>	<b>Inspection Frequency</b>	<b>Range of Operation</b>	<b>Basis</b>	<b>Reading Taken Onsite (11/29/22)</b>
Blower/Compressor	Compression by positive displacement	Discharge Pressure	Monthly	5 – 20 psi	Manufacturer's specifications	6.6 psi
Particulate Filters	Filtration of particles < 10 microns in diameter by use of filter media	Pressure drop	Monthly	≥6" w.c.	Filters changed when Pressure falls below 6" w.c. (indicative that media efficacy is reduced)	3.8" w.c.
Aftercooler (Two – 1 per compressor)	Reduction of gas temperature before it goes to the engines	Process Temperature	Monthly	<110°F	Gas after compression is ~150 – 200°F. The aftercooler is designed to reduce the temperature <100°F	76°F

Onsite I confirmed with EDL staff that they use a fabric filter with mesh with a 1 micron filter rating (Pneumatech Part # C-280-S1), which is in compliance with the requirement to be able to filter particulate that is less than 10 microns in diameter.

EDL staff said that the chiller is the primary means of dewatering the landfill gas and the aftercooler is used secondarily to dewater the gas when the chiller is not operating (the chiller comes after the aftercooler in the process flow diagram).

**Design/Equipment Parameters & Monitoring/Recordkeeping**

A gas flow rate measuring device is required to be installed, calibrated and maintained in order to record the gas flow to the treatment system at least every 15 minutes; additionally, continuous records of the indication of flow and gas flow rate to the treatment system are required to be kept. Onsite I was told that on EDL's "Production Data" screen monitors the total flow to the engine plant is monitored continuously. The total flow to all engines is the same flow that is going to the gas treatment system. Records for the continuous gas flow to the engines was provided for the first week of October 2022. Records indicate there was flow to the engines and thus also to the treatment system for October 1 – 7, 2022, except for an approximately 4-hour period where the engines were down and gas was not being treated. I compared the October 1 - 7 data to the EUOPENFLARE operating data provided Brent Run Landfill, and confirmed that during the period when gas was not being combusted by the engines, the flare was operating to control the landfill gas.

All records indicate continuous records are being kept (flow data is recorded every 10 minutes). Attached is a snapshot of the flows through the system on October 7, 2022.

**Reporting**

EDL is required to submit semi-annual reports which include the following: the number of times the parameters (per 40 CFR 63.1961(g)) for the treatment system were exceeded; a description and duration of all periods when the gas stream is diverted from the treatment system through a bypass line; and a description and duration of all periods when the treatment system was not operating and the length of time the treatment system was not operating.

EDL does not have a bypass line to bypass the treatment system.

All required reports have been submitted to and reviewed by AQD on an annual and semi-annual basis.

**Section 2 Compliance Statement:** EDL appears to be in compliance with PTI 178-19, the MACT Part 63 Subpart AAAAA, and MI-ROP-N5997-2020a at this time.

**Overall Compliance Statement:** Brent Run Landfill is in non-compliance with the MACT Subpart AAAAA at this time. A violation notice will be issued to address the issue.

NAME Michelle Luplow

DATE 3/28/23

SUPERVISOR RB

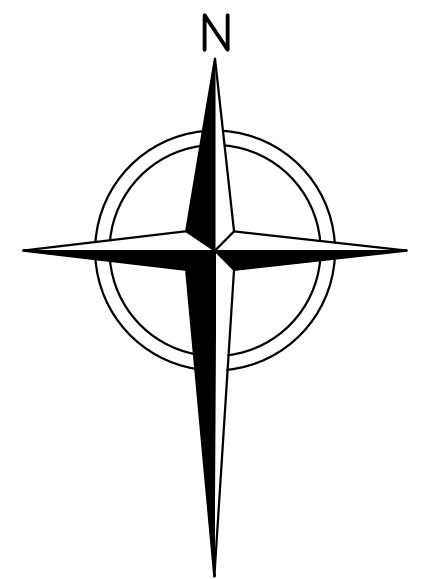
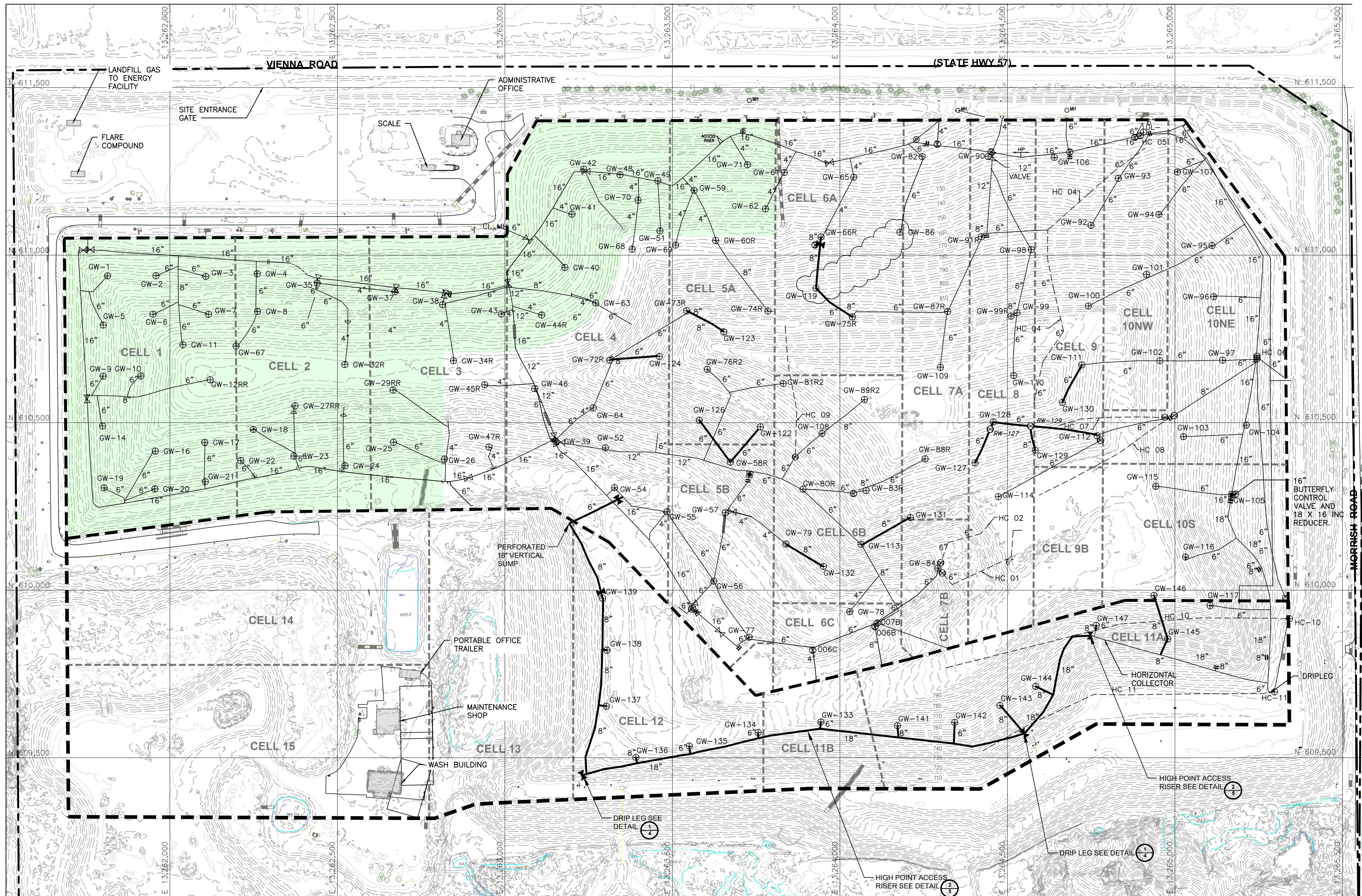


**Brent Run Landfill**  
**Approved HOVs (Oxygen, Temperature & Pressure)**

Well ID	Pressure HOV	Oxygen HOV	Temperature HOV	Date Approved
BRLF0001	19.00			2/13/2006
BRLF0002	19.00			2/13/2006
BRLF0003	19.00			2/13/2006
BRLF0004	19.00			2/13/2006
BRLF0005	19.00			2/13/2006
BRLF0006	19.00			2/13/2006
BRLF006B		21.00		1/5/2015
BRLF006C		21.90		11/6/2017
BRLF0007	19.00			2/13/2006
BRLF007A		21.90		3/14/2012
BRLF007B		21.90		11/6/2017
BRLF0008	19.00			2/13/2006
BRLF0009	19.00			2/13/2006
BRLF0010	19.00	20.00		1/2002 (Oxygen), 2/13/2006 (Pressure)
BRLF0011	19.00			2/13/2006
BRLF12RR	19.00			2/13/2006
BRLF0016	19.00			2/13/2006
BRLF0017	19.00			2/13/2006
BRLF0018	19.00			2/13/2006
BRLF0019	19.00			2/13/2006
BRLF0020	19.00			2/13/2006
BRLF0021	19.00			2/13/2006
BRLF0022	19.00			2/13/2006
BRLF0023	19.00			2/13/2006
BRLF27RR	19.00			2/13/2006
BRLF32RR	19.00			2/13/2006
BRLF0035	19.00			2/13/2006
BRLF0037	19.00			2/13/2006
BRLF0038	19.00			2/13/2006
BRLF0040	19.00			2/13/2006
BRLF0043	19.00			2/13/2006
BRLF0049	19.00			2/13/2006
BRLF0051	19.00			2/13/2006
BRLF0059	19.00			2/13/2006
BRLF0062	19.00			2/13/2006
BRLF0063	19.00			2/13/2006
BRLF0067	19.00			2/13/2006
BRLF0068	19.00			2/13/2006
BRLF0069	19.00			2/13/2006
BRLF0070	19.00			2/13/2006
BRLF0071	19.00			2/13/2006
BRLF0115			140.00	8/17/2018
BRLCEL10		21.90		8/7/2013
BRCEL10B		21.90		11/6/2017
BRCEL10S		21.90		11/6/2017
BRLFCEL8		21.90		11/6/2017
BRLFCEL9		21.90		11/6/2017
BRLFHC04			145.00	1/3/2018
BRLFHC07			140.00	*

\* Internal well compliance document indicate this well has HOV of 140 degrees since Jan 2020. There is some correspondence with EGLE during August 2019 about obtaining an ACT for this well and potential request of HOV if the well did not return to compliance. However, we could not locate any correspondence of requesting HOV or any approval from EGLE. The timing of this request would have fallen during the 6 month time period when EGLE was not responding to Brent Run's request for ACT, HOV or decommissioning. EGLE verbally indicated that they have received our email requests.





0 150 300  
SCALE IN FEET

**LEGEND**

- PROPERTY BOUNDARY
- CELL BOUNDARY
- SOLID WASTE BOUNDARY
- EXPANSION AREA SOLID WASTE BOUNDARY
- FINAL COVER AREA
- 680 TOPO 10' CONTOUR
- TOPO 2' CONTOUR
- ⊕ GW-44R EXISTING WELL REDRILLS
- ⊕ GW-65 EXISTING WELLS
- ⊕ GW-30(D) EXISTING DECOMMISSIONED WELLS
- || 2020 AS-BUILT 8" BLIND FLANGE AND BUTTERFLY CONTROL VALVE
- RECORD LFG LATERAL
- ⊕ GW-117 RECORD WELLS
- ⊕ RECORD VALVE
- ⊕ RW-127 RECORD REMOTE WELLHEAD

- NOTES:**
- AERIAL TOPOGRAPHIC MAP PROVIDED BY THE ROWE PROFESSIONAL SERVICES COMPANY. DATE OF PHOTOGRAPHY: 06/05/2021.
  - FEATURES, CONTOURS, AND ELEVATIONS OF THESE BASE MAPS ARE APPROXIMATE INDICATIONS OF CURRENT CONDITIONS.

1" = 1/2" 0"

**RECORD**

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
DATE OF ISSUE	12/19/22	DRAWN BY	JTH	CHECKED BY	JEB	APPROVED BY	JEB
		DESIGNED BY	CDA				



BRENT RUN, INC.  
BRENT RUN LANDFILL  
MONTROSE TWP., GENESEE COUNTY, MICHIGAN

**GCCS 2021 CONSTRUCTION  
GCCS 2021 RECORD PLAN**

SHEET NO.  
**2A**  
PROJECT NO.  
4211620

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June 2, 2020

Mr. Dan Zimmerman  
Director of North America HSE & Compliance  
Energy Developments Michigan, LLC  
608 S. Washington Avenue  
Lansing, MI 48933

Subject: Energy Developments Michigan at the  
Brent Run Landfill; SRN: N5987  
LFG sulfur sampling results for May 18, 2020

Dear Mr. Zimmerman;

Impact Compliance & Testing, Inc. (ICT) is submitting this report to provide Energy Developments Michigan, LLC (EDL) with the results of recent landfill gas (LFG) sampling that occurred May 18, 2020. The results will be used to determine the total sulfur to sulfur-as-H<sub>2</sub>S ratio to be used in monthly emission rate calculations for the EDL generating station located at the Brent Run Landfill (SRN N5987).

## 1.0 INTRODUCTION

EDL operates gas-fired reciprocating internal combustion engine (RICE) and electricity generator sets at the Brent Run Landfill at 8247 Vienna Road, Montrose, Michigan. The RICE are fueled by LFG that is recovered from the Brent Run Landfill. The recovered gas is transferred to EDL where it is treated and used as fuel.

The EGLE Air Quality Division (EGLE-AQD) has issued to EDL Permit to Install (PTI) No. 176-18 for operation of the renewable electricity generation facility, which consists of four (4) CAT® Model No. G3520C and one (1) CAT® Model No. G3512 RICE-generator sets collectively referred to as FGICEENGINES.

The TESTING/SAMPLING conditions for FGICEENGINES in Permit-to-Install PTI 176-18 specify:

- *Upon issuance of this PTI, the permittee shall verify the hydrogen sulfide (H<sub>2</sub>S) or total reduced sulfur (TRS) content of the landfill gas burned in FGICEENGINES monthly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc.) and semi-annually by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements.*

- *If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 640 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas weekly and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken*

The following sections of this document provide a description of the sampling and analytical methods for the semi-annual sampling event performed May 18, 2020 pursuant to Testing/Sampling conditions specified in PTI No. 176-18.

## 2.0 SAMPLING AND ANALYTICAL PROCEDURES

Sampling and analysis was performed according to ASTM Method D5504 to measure the concentration of hydrogen sulfide (H<sub>2</sub>S) and other sulfur-bearing compounds in the treated LFG used to fuel the RICE operated at the facility. Total reduced sulfur (TRS) content was calculated based on the sum of all sulfur-bearing compounds in the sample. Fixed gas analysis was performed according to method GPA 2261 to determine the LFG methane content and verify the integrity of the sample.

On May 18, 2020, a sample of the treated LFG that is used to fuel the engines was obtained from the sample tubing at the gas analyzer. The sample was collected using a conditioned tedlar bag and hand-delivered by ICT to SPL Laboratory (Traverse City, Michigan) for total sulfur content analysis.

Prior to sampling, the tedlar bag was conditioned by filling the bag with LFG and purging the gas from it twice. This allowed the bag materials to saturate with LFG components to reduce any bias caused by potential adsorption of the sampling media.

At the same time that the samples were obtained, the sulfur content was checked on-site using Draeger stain tubes to correlate with the laboratory results.

## 3.0 CALCULATIONS

The analytical results for the fuel gas will be used to determine the monthly potential sulfur dioxide (SO<sub>2</sub>) emission rate in tons per month (tons/month). The following equation is presented in PTI 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions:

$$\frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} * \frac{1.1733 \text{ mol Sulfur}}{\text{ft}^3} * \frac{34.08 \text{ grams}}{\text{mol Sulfur}}$$

$$* \frac{\text{pound}}{453.59 \text{ grams}} * \frac{1 \text{ ton}}{2 \text{ pounds}} * \frac{1.88\text{SO}_2}{\text{Sulfur as H}_2\text{S}} \text{Molecular Weight Ratio}$$

$$* \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} * \text{Monthly Landfill Gas Usage } \left( \frac{\text{ft}^3}{\text{month}} \right)$$

Where:

Monthly Average = Determined from weekly or monthly H<sub>2</sub>S monitoring  
Sulfur as H<sub>2</sub>S = Determined from laboratory analysis  
Total Sulfur = Determined from laboratory analysis

#### **4.0 RESULTS**

SPL labs located in Traverse City, Michigan analyzed the treated LFG sample using ASTM Method D5504 and Method GPA 2261 within 24 hours of obtaining the samples. The reported total sulfur content and H<sub>2</sub>S content were 642 and 608 parts per million by volume (ppmv), respectively. Draeger tube analysis generally confirmed the laboratory results. The laboratory analytical results are presented in Table 4.1 below.

Table 4.1 Laboratory analytical results for treated LFG fuel sample

Total Sulfur (ppmv)	642
H <sub>2</sub> S Content (ppmv)	608
Total sulfur to sulfur as H <sub>2</sub> S	1.06
Methane Mol. %	51.8

#### **5.0 Monitoring/Recordkeeping**

The laboratory analytical results presented in Table 4.1 will be used with equation presented in PTI No. 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions.

Please contact us at (517) 268-0043 or [tyler.harvey@impactcandt.com](mailto:tyler.harvey@impactcandt.com) if you have any questions or require additional information.

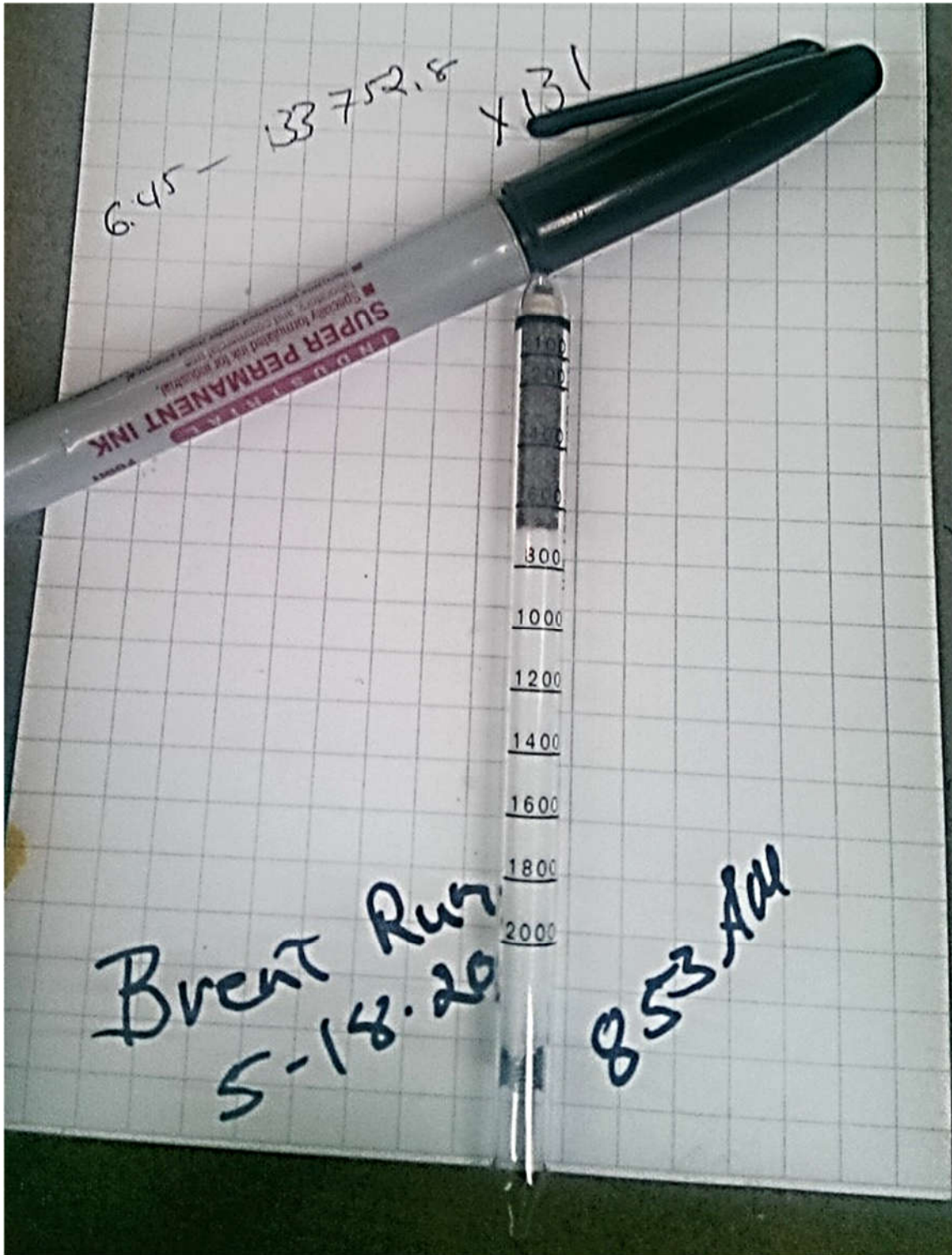
Sincerely,

Impact Compliance & Testing, Inc.



Tyler Harvey  
Environmental Technician

Attachments



6.45 - 133752.8 x 131

Brent Rus  
5-18-20

853 Acc



Certificate of Analysis  
 Number: 8010-20050047-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

May 19, 2020

Station Location: BRENT RUN  
 Sample Point: ENGINE ROOM  
 Method: GPA 2261M  
 Analyzed: 05/18/2020 14:13:36 by SJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 05/18/2020  
 Sample Conditions: ATMOS psig, @ N/A °F

**Analytical Data**

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	7.548	7.464		GPM TOTAL C2+	0.011
Carbon Dioxide	40.632	63.120		GPM TOTAL C3+	0.011
Methane	51.794	29.330		GPM TOTAL iC5+	0.011
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.026	0.086	0.011		
	100.000	100.000	0.011		

**Calculated Physical Properties**

Relative Density Real Gas	0.9807
Calculated Molecular Weight	28.33
Compressibility Factor	0.9970

**GPA 2172 Calculation:**

**Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia & 60°F**

Real Gas Dry BTU	526
Water Sat. Gas Base BTU	517

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



Certificate of Analysis  
 Number: 8010-20050047-001B

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

May 19, 2020

Station Location: BRENT RUN  
 Sample Point: ENGINE ROOM  
 Method: ASTM D-5504  
 Analyzed: 05/19/2020 00:00:00 by SJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 05/18/2020  
 Sample Conditions: ATMOS psig, @ N/A °F

**Sulfur Analysis**

<b>SULFIDES</b>	<b>ppm (v)</b>
Hydrogen Sulfide	608
Carbonyl Sulfide	ND <1
Dimethyl Sulfide	ND <1
Diethyl Sulfide	ND <1
Methyl Ethyl Sulfide	ND <1
<b>MERCAPTANS</b>	
	<b>ppm (v)</b>
Methyl Mercaptan	7
Ethyl Mercaptan	11
Isopropyl Mercaptan	8
n-Propyl Mercaptan	ND <1
n-Butyl Mercaptan	ND <1
Isobutyl Mercaptan	5
<b>DISULFIDES</b>	
	<b>ppm (v)</b>
Dimethyl Disulfide	ND <1
Diethyl Disulfide	ND <1
Methyl Ethyl Disulfid	ND <1
Misc. Sulfurs	3
<b>Total Sulfur (Calc.)</b>	<b>642</b>

Note: ND = None Detected  
 Note: Total Sulfur (Calc.) = Sum of detected sulfurs





July 15, 2020

Mr. Dan Zimmerman  
Director of North America HSE & Compliance  
Energy Developments Michigan, LLC  
608 S. Washington Avenue  
Lansing, MI 48933

Subject: Energy Developments Michigan at the  
Brent Run Landfill; SRN: N5987  
LFG sulfur sampling results for July 9, 2020

Dear Mr. Zimmerman;

Impact Compliance & Testing, Inc. (ICT) is submitting this report to provide Energy Developments Michigan, LLC (EDL) with the results of recent landfill gas (LFG) sampling that occurred July 9, 2020. The results will be used to determine the total sulfur to sulfur-as-H<sub>2</sub>S ratio to be used in monthly emission rate calculations for the EDL generating station located at the Brent Run Landfill (SRN N5987).

## 1.0 INTRODUCTION

EDL operates gas-fired reciprocating internal combustion engine (RICE) and electricity generator sets at the Brent Run Landfill at 8247 Vienna Road, Montrose, Michigan. The RICE are fueled by LFG that is recovered from the Brent Run Landfill. The recovered gas is transferred to EDL where it is treated and used as fuel.

The EGLE Air Quality Division (EGLE-AQD) has issued to EDL Permit to Install (PTI) No. 176-18 for operation of the renewable electricity generation facility, which consists of four (4) CAT® Model No. G3520C and one (1) CAT® Model No. G3512 RICE-generator sets collectively referred to as FGICEENGINES.

The TESTING/SAMPLING conditions for FGICEENGINES in Permit-to-Install PTI 176-18 specify:

- *Upon issuance of this PTI, the permittee shall verify the hydrogen sulfide (H<sub>2</sub>S) or total reduced sulfur (TRS) content of the landfill gas burned in FGICEENGINES monthly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc.) and semi-annually by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements.*

- *If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 640 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas weekly and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken*

The following sections of this document provide a description of the sampling and analytical methods for the semi-annual sampling event performed July 9, 2020 pursuant to Testing/Sampling conditions specified in PTI No. 176-18.

## 2.0 SAMPLING AND ANALYTICAL PROCEDURES

Sampling and analysis was performed according to ASTM Method D5504 to measure the concentration of hydrogen sulfide (H<sub>2</sub>S) and other sulfur-bearing compounds in the treated LFG used to fuel the RICE operated at the facility. Total reduced sulfur (TRS) content was calculated based on the sum of all sulfur-bearing compounds in the sample. Fixed gas analysis was performed according to method GPA 2261 to determine the LFG methane content and verify the integrity of the sample.

On July 9, 2020 a sample of the treated LFG that is used to fuel the engines was obtained from the sample tubing at the gas analyzer. The sample was collected using a conditioned tedlar bag and hand-delivered by ICT to SPL Laboratory (Traverse City, Michigan) for total sulfur content analysis.

Prior to sampling, the tedlar bag was conditioned by filling the bag with LFG and purging the gas from it twice. This allowed the bag materials to saturate with LFG components to reduce any bias caused by potential adsorption of the sampling media.

At the same time that the samples were obtained, the sulfur content was checked on-site using Draeger stain tubes to correlate with the laboratory results.

## 3.0 CALCULATIONS

The analytical results for the fuel gas will be used to determine the monthly potential sulfur dioxide (SO<sub>2</sub>) emission rate in tons per month (tons/month). The following equation is presented in PTI 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions:

$$\frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} * \frac{1.1733 \text{ mol Sulfur}}{\text{ft}^3} * \frac{34.08 \text{ grams}}{\text{mol Sulfur}}$$

$$* \frac{\text{pound}}{453.59 \text{ grams}} * \frac{1 \text{ ton}}{2 \text{ pounds}} * \frac{1.88\text{SO}_2}{\text{Sulfur as H}_2\text{S}} \text{Molecular Weight Ratio}$$

$$* \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} * \text{Monthly Landfill Gas Usage } \left( \frac{\text{ft}^3}{\text{month}} \right)$$

Where:

Monthly Average = Determined from weekly or monthly H<sub>2</sub>S monitoring  
Sulfur as H<sub>2</sub>S = Determined from laboratory analysis  
Total Sulfur = Determined from laboratory analysis

#### **4.0 RESULTS**

SPL labs located in Traverse City, Michigan analyzed the treated LFG sample using ASTM Method D5504 and Method GPA 2261 within 24 hours of obtaining the samples. The reported total sulfur content and H<sub>2</sub>S content were 511 and 480 parts per million by volume (ppmv), respectively. Draeger tube analysis generally confirmed the laboratory results. The laboratory analytical results are presented in Table 4.1 below.

Table 4.1 Laboratory analytical results for treated LFG fuel sample

Total Sulfur (ppmv)	511
H <sub>2</sub> S Content (ppmv)	480
Total sulfur to sulfur as H <sub>2</sub> S	1.06
Methane Mol. %	48.3

#### **5.0 Monitoring/Recordkeeping**

The laboratory analytical results presented in Table 4.1 will be used with equation presented in PTI No. 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions.

Please contact us at (517) 268-0043 or [tyler.harvey@impactcandt.com](mailto:tyler.harvey@impactcandt.com) if you have any questions or require additional information.

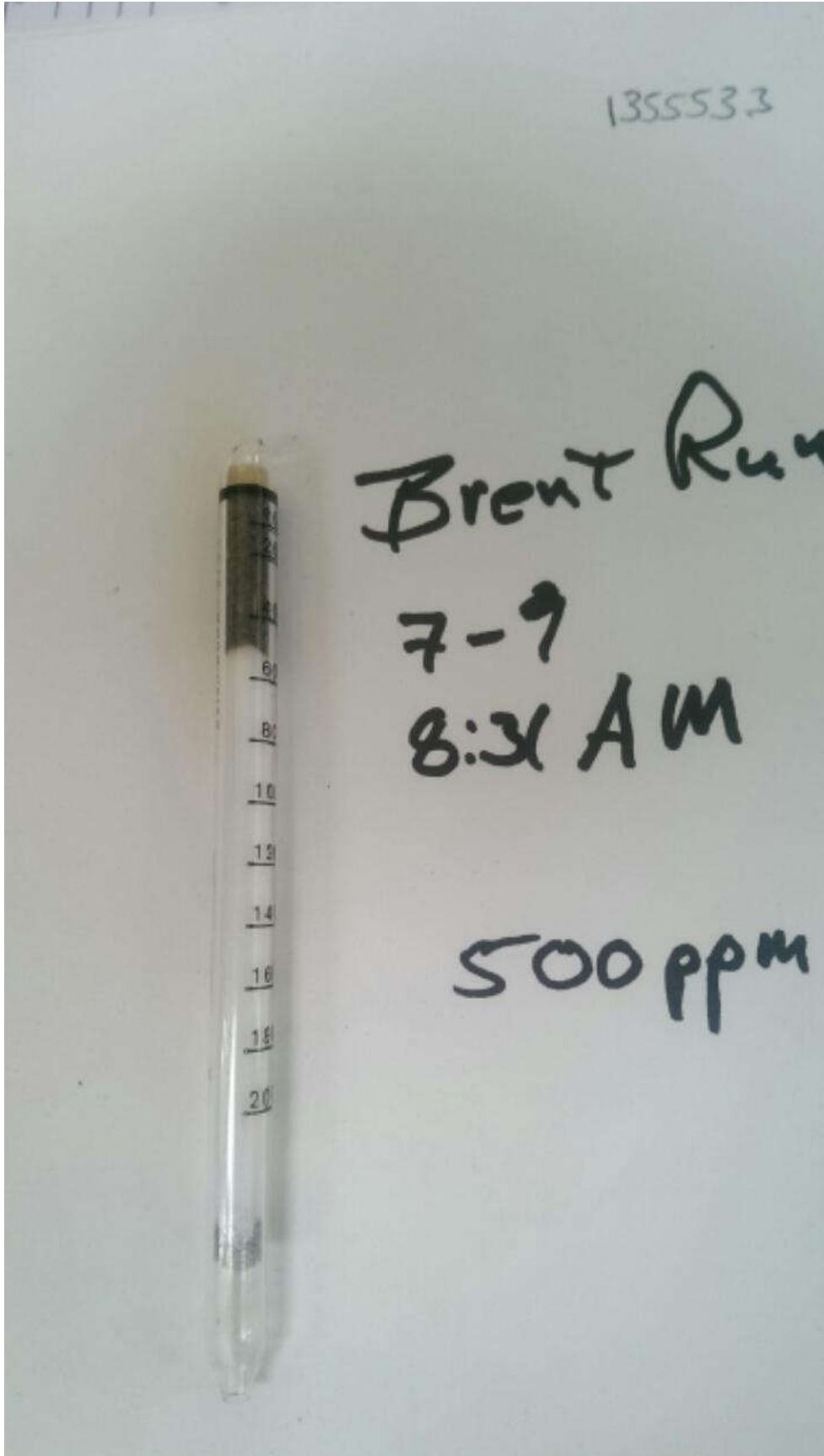
Sincerely,

Impact Compliance & Testing, Inc.



Tyler Harvey  
Environmental Technician

Attachments



135533

Brent Run

7-9

8:30 AM

500 ppm



Certificate of Analysis  
 Number: 8010-20070017-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

July 14, 2020

Station Location: BRENT RUN  
 Sample Point: ENGINE ROOM  
 Method: GPA 2261M  
 Analyzed: 07/09/2020 12:16:00 by SJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 07/09/2020  
 Sample Conditions: ATMOS psig, @ N/A °F

**Analytical Data**


Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	12.185	11.947		GPM TOTAL C2+	0.010
Carbon Dioxide	39.518	60.872		GPM TOTAL C3+	0.010
Methane	48.274	27.106		GPM TOTAL iC5+	0.010
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.023	0.075	0.010		
	100.000	100.000	0.010		

**Calculated Physical Properties**

Relative Density Real Gas	0.9889
Calculated Molecular Weight	28.57
Compressibility Factor	0.9972

**GPA 2172 Calculation:**

Calculated Gross BTU per ft <sup>3</sup> @ 14.696 psia & 60°F	
Real Gas Dry BTU	490
Water Sat. Gas Base BTU	482

  
 Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



Certificate of Analysis  
 Number: 8010-20070017-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

July 14, 2020

Station Location: BRENT RUN  
 Sample Point: ENGINE ROOM  
 Method: ASTM D-5504  
 Analyzed: 07/14/2020 00:00:00 by SJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 07/09/2020  
 Sample Conditions: ATMOS psig, @ N/A °F

**Sulfur Analysis**

<b>SULFIDES</b>	<b>ppm (v)</b>
Hydrogen Sulfide	480
Carbonyl Sulfide	ND <1
Dimethyl Sulfide	ND <1
Diethyl Sulfide	ND <1
Methyl Ethyl Sulfide	ND <1
<b>MERCAPTANS</b>	
	<b>ppm (v)</b>
Methyl Mercaptan	4.8
Ethyl Mercaptan	9
Isopropyl Mercaptan	7.5
n-Propyl Mercaptan	ND <1
n-Butyl Mercaptan	ND <1
Isobutyl Mercaptan	7
<b>DISULFIDES</b>	
	<b>ppm (v)</b>
Dimethyl Disulfide	ND <1
Diethyl Disulfide	ND <1
Methyl Ethyl Disulfid	ND <1
Misc. Sulfurs	3
<b>Total Sulfur (Calc.)</b>	<b>511.3</b>

Note: ND = None Detected  
 Note: Total Sulfur (Calc.) = Sum of detected sulfurs



November 2, 2020

Mr. Dan Zimmerman  
Senior Compliance Manager  
Energy Developments Michigan, LLC  
2501 Coolidge Rd, Suite 100  
PO Box 15217  
Lansing, MI 48901

Subject: Energy Developments Michigan at the  
Brent Run Landfill; SRN: N5987  
LFG sulfur sampling results for October 21, 2020

Dear Mr. Zimmerman:

Impact Compliance & Testing, Inc. (ICT) is submitting this report to provide Energy Developments Michigan, LLC (EDL) with the results of recent landfill gas (LFG) sampling that occurred October 21, 2020. The results will be used to determine the total sulfur to sulfur-as-H<sub>2</sub>S ratio to be used in monthly emission rate calculations for the EDL generating station located at the Brent Run Landfill (SRN N5987).

## 1.0 INTRODUCTION

EDL operates gas-fired reciprocating internal combustion engine (RICE) and electricity generator sets at the Brent Run Landfill at 8247 Vienna Road, Montrose, Michigan. The RICE are fueled by LFG that is recovered from the Brent Run Landfill. The recovered gas is transferred to EDL where it is treated and used as fuel.

The EGLE Air Quality Division (EGLE-AQD) has issued to EDL Permit to Install (PTI) No. 176-18 for operation of the renewable electricity generation facility, which consists of four (4) CAT® Model No. G3520C and one (1) CAT® Model No. G3512 RICE-generator sets collectively referred to as FGICEENGINES.

The TESTING/SAMPLING conditions for FGICEENGINES in Permit-to-Install PTI 176-18 specify:

- *Upon issuance of this PTI, the permittee shall verify the hydrogen sulfide (H<sub>2</sub>S) or total reduced sulfur (TRS) content of the landfill gas burned in FGICEENGINES monthly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc.) and semi-annually by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements.*

## Impact Compliance & Testing, Inc.

Mr. Dan Zimmerman  
EDL

November 2, 2020  
Page 2

- *If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 640 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas weekly and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken*

The following sections of this document provide a description of the sampling and analytical methods for the semi-annual sampling event performed October 21, 2020 pursuant to Testing/Sampling conditions specified in PTI No. 176-18.

### 2.0 SAMPLING AND ANALYTICAL PROCEDURES

Sampling and analysis were performed according to ASTM Method D5504 to measure the concentration of hydrogen sulfide (H<sub>2</sub>S) and other sulfur-bearing compounds in the treated LFG used to fuel the RICE operated at the facility. Total reduced sulfur (TRS) content was calculated based on the sum of all sulfur-bearing compounds in the sample. Fixed gas analysis was performed according to method GPA 2261 to determine the LFG methane content and verify the integrity of the sample.

On October 21, 2020 a sample of the treated LFG that is used to fuel the engines was obtained from the sample tubing at the gas analyzer. The sample was collected using a conditioned tedlar bag and hand-delivered by ICT to SPL Laboratory (Traverse City, Michigan) for total sulfur content analysis.

Prior to sampling, the tedlar bag was conditioned by filling the bag with LFG and purging the gas from it twice. This allowed the bag materials to saturate with LFG components to reduce any bias caused by potential adsorption of the sampling media.

At the same time that the samples were obtained, the sulfur content was checked on-site using Draeger stain tubes to correlate with the laboratory results.

### 3.0 CALCULATIONS

The analytical results for the fuel gas will be used to determine the monthly potential sulfur dioxide (SO<sub>2</sub>) emission rate in tons per month (tons/month). The following equation is presented in PTI 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions:

$$\frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} * \frac{1.1733 \text{ mol Sulfur}}{\text{ft}^3} * \frac{34.08 \text{ grams}}{\text{mol Sulfur}}$$
$$* \frac{\text{pound}}{453.59 \text{ grams}} * \frac{1 \text{ ton}}{2000 \text{ pounds}} * \frac{1.88\text{SO}_2}{\text{Sulfur as H}_2\text{S}} \text{Molecular Weight Ratio}$$
$$* \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} * \text{Monthly Landfill Gas Usage } \left( \frac{\text{ft}^3}{\text{month}} \right)$$



## Impact Compliance & Testing, Inc.

Mr. Dan Zimmerman  
EDL

November 2, 2020  
Page 3

Where:

Monthly Average = Determined from weekly or monthly H<sub>2</sub>S monitoring  
Sulfur as H<sub>2</sub>S = Determined from laboratory analysis  
Total Sulfur = Determined from laboratory analysis

### 4.0 RESULTS

SPL labs located in Traverse City, Michigan analyzed the treated LFG sample using ASTM Method D5504 and Method GPA 2261 within 24 hours of obtaining the samples. The reported total sulfur content and H<sub>2</sub>S content were 645 and 610 parts per million by volume (ppmv), respectively. Draeger tube analysis generally confirmed the laboratory results. The laboratory analytical results are presented in Table 4.1 below.

Table 4.1 Laboratory analytical results for treated LFG fuel sample

Total Sulfur (ppmv)	645
H <sub>2</sub> S Content (ppmv)	610
Total sulfur to sulfur as H <sub>2</sub> S	1.05
Methane Mol. %	51.3

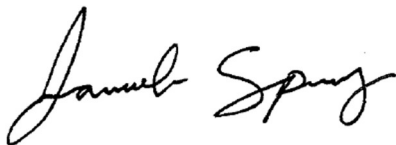
### 5.0 Monitoring/Recordkeeping

The laboratory analytical results presented in Table 4.1 will be used with equation presented in PTI No. 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions.

Please contact us at (734) 464-3880 or [Jake.Spry@ImpactCandT.com](mailto:Jake.Spry@ImpactCandT.com) if you have any questions or require additional information.

Sincerely,

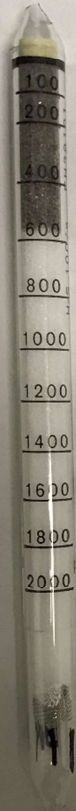
Impact Compliance & Testing, Inc.



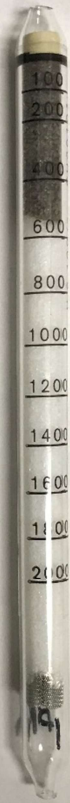
Jake Spry  
Environmental Consultant

Attachments

Brent Run



550 ppm



550 ppm



Certificate of Analysis  
 Number: 8010-20100043-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

Oct. 22, 2020

Station Location: BRENT RUN  
 Sample Point: PLANT 1  
 Method: GPA 2261M  
 Analyzed: 10/21/2020 14:39:21 by SCJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 10/21/2020  
 Sample Conditions: ATMOS psig, @ N/A °F

**Analytical Data**

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	8.197	8.101		GPM TOTAL C2+	0.008
Carbon Dioxide	40.424	62.767		GPM TOTAL C3+	0.008
Methane	51.360	29.070		GPM TOTAL iC5+	0.008
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.019	0.062	0.008		
	100.000	100.000	0.008		


**Calculated Physical Properties**

Relative Density Real Gas	0.9812
Calculated Molecular Weight	28.34
Compressibility Factor	0.9970

**GPA 2172 Calculation:**

**Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia & 60°F**

Real Gas Dry BTU	521
Water Sat. Gas Base BTU	512

  
 Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



Certificate of Analysis  
 Number: 8010-20100043-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

Oct. 22, 2020

Station Location: BRENT RUN  
 Sample Point: PLANT 1  
 Method: ASTM D-5504  
 Analyzed: 10/22/2020 00:00:00 by SJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 10/21/2020  
 Sample Conditions: ATMOS psig, @ N/A °F

**Sulfur Analysis**

<b>SULFIDES</b>	<b>ppm (v)</b>
Hydrogen Sulfide	610
Carbonyl Sulfide	ND <1
Dimethyl Sulfide	ND <1
Diethyl Sulfide	ND <1
Methyl Ethyl Sulfide	ND <1
<b>MERCAPTANS</b>	
	<b>ppm (v)</b>
Methyl Mercaptan	6.3
Ethyl Mercaptan	11.7
Isopropyl Mercaptan	8.7
n-Propyl Mercaptan	ND <1
n-Butyl Mercaptan	ND <1
Isobutyl Mercaptan	5.1
<b>DISULFIDES</b>	
	<b>ppm (v)</b>
Dimethyl Disulfide	ND <1
Diethyl Disulfide	ND <1
Methyl Ethyl Disulfid	ND <1
Misc. Sulfurs	3.6
<b>Total Sulfur (Calc.)</b>	<b>645.4</b>

Note: ND = None Detected  
 Note: Total Sulfur (Calc.) = Sum of detected sulfurs







May 3, 2021

Mr. Dan Zimmerman  
Senior Compliance Manager  
Energy Developments Michigan, LLC  
2501 Coolidge Rd, Suite 100  
PO Box 15217  
Lansing, MI 48901

Subject: Energy Developments Michigan at the  
Brent Run Landfill; SRN: N5987  
LFG sulfur sampling results for April 6, 2021

Dear Mr. Zimmerman:

Impact Compliance & Testing, Inc. (ICT) is submitting this report to provide Energy Developments Michigan, LLC (EDL) with the results of recent landfill gas (LFG) sampling that occurred April 6, 2021. The results will be used to determine the total sulfur to sulfur-as-H<sub>2</sub>S ratio to be used in monthly emission rate calculations for the EDL generating station located at the Brent Run Landfill (SRN N5987).

## 1.0 INTRODUCTION

EDL operates gas-fired reciprocating internal combustion engine (RICE) and electricity generator sets at the Brent Run Landfill at 8247 Vienna Road, Montrose, Michigan. The RICE are fueled by LFG that is recovered from the Brent Run Landfill. The recovered gas is transferred to EDL where it is treated and used as fuel.

The EGLE Air Quality Division (EGLE-AQD) has issued to EDL Permit to Install (PTI) No. 176-18 for operation of the renewable electricity generation facility, which consists of four (4) CAT® Model No. G3520C and one (1) CAT® Model No. G3512 RICE-generator sets collectively referred to as FGICEENGINES.

The TESTING/SAMPLING conditions for FGICEENGINES in Permit-to-Install PTI 176-18 specify:

- *Upon issuance of this PTI, the permittee shall verify the hydrogen sulfide (H<sub>2</sub>S) or total reduced sulfur (TRS) content of the landfill gas burned in FGICEENGINES monthly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc.) and semi-annually by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements.*

## Impact Compliance & Testing, Inc.

Mr. Dan Zimmerman  
EDL

May 3, 2021  
Page 2

- *If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 640 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas weekly and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken*

The following sections of this document provide a description of the sampling and analytical methods for the semi-annual sampling event performed April 6, 2021 pursuant to Testing/Sampling conditions specified in PTI No. 176-18.

### 2.0 SAMPLING AND ANALYTICAL PROCEDURES

Sampling and analysis were performed according to ASTM Method D5504 to measure the concentration of hydrogen sulfide (H<sub>2</sub>S) and other sulfur-bearing compounds in the treated LFG used to fuel the RICE operated at the facility. Total reduced sulfur (TRS) content was calculated based on the sum of all sulfur-bearing compounds in the sample. Fixed gas analysis was performed according to method GPA 2261 to determine the LFG methane content and verify the integrity of the sample.

On April 6, 2021 a sample of the treated LFG that is used to fuel the engines was obtained from the sample tubing at the gas analyzer. The sample was collected using a conditioned tedlar bag and hand-delivered by ICT to SPL Laboratory (Traverse City, Michigan) for total sulfur content analysis.

Prior to sampling, the tedlar bag was conditioned by filling the bag with LFG and purging the gas from it twice. This allowed the bag materials to saturate with LFG components to reduce any bias caused by potential adsorption of the sampling media.

At the same time that the samples were obtained, the sulfur content was checked on-site using Draeger stain tubes to correlate with the laboratory results.

### 3.0 CALCULATIONS

The analytical results for the fuel gas will be used to determine the monthly potential sulfur dioxide (SO<sub>2</sub>) emission rate in tons per month (tons/month). The following equation is presented in PTI 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions:

$$\frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} * \frac{1.1733 \text{ mol Sulfur}}{\text{ft}^3} * \frac{34.08 \text{ grams}}{\text{mol Sulfur}}$$
$$* \frac{\text{pound}}{453.59 \text{ grams}} * \frac{1 \text{ ton}}{2000 \text{ pounds}} * \frac{1.88\text{SO}_2}{\text{Sulfur as H}_2\text{S}} \text{Molecular Weight Ratio}$$
$$* \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} * \text{Monthly Landfill Gas Usage } \left( \frac{\text{ft}^3}{\text{month}} \right)$$

## Impact Compliance & Testing, Inc.

Mr. Dan Zimmerman  
EDL

May 3, 2021  
Page 3

Where:

Monthly Average = Determined from weekly or monthly H<sub>2</sub>S monitoring  
Sulfur as H<sub>2</sub>S = Determined from laboratory analysis  
Total Sulfur = Determined from laboratory analysis

### 4.0 RESULTS

SPL labs located in Traverse City, Michigan analyzed the treated LFG sample using ASTM Method D5504 and Method GPA 2261 within 24 hours of obtaining the samples. The reported total sulfur content and H<sub>2</sub>S content were 652 and 620 parts per million by volume (ppmv), respectively. Draeger tube analysis generally confirmed the laboratory results. The laboratory analytical results are presented in Table 4.1 below.

Table 4.1 Laboratory analytical results for treated LFG fuel sample

Total Sulfur (ppmv)	652
H <sub>2</sub> S Content (ppmv)	620
Total sulfur to sulfur as H <sub>2</sub> S	1.05
Methane Mol. %	53.0

### 5.0 Monitoring/Recordkeeping

The laboratory analytical results presented in Table 4.1 will be used with equation presented in PTI No. 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions.

Please contact us at (734) 464-3880 or [Andrew.Eisenberg@ImpactCandT.com](mailto:Andrew.Eisenberg@ImpactCandT.com) if you have any questions or require additional information.

Sincerely,

Impact Compliance & Testing, Inc.

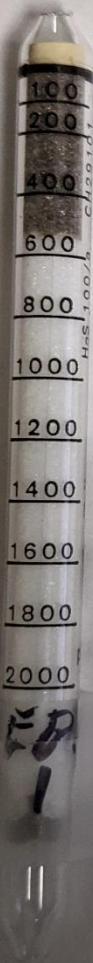


Andrew Eisenberg  
Environmental Consultant

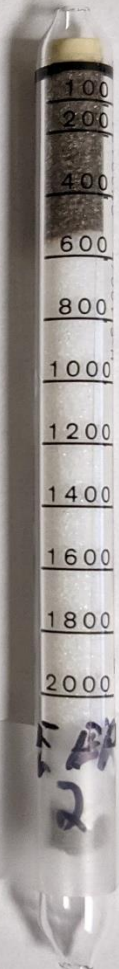
Attachments



EDL  
Brent Run



550ppm



550ppm



Certificate of Analysis  
 Number: 8010-21040037-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

Apr. 08, 2021

Station Location: EDL BRENT RUN  
 Sample Point: GAS SAMPLE  
 Method: GPA 2261M  
 Analyzed: 04/07/2021 11:12:51 by SCJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 04/06/2021  
 Sample Conditions: ATMOS psig, @ N/A °F

**Analytical Data**


Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	6.596	6.563		GPM TOTAL C2+	0.010
Carbon Dioxide	40.421	63.186		GPM TOTAL C3+	0.010
Methane	52.961	30.178		GPM TOTAL iC5+	0.010
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.022	0.073	0.010		
	100.000	100.000	0.010		

**Calculated Physical Properties**

Relative Density Real Gas	0.9746
Calculated Molecular Weight	28.15
Compressibility Factor	0.9970

**GPA 2172 Calculation:**

Calculated Gross BTU per ft <sup>3</sup> @ 14.696 psia & 60°F	
Real Gas Dry BTU	538
Water Sat. Gas Base BTU	528

  
 Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



Certificate of Analysis  
 Number: 8010-21040037-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

Apr. 08, 2021

Station Location: EDL BRENT RUN  
 Sample Point: GAS SAMPLE  
 Method: ASTM D-5504  
 Analyzed: 04/08/2021 00:00:00 by SPL

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 04/06/2021  
 Sample Conditions: ATMOS psig, @ N/A °F

**Sulfur Analysis**

<b>SULFIDES</b>	<b>ppm (v)</b>
Hydrogen Sulfide	620
Carbonyl Sulfide	ND <1
Dimethyl Sulfide	ND <1
Diethyl Sulfide	ND <1
Methyl Ethyl Sulfide	ND <1
<b>MERCAPTANS</b>	
	<b>ppm (v)</b>
Methyl Mercaptan	7.3
Ethyl Mercaptan	5.8
Isopropyl Mercaptan	9.9
n-Propyl Mercaptan	ND <1
n-Butyl Mercaptan	ND <1
Isobutyl Mercaptan	5
<b>DISULFIDES</b>	
	<b>ppm (v)</b>
Dimethyl Disulfide	ND <1
Diethyl Disulfide	ND <1
Methyl Ethyl Disulfid	ND <1
Misc. Sulfurs	3.6
<b>Total Sulfur (Calc.)</b>	<b>651.6</b>

Note: ND = None Detected  
 Note: Total Sulfur (Calc.) = Sum of detected sulfurs





## Analysis Request Chain of Custody Record

SPL Work Order No.:		SPL Work Order No.:		Acct. Mate Code:		Dept. Code:		Page ____ of ____											
Report To: (Co. Name)		Project/Station Name:		Project/Station Number:		Project/Station Location:		Requested TAT											
Address:		EDL Brent Run		8383 W. Viamard		Montrose		<input checked="" type="checkbox"/> 24 Hour*											
City, State Zip:		Farmington Hills, MI 48331		Special Instructions:				<input type="checkbox"/> 48 Hour*											
Contact:		Andrew Eisenberg		Dropper Tube 1 / Dropper Tube 2				<input type="checkbox"/> 72 Hour*											
Phone:		734-357-8406 Fax:		550PPM / 550PPM				<input type="checkbox"/> Standard											
Invoice To: (Co. Name)		Indicate Billing Type:		Net 30 day Acct. <input type="checkbox"/>		Check #		Cash Rec'd \$											
Address:				Credit Card <input type="checkbox"/>		Contact SPL for CC payment arrangements.		<input type="checkbox"/> Other (Indicate Below)											
City, State Zip:				* Terms: Cylinders will be rented for \$10/cylinder. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.		Requested Analysis													
Contact:																			
Phone:		Fax:																	
PO/Ref. No.:																			
Contract/Proposal #:																			
Sample ID & Point		Sample Date		Sample Time		Sample Type (Gas/Liq. Solid)		Duplicate		Composite		Spot		Cylinder Tracking Info *		Comments			
														Cylinder #	Date Out			Date In	
EDL Brent Run		4-6		A 12:32 B 12:33		LFG				X		X		X		2x samples			
Sampled By-Print Name:		Andrew Eisenberg		Signature:		[Signature]		Company Name:		Impact Compliance + Testing									
Relinquished By-Print Name:		Andrew Eisenberg		Date:		4-6		Time:		15:43		Received By-Print Name:		Signature:		Date:		Time:	
																4-6-21		4:00	
Relinquished By-Print Name:				Date:				Time:				Received By-Print Name:		Signature:		Date:		Time:	
Relinquished By-Print Name:				Date:				Time:				Received By-Print Name:		Signature:		Date:		Time:	

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> 8820 Interchange Drive, Houston, TX 77054   713-660-0901      | <input type="checkbox"/> 1595 South US Highway 79, Carthage, TX 75633   903-693-6242                     | <input type="checkbox"/> 208 Main Street, Units A & B, Windsor, CO 80550   970-460-0741 |
| <input type="checkbox"/> 9221 Highway 23, Belle Chasse, LA 70037   504-391-1333        | <input type="checkbox"/> 4790 NE Evangeline Thruway, Carencro, LA 70520   337-896-3055                   | <input type="checkbox"/> 2565 Highway 33, Ruston, LA 71270   318-224-7066               |
| <input type="checkbox"/> 2440 Chambers Street, Suite A, Venus, TX 76084   817-539-2168 | <input checked="" type="checkbox"/> 781 Industrial Circle, Ste 6, Traverse City, MI 49686   231-421-8202 | <input type="checkbox"/> 7111 Nix Drive, Duncan, OK 73533   580-786-4835                |
| <input type="checkbox"/> 627 2nd Street, Pleasonton, TX 78064   830-224-7920           |  |   |



May 16, 2022

Mr. Rocky Tondo  
Head of Project Delivery and Technical Services  
Energy Developments Michigan, LLC  
2501 Coolidge Rd, Suite 100  
PO Box 15217  
Lansing, MI 48901

Subject: Energy Developments Michigan at the  
Brent Run Landfill; SRN: N5987  
LFG sulfur sampling results for May 10, 2022

Dear Mr. Tondo:

Impact Compliance & Testing, Inc. (ICT) is submitting this report to provide Energy Developments Michigan, LLC (EDL) with the results of recent landfill gas (LFG) sampling that occurred May 10, 2022. The results will be used to determine the total sulfur to sulfur-as-H<sub>2</sub>S ratio to be used in monthly emission rate calculations for the EDL generating station located at the Brent Run Landfill (SRN N5987).

## 1.0 INTRODUCTION

EDL operates gas-fired reciprocating internal combustion engine (RICE), and electricity generator sets at the Brent Run Landfill at 8247 Vienna Road, Montrose, Michigan. The RICE are fueled by LFG that is recovered from the Brent Run Landfill. The recovered gas is transferred to EDL where it is treated and used as fuel.

The EGLE Air Quality Division (EGLE-AQD) has issued to EDL Permit to Install (PTI) No. 176-18 for operation of the renewable electricity generation facility, which consists of four (4) CAT® Model No. G3520C and one (1) CAT® Model No. G3512 RICE-generator sets collectively referred to as FGICEENGINES.

The TESTING/SAMPLING conditions for FGICEENGINES in Permit-to-Install PTI 176-18 specify:

- *Upon issuance of this PTI, the permittee shall verify the hydrogen sulfide (H<sub>2</sub>S) or total reduced sulfur (TRS) content of the landfill gas burned in FGICEENGINES monthly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc.) and semi-annually by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements.*

## Impact Compliance & Testing, Inc.

Mr. Rocky Tondo  
EDL

May 16, 2022  
Page 2

- *If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 640 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas weekly and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken*

The following sections of this document provide a description of the sampling and analytical methods for the semi-annual sampling event performed May 10, 2022, pursuant to Testing/Sampling conditions specified in PTI No. 176-18.

### 2.0 SAMPLING AND ANALYTICAL PROCEDURES

Sampling and analysis were performed according to ASTM Method D5504 to measure the concentration of hydrogen sulfide (H<sub>2</sub>S) and other sulfur-bearing compounds in the treated LFG used to fuel the RICE operated at the facility. Total reduced sulfur (TRS) content was calculated based on the sum of all sulfur-bearing compounds in the sample. Fixed gas analysis was performed according to method GPA 2261 to determine the LFG methane content and verify the integrity of the sample.

On May 10, 2022, a sample of the treated LFG that is used to fuel the engines was obtained from the sample tubing at the gas analyzer. The sample was collected using a conditioned tedlar bag and hand-delivered by ICT to SPL Laboratory (Traverse City, Michigan) for total sulfur content analysis.

Prior to sampling, the tedlar bag was conditioned by filling the bag with LFG and purging the gas from it twice. This allowed the bag materials to saturate with LFG components to reduce any bias caused by potential adsorption of the sampling media.

At the same time that the samples were obtained, the sulfur content was checked on-site using Draeger stain tubes to correlate with the laboratory results.

### 3.0 CALCULATIONS

The analytical results for the fuel gas will be used to determine the monthly potential sulfur dioxide (SO<sub>2</sub>) emission rate in tons per month (tons/month). The following equation is presented in PTI 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions:

$$\frac{\text{Monthly Average of Weekly H}_2\text{S Gas Samples (ppmv)}}{1,000,000} * \frac{1.1733 \text{ mol Sulfur}}{\text{ft}^3} * \frac{34.08 \text{ grams}}{\text{mol Sulfur}}$$
$$* \frac{\text{pound}}{453.59 \text{ grams}} * \frac{1 \text{ ton}}{2000 \text{ pounds}} * \frac{1.88\text{SO}_2}{\text{Sulfur as H}_2\text{S}} \text{Molecular Weight Ratio}$$
$$* \frac{\text{Total Sulfur}}{\text{Sulfur as H}_2\text{S}} * \text{Monthly Landfill Gas Usage} \left( \frac{\text{ft}^3}{\text{month}} \right)$$

## Impact Compliance & Testing, Inc.

Mr. Rocky Tondo  
EDL

May 16, 2022  
Page 3

Where:

Monthly Average = Determined from weekly or monthly H<sub>2</sub>S monitoring  
Sulfur as H<sub>2</sub>S = Determined from laboratory analysis  
Total Sulfur = Determined from laboratory analysis

### 4.0 RESULTS

SPL labs located in Traverse City, Michigan analyzed the treated LFG sample using ASTM Method D5504 and Method GPA 2261 within 24 hours of obtaining the samples. The reported total sulfur content and H<sub>2</sub>S content were 620.5 and 580 parts per million by volume (ppmv), respectively. Draeger tube analysis generally confirmed the laboratory results. The laboratory analytical results are presented in Table 4.1 below.

Table 4.1 Laboratory analytical results for treated LFG fuel sample

Total Sulfur (ppmv)	620.5
H <sub>2</sub> S Content (ppmv)	580
Total sulfur to sulfur as H <sub>2</sub> S	1.07
Methane Mol. %	50.8

### 5.0 Monitoring/Recordkeeping

The laboratory analytical results presented in Table 4.1 will be used with equation presented in PTI No. 176-18 Appendix A to calculate monthly SO<sub>2</sub> emissions.

Please contact us at (734) 464-3880 or [Andrew.Eisenberg@ImpactCandT.com](mailto:Andrew.Eisenberg@ImpactCandT.com) if you have any questions or require additional information.

Sincerely,

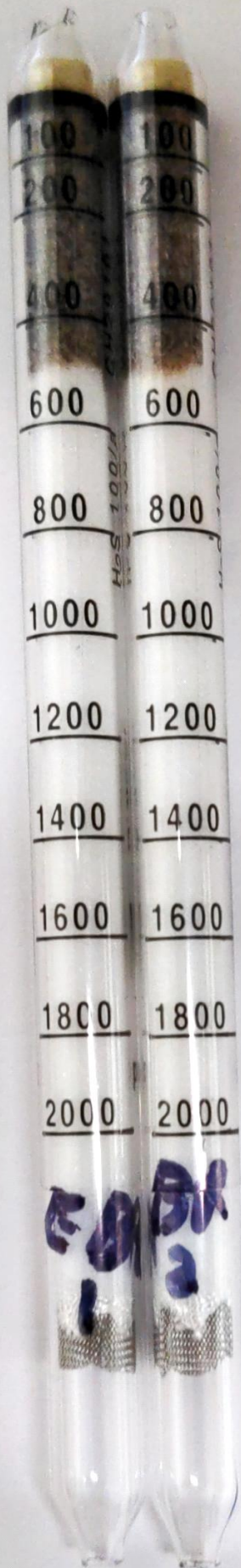
Impact Compliance & Testing, Inc.



Andrew Eisenberg  
Environmental Consultant

Attachments









Certificate of Analysis  
 Number: 8010-22050022-001A

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

May 12, 2022

Station Location: EDL BRENT RUN  
 Sample Point: GAS SAMPLE  
 Method: GPA 2261M  
 Analyzed: 05/10/2022 13:40:22 by SCJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 05/10/2022  
 Sample Conditions: ATMOS psig, @ N/A °F

**Analytical Data**

Components	Mol. %	Wt. %	GPM at 14.696 psia		
Nitrogen	9.420	9.323		GPM TOTAL C2+	0.005
Carbon Dioxide	39.783	61.857		GPM TOTAL C3+	0.005
Methane	50.786	28.784		GPM TOTAL iC5+	0.005
Ethane	NIL	NIL	NIL		
Propane	NIL	NIL	NIL		
Iso-butane	NIL	NIL	NIL		
n-Butane	NIL	NIL	NIL		
Iso-pentane	NIL	NIL	NIL		
n-Pentane	NIL	NIL	NIL		
Hexanes Plus	0.011	0.036	0.005		
	100.000	100.000	0.005		

**Calculated Physical Properties**

Relative Density Real Gas	0.9798
Calculated Molecular Weight	28.30
Compressibility Factor	0.9971

**GPA 2172 Calculation:**

**Calculated Gross BTU per ft<sup>3</sup> @ 14.696 psia & 60°F**

Real Gas Dry BTU	515
Water Sat. Gas Base BTU	506

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP, GPA guidelines for quality assurance, unless otherwise stated.



Certificate of Analysis  
 Number: 8010-22050022-001B

Traverse City Laboratory  
 781 Industrial Circle, Ste 6  
 Traverse City, MI 49686  
 Phone 231-421-8202

Robert Harvey  
 Impact Compliance & Testing  
 4180 Keller Rd Ste B  
 Holt, MI 48842

May 12, 2022

Station Location: EDL BRENT RUN  
 Sample Point: GAS SAMPLE  
 Method: ASTM D-5504  
 Analyzed: 05/11/2022 00:00:00 by SCJ

Sampled By: IMPACT COMPLIANCE  
 Sample Of: Gas Spot  
 Sample Date: 05/10/2022  
 Sample Conditions: ATMOS psig, @ N/A °F

**Sulfur Analysis**

<b>SULFIDES</b>	<b>ppm (v)</b>
Hydrogen Sulfide	580
Carbonyl Sulfide	ND <1
Dimethyl Sulfide	ND <1
Diethyl Sulfide	ND <1
Methyl Ethyl Sulfide	ND <1
<b>MERCAPTANS</b>	
	<b>ppm (v)</b>
Methyl Mercaptan	8.4
Ethyl Mercaptan	11.6
Isopropyl Mercaptan	11.3
n-Propyl Mercaptan	ND <1
n-Butyl Mercaptan	ND <1
Isobutyl Mercaptan	3.6
<b>DISULFIDES</b>	
	<b>ppm (v)</b>
Dimethyl Disulfide	ND <1
Diethyl Disulfide	ND <1
Methyl Ethyl Disulfid	ND <1
Misc. Sulfurs	5.6
<b>Total Sulfur (Calc.)</b>	<b>620.5</b>

Note: ND = None Detected  
 Note: Total Sulfur (Calc.) = Sum of detected sulfurs



# SPL

## Analysis Request Chain of Custody Record

SPL Work Order No.:		SPL Work Order No.:		Acct. Mate Code:		Dept. Code:		Page ____ of ____			
Report To: (Co. Name) <b>Impact Compliance &amp; Testing</b>		Project/Station Name: <b>EDL Brent Run</b>		Project/Station Number: <b>8393 W. Vienna Rd.</b>		Project/Station Location: <b>Montrose</b>		Requested TAT			
Address: <b>37660 Hills Tech Drive</b>		Special Instructions: <b>Dräger Tubel / Dräger Tubel</b>		Indicate Billing Type: Net 30 day Acct. <input type="checkbox"/> Check # _____ Cash Recv'd \$ _____ Credit Card <input type="checkbox"/> Contact SPL for CC payment arrangements.		Requested Analysis		<input checked="" type="checkbox"/> 24 Hour*			
City, State Zip: <b>Farmington Hills, MI 48331</b>								<input type="checkbox"/> 48 Hour*			
Contact: <b>Andrew Eisenberg</b>								<input type="checkbox"/> 72 Hour*			
Phone: <b>248-529-3401</b> Fax: _____		500ppm / 500ppm						<input type="checkbox"/> Standard			
Invoice To: (Co. Name)		* Terms: Cylinders will be rented for \$10/cylinder. All cylinders checked out are to be returned within 21 days, whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.						<input type="checkbox"/> Other (Indicate Below)			
Address:											
City, State Zip:											
Contact:											
Phone: _____ Fax: _____											
PO/Ref. No.:											
Contract/Proposal #:											
Sample ID & Point	Sample Date	Sample Time	Sample Type (Gas/Liq. Solid)	Duplicate	Composite	Spot	Cylinder Tracking Info *			Comments	
							Cylinder #	Date Out	Date In		
Brent Run - A	5/10/22	0754	LFG			X	ASAM D5504				
Brent Run - B	5/10/22	0755	LFG			X	GPA 2261				
Sampled By-Print Name: <b>Andrew Eisenberg</b>				Company Name: <b>Impact Compliance &amp; Testing</b>							
Signature: <i>[Signature]</i>				Received By-Print Name: <b>D. Harrison</b>				Date: <b>5/10/22</b> Time: <b>11:00</b>			
Relinquished By-Print Name: <b>Andrew Eisenberg</b>				Signature: <i>[Signature]</i>				Date: _____ Time: _____			
Relinquished By-Print Name: _____				Signature: _____				Date: _____ Time: _____			
Relinquished By-Print Name: _____				Signature: _____				Date: _____ Time: _____			

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> 8820 Interchange Drive, Houston, TX 77054   713-660-0901      | <input type="checkbox"/> 1595 South US Highway 79, Carthage, TX 75633   903-693-6242                     | <input type="checkbox"/> 208 Main Street, Units A & B, Windsor, CO 80550   970-460-0741 |
| <input type="checkbox"/> 9221 Highway 23, Belle Chasse, LA 70037   504-391-1333        | <input type="checkbox"/> 4790 NE Evangeline Thruway, Carencro, LA 70520   337-896-3055                   | <input type="checkbox"/> 2565 Highway 33, Ruston, LA 71270   318-224-7066               |
| <input type="checkbox"/> 2440 Chambers Street, Suite A, Venus, TX 76084   817-539-2168 | <input checked="" type="checkbox"/> 781 Industrial Circle, Ste 6, Traverse City, MI 49686   231-421-8202 | <input type="checkbox"/> 7111 Nix Drive, Duncan, OK 73533   580-786-4835                |
| <input type="checkbox"/> 627 2nd Street, Pleasanton, TX 78064   830-224-7920           |  |   |

**Energy Developments Brent Run, LLC 2022 Operation Summary**

Month/Year	Plant *			Engine 3				Engine 4				Engine 5 (CAT 3512)				Engine 6				Engine 7				Engine 3, 4, 5	Engine 3, 4, 5, 6, 7		
	Methane %	Average Flow scfm	Total Flow Mscf	MMBTU	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	MMBTU	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	MMBTU	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	MMBTU	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	MMBTU	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	MMBTU	Total Flow MMscf	Total Flow MMscf	
Jan-22	48.39	2,026.71	98,757.0	47,755.0	22.98	719.83	1,071,435	13,102	22.35	718.32	831,609	10,170	1.06	67.83	21,518	517	20.83	669.66	970,273	11,865	22.86	732.17	1,031,823	12,618	46.38	90.08	
Feb-22	50.47	2,027.18	89,747.0	45,391.0	21.02	657.64	1,023,861	12,032	19.68	645.98	921,147	10,825	1.67	113.80	49,895	844	20.23	649.14	985,393	11,580	19.47	660.97	932,156	10,954	42.36	82.06	
Mar-22	51.61	1,966.36	97,837.0	50,482.0	21.03	669.15	1,025,466	12,125	22.06	733.99	1,064,613	12,588	6.60	602.97	250,836	3,386	22.13	725.99	1,080,824	12,780	22.50	743.49	1,098,418	12,988	49.69	94.32	
Apr-22	52.07	2,064.20	99,450.0	51,688.0	22.24	704.92	1,076,337	12,988	21.26	696.92	995,887	12,018	5.57	546.53	220,653	2,894	22.16	701.59	1,072,194	12,938	23.53	720.09	1,138,931	13,744	49.07	94.76	
May-22	49.96	2,077.78	102,400.0	50,422.0	22.90	718.58	1,076,062	12,592	22.26	718.75	1,011,419	11,836	5.12	556.83	221,987	2,566	22.47	711.75	1,056,149	12,359	24.84	741.75	1,165,122	13,635	50.29	97.59	
Jun-22	48.99	1,970.22	93,080.0	45,569.0	20.45	664.50	923,911	11,198	19.89	669.34	836,231	10,136	4.25	529.64	211,647	2,085	21.94	711.67	992,655	12,032	22.38	716.17	1,006,793	12,203	44.59	88.91	
Jul-22	48.22	1,963.19	94,661.0	45,553.0	22.36	728.82	977,603	11,869	22.41	728.99	959,895	11,654	0.42	52.35	20,295	192	20.31	694.65	888,525	10,788	21.47	734.82	925,885	11,241	45.19	86.97	
Aug-22	49.53	1,875.66	89,908.0	44,530.0	22.23	731.67	990,696	12,047	21.53	726.83	935,353	11,374	1.09	108.50	43,688	541	15.66	565.66	695,905	8,463	23.58	737.50	1,039,917	12,646	44.85	84.09	
Sep-22	47.82	2,016.34	93,737.0	44,881.0	21.77	711.27	914,876	11,234	21.44	714.11	894,042	10,978	0.00	0.00	0	0	21.29	717.10	894,812	10,987	22.62	720.10	951,348	11,682	43.21	87.12	
Oct-22	47.38	2,033.00	97,391.0	46,146.0	22.59	736.17	913,266	11,234	20.45	711.84	817,904	10,212	0.00	0.00	0	0	23.01	731.83	962,578	12,018	24.09	739.17	1,002,315	12,514	43.05	90.15	
Nov-22																											
Dec-22																											

\*Plant is Engine 3, 4, 6, & 7 (does not include Mobile engine 5)

\*Engine 1 is no longer in operation; replaced by Engine 7

**Energy Developments Michigan, LLC**  
**Rolling Data**

	Engine 3 - G3520 C						Engine 4 - G3520 C						Engine 5 - G3512						
	Hours of Operation		Landfill Gas Usages		Power Output		Hours of Operation		Landfill Gas Usages		Power Output		Hours of Operation		Landfill Gas Usages		Power Output		
	hr/ month	Rolling hr/ 12-month	MMscf/ month	Rolling MMscf/ 12-month	KW-hr/ month	Rolling kw-hr/12-month	hr/ month	Rolling hr/ 12-month	MMscf/ month	Rolling MMscf/ 12-month	KW-hr/ month	Rolling kw-hr/12-month	hr/ month	Rolling hr/ 12-month	MMscf/ month	Rolling MMscf/ 12-month	KW-hr/ month	Rolling kw-hr/12-month	
2021	October	690.33	8,398.07	21.76	267.25	1,036,918	12,420,342	711.33	8,334.14	22.48	252.81	1,025,188	11,357,824	131.66	1,953.22	1.92	28.57	65,965	938,416
	November	695.33	8,388.57	22.01	265.61	1,054,661	12,378,234	595.50	8,261.81	18.42	249.80	727,711	11,140,895	131.00	1,714.88	1.73	25.72	60,164	796,826
	December	711.67	8,418.57	23.21	265.60	1,083,238	12,393,086	722.51	8,251.48	22.78	249.84	1,032,600	11,135,706	0.00	1,251.55	0.00	20.43	0	601,548
2022	January	719.83	8,414.00	22.98	263.42	1,071,435	12,308,763	718.32	8,267.25	22.35	250.24	831,609	11,002,916	67.83	1,056.84	1.06	18.19	21,518	494,839
	February	657.64	8,482.14	21.02	263.90	1,023,861	12,439,956	645.98	8,276.81	19.68	249.60	921,147	11,077,132	113.80	1,170.64	1.67	19.86	49,895	544,734
	March	669.15	8,422.67	21.03	262.36	1,025,466	12,368,876	733.99	8,294.69	22.06	249.83	1,064,613	11,107,394	602.97	1,765.78	6.60	26.26	250,836	791,248
	April	704.92	8,426.43	22.24	263.24	1,076,337	12,395,450	696.92	8,286.73	21.26	250.46	995,887	11,104,968	546.53	2,309.81	5.57	31.69	220,653	1,010,647
	May	718.58	8,411.48	22.90	263.38	1,076,062	12,425,244	718.75	8,395.28	22.26	253.08	1,011,419	11,354,105	556.83	2,518.15	5.12	29.21	221,987	1,052,970
	June	664.50	8,357.64	20.45	262.85	923,911	12,412,343	669.34	8,351.12	19.89	250.77	836,231	11,206,034	529.64	3,042.62	4.25	33.30	211,647	1,262,265
	July	728.82	8,380.36	22.36	264.87	977,603	12,409,152	728.99	8,342.83	22.41	251.07	959,895	11,104,223	52.35	2,911.13	0.42	30.94	20,295	1,187,030
	August	731.67	8,377.44	22.23	264.89	990,696	12,379,014	726.83	8,328.41	21.53	254.11	935,353	11,192,957	108.50	3,009.79	1.09	31.90	43,688	1,226,216
	September	711.27	8,403.71	21.77	263.95	914,876	12,255,065	714.11	8,382.55	21.44	256.56	894,042	11,235,695	0.00	2,841.12	0.00	29.42	0	1,166,648
	October	736.17	8,449.55	22.59	264.78	913,266	12,131,413	711.84	8,383.06	20.45	254.52	817,904	11,028,411	0.00	2,709.46	0.00	27.50	0	1,100,683

	Engine 6 - G3520 C							Engine 7 - G3520 C					Engines 3, 4 and 5			Plant (Engines 3, 4, 6, & 7)		Engines 3, 4, 5, 6, and 7				
	Hours of Operation		Landfill Gas Usages <sup>1</sup>		Power Output		Is Total MMscf within the ROP Limit? <sup>1</sup>	Hours of Operation		Landfill Gas Usages		Power Output		Total MMscf/ 12-month for Engines 3, 4 and 5		Is Total MMscf within the ROP Limit? <sup>2</sup>	Plant LFG Usages	Plant Power Output	Landfill Gas Usages****		Is Total MMscf within the PTI Limit? <sup>3</sup>	
	hr/ month	Rolling hr/ 12-month	MMscf/ month	Rolling MMscf/ 12-month	KW-hr/mo	KW-hr/ month		Yes/No	hr/ month	Rolling hr/ 12-month	MMscf/ month	Rolling MMscf/ 12-month	KW-hr/ month	Rolling kw-hr/ 12-month	MMscf/ month				Rolling MMscf/ 12-month	Yes/No		MMscf/ mo
2021	October	705.84	8,327.99	21.03	259.06	1,002,452.4	12,003,055	YES	728.84	8,603.02	24.78	272.32	1,031,925	12,196,914	46.17	548.63	YES	95.37	4,096,483	91.98	1,080.02	YES
	November	676.83	8,308.65	21.36	258.17	1,023,329.9	11,992,863	YES	704.00	8,599.35	22.57	270.51	1,061,892	12,147,258	42.15	541.13	YES	93.38	3,867,594	86.08	1,069.81	YES
	December	704.67	8,282.49	22.25	256.54	1,037,404.5	11,927,454	YES	726.01	8,636.52	21.63	268.44	983,395	12,121,542	45.99	535.87	YES	99.64	4,136,638	89.87	1,060.85	YES
2022	January	669.66	8,234.94	20.83	252.95	970,272.7	11,775,382	YES	732.17	8,638.12	22.86	265.85	1,031,823	12,004,634	46.38	531.84	YES	98.76	3,905,141	90.08	1,050.64	YES
	February	649.14	8,227.34	20.23	250.54	985,392.6	11,822,731	YES	660.97	8,630.85	19.47	262.78	932,156	11,996,304	42.36	533.35	YES	89.75	3,862,557	82.06	1,046.67	YES
	March	725.99	8,227.87	22.13	251.39	1,080,824	11,862,513	YES	743.49	8,635.06	22.50	264.37	1,098,418	12,085,784	49.69	538.45	YES	97.84	4,269,321	94.32	1,054.21	YES
	April	701.59	8,221.41	22.16	253.68	1,072,194	11,957,546	YES	720.09	8,641.93	23.53	267.24	1,138,931	12,217,731	49.07	545.40	YES	99.45	4,283,349	94.76	1,066.32	YES
	May	711.75	8,243.16	22.47	256.57	1,056,149	12,095,316	YES	741.75	8,670.81	24.84	269.50	1,165,122	12,390,915	50.29	545.67	YES	102.40	4,308,753	97.59	1,071.75	YES
	June	711.67	8,236.99	21.94	257.17	992,655	12,134,026	YES	716.17	8,669.50	22.38	268.91	1,006,793	12,372,124	44.59	546.92	YES	93.08	3,759,590	88.91	1,073.00	YES
	July	694.65	8,376.53	20.31	261.71	888,525	12,268,752	YES	734.82	8,661.04	21.47	267.96	925,885	12,212,857	45.19	546.88	YES	94.66	3,751,907	86.97	1,076.54	YES
	August	565.66	8,204.44	15.66	253.38	695,905	11,860,879	YES	737.50	8,654.63	23.58	270.55	1,039,917	12,286,835	44.85	550.90	YES	89.91	3,661,871	84.09	1,074.83	YES
	September	717.10	8,234.54	21.29	251.67	894,812	11,699,917	YES	720.10	8,665.89	22.62	272.23	951,348	12,367,605	43.21	549.93	YES	93.74	3,655,078	87.12	1,073.84	YES
	October	731.83	8,260.54	23.01	253.65	962,578	11,660,042	YES	739.17	8,676.22	24.09	271.54	1,002,315	12,337,995	43.04	546.80	YES	97.39	3,696,063	90.14	1,072.00	YES

<sup>1</sup> Total MMscf/12-month for Engine 6 not to exceed 284.34 MMscf/12-month rolling per MI-ROP-N5987-2015a Section 2, EUENGINE6 Condition II.1.

<sup>2</sup> Total MMscf/12-month for Engines 3, 4, and 5 not to exceed 724.88 MMscf/12-month rolling per per MI-ROP-N5987-2015a Section 2, FGICEENGINES Condition II.1.

<sup>3</sup> Total MMscf/12-month for Engines 3, 4, 5, 6, and 7 not to exceed 1,545.26 MMscf/12-month rolling per PTI 176-18, FGICEENGINES Condition II.1

**Energy Developments Michigan, LLC**  
**Recordkeeping Requirements**  
**Rolling Monthly Emissions**

	Engine 3 CAT G3520C										Engine 4 - CAT G3520 C										
	NOx		CO		SO2		PM10/PM2.5		VOC (including formaldehyde)		NOx		CO		SO2		PM10/PM2.5		VOC (including formaldehyde)		
	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	
2022	January	0.73	10.04	5.07	59.32	0.77	10.68	0.20	2.30	0.87	9.60	0.96	7.64	4.99	48.78	0.77	10.50	0.20	2.30	0.88	9.90
	February	0.67	10.00	4.64	59.80	0.62	10.42	0.18	2.32	0.80	9.73	0.86	7.94	4.49	49.57	0.61	10.16	0.18	2.32	0.79	9.93
	March	0.68	9.80	4.72	59.38	0.81	10.13	0.18	2.30	0.81	9.71	0.98	8.29	5.10	50.52	0.89	9.98	0.20	2.32	0.90	9.98
	April	0.72	9.67	4.97	59.41	0.76	9.91	0.19	2.31	0.85	9.77	0.93	8.59	4.84	51.28	0.75	9.74	0.19	2.32	0.85	9.99
	May	0.73	9.52	5.07	59.30	0.79	9.80	0.20	2.30	0.87	9.81	0.96	9.01	5.00	52.73	0.79	9.78	0.20	2.31	0.88	10.14
	June	0.68	9.33	4.68	58.92	0.50	9.28	0.18	2.29	0.80	9.80	0.89	9.27	4.65	53.25	0.50	9.27	0.18	2.30	0.82	10.11
	July	0.74	9.22	5.14	59.08	0.80	9.37	0.20	2.29	0.88	9.88	0.97	9.59	5.07	54.04	0.80	9.32	0.20	2.31	0.89	10.12
	August	0.75	9.07	5.16	59.06	0.60	9.17	0.20	2.29	0.89	9.93	0.97	9.91	5.05	54.79	0.60	9.12	0.20	2.30	0.89	10.12
	September	0.73	8.97	5.01	59.25	0.78	9.07	0.19	2.30	0.86	10.01	0.95	10.28	4.96	55.93	0.78	9.05	0.20	2.31	0.87	10.21
	October	0.75	8.89	5.19	59.57	0.80	8.92	0.20	2.31	0.89	10.12	0.95	10.60	4.95	56.75	0.78	8.85	0.19	2.32	0.87	10.23

	Engine 5 - CAT G3512										Engine 6 - G3520										
	NOx		CO		SO2		PM10/PM2.5		VOC (including formaldehyde)		NOx		CO		SO2		PM10/PM2.5		VOC (including formaldehyde)		
	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	
2022	January	0.02	0.34	0.13	2.10	0.02	0.66	0.01	0.21	0.05	0.79	0.83	11.12	5.02	52.68	0.72	10.52	0.18	2.25	0.93	10.20
	February	0.04	0.38	0.23	2.32	0.03	0.69	0.02	0.23	0.08	0.87	0.80	11.02	4.87	53.41	0.61	10.15	0.18	2.25	0.91	10.30
	March	0.20	0.57	1.20	3.51	0.24	0.92	0.12	0.35	0.45	1.32	0.90	10.93	5.44	54.29	0.88	9.94	0.20	2.25	1.01	10.43
	April	0.18	0.75	1.08	4.58	0.19	1.11	0.11	0.46	0.41	1.72	0.87	10.84	5.26	55.09	0.75	9.70	0.19	2.25	0.98	10.54
	May	0.18	0.82	1.11	5.00	0.20	1.08	0.11	0.50	0.41	1.88	0.88	10.78	5.34	56.08	0.78	9.64	0.19	2.25	0.99	10.69
	June	0.17	0.99	1.05	6.04	0.13	1.21	0.11	0.61	0.39	2.27	0.88	10.68	5.34	56.90	0.53	9.16	0.19	2.25	0.99	10.80
	July	0.02	0.95	0.10	5.78	0.02	1.13	0.01	0.58	0.04	2.17	0.86	10.78	5.21	58.61	0.76	9.36	0.19	2.29	0.97	11.09
	August	0.04	0.98	0.22	5.97	0.03	1.15	0.02	0.60	0.08	2.24	0.70	10.48	4.24	58.20	0.46	9.02	0.15	2.24	0.79	10.97
	September	0.00	0.92	0.00	5.64	0.00	1.04	0.00	0.57	0.00	2.12	0.89	10.43	5.38	59.25	0.78	8.93	0.20	2.25	1.00	11.13
	October	0.00	0.88	0.00	5.38	0.00	0.94	0.00	0.54	0.00	2.02	0.90	10.37	5.49	60.30	0.80	8.75	0.20	2.26	1.02	11.29

	Engine 7 - G3520										PTI No. 176-18 FGICENGINES (Engines 3, 4, 5, 6, and 7)												
	NOx		CO		SO2		PM10/PM2.5		VOC (including formaldehyde)		NOx <sup>1</sup>		Is Total tpy within the PTI Limit <sup>1</sup>	SO2 <sup>2</sup>		Is Total tpy within the PTI Limit <sup>2</sup>	PM10/PM2.5 <sup>3</sup>		Is Total tpy within the PTI Limit <sup>3</sup>	VOC <sup>4</sup> (including formaldehyde)		Is Total tpy within the PTI Limit <sup>4</sup>	
	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Tons/month	Rolling ton/12-month	Yes/No	Tons/month	Rolling ton/12-month	Yes/No	Tons/month	Rolling ton/12-month	Yes/No	Tons/month	Rolling ton/12-month	Yes/No	
2022	January	1.29	11.06	5.09	61.62	0.79	10.98	0.20	2.36	0.89	11.05	3.83	40.20	YES	3.07	43.33	YES	0.79	9.43	YES	3.63	41.55	YES
	February	1.17	11.40	4.59	61.43	0.62	10.60	0.18	2.36	0.81	11.00	3.54	40.74	YES	2.49	42.01	YES	0.74	9.48	YES	3.38	41.84	YES
	March	1.31	11.80	5.17	61.31	0.90	10.39	0.20	2.36	0.91	10.96	4.07	41.39	YES	3.70	41.36	YES	0.91	9.59	YES	4.08	42.39	YES
	April	1.27	12.19	5.00	61.22	0.77	10.16	0.20	2.36	0.88	10.92	3.96	42.04	YES	3.22	40.62	YES	0.88	9.70	YES	3.97	42.93	YES
	May	1.31	12.62	5.16	61.28	0.81	10.11	0.20	2.37	0.90	10.91	4.06	42.74	YES	3.36	40.41	YES	0.90	9.74	YES	4.06	43.41	YES
	June	1.26	12.99	4.98	61.12	0.54	9.63	0.20	2.37	0.87	10.86	3.89	43.26	YES	2.20	38.55	YES	0.86	9.82	YES	3.89	43.83	YES
	July	1.30	13.37	5.11	60.92	0.80	9.68	0.20	2.37	0.90	10.80	3.89	43.91	YES	3.17	38.85	YES	0.80	9.84	YES	3.68	44.05	YES
	August	1.30	13.76	5.13	60.72	0.60	9.48	0.20	2.37	0.90	10.75	3.75	44.19	YES	2.29	37.95	YES	0.78	9.81	YES	3.55	44.01	YES
	September	1.27	14.15	5.00	60.66	0.79	9.36	0.20	2.37	0.88	10.71	3.84	44.75	YES	3.13	37.45	YES	0.78	9.80	YES	3.61	44.18	YES
	October	1.30	14.56	5.14	60.59	0.81	9.16	0.20	2.37	0.90	10.68	3.91	45.29	YES	3.19	36.63	YES	0.80	9.80	YES	3.69	44.33	YES

<sup>1</sup> Total Ton/12-month NOx for Engines 3, 4, 5, 6, and 7 not to exceed 108.7 Ton/12-month rolling per PTI 176-18, FGICENGINES Condition I.13.

<sup>2</sup> Total Ton/12-month SO2 for Engines 3, 4, 5, 6, and 7 not to exceed 71.0 Ton/12-month rolling per PTI 176-18, FGICENGINES Condition I.8.

<sup>3</sup> Total Ton/12-month PM2.5 for Engines 3, 4, 5, 6, and 7 not to exceed 14.5 Ton/12-month rolling per PTI 176-18, FGICENGINES Condition I.12.

<sup>4</sup> Total Ton/12-month VOC for Engines 3, 4, 5, 6, and 7 not to exceed 91.1 Ton/12-month rolling per PTI 176-18, FGICENGINES Condition I.16.



406671 / MID985632819 BRENT RUN LANDFILL  
8335 W VIENNA RD, MONTROSE, MI 48457

Annual Landfill Reports (27)							*CYDS = Cubic Yards
Reporting Year *	Total MCW	Total IW	Total C&D	Total ADC	Total Other	Total Waste	
2022	723,846.30 CYDS	13,342.89 CYDS	25,140.84 CYDS	21,216.32 CYDS	1,768.80 CYDS	785,315.15 CYDS	
2021	597,705.87 CYDS	35,243.31 CYDS	26,013.76 CYDS	17,136.17 CYDS	9,166.18 CYDS	685,265.29 CYDS	
2020	580,118.00 CYDS	88,021.00 CYDS	55,484.00 CYDS	-	989.00 CYDS	724,612.00 CYDS	
2019	643,966.00 CYDS	200,762.00 CYDS	324,719.00 CYDS	-	-	1,169,447.00 CYDS	
2018	922,174.00 CYDS	240,374.00 CYDS	1,055,242.00 CYDS	-	-	2,217,790.00 CYDS	
2017	1,036,635.00 CYDS	260,535.00 CYDS	1,123,113.00 CYDS	-	-	2,420,283.00 CYDS	
2016	833,112.00 CYDS	159,239.00 CYDS	946,594.00 CYDS	-	-	1,938,945.00 CYDS	
2015	1,406,406.00 CYDS	134,452.00 CYDS	1,054,947.00 CYDS	-	-	2,595,805.00 CYDS	
2014	1,327,711.00 CYDS	131,894.00 CYDS	1,162,258.00 CYDS	-	-	2,621,863.00 CYDS	
2013	1,665,145.00 CYDS	149,265.00 CYDS	700,582.00 CYDS	-	-	2,514,992.00 CYDS	
2012	1,496,529.00 CYDS	343,437.00 CYDS	638,853.00 CYDS	-	-	2,480,819.00 CYDS	
2011	1,822,657.00 CYDS	144,291.00 CYDS	455,874.00 CYDS	-	-	2,422,822.00 CYDS	
2010	1,748,811.00 CYDS	199,214.00 CYDS	447,246.00 CYDS	-	-	2,395,271.00 CYDS	
2009	1,988,482.00 CYDS	538,192.00 CYDS	-	-	-	2,526,674.00 CYDS	
2008	1,480,991.00 CYDS	358,764.00 CYDS	-	-	-	1,839,755.00 CYDS	
2007	1,610,584.00 CYDS	320,246.00 CYDS	-	-	-	1,930,830.00 CYDS	
2006	1,667,148.00 CYDS	433,507.00 CYDS	-	-	-	2,100,655.00 CYDS	
2005	1,587,560.00 CYDS	222,652.00 CYDS	-	-	-	1,810,212.00 CYDS	
2004	1,125,145.00 CYDS	526,887.00 CYDS	-	-	-	1,652,032.00 CYDS	
2003	1,579,905.00 CYDS	-	-	-	-	1,579,905.00 CYDS	
2002	1,141,710.00 CYDS	551,556.00 CYDS	-	-	-	1,693,266.00 CYDS	
2001	546,151.00 CYDS	607,104.00 CYDS	-	-	-	1,155,255.00 CYDS	
2000	540,889.00 CYDS	341,931.00 CYDS	-	-	-	882,820.00 CYDS	
1999	95,211.00 CYDS	170,301.00 CYDS	-	-	-	265,512.00 CYDS	
1998	798,881.00 CYDS	-	-	-	-	798,881.00 CYDS	
1997	777,843.00 CYDS	-	-	-	-	777,843.00 CYDS	
1996	500,082.00 CYDS	-	-	-	-	500,082.00 CYDS	

Brent Run Landfill, Inc.  
RACM Load Inspection Report Form

TICKET # 40700009784

Transporter: GFL Generator/Operator: MIS

Date of Delivery: 3/9/22 Waste Approval #: BRL-17-051 (if none load must be rejected)

Gatehouse Inspection

- 1. RACM load is accompanied by a waste shipment record (WSR)
  - 2. WSR is properly completed
  - 3. Quantity of RACM on WSR equal quantity delivered on load
  - 4. WSR has been appropriately signed
  - 5. Transport vehicle has proper hazard warning placards displayed
  - 6. RACM is fully covered and enclosed by transport vehicle
  - 7. Certification that RACM properly prepared for packaging and packaged in accordance with applicable rules and regulations
- If Item 1 is No, reject the load
  - If any item 2-7 is no, attempt to receive and correct prior to disposal. If unable to resolve, load may be rejected
  - If item 3 is no, the load can be accepted. However, correct amount
  - If load is rejected, do not sign WSR

This RACM load is  Accepted  
 Rejected

Gatehouse Inspector Alisha Alexander Date 3-9-22

Disposal Inspection

- 1. RACM load is intact, leak-tight containers
  - 2. RACM load containers labeled with appropriate hazard warning label
  - 3. Containers have name of generator/operator and location of RACM generation
  - 4. RACM load is sufficiently enclosed and covered
- If any item 1-4 is no, the generator/operator should be contacted to resolve and correct
  - If item 4 is no, report to operations
  - Any load may be rejected by BRL disposal personnel prior to deposition into the designated disposal area if believed disposal poses a dispersal concern.
  - If load is rejected, do not sign WSR

This RACM load is  Accepted  
 Rejected

CC: Operating Record attached to WSR

Yards: 40  
Tons: 5.88  
Amount \$ 785.69

Coordinates:  
N 43° 10.313  
W 083° ~~30.0285~~ 50.085  
Elevation 770



## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address LBWL 830 E Hazd St Lansing, MI 48912	Owner's name LBWL	Owner's Telephone No. 517-702-6006
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location Bear Run Landfill 8247 Vroman Rd, Madrose, MI 48457		WDS Phone No. 810-639-3077 WDS Approval No. BRL-17-051
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
GENERATOR	5. Description of materials Pbc Insulation	6. Containers No. Type 7 1 Bag	7. Total quantity (cubic yards) 0.2 cy
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable		
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title Matt Hawrylo Foreman	Signature 	Month/Day/Year 02 17 22
	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title Matt Hawrylo Foreman Address and telephone no. Jan 95 #2	Signature 	Month/Day/Year 02 17 22
DISPOSAL SITE	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title	Signature	Month/Day/Year
	Address and telephone no.		3-9-22
12. Discrepancy indication space			
13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.			
DISPOSAL SITE	Printed/Typed Name & Title Elesha A. DeLeon	Signature 	Month/Day/Year 3/9/22



MIS Job # 22511  
6105

### Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address CEC 4131 138th AVE Hamilton, MI 49419	Owner's name Consumers Energy	Owner's Telephone No. 517-788-2083
	2. Operator's name and address MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599	
	3. Waste Disposal site (WDS) name, mailing address, and physical site location Brent Run Landfill 8247 Vienna Rd Montrose, MI 48457	WDS Phone No. 810-639-3077 WDS Approval No. 13RL-17051	
	4. Name and address of responsible agency Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780	
5. Description of materials Pipe Coatings	6. Containers No. Type 28 bags	7. Total quantity (cubic yards) 5.6cy	
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
Printed/Typed Name & Title Matt Hawrylo / Foreman		Signature 	Month/Day/Year 01/06/22
TRANSPORTER	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title Matt Hawrylo / Foreman Address and telephone no.	Signature 	Month/Day/Year 01/06/22
	11. Transporter 2 (Acknowledgment of receipt of materials)		
Printed/Typed Name & Title		Signature	Month/Day/Year
Address and telephone no.			3-9-22
DISPOSAL SITE	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
Printed/Typed Name & Title Elesha Ardelean		Signature 	Month/Day/Year 3/9/22

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address	Owner's name	Owner's Telephone No.
	CE 1205 Decker Rd Walled Lake, MI 48390	Consumers Energy	517-788-2083
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave. Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location	Brent Run Landfill 8247 Vixana Rd, Montrose, MI 48457	WDS Phone No. 810-639-3077 WDS Approval No. BRI-17-051
4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780	
5. Description of materials	6. Containers No. Type	7. Total quantity (cubic yards)	
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title	Signature	Month/Day/Year
	Jeff Wojcik Project manager	<i>Jeff Wojcik</i>	10-29-21
	10. Transporter 1 (Acknowledgment of receipt of materials)		
Printed/Typed Name & Title	Signature	Month/Day/Year	
Jeff Wojcik Project manager	<i>Jeff Wojcik</i>	10-29-21	
Address and telephone no.	Same as # 2		
11. Transporter 2 (Acknowledgment of receipt of materials)			
Printed/Typed Name & Title	Signature	Month/Day/Year	
Address and telephone no.	<i>Chris King</i>	3-9-22	
DISPOSAL SITE	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
Printed/Typed Name & Title	Signature	Month/Day/Year	
Elesha Ardelean	<i>Elesha Ardelean</i>	3/9/22	

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address	Owner's name	Owner's Telephone No.
	CE 1205 Decker Rd Walker Lake, MI 48390	Consumers Energy	517-788-2083
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location	Brent Run Landfill 82417 Victoria Rd, Montrose, MI 48457	WDS Phone No. 810-639-3077 WDS Approval No. BRL-17-051
4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780	
TRANSPORTER	5. Description of materials	6. Containers	7. Total quantity (cubic yards)
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ	No. Type	
	<input type="checkbox"/> Friable <input checked="" type="checkbox"/> Non-friable	42 Bags	8.4 cy
8. Special handling instructions and additional information	Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>		
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
DISPOSAL SITE	Printed/Typed Name & Title	Signature	Month/Day/Year
	Corth Patterson		11/25/11
	10. Transporter 1 (Acknowledgment of receipt of materials)		
Printed/Typed Name & Title	Signature	Month/Day/Year	
Corth Patterson			
Address and telephone no.	Same as #2		
11. Transporter 2 (Acknowledgment of receipt of materials)			
Printed/Typed Name & Title	Signature	Month/Day/Year	
Address and telephone no.		3-9-12	
12. Discrepancy indication space			
13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.			
Printed/Typed Name & Title	Signature	Month/Day/Year	
Elesha Ardelean		3/9/12	

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address	Owner's name	Owner's Telephone No.
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location	WDS Phone No. 810-639-3077 WDS Approval No. BRL-17-051	
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD (517) 284-6780 P.O. Box 30260 Lansing, MI 48909	
TRANSPORTER	5. Description of materials	6. Containers	7. Total quantity (cubic yards)
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input type="checkbox"/> Friable <input checked="" type="checkbox"/> Non-friable	No. 1 Type Bag	2 cy
	8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>		
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
DISPOSAL SITE	Printed/Typed Name & Title	Signature	Month/Day/Year
	10. Transporter 1 (Acknowledgment of receipt of materials)	Signature	Month/Day/Year
	11. Transporter 2 (Acknowledgment of receipt of materials)	Signature	Month/Day/Year
12. Discrepancy indication space			
13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.			
Printed/Typed Name & Title	Signature	Month/Day/Year	

Asbestos Disposal  
Walled Lake, MI 48340

Consumers Energy

517-788-2083

BRENTON LINDSEY  
8247 Wynn Rd, Marquette, MI 49457

810-639-3077  
BRL-17-051

Window Chalk

No. 1 Type wrapped windows

NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ  
 Friable  
 Non-friable

1 Bag

2 cy

Jeff Wojcik Project manager

11-11-21

Jeff Wojcik Project manager  
Same as #2

Jeff Wojcik

11-11-21

Chris Phung

Chris Phung

3-9-22

Elecha Ardelean

Elecha Ardelean

3/9/22

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address CE Oversee 4131 138th Ave Hamilton MI 49419	Owner's name Consumers Energy	Owner's Telephone No. 517-788-2083
	2. Operator's name and address MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599	
	3. Waste Disposal site (WDS) name, mailing address, and physical site location Dred Run Landfill 8247 Vienna Rd, Montrose, MI 48457	WDS Phone No. 810-639-3077	WDS Approval No. DRL-17-051
	4. Name and address of responsible agency Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780	
↓	5. Description of materials Pipe Coating	6. Containers No. Type 5 Bags	7. Total quantity (cubic yards) 1.0 cy
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input type="checkbox"/> Friable <input checked="" type="checkbox"/> Non-friable		
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
↓	Printed/Typed Name & Title Matt Hawrylo Foreman	Signature 	Month/Day/Year 12 09 21
	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title Matt Hawrylo Foreman Address and telephone no. Same as #2	Signature 	Month/Day/Year 12 09 21
	11. Transporter 2 (Acknowledgment of receipt of materials)		
↓	Printed/Typed Name & Title	Signature	Month/Day/Year
	Address and telephone no.		3-9-22
↓	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
	Printed/Typed Name & Title Alisha Alexander	Signature 	Month/Day/Year 3 9 22

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address <i>CE Water St 190 S Water St Saginaw, MI 48607</i>	Owner's name <i>Consumers Energy</i>	Owner's Telephone No. <i>517-788-2083</i>
	2. Operator's name and address MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599	
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Brook Run Landfill 8247 Vienna Rd, Montrose, MI 48457</i>	WDS Phone No. <i>810-634-3077</i>	WDS Approval No. <i>JRL-17-051</i>
	4. Name and address of responsible agency Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780	
	5. Description of materials <i>Cable</i>	6. Containers <i>No. 109 Type Bags</i>	7. Total quantity (cubic yards) <i>21.8 cy</i>
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input type="checkbox"/> Friable <input checked="" type="checkbox"/> Non-friable	<i>109 Bags</i>	
	8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>		
	9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.		
TRANSPORTER	Printed/Typed Name & Title <i>Rick Beuchamp</i>	Signature <i>Rick Beuchamp</i>	Month/Day/Year <i>12-4-21</i>
	10. Transporter 1 (Acknowledgment of receipt of materials)	Printed/Typed Name & Title <i>Rick Beuchamp</i>	Signature <i>Rick Beuchamp</i>
	Address and telephone no. <i>SAME AS #2</i>	Month/Day/Year <i>12-4-21</i>	
	11. Transporter 2 (Acknowledgment of receipt of materials)	Printed/Typed Name & Title	Signature
DISPOSAL SITE	Address and telephone no.	<i>[Signature]</i>	<i>3-9-22</i>
	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
Printed/Typed Name & Title <i>Aisha Alexander</i>	Signature <i>Aisha Alexander</i>	Month/Day/Year <i>3-9-22</i>	

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address <i>VA Medical 1500 Weiss St Saginaw, MI 48602</i>	Owner's name <i>Saginaw VA Medical Center</i>	Owner's Telephone No. <i>989-597-2500</i>
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Bred Run Landfill 8247 Vienna Rd, Montrose, MI 48457</i>	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	WDS Phone No. <i>810-639-3077</i> WDS Approval No. <i>BR2-17-051</i>
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
GENERATOR	5. Description of materials <i>Pipe Insulation</i>	6. Containers No. Type <i>1 Bag</i>	7. Total quantity (cub) <i>0.2 cu</i>
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable		
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title <i>Jeff Wojcik Project manager</i>	Signature <i>Jeff Wojcik</i>	Month/Day/Year <i>12-14-01</i>
	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title <i>Jeff Wojcik Project manager</i> Address and telephone no. <i>Same as # 2</i>	Signature <i>Jeff Wojcik</i>	Month/Day/Year <i>12-14-01</i>
TRANSPORTER	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title	Signature	Month/Day/Year
Address and telephone no.		<i>[Signature]</i>	<i>3-9-02</i>
DISPOSAL SITE	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
Printed/Typed Name & Title	Signature	Month/Day/Year	
<i>Aisha Alexander</i>	<i>Aisha Alexander</i>	<i>3-9-02</i>	



## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address <i>Bryant Middle School 460 W. Vernon St Dearborn, MI 48128</i>	Owner's name <i>Dearborn Public Schools</i>	Owner's Telephone No. <i>313-827-3000</i>
	2. Operator's name and address <i>MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601</i>	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Brook Run Landfill 82417 Vienna Rd, Montrose, MI 48457</i>	WDS Phone No. <i>810-634-3077</i> WDS Approval No. <i>BRL-17-051</i>	
	4. Name and address of responsible agency <i>Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909</i>	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
5. Description of materials <i>Pipe Insulation</i>	6. Containers No. Type <i>1 Bag</i>	7. Total quantity (cubic yards) <i>.2 cy</i>	
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title <i>John Oberstein Foreman</i>	Signature 	Month/Day/Year <i>1-3-22</i>
	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title <i>John Oberstein Foreman</i> Address and telephone no. <i>Same as #2</i>	Signature 	Month/Day/Year <i>1-3-22</i>
DISPOSAL SITE	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title <i>[Blank]</i>	Signature 	Month/Day/Year <i>3-9-22</i>
12. Discrepancy indication space			
13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.			
Printed/Typed Name & Title <i>Aisha Alexander</i>	Signature 	Month/Day/Year <i>3-9-22</i>	

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address	Owner's name	Owner's Telephone No.
	Dyc Water Plant 1485 Cedar St Lansing, MI 48912	LBWL	517-702-6006
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location		WDS Phone No. 810-639-3077 WDS Approval No. BRL-17-051
	Brook Run Landfill 8247 Vienna Rd, Montrose, MI 48457		
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
	5. Description of materials	6. Containers	7. Total quantity (cubic yards)
	Pipe Insulation	No. Type	
NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ	4 Bags	0.8 cy	
<input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable			
8. Special handling instructions and additional information			
Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
Printed/Typed Name & Title	Signature	Month/Day/Year	
Matt Hawrylo / Foreman		02/14/22	
10. Transporter 1 (Acknowledgment of receipt of materials)			
Printed/Typed Name & Title	Signature	Month/Day/Year	
Matt Hawrylo / Foreman		02/14/22	
Address and telephone no. Same as #2			
11. Transporter 2 (Acknowledgment of receipt of materials)			
Printed/Typed Name & Title	Signature	Month/Day/Year	
		3-9-22	
Address and telephone no.			
12. Discrepancy indication space			
13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.			
Printed/Typed Name & Title	Signature	Month/Day/Year	
Aisha Alexander	Aisha Alex	3-9-22	

GENERATOR

TRANSPORTER

DISPOSAL SITE

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address <i>St. Marys of Michigan 800 S Washington Ave Saginaw, MI 48601</i>	Owner's name <i>Ascension Health</i>	Owner's Telephone No. <i>989-907-8000</i>	
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599	
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Brook Run Landfill 82417 Vienna Rd, Montrose, MI 48457</i>		WDS Phone No. <i>810-634-3077</i>	WDS Approval No. <i>BR2-17-051</i>
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD (517) 284-6780 P.O. Box 30260 Lansing, MI 48909		
	5. Description of materials <i>Pipe Insulation</i>	6. Containers No. <i>2</i> Type <i>Bags</i>	7. Total quantity (cubic yards) <i>.4 cy</i>	
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable	<i>2 Bags</i>		
	8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
	9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
	Printed/Typed Name & Title <i>Rick Beavon</i>	Signature <i>Rick Beavon</i>	Month/Day/Year <i>2-9-22</i>	
	TRANSPORTER	10. Transporter 1 (Acknowledgment of receipt of materials)		
Printed/Typed Name & Title <i>Rick Beavon</i>		Signature <i>Rick Beavon</i>	Month/Day/Year <i>2-4-22</i>	
Address and telephone no. <i>Same as #2</i>				
11. Transporter 2 (Acknowledgment of receipt of materials)				
Printed/Typed Name & Title	Signature	Month/Day/Year		
Address and telephone no.	<i>Chris Jones 3-9-22</i>			
DISPOSAL SITE	12. Discrepancy indication space			
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.			
	Printed/Typed Name & Title <i>Alisha Alexander</i>	Signature <i>Alisha Alexander</i>	Month/Day/Year <i>3-9-22</i>	

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address <i>St. Marys of Michigan 800 S Washington Ave Saginaw, MI 48604</i>	Owner's name <i>Ascension Health</i>	Owner's Telephone No. <i>989-907-8000</i>
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Brent Run Landfill 8247 Verna Rd, Montrose, MI 48457</i>		WDS Phone No. <i>810-639-3077</i> WDS Approval No. <i>BRL-17-051</i>
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
5. Description of materials <i>Pipe Insulation</i>	6. Containers No. Type <i>23 Bag</i>	7. Total quantity (cubic yards) <i>.6 cy</i>	
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title <i>Rick Beauchamp/PM</i>	Signature <i>Rick Beauchamp</i>	Month/Day/Year <i>1/26/22</i>
	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title <i>Rick Beauchamp/PM</i> Address and telephone no. <i>Same as #2</i>	Signature <i>Rick Beauchamp</i>	Month/Day/Year <i>1/26/22</i>
	11. Transporter 2 (Acknowledgment of receipt of materials)		
Printed/Typed Name & Title		Signature	Month/Day/Year
Address and telephone no.		<i>[Signature]</i>	<i>3-9-22</i>
DISPOSAL SITE	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
Printed/Typed Name & Title <i>Atisha Alexander</i>		Signature <i>Atisha Alexander</i>	Month/Day/Year <i>3-9-22</i>

## Asbestos Disposal Documentation Form

GENERATOR	1. Work site name and mailing address Dearborn Public Schools 18700 Adelphi St Dearborn, MI 48124	Owner's name Dearborn Public Schools	Owner's Telephone No. 313-827-3000
	2. Operator's name and address MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599	
	3. Waste Disposal site (WDS) name, mailing address, and physical site location Bent Run Landfill 8247 Vienna Rd, Montross, MI 48457		WDS Phone No. 810-639-3077 WDS Approval No. BRL-17-051
	4. Name and address of responsible agency Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909		
GENERATOR	5. Description of materials Pipe Insulation	6. Containers No. Type 2 Bags	7. Total quantity (cubic yards) 4 cy
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable		
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title John Oberlein Foreman	Signature 	Month/Day/Year 3/10/22
	10. Transporter 1 (Acknowledgment of receipt of materials) Printed/Typed Name & Title John Oberlein Foreman Address and telephone no. SAME AS #2	Signature 	Month/Day/Year 3/10/22
	11. Transporter 2 (Acknowledgment of receipt of materials) Printed/Typed Name & Title Address and telephone no.	Signature 	Month/Day/Year 3-9-22
DISPOSAL SITE	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12. Printed/Typed Name & Title Alisha Alexander		

## Asbestos Disposal Documentation Form

<b>GENERATOR</b>	1. Work site name and mailing address <i>St. Marys of Michigan 800 S Washington Ave Saginaw, MI 48601</i>	Owner's name <i>Ascension Health</i>	Owner's Telephone No. <i>989-907-8000</i>
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Brook Run Landfill 8247 Vienna Rd, Montrose, MI 48457</i>	WDS Phone No. <i>810-639-3077</i> WDS Approval No. <i>BRL-17-051</i>	
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
<b>GENERATOR</b>	5. Description of materials <i>Pipe Insulation</i>	6. Containers No.      Type <i>1      Bag</i>	7. Total quantity (cubic yards) <i>2 cy</i>
	NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable		
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
<b>TRANSPORTER</b>	Printed/Typed Name & Title <i>Jeff Wojcik Project manager</i>	Signature <i>Jeff Wojcik</i>	Month/Day/Year <i>11-4-21</i>
	10. Transporter 1 (Acknowledgment of receipt of materials)	Printed/Typed Name & Title <i>Jeff Wojcik Project manager</i> Address and telephone no. <i>Same as #2</i>	Signature <i>Jeff Wojcik</i> Month/Day/Year <i>11-4-21</i>
	11. Transporter 2 (Acknowledgment of receipt of materials)	Printed/Typed Name & Title Address and telephone no.	Signature <i>[Signature]</i> Month/Day/Year <i>3-9-22</i>
<b>DISPOSAL SITE</b>	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
	Printed/Typed Name & Title <i>Atisha Alexander</i>	Signature <i>Atisha Alex</i>	Month/Day/Year <i>3-9-22</i>

## Asbestos Disposal Documentation Form

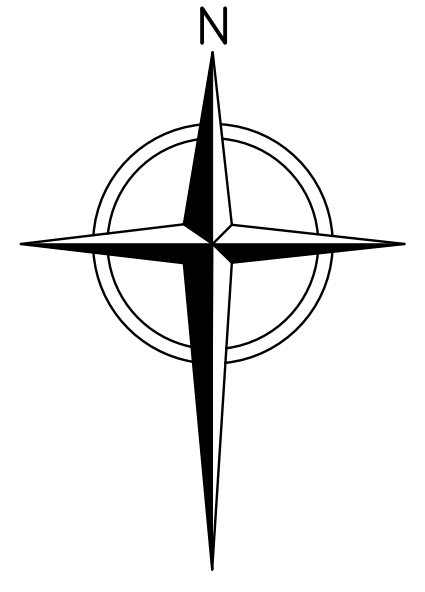
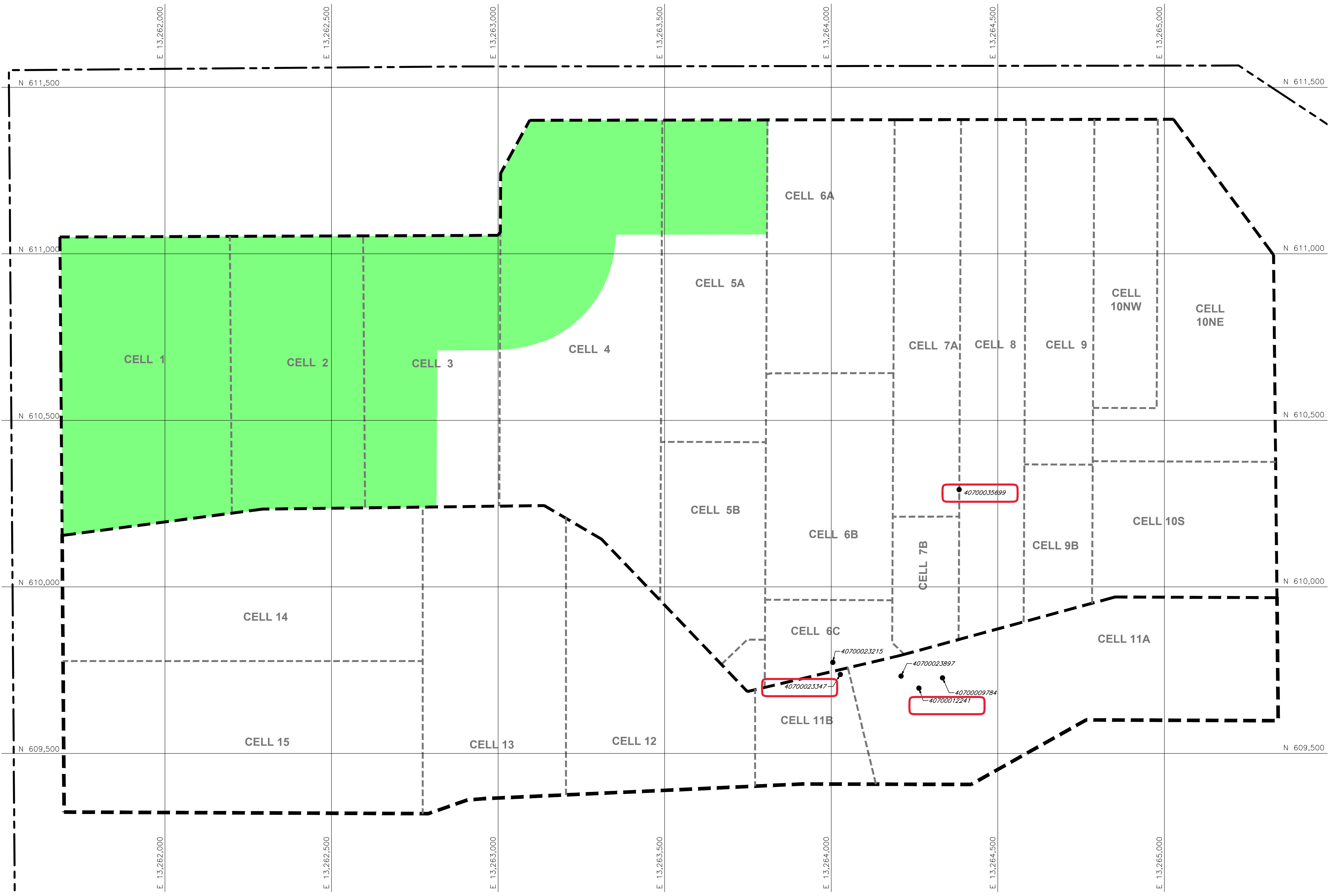
GENERATOR	1. Work site name and mailing address <i>Line Garage - LBWL 1140 S Pennsylvania Ave Lansing, MI 48912</i>	Owner's name <i>LBWL</i>	Owner's Telephone No. <i>517-702-6006</i>
	2. Operator's name and address	MIS Corporation - Michigan 3515 Janes Ave Saginaw MI 48601	Operator's Phone No. (989) 753-5599
	3. Waste Disposal site (WDS) name, mailing address, and physical site location <i>Brook Run Landfill 82417 Vienna Rd, Montrose, MI 48457</i>		WDS Phone No. <i>810-634-3077</i> WDS Approval No. <i>BRL-17-051</i>
	4. Name and address of responsible agency	Asbestos Coord, MDEQ, AQD P.O. Box 30260 Lansing, MI 48909	(517) 284-6780
5. Description of materials <i>Pipe Insulation</i>	6. Containers No. Type <i>Bag 1</i>	7. Total quantity (cubic yards) <i>.2 cy</i>	
		NA2212, Asbestos (Federal/State regulated waste), 9, PG III, RQ <input checked="" type="checkbox"/> Friable <input type="checkbox"/> Non-friable	
8. Special handling instructions and additional information Guide 171 <b>EMERGENCY RESPONSE 24-HOUR PHONE NUMBER: 989-737-5386</b>			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
TRANSPORTER	Printed/Typed Name & Title <i>John Oberlein Foreman</i>	Signature 	Month/Day/Year <i>1-10-22</i>
	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/Typed Name & Title <i>John Oberlein Foreman</i> Address and telephone no. <i>Same as #2</i>	Signature 	Month/Day/Year <i>1-10-22</i>
	11. Transporter 2 (Acknowledgment of receipt of materials)		
Printed/Typed Name & Title	Signature	Month/Day/Year	
Address and telephone no.		<i>3-9-22</i>	
DISPOSAL SITE	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
	Printed/Typed Name & Title <i>Alisha Alexander</i>	Signature <i>Alisha Alexander</i>	Month/Day/Year <i>3-9-22</i>





1" = 1/2" = 0" = 1"

File: F:\PROJECTS\BRENT RUN\221236 - 2022 AIR COMPLIANCE\Asbestos Plot Map\BRF - 2022 ASBESTOS FIGURES.dwg User: COOPER, J. Feb. 13, 2023 - 11:30am



0 150 300  
SCALE IN FEET

**LEGEND**

- CELL BOUNDARY
- SOLID WASTE BOUNDARY
- EXPANSION AREA SOLID WASTE BOUNDARY
- PROPERTY BOUNDARY
- FINAL COVER AREA
- 552453 ASBESTOS LOCATION & TICKET NUMBER

**NOTE:**  
MONTHLY ASBESTOS DISPOSAL LOCATIONS PROVIDED BY THE CLIENT.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 12/5/22	DRAWN BY CDA	CHECKED BY KM
DESIGNED BY MPB	APPROVED BY KM	



BRENT RUN, INC.  
BRENT RUN LANDFILL  
MONTROSE TWP., GENESEE COUNTY, MICHIGAN

**ASBESTOS DISPOSAL  
2022 LOCATIONS**

SHEET NO.  
**1**  
PROJECT NO.  
4221236.006

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ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY FULLY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

Date	Time	Eng/Gen 3, 4, 6, 7 Combined Flow (SCFM)	Eng/Gen 5 (SCFM)	Total Plant Flow (SCFM)
10/7/2022	0:07:01	2055.2	0	2055.2
10/7/2022	0:17:06	2048.7	0	2048.7
10/7/2022	0:27:02	2051.5	0	2051.5
10/7/2022	0:37:07	2066.5	0	2066.5
10/7/2022	0:47:03	2054.3	0	2054.3
10/7/2022	0:57:09	2071.2	0	2071.2
10/7/2022	1:07:06	2063.7	0	2063.7
10/7/2022	1:17:00	2076.8	0	2076.8
10/7/2022	1:27:06	2059.9	0	2059.9
10/7/2022	1:37:01	2055.2	0	2055.2
10/7/2022	1:47:07	2073	0	2073
10/7/2022	1:57:03	2059	0	2059
10/7/2022	2:07:08	2041.2	0	2041.2
10/7/2022	2:17:03	2050.5	0	2050.5
10/7/2022	2:27:09	2040.2	0	2040.2
10/7/2022	2:37:05	2051.5	0	2051.5
10/7/2022	2:47:01	2059	0	2059
10/7/2022	2:57:06	2059	0	2059
10/7/2022	3:07:01	2059.9	0	2059.9
10/7/2022	3:17:05	2040.2	0	2040.2
10/7/2022	3:27:10	2059.9	0	2059.9
10/7/2022	3:37:05	2057.1	0	2057.1
10/7/2022	3:47:01	2055.2	0	2055.2
10/7/2022	3:57:06	2051.5	0	2051.5
10/7/2022	4:07:01	2044	0	2044
10/7/2022	4:17:07	2041.2	0	2041.2
10/7/2022	4:27:02	2050.5	0	2050.5
10/7/2022	4:37:07	2051.5	0	2051.5
10/7/2022	4:47:02	2047.7	0	2047.7
10/7/2022	4:57:09	2051.5	0	2051.5
10/7/2022	5:07:03	2064.6	0	2064.6
10/7/2022	5:17:08	2066.5	0	2066.5
10/7/2022	5:27:04	2057.1	0	2057.1
10/7/2022	5:37:09	2059	0	2059
10/7/2022	5:47:04	2045.9	0	2045.9
10/7/2022	5:57:10	2054.3	0	2054.3
10/7/2022	6:07:06	2068.4	0	2068.4
10/7/2022	6:17:01	2073	0	2073
10/7/2022	6:27:06	2072.1	0	2072.1
10/7/2022	6:37:01	2059	0	2059
10/7/2022	6:47:07	2070.2	0	2070.2
10/7/2022	6:57:03	2066.5	0	2066.5
10/7/2022	7:07:08	2075.8	0	2075.8
10/7/2022	7:17:04	2074.9	0	2074.9
10/7/2022	7:27:09	2074.9	0	2074.9
10/7/2022	7:37:04	2016.8	0	2016.8
10/7/2022	7:47:09	2031.8	0	2031.8
10/7/2022	7:57:04	1936.2	0	1936.2
10/7/2022	8:07:00	1924	0	1924
10/7/2022	8:17:05	1927.8	0	1927.8
10/7/2022	8:27:02	1921.2	0	1921.2
10/7/2022	8:37:08	1927.8	0	1927.8
10/7/2022	8:47:03	1926.8	0	1926.8
10/7/2022	8:57:09	1961.5	0	1961.5
10/7/2022	9:07:05	1969	0	1969
10/7/2022	9:17:10	1967.1	0	1967.1
10/7/2022	9:27:05	1961.5	0	1961.5
10/7/2022	9:37:01	1952.1	0	1952.1
10/7/2022	9:47:05	1955.9	0	1955.9
10/7/2022	9:57:01	299.9	0	299.9
10/7/2022	10:07:06	-0.9	0	-0.9
10/7/2022	10:17:01	-0.9	0	-0.9
10/7/2022	10:27:06	-0.9	0	-0.9
10/7/2022	10:37:01	-0.9	0	-0.9
10/7/2022	10:47:07	-0.9	0	-0.9
10/7/2022	10:57:03	-0.9	0	-0.9
10/7/2022	11:07:10	-0.9	0	-0.9
10/7/2022	11:17:07	-0.9	0	-0.9
10/7/2022	11:27:05	-0.9	0	-0.9
10/7/2022	11:37:02	-0.9	0	-0.9
10/7/2022	11:47:00	-0.9	0	-0.9
10/7/2022	11:57:07	-0.9	0	-0.9
10/7/2022	12:07:05	-0.9	0	-0.9
10/7/2022	12:17:00	-0.9	0	-0.9
10/7/2022	12:27:05	-0.9	0	-0.9
10/7/2022	12:37:10	-0.9	0	-0.9
10/7/2022	12:47:05	-0.9	0	-0.9
10/7/2022	12:57:00	-0.9	0	-0.9
10/7/2022	13:07:04	-0.9	0	-0.9
10/7/2022	13:17:01	-0.9	0	-0.9
10/7/2022	13:27:07	-0.9	0	-0.9
10/7/2022	13:37:02	-0.9	0	-0.9
10/7/2022	13:47:08	-1.8	0	-1.8
10/7/2022	13:57:04	-0.9	0	-0.9
10/7/2022	14:07:09	-1.8	0	-1.8
10/7/2022	14:17:04	246.4	0	246.4
10/7/2022	14:27:10	543.5	0	543.5
10/7/2022	14:37:06	1036.5	0	1036.5
10/7/2022	14:47:01	1657.9	0	1657.9
10/7/2022	14:57:06	1988.7	0	1988.7
10/7/2022	15:07:02	2145.2	0	2145.2
10/7/2022	15:17:07	2163.9	0	2163.9
10/7/2022	15:27:03	2123.6	0	2123.6
10/7/2022	15:37:09	2127.4	0	2127.4
10/7/2022	15:47:04	2154.6	0	2154.6
10/7/2022	15:57:00	2144.3	0	2144.3
10/7/2022	16:07:05	2141.5	0	2141.5
10/7/2022	16:17:01	2126.5	0	2126.5
10/7/2022	16:27:06	2136.8	0	2136.8
10/7/2022	16:37:02	2096.5	0	2096.5
10/7/2022	16:47:08	2047.7	0	2047.7

Brent Run Landfill

July 2022 Enclosed Flare Data

Standard Interval:	10	DD/MM/YYYY HH:MM	Time Interval (min.)	Operating Time (min.)	CH01	CH02	AVERAGE FLOW	TOTAL FLOW	DOWNTIME	MISSING DATA		3 HOUR AVERAGE TEMPERATURE
					FLARE TEMP	FLARE FLOW						
					°F	SCFM						
Date	Time				MIN	MIN	SCFM	SCF	MIN	MIN		
								Total				
7/21/2022	6:31:01	7/21/22 6:31	10	0	-596	-25	0	0	10			
7/21/2022	6:41:06	7/21/22 6:41	10	0	-596	-26	0	0	10			
7/21/2022	6:51:00	7/21/22 6:51	10	0	-596	-26	0	0	10			
7/21/2022	7:01:06	7/21/22 7:01	10	0	-596	-26	0	0	10			
7/21/2022	7:11:01	7/21/22 7:11	10	0	-596	-25	0	0	10			
7/21/2022	7:21:06	7/21/22 7:21	10	0	-596	-26	0	0	10			
7/21/2022	7:31:02	7/21/22 7:31	10	0	-596	-26	0	0	10			
7/21/2022	7:41:08	7/21/22 7:41	10	0	-596	-25	0	0	10			
7/21/2022	7:51:03	7/21/22 7:51	10	0	-596	-26	0	0	10			
7/21/2022	8:01:08	7/21/22 8:01	10	0	-596	-26	0	0	10			
7/21/2022	8:11:03	7/21/22 8:11	10	0	-596	-25	0	0	10			
7/21/2022	8:21:09	7/21/22 8:21	10	0	-596	-25	0	0	10			
7/21/2022	8:31:04	7/21/22 8:31	10	0	-596	-26	0	0	10			
7/21/2022	8:41:09	7/21/22 8:41	10	0	-596	-26	0	0	10			
7/21/2022	8:51:05	7/21/22 8:51	10	0	-596	-26	0	0	10			
7/21/2022	9:01:00	7/21/22 9:01	10	0	-596	-26	0	0	10			
7/21/2022	9:11:04	7/21/22 9:11	10	0	-596	-26	0	0	10			
7/21/2022	9:21:00	7/21/22 9:21	10	0	-596	-26	0	0	10			
7/21/2022	9:31:05	7/21/22 9:31	10	0	-596	-25	0	0	10			
7/21/2022	9:41:01	7/21/22 9:41	10	0	-596	-26	0	0	10			
7/21/2022	9:51:06	7/21/22 9:51	10	0	-596	-26	0	0	10			
7/21/2022	10:01:01	7/21/22 10:01	10	0	-596	-25	0	0	10			
7/21/2022	10:11:07	7/21/22 10:11	10	0	-596	-25	0	0	10			
7/21/2022	10:21:02	7/21/22 10:21	10	0	-596	-25	0	0	10			
7/21/2022	10:31:08	7/21/22 10:31	10	0	-596	-26	0	0	10			
7/21/2022	10:41:03	7/21/22 10:41	10	0	-596	-26	0	0	10			
7/21/2022	10:51:09	7/21/22 10:51	10	0	-596	-402	0	0	10			
7/21/2022	11:01:04	7/21/22 11:01	10	0	-596	-402	0	0	10			
7/21/2022	11:11:09	7/21/22 11:11	10	0	-596	-402	0	0	10			
7/21/2022	11:21:05	7/21/22 11:21	10	0	-596	-402	0	0	10			
7/21/2022	11:31:00	7/21/22 11:31	10	0	-596	-402	0	0	10			
7/21/2022	11:41:05	7/21/22 11:41	10	0	550	-26	0	0	10			
7/21/2022	11:51:00	7/21/22 11:51	10	0	536	-26	0	0	10			
7/21/2022	12:01:05	7/21/22 12:01	10	0	-596	-26	0	0	10			
7/21/2022	12:11:10	7/21/22 12:11	10	0	1610	-26	0	0	10			
7/21/2022	12:21:05	7/21/22 12:21	10	0	1610	-26	0	0	10			
7/21/2022	12:31:09	7/21/22 12:31	10	0	-596	-25	0	0	10			
7/21/2022	12:41:05	7/21/22 12:41	10	0	-83	-25	0	0	10			
7/21/2022	12:51:10	7/21/22 12:51	10	0	279	-26	0	0	10			
7/21/2022	13:01:05	7/21/22 13:01	10	0	281	-25	0	0	10			
7/21/2022	13:11:10	7/21/22 13:11	10	0	921	-25	0	0	10			
7/21/2022	13:21:06	7/21/22 13:21	10	0	281	-26	0	0	10			
7/21/2022	13:31:01	7/21/22 13:31	10	0	281	-25	0	0	10			
7/21/2022	13:41:07	7/21/22 13:41	10	0	281	-1	0	0	10			
7/21/2022	13:51:03	7/21/22 13:51	10	10	1604	257	257	2564			1604	1604
7/21/2022	14:01:01	7/21/22 14:01	10	10	1628	244	244	2466			1628	1616
7/21/2022	14:11:07	7/21/22 14:11	10	0	1627	-5	0	0	10			1616
7/21/2022	14:21:03	7/21/22 14:21	10	0	262	-3	0	0	10			1616
7/21/2022	14:31:07	7/21/22 14:31	10	0	165	-5	0	0	10			1616
7/21/2022	14:41:03	7/21/22 14:41	10	0	135	-6	0	0	10			1616
7/21/2022	14:51:08	7/21/22 14:51	10	0	119	-5	0	0	10			1616
7/21/2022	15:01:03	7/21/22 15:01	10	0	112	-6	0	0	10			1616
7/21/2022	15:11:08	7/21/22 15:11	10	0	105	-6	0	0	10			1616
7/21/2022	15:21:02	7/21/22 15:21	10	0	104	-5	0	0	10			1616
7/21/2022	15:31:07	7/21/22 15:31	10	0	102	-6	0	0	10			1616
7/21/2022	15:41:02	7/21/22 15:41	10	0	98	-5	0	0	10			1616
7/21/2022	15:51:08	7/21/22 15:51	10	0	97	-5	0	0	10			1616
7/21/2022	16:01:03	7/21/22 16:01	10	0	96	-6	0	0	10			1616
7/21/2022	16:11:08	7/21/22 16:11	10	0	94	-5	0	0	10			1616
7/21/2022	16:21:03	7/21/22 16:21	10	0	94	-5	0	0	10			1616
7/21/2022	16:31:08	7/21/22 16:31	10	0	93	-5	0	0	10			1616
7/21/2022	16:41:03	7/21/22 16:41	10	0	91	-6	0	0	10			1616
7/21/2022	16:51:08	7/21/22 16:51	10	0	91	-5	0	0	10			1628
7/21/2022	17:01:04	7/21/22 17:01	10	0	90	-3	0	0	10			

<b>Plant Item Number</b>	<b>Engine</b>	<b>Title</b>	<b>Work Complete</b>
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 1000 HOUR SERVICE	9/2/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	9/2/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	9/2/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	9/4/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	9/6/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	9/6/2022
BRR-MD	All Engines	Day Tank top up Oil...update and order	9/6/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 1000 HOUR SERVICE	9/7/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	9/7/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	9/8/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	9/8/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	9/8/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	9/13/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	9/13/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	9/16/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	9/19/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	9/20/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 1000 HOUR SERVICE	9/21/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	9/21/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	9/21/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 1000 HOUR SERVICE	9/27/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 1000 HOUR SERVICE	9/29/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	9/29/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	10/3/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	10/4/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	10/6/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 1000 HOUR SERVICE	10/7/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	10/7/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	10/7/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	10/8/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	10/12/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	10/14/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	10/14/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	10/17/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	10/17/2022
BRR-MD	All Engines	Day Tank top up Oil...update and order	10/17/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	10/20/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	10/21/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	10/21/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	10/21/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 1000 HOUR SERVICE	10/27/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	10/28/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	11/2/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	11/2/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	11/2/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 1000 HOUR SERVICE	11/9/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	11/10/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	11/10/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	11/10/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	11/15/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	11/15/2022

BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	11/15/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	11/15/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	11/17/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	11/18/2022
BRR-MD	All Engines	Day Tank top up Oil...update and order	11/18/2022
BRR-MD	All Engines	Day Tank top up Oil...update and order	11/18/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	11/21/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	11/21/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 1000 HOUR SERVICE	11/23/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 1000 HOUR SERVICE	11/23/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	11/23/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 1 YEARLY ROSS TECH INSPECTION	11/28/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 1 YEARLY ROSS TECH INSPECTION	11/28/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 1 YEARLY ROSS TECH INSPECTION	11/28/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 1000 HOUR SERVICE	11/28/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 1000 HOUR SERVICE	11/28/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 1000 HOUR SERVICE	11/28/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	11/28/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	11/28/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	11/28/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 1 YEARLY ROSS TECH INSPECTION	11/29/2022
BRR-MD-04EN	Engine 4	CATERPILLAR G3520 200 HOUR SERVICE	12/7/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	12/7/2022
BRR-MD-01EN	Engine 7	CATERPILLAR G3520 200 HOUR SERVICE	12/7/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	12/9/2022
BRR-MD	All Engines	CATERPILLAR G3520 WEEKLY INSPECTIONS	12/15/2022
BRR-MD-03EN	Engine 3	CATERPILLAR G3520 200 HOUR SERVICE	12/20/2022
BRR-MD-02EN	Engine 6	CATERPILLAR G3520 200 HOUR SERVICE	12/21/2022





November 18, 2022

Brent Run Landfill  
Mr. Tim Church  
8247 W. Vienna Rd  
Montrose, MI 48457

**Subject: Surface Emissions Monitoring, Fourth Quarter 2022  
Brent Run Landfill, Montrose, Michigan**

Dear Mr. Church,

Enclosed, please find the fourth quarter, 2022, report documenting the results of the NSPS Surface Emissions Monitoring and Protrusion Scan event performed on October 13, 2022, at Brent Run Landfill. Results of the initial scan indicated zero (0) area in excess of the 500 ppm (above background) methane regulatory limit.

The survey was conducted in accordance with the published landfill performance sections: 40 CFR 60.753(d), 40 CFR 62.16716(d) - Surface Scan Requirements, 40 CFR 60.755(c), 40 CFR 62.16720(c) - Surface Scan Compliance Provisions, and 40 CFR 60 Appendix A, Method 21 - Equipment Performance Provisions. All calibration sheets and data are presented in Attachment A.

If you have any questions or comments, please feel free to contact me at (616) 901-9292 or ([tlockwood@landfillgasom.com](mailto:tlockwood@landfillgasom.com)).

Sincerely,

Monitoring Control and Compliance, Inc.

*Tom Lockwood*

Tom Lockwood  
Senior Manager

**PART 1**  
**CALIBRATION PRECISION TEST RECORD**

LANDFILL NAME: Brent Run

DATE: 10/13/2022

TIME: 9:27 AM  PM

INSTRUMENT MAKE: Inficon

MODEL: IRwin

S/N: 92001335

CALIBRATION GAS STANDARD: 503 ppm (7) (check cal. gas cert. - should be 500 ppm)

**MEASUREMENT #1:**

Meter Reading for Zero Air: 0 ppm (1)

Meter Reading for Calibration Gas: 498 ppm (2)

**MEASUREMENT #2:**

Meter Reading for Zero Air: 0 ppm (3)

Meter Reading for Calibration Gas: 498 ppm (4)

**MEASUREMENT #3:**

Meter Reading for Zero Air: 0 ppm (5)

Meter Reading for Calibration Gas: 498 ppm (6)

**CALCULATE PRECISION:**

$$\frac{|(7)-(2)| + |(7)-(4)| + |(7)-(6)|}{3} \times \frac{1}{(7)} \times \frac{100}{1}$$
$$= \underline{+1\%}$$

PERFORMED BY: Jeff Bucholz

**CALIBRATION GAS CERTIFICATION DATA AND EXPIRATION DATE:**

Zero Gas Serial Number: 00000EE15985 Span Gas Serial Number: 00000EE15967  
Zero Gas Expiration Date: 08/16/2026 Span Gas Expiration Date: 07/22/2026



**PART 2**

**RESPONSE TIME TEST RECORD**

LANDFILL NAME: Brent Run

DATE: 10/13/2022

TIME: 9:27 AM  PM

INSTRUMENT MAKE: Inficon

MODEL: IRwin

S/N: 92001335

**MEASUREMENT #1:**

Stabilized Reading Using Calibration Gas: 498 ppm  
90% of the Stabilized Reading: 448 ppm  
Time to reach 90% of Stabilized Reading  
After Switching from Zero Air to  
Calibration Gas: 5 seconds (1)

**MEASUREMENT #2:**

Stabilized Reading Using Calibration Gas: 498 ppm  
90% of the Stabilized Reading: 448 ppm  
Time to reach 90% of Stabilized Reading  
After Switching from Zero Air to  
Calibration Gas: 4 seconds (2)

**MEASUREMENT #3:**

Stabilized Reading Using Calibration Gas: 498 ppm  
90% of the Stabilized Reading: 448 ppm  
Time to reach 90% of Stabilized Reading  
After Switching from Zero Air to  
Calibration Gas: 4 seconds (3)

**CALCULATE RESPONSE TIME:**

$$\frac{(1)+(2)+(3)}{3}$$

= 4 SECONDS (MUST BE LESS THAN 30 SECONDS)

PERFORMED BY: Jeff Bucholz

**PART 3**

**STABILIZED READING AND BACKGROUND DETERMINATION**

LANDFILL NAME: Brent Run

DATE: 10/13/2022

TIME: 9:27 AM  PM

INSTRUMENT MAKE: Inficon MODEL: IRwin S/N: 92001335

**Stabilized Reading Determination Procedure**

Calibration gas standard: 503 ppm

**MEASUREMENT #1:**

Stabilized Reading Using Calibration Gas: 498 ppm

**MEASUREMENT #2:**

Stabilized Reading Using Calibration Gas: 498 ppm

**MEASUREMENT #3:**

Stabilized Reading Using Calibration Gas: 498 ppm

Stable instrument reading: 
$$\frac{\text{Measurement \#1} + \text{Measurement \#2} + \text{Measurement \#3}}{3}$$

Stable instrument reading: 497 ppm

**Background Determination Procedure**

1. Upwind Reading (highest in 30 seconds): 0 ppm (1)

2. Downwind Reading (highest in 30 seconds): 0 ppm (2)

Calculate Background Value:

$$\frac{(1) + (2)}{2}$$

Background = 0 ppm

PERFORMED BY: Jeff Bucholz

LANDFILL NAME: Brent Run

DATE: 10/13/2022

**Site Information**

<b>Section 1 - Weather Data</b>			
<b>Weather Recorded From:</b> <input type="checkbox"/> On-Site Weather Station <input checked="" type="checkbox"/> Portable Device <input type="checkbox"/> Other			
<i>If "OTHER", describe device utilized for the collection of weather information below.</i>			
<b>Beginning of Monitoring Event</b>		<b>End of Monitoring Event</b>	
Time:	9:27 AM	Time:	2:12 PM
Temperature:	47 °F	Temperature:	48 °F
Barometer:	29.62 " Hg	Barometer:	29.62 " Hg
Humidity:	91 %	Humidity:	73 %
Wind Speed:	8 mph	Wind Speed:	13 mph
Wind Direction:	SW °	Wind Direction:	SW °

**PART 1**  
**CALIBRATION PRECISION TEST RECORD**

LANDFILL NAME: Brent Run

DATE: 10/13/2022

TIME: 9:24 AM  PM

INSTRUMENT MAKE: Inficon MODEL: IRwin S/N: 92001320

CALIBRATION GAS STANDARD: 503 ppm (7) (check cal. gas cert. - should be 500 ppm)

**MEASUREMENT #1:**

Meter Reading for Zero Air: 0 ppm (1)

Meter Reading for Calibration Gas: 495 ppm (2)

**MEASUREMENT #2:**

Meter Reading for Zero Air: 0 ppm (3)

Meter Reading for Calibration Gas: 496 ppm (4)

**MEASUREMENT #3:**

Meter Reading for Zero Air: 1 ppm (5)

Meter Reading for Calibration Gas: 495 ppm (6)

**CALCULATE PRECISION:**

$$\frac{|(7)-(2)| + |(7)-(4)| + |(7) - (6)|}{3} \times \frac{1}{(7)} \times \frac{100}{1}$$
$$= \underline{+1\%}$$

PERFORMED BY: Trent Marsh

**CALIBRATION GAS CERTIFICATION DATA AND EXPIRATION DATE:**

Zero Gas Serial Number: 00000EE15985 Span Gas Serial Number: 00000EE15967  
Zero Gas Expiration Date: 08/16/2026 Span Gas Expiration Date: 07/22/26

**PART 2**

**RESPONSE TIME TEST RECORD**

LANDFILL NAME: Brent Run

DATE: 10/13/2022

TIME: 9:24 AM  PM

INSTRUMENT MAKE: Inficon

MODEL: IRwin

S/N: 92001320

**MEASUREMENT #1:**

Stabilized Reading Using Calibration Gas: 495 ppm  
90% of the Stabilized Reading: 445 ppm  
Time to reach 90% of Stabilized Reading  
After Switching from Zero Air to  
Calibration Gas: 4 seconds (1)

**MEASUREMENT #2:**

Stabilized Reading Using Calibration Gas: 496 ppm  
90% of the Stabilized Reading: 446 ppm  
Time to reach 90% of Stabilized Reading  
After Switching from Zero Air to  
Calibration Gas: 4 seconds (2)

**MEASUREMENT #3:**

Stabilized Reading Using Calibration Gas: 495 ppm  
90% of the Stabilized Reading: 445 ppm  
Time to reach 90% of Stabilized Reading  
After Switching from Zero Air to  
Calibration Gas: 6 seconds (3)

**CALCULATE RESPONSE TIME:**

$$\frac{(1)+(2)+(3)}{3}$$

= 4 SECONDS (MUST BE LESS THAN 30 SECONDS)

PERFORMED BY: Trent Marsh

**PART 3**

**STABILIZED READING AND BACKGROUND DETERMINATION**

LANDFILL NAME: Brent Run

DATE: 10/13/2022

TIME: 9:24 AM  PM

INSTRUMENT MAKE: Inficon MODEL: IRwin S/N: 92001320

**Stabilized Reading Determination Procedure**

Calibration gas standard: 503 ppm

**MEASUREMENT #1:**

Stabilized Reading Using Calibration Gas: 495 ppm

**MEASUREMENT #2:**

Stabilized Reading Using Calibration Gas: 496 ppm

**MEASUREMENT #3:**

Stabilized Reading Using Calibration Gas: 495 ppm

Stable instrument reading:  $\frac{\text{Measurement \#1} + \text{Measurement \#2} + \text{Measurement \#3}}{3}$

Stable instrument reading: 495 ppm

**Background Determination Procedure**

1. Upwind Reading (highest in 30 seconds): 0 ppm (1)

2. Downwind Reading (highest in 30 seconds): 0 ppm (2)

Calculate Background Value:

$$\frac{(1) + (2)}{2}$$

Background = 0 ppm

PERFORMED BY: Trent Marsh

LANDFILL NAME: Brent Run

DATE: 10/13/2022

**Site Information**

<b>Section 1 - Weather Data</b>			
<b>Weather Recorded From:</b> <input type="checkbox"/> On-Site Weather Station <input checked="" type="checkbox"/> Portable Device <input type="checkbox"/> Other			
<i>If "OTHER", describe device utilized for the collection of weather information below.</i>			
<b>Beginning of Monitoring Event</b>		<b>End of Monitoring Event</b>	
Time:	9:24 AM	Time:	2:08 PM
Temperature:	47 °F	Temperature:	48 °F
Barometer:	29.62 " Hg	Barometer:	29.62 " Hg
Humidity:	91 %	Humidity:	73 %
Wind Speed:	8 mph	Wind Speed:	13 mph
Wind Direction:	SW °	Wind Direction:	SW °

