

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N598747215

FACILITY: Brent Run Landfill		SRN / ID: N5987
LOCATION: 8335 W. Vienna Rd, MONTROSE		DISTRICT: Lansing
CITY: MONTROSE		COUNTY: GENESEE
CONTACT: Tim Church , District Manager		ACTIVITY DATE: 12/03/2018
STAFF: Michelle Luplow	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled, announced compliance inspection to determine compliance with MI-ROP-N5987-2015a.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow (author), Matt Karl (AQD Asbestos Inspector, Saginaw Bay District), David Siroonian (DEQ Intern)

Personnel Present (Brent Run Landfill): Tim Church (timc@wasteconnections.com), District Manager, Brent Run Landfill

Personnel Present (Energy Developments):

Dan Zimmerman (dan.zimmerman@edlenergy.com), Director of NA HSE & Compliance
Patrick Walters (pat.walters@edlenergy.com), Operations Technician
Jenna Hiltz, Operations Technician
Kevin, Operations Technician
Courtney Truett (courtney.truett@energydi.com), Environmental Compliance Systems Advisor

Purpose: Conduct an announced, scheduled, partial compliance evaluation (PCE) inspection of the Brent Run Landfill and announced inspection of the EDL Generating Station (services Brent Run). Compliance was determined using the sectioned ROP, MI-ROP-N5987-2015a. These activities were 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, with receipt of municipal solid sludge on a daily basis. Construction, demolition, and industrial 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 itself was installed December 13, 1995, making it subject to 40 CFR Part 60, Subpart WWW, as it has been constructed after May 30, 1991. T. Church said they have a 1 ppt citrus and water odor misting system that could be used to control odors but is not operational. Instead of the misting system they use a water truck with odor control agent to "spot treat" the landfill for odors. 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, Brent Run 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. He said that he does not believe Brent Run Landfill has received any odor complaints within the past year.

The NSPS Subpart XXX EPA ruling for landfills was finalized October 28, 2016. The NSPS Subpart XXX will apply to all landfills that are modified, new, or reconstructed after July 17, 2014. For all other landfills, there is an Emission Guideline (EG) NSPS Subpart Cf that applies to landfills accepting waste between November 8, 1987 and constructed, modified or new before July 17, 2014. These two regulations will replace NSPS Subpart WWW and NSPS Subpart Cc, respectively. Both Subparts in their entirety were stayed from May 31, 2017 through August 29, 2017. Steve Blayer, WMRPD, said 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. Based on this information, Brent Run will likely be subject to the NSPS Subpart Cf. Michigan's SIP for obtaining delegation of Emission Guideline Subpart Cf is currently being developed for EPA approval. ROPs will not be reopened to incorporate these requirements, but rather, the requirements will be incorporated during renewal.

MI-ROP-N5987-2015 was issued in October 2015. The ROP was received administratively incomplete and resulted in violation notices for both Brent Run Landfill and Granger Electric sections of the ROP, and the loss of an application shield. The new ROP was issued before the previous ROP expired, therefore a consent order was not necessary.

On August 18, 2016, PTI 78-16 was approved for EUENGINE6, a 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 by removing flexible group FGICEENGINES2 and replacing it with an EUENGINE1 emission unit,

maintaining all requirements that FGICEENGINES2 had for both engines.

EUENGINE1 is a G3516 engine that is subject to NESHAP, 40 CFR Part 63, Subparts A and ZZZZ (RICE MACT), but there are no associated applicable requirements at this time. EUENGINE3 (G3516), EUENGINE4 (G3516), EUENGINE5 (G3512) (FGICEENGINES), and EUENGINE6 are subject to the RICE MACT. EUENGINE3, EUENGINE4, and EUENGINE6 are subject to the NSPS 40 CFT 60 Subpart JJJJ.

There is a permit to install application currently in-house with the Permit Section for the replacement of EUENGINE1 with a 3520 engine. A permit to install waiver was sent to EDL on November 15, 2018. AQD received the signed approved waiver on December 6, 2018 via email; AQD has yet to receive the original signature hard-copy which would institute waiver approval. D. Zimmerman said on January 2, 2019, that they have not started on installation of the new 3520 engine yet.

Inspection: This was an announced, scheduled inspection for both Brent Run and EDL. At approximately 9:15 a.m. on December 3, 2018, David Siroonian and I met with Matt Karl (AQD Asbestos Inspector out of the Saginaw Bay District Office), and Tim Church, Waste Connections District Manager at Brent Run. Matt Karl was present to ensure compliance with all NESHAP Subpart M requirements for asbestos.

The EDL inspection was conducted on November 30, 2018 during EDL's annual stack testing. At approximately 8:30 a.m. I met with Dan Zimmerman, Patrick Walters, and Jenna Hiltz to conduct the inspection and record engine operating hours for the stack test (report for the stack test observation is under a separate activity in MACES).

Section 1: Brent Run Landfill Inspection

EULANDFILL

Brent Run has a gas collection and control system subject to the NSPS Subpart WWW that routes all collected landfill gas to the gas treatment system and subsequently to the EDL energy plant where the engines combust the landfill gas for electricity production. Flares (candlestick and enclosed) are available to burn excess gas when there is more gas than the generators can burn at any given time, or when the energy plant is down.

Emission Limits, Testing/Sampling & Monitoring/Recordkeeping

Brent Run is required to conduct surface 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). 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. For each semi-annual report that Brent Run submits to AQD, quarterly reports for surface emission monitoring (SEM) are included. These reports include a map of the route that is traversed for surface monitoring. According to the map's scale, the distance between the traverse routes appears to meet the 30-meter interval requirement, except where slopes on the landfill are particularly steep, in which case the NSPS allows these areas to be excluded from monitoring. K. Mahmood explained that the surface monitoring consultants, Monitoring Control and Compliance, Inc (MCC), are required to follow the SEM map that Brent Run has constructed. He explained that 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.

All quarterly SEM reports are reviewed for compliance with the 500-ppm methane limit. The most recent semi-annual contains an SEM report for report 1st and second quarter, 2018. The SEM were conducted March 21, 2018 and June 14, 2018; there were no exceedances of the 500 ppm above background limit during the 2 quarters. Upon request, T. Church provided me with 3rd quarter SEM results, the monitoring of which was conducted August 27, 2018. The report indicates that there was one area where the 500-ppm standard was exceeded (specifically, 11,502 ppm). The NSPS Subpart WWW requires that if exceedances are detected, the location should be documented, and cover maintenance or adjustments to vacuum be made prior to re-monitoring within 10 days of the initial exceedance. If the 10-day re-monitoring shows a second exceedance, corrective actions are required to be taken, and the location re-monitored within another 10 days. If a third exceedance is detected, a new well or other collection device is required to be installed within 120 calendar days of the first exceedance. If there is not a third exceedance, the location is required to be re-monitored at one month from the first exceedance, and if there is no exceedance at one month, quarterly monitoring can be resumed.

In response to the 500 ppm initial exceedance, the location was re-monitored on September 4, 2018, within the 10-day period, and an exceedance of 780.4 ppm was detected. On September 14, 2018, the area was re-monitored for a second time. No exceedance was detected (20.3 ppm detected) and therefore no further action was necessary.

The monitoring is required to be conducted using an organic vapor analyzer, flame ionization detector, or other portable monitor. The quarterly reports contain what type of analyzer was used. For the most recent quarters, a TVA-2020 (flame ionization detector) was used.

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 "Calibration Precision Record" shows the procedure and results of the background concentration at the surface of the landfill, upwind and downwind.

Records for surface monitoring are required to be kept for the following: topographical maps of route traversed, locations and concentrations of any readings exceeding 500 ppm above background, and the weather conditions on the day of testing. As addressed above, a topographical map of the surface monitoring route traversed was provided, and the one exceedance on August 27, 2018 was documented on the topographical map. The "Calibration Precision Record" also includes the weather conditions during the surface monitoring.

In addition to the quarterly SEM, Brent Run now includes in its quarterly SEM reports protrusion monitoring – monitoring of the locations throughout the landfill where there are protrusions, such as wells, risers, and areas where there is distressed vegetation, cracks, or seeps, etc. Quarterly protrusion SEMs are required by the NSPS Subpart XXX as well as the NSPS Subpart Cf; however, at this time Brent Run is not subject to the NSPS Subpart XXX and there is currently no State Implementation Plan (SIP) for Michigan that incorporates Subpart Cf federal guidelines, and therefore protrusion monitoring is only voluntary.

There are no Material Limits for EULANDFILL at this time.

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. Gina Lincoln sent me MCC's "Monthly Cover Integrity Inspection Surface Monitoring Design Plan" for 2018 up through October 2018, attached). These inspections are conducted on a monthly basis. These documents contain notes on the cover integrity of the landfill throughout the calendar year, but can also contain notes on issues spotted, and if there were no issues, it is documented as such. It also appears that if a fix in the cover was required the fix was also documented. T. Church explained that if holes are found during the inspection, they usually will fill the holes with clay, depending on the severity; the inspections 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. No issues were documented in the monthly cover integrity reports from January – October 2018.

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 WMRPD 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 2018) is 41,530,484 yd³. The landfill opened in December 1995, so it is appropriate that the waste acceptance log started in 1996. K. Mahmood emailed me Brent Run's current and only design capacity report in 2015, noting a maximum design capacity of 9.3 million megagrams, which triggered the NSPS threshold of 2.5 million megagrams.

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

Reporting

Brent Run is required to submit semi-annual certifications, SEM exceedances and startup, shutdown, malfunction (SSM) reports by March 15 for July 1 – December 31 and September 15 for January 1 to June 30. Annual certifications are required to be submitted by March 15. All reports (semi-annual and annual) have been submitted in a timely manner.

The most recent reports received were for the reporting period July 2016 – December 2016.

EUACTIVECOLL

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 recent renewal, as the gas treatment system is owned and operated by EDL. T. Church and K. Mahmood explained during the 2015 inspection, that the open flare is 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 or Material Limits for EUACTIVECOLL at this time.

Process/Operational Restrictions

Blower vacuums are used to pull the landfill gas from the landfill in through the treatment system. K. Mahmood said during

the 2015 inspection that Brent Run has several blowers that are alternately used during gas collection. They 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.

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 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/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. Horizontal collectors in the active sites of the landfill are also more inclined to have higher oxygen levels because they are relatively closer to the surface of the landfill than other horizontal collectors. T. Church said that Brent Run closes their collection wells when they no longer produce gas (when CH₄% levels off at around 5-10%).

Process/Operational Restrictions & Monitoring/Recordkeeping

Each wellhead is required to be operated under negative pressure, with an interior temperature less than 131°F, and at oxygen levels less than 5%. Negative pressures are not required if there is a fire or increased well temperature, if a geomembrane or synthetic cover are used, or if the well is decommissioned. Higher operating values (HOVs) for temperature and oxygen can be established for wells if Brent Run can demonstrate with supporting data that the elevated temperature or oxygen value does not cause fires or significantly inhibit anaerobic decomposition (via killing of methanogens).

Wells are required to be monitored monthly for pressure, temperature and oxygen.

In October 2016, an email was sent to Brent Run contact, Tim Church, and Cornerstone Consultants, Khaled Mahmood and Matt Boudreau, with the following information concerning alternative timeline requests for oxygen and temperature exceedances, positive pressures, decommissioning of wells, and other requests:

As you may know, the NSPS WWW, 60.755(a) (5), allows a facility to request an alternative timeline for correcting exceedances of GCCS well operating parameters. I am writing to inform you that the deadline for submitting an alternative request is 15 days from the exceedance. In the past, MDEQ-AQD staff has considered alternative timeline requests, regardless of whether the facility submitted the request within 15 days.

Recent discussions with EPA reconfirmed the 15-day NSPS requirement for requesting an alternative timeline. As a result of this discussion, in order to be compliant with the NSPS companies are required to submit alternative timeline requests within the 15-day deadline or MDEQ-AQD may deny these requests, as specified under NSPS WWW. In addition, facilities should include any denied requests in their semi-annual deviation reports.

Each situation and request is unique and it is difficult to prescribe what information must be included in a specific request; however, it is expected that, at a minimum, a request shall include:

- the operating parameter that has exceeded the regulatory limit;
- the date that the exceedance was initially detected;
- a detailed narrative discussion of all steps taken by the landfill owner or operator to correct the exceedance within the 15-day period;
- an explanation of why, despite the best efforts of the landfill owner or operator, the corrective action/repair work selected by the landfill owner or operator could not be implemented within 15 days and why exceedance could not otherwise be corrected within 15 calendar days;
- a summary of the historical data for the well in question (should include a minimum of 6 months of past data, construction specifications for the well, description of the cover in the area, the age and type of waste, and any other information pertinent to the well);
- the following data collected at the well head:
 - temperature of the landfill gas,
 - percentage of the gas that is methane, oxygen, and CO₂
 - gauge pressure;
- a detailed narrative discussion of the intended corrective measure and the amount of time the owner or operator estimates it will take to accomplish the correction;
- a detailed justification of why the proposed alternative timeline represents the amount of time necessary to implement the proposed corrective action/repair;
- a detailed justification of why an expansion of the gas collection system is unwarranted (if applicable);
- a detailed narrative describing why complying with the timeframes provided for in the rule would result in (1) unreasonable cost of control resulting from plant age, location, or basic process design; (2) physical impossibility of installing necessary control equipment; or (3) other factors specific to the facility that make application of a less stringent compliance time significantly more reasonable.

This notice was provided to ensure that facilities understood that corrective actions should be taken within 15 days for pressure, temperature, and oxygen exceedances. If they are not corrected in 15 days, a request for an alternative compliance timeline (ACT) must be placed within that 15-day timeframe, otherwise a deviation is required to be reported for failure to request within the 15-day timeframe. This was not always enforced consistently throughout the State of Michigan.

Brent Run submits semi-annual summary tables of all wells that experienced positive pressure and exceedances in temperature and oxygen during each semi-annual period. When positive pressures cannot be corrected within 15 days of the first measurement, Brent Run is required to contact AQD to obtain approval for an alternative timeline (or gas collection system should be expanded) to correct the positive pressure on the well-head. Brent Run has been consistent with asking for alternative timelines for all wells not in compliance with the negative pressure requirement, and within the 15-day timeline after the October 2016 email was sent.

In addition to gauge pressure monitoring, Brent Run is also required to monitor the wells for temperature and oxygen on a monthly basis. Brent Run submits a semi-annual summary table of all wells that experienced exceedances of the temperature and oxygen maximum level limits. The wells are monitored monthly for these 2 operating parameters and Brent Run has been consistent with asking for alternative timelines when appropriate.

In addition to semi-annual reporting, Brent Run, through Cornerstone, has instituted a new type of monthly reporting for well parameter exceedances, corrective actions for the exceedances, any alternative timeline requests, AQD approvals of HOV's and whether or not the issues were resolved. This spreadsheet is sent to AQD for all exceedances that require ACT approval.

Table 1 consists of all approved oxygen higher operating values (HOVs) for various well-heads within the landfill. Table 2 consists of all wells with approved temperature HOVs.

Table 1. Approved Oxygen Higher Operating Values

Well ID	Higher Operating Value	HOV Request Date	HOV Approval Date
Horizontal Collector 03 (HC03)	21.9%	11/2/15	No longer needed, well is being abandoned (rendered permanently inoperable) by filling it with bentonite and capping wellhead off below grade.
Leachate Riser 6B (LR 6B)	21%	9/8/15	10/5/2015
Leachate Riser 7A (LR 7A)	21.9%		4/20/2012

Table 2. Approved Temperature Higher Operating Values

Well ID	Higher Operating Value (°F)	HOV Approval Date
BRLFHC04	145	1/3/2018
BRLF0115	140	8/17/2018

Decommissioned Wells

Brent Run occasionally will temporarily or permanently decommission wells. Table 3 contains a list of wells that were temporarily or permanently decommissioned and the reason for decommissioning.

Table 3. Decommissioned Wells at Brent Run

Well ID	Cause	Decommission Approval Date (per AQD)
88	Well did not respond to corrections applied to bring O ₂ below 5%; the pipe was in good condition, no pinching	10/7/2015
76R	O ₂ was greater than 5%,	Temporary Decommission, 2/15/2017

	could not be corrected, and sufficient density of wells in area to remove excess gas.	
81R	O2 was greater than 5%, could not be corrected, and sufficient density of wells in area to remove excess gas.	Temporary Decommission, 3/8/2017
0075	Well pinched below grade, gas quality (methane concentration) is poor. Sufficient density of other wells to cover extraction of gas	Permanent Decommission, 4/8/2018
0014	O2 was greater than 5%, could not be corrected, and sufficient density of wells in area to remove excess gas.	Temporary Decommission, 10/24/2018

Design/Equipment Parameters

All wellheads are required to have sampling ports installed for measuring temperature. There are 3 sampling ports for temperature, pressure and oxygen. He said these are on each wellhead in the landfill.

The collection pipes are required to be made of PVC, HDPE, fiberglass, stainless steel or other nonporous, corrosion-resistant materials. T. Church verified that all collection pipes are made of HDPE.

The maximum gas generation flow rate is also required to be determined in order to design the active gas collection system that is sufficient for handling this projected quantity. Brent Run uses LandGEM to determine this flow rate. The projected maximum landfill gas generate rate at the end of calendar year 2018, according to T. Church is 3,782 scfm. K. Mahmood also said there is a 70% collection efficiency, resulting in an estimated flow of 2,608 scfm to the control devices. The LandGEM model uses a similar formula to the one that is required to be used in 40 CFR 60.755(a)(1) for new collection systems. T. Church said that pulling the gas in the system at 42" H₂O is typically the optimal pull rate to maintain the O₂ to CH₄ ratio at levels prime for engine operation.

T. Church said that if the flare is down, they will decrease vacuum pull on the landfill so that only enough gas is being sent to run the engines. He said that odors can be associated with flare or engine downtime.

There are currently no Testing/Sampling requirements.

Monitoring/Recordkeeping

Brent Run is also required to maintain a plot map to include existing and planned collectors in the system with a unique ID location label for each. T. Church showed me the large plot map that they keep in their office. It contains identification numbers with all associated horizontal and vertical collectors currently in place. K. Mahmood explained during the 2015 inspection that Brent Run plans the well installations year by year, based on their overall goal as supplied in the Initial Design Capacity report (June 1996). Additionally, the density of the wells, horizontal collectors, surface collectors and other gas extraction devices are required to be determined via the procedures specified in 40 CFR 60.758(a)(1). K. Mahmood provided a letter of approval from the AQD and WMRPD of Brent Run's GCCS design plan in February 2006 for the May 2004 GCCS Design Plan submittal. Included with this was a description of how compliance with 40 CFR 60.759(a)(1) and subsequently, 40 CFR 60.759(a)(2) was determined.

Reporting

Semi-annual reports for the GCCS system are required to include the value and length of time for each exceedance of applicable parameters monitored in SC VI.1 and VI.3, all periods when the GCCS was not operating in excess of 5 days, and records of positive pressure wells which are maintained as such in effort to avoid fire. An SSM report is also required to be submitted semi-annually. Brent Run has submitted all required reports for EUACTIVECOLL to date.

EUENCLOSEDFLARE

According to T. Church, the enclosed flare was installed in the 1990's. It was not operating during the inspection, and T. Church said that it has not operated for control of landfill gas since July 2013. They currently operate the flare once per month for maintenance and readiness testing, which is also used to determine what upgrades and maintenance still needs to be done. In December 2015, T. Church initiated actions to get the enclosed flare back into operating order; this included the

following installations of new equipment: a calibrated flow meter, a pilot gas line, flame arrestor, rain cap, and refractory. A digital monitoring system for flow and temperature was also installed which T. Church said is now electronically redirected to the PLC inside the electric plant. Flow and temperature were previously recorded on analog circular charts. T. Church said these updates have made the enclosed flare fully operational.

K. Mahmood said the flare is capable of handling 1389 scfm. Between the open and enclosed flare capacities, the flares can handle 2739 scfm landfill gas. As previously mentioned in the report, after 70% collection efficiency the maximum flow to the flares is approximately 2,608 scfm; if all engines were simultaneously inoperable, the flares would be capable of handling all landfill gas flow. The enclosed flare does not have a bypass line.

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 flare is required to have an NMOC reduction of 98% or an NMOC outlet concentration of 20 ppmv. K. Mahmood provided me with the test report for the April 12, 2002 performance test as AQD did not have a copy of this in their files. The 4/2002 test results showed an average of 1.27 ppmv NMOC outlet concentration, meeting the 20 ppmv emission limit.

There are no Material Limits or Design/Equipment Parameters for EUENCLOSEDFLARE at this time.

Process/Operational Restrictions

Brent Run is required to operate the enclosed flare 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 during the test were around 1320°F. If Brent Run uses this flare in the future, these are the operating parameters to pay attention to. If this flare is used in the future and there are 3-hour block averages where the combustion temperature is more than 28C below the average combustion temperature determined during the performance test, an exceedance is required to be recorded and reported (per SC IV.2.a.i.).

The enclosed flare is always required to 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.

Monitoring/Recordkeeping

Brent Run is required to calibrate, maintain, and operate the enclosed flare according to the manufacturer's specifications, including installing a temperature monitoring device equipped with a continuous recorder and a device that records flow to the flare that is installed, calibrated, and maintained also. As discussed previously in this report, T. Church ensured that a digital monitoring system was installed which provides continuous data for flow and temperature. MCC conducts calibrations on this equipment.

Reporting

Semi-annual reports for the GCCS system are required to include the value and length of time for each exceedance of applicable parameters monitored in SC VI.1, and a description and duration of all periods when the flare was not operating in excess of 1 hour. An SSM report (according to their SSM plan) is also required to be submitted semi-annually. Brent Run has submitted all required reports for this unit to date.

EUOPENFLARE

This flare was operating during the inspection. The open flare was installed in 2012 and was incorporated into the ROP during the 2015 renewal cycle. According to T. Church in an October 2017 email, 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. The flare is designed to operate at a certain vacuum set-point that can be auto (via frequency drive) or manually set. For example, if 2+ engines go down, EDL will call Tim 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

Emission Limits, Process/Operational Restrictions & Testing/Sampling

Visible emissions from the flare are limited to 0% opacity. A performance test was also required per 40 CFR 60.18. Brent Run had 180 days from the October 13, 2015 ROP issuance date to complete the performance test (April 2016). The performance test was conducted on March 16, 2016, with the test report 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 (attached), visible emission readings can be performed for 30 minutes rather than the 2-hour period required under the NSPS Subpart WWW. Brent Run has utilized Method 22, Alternative 42 for the visible emissions test and found that no visible emissions were observed during the 30-minute testing period. A net heating value of 18.7 MJ/m³ was determined using Method 3C, Alternative 42. The NSPS requires that the net heating value for non-assisted flares be greater than 7.45 MJ/scm. During the inspection I did not observe any signs of visible emissions from EUOPENFLARE.

Additionally, non-assisted flares are to be designed and operated with an exit velocity less than 60 ft/sec. The performance test concluded that the exit velocity was 32.7 ft/s, which they stated in the test report is less than 60 ft/sec (the lower-end limit associated with non-assisted and steam-assisted flares). Brent Run is currently in compliance with visible emission and net heating value restrictions, as well as exit velocity at this time.

During the inspection, the flare was operating at 1250°F with an inlet flow of 388 scfm.

There are currently no Material Limits associated with EUOPENFLARE at this time.

Design/Equipment Parameters

In addition to the exit velocity requirements (discussed above), 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. During the 2015 inspection, K Mahmood said 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, not the pilot flame, 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.

Monitoring/Recordkeeping

Brent Run is required to keep up-to-date, readily accessible records of flow to the control device, with readings taken at least every 15 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. I did not request flow records for this inspection; however, during the 2015 inspection, K. Mahmood provided a spreadsheet of the flow to the flare and the flare temperature for the month of November, with data points being captured every 12-15 minutes.

Reporting

Semi-annual reports for the GCCS system are required to include the value and length of time for each exceedance of applicable parameters monitored in 756(c) and a description and duration of all periods when the flare was not operating in excess of 1 hour. An SSM report (according to their SSM plan) is also required to be submitted semi-annually. Brent Run has submitted all required reports for this unit to date.

EUASBESTOS

T. Church said that Brent Run Landfill receives friable and non-friable asbestos containing material (ACM), at approximately 6 loads per week. He said the Flint Land Bank Authority has ACM projects in Flint, and Brent Run is one of the landfills receiving the demolition debris. They are demolishing houses that are not stable enough to be inspected for asbestos (because they are either dilapidated or remains from a fire), so entire houses are treated as ACM, though not bagged as ACM waste. The houses are torn down and placed in trucks that are covered and transported to the landfills. T. Church said these loads are dumped directly into the ACM pits. This has been determined acceptable handling of the ACM by other AQD Districts, including the Saginaw Bay District, who are involved in these demolition projects.

There are no Emission Limits or Material Limits for EUASBESTOS at this time.

Process/Operational Restrictions

Asbestos-containing material 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 only has fencing at its northern and eastern perimeters, there are also no asbestos warning signs posted, and therefore Brent Run is required to meet cover requirements for the ACM. To meet this requirement. T. Church said time

slots are scheduled to receive ACM. The non-friable ACM is immediately covered with landfill waste, and it is placed downwind from other customers. He said the friable ACM is placed by a truck labeled with HAZMAT code labels. The truck immediately covers the friable ACM with 3' of garbage, and then drives over the area to take a GPS coordinate of the material.

Design/Equipment Parameters

The GCCS collection wells are required to control all gas-producing areas, except for segregated areas of asbestos or nondegradable material. T. Church explained that their ACM is distributed randomly throughout the landfill; there is no specific location for ACM deposits and therefore all gas-producing areas are controlled; there are no areas exempt from gas collection.

There are no Testing/Sampling requirements for EUASBESTOS at this time.

Monitoring/Recordkeeping

Waste shipment records are required to be kept containing the name, address, and phone number of the waste generator, transporter(s) and 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 containers. The waste generator who created the improperly enclosed or uncovered ACM waste needs to be reported to the DEQ, AQD. Additionally, Brent Run is required to keep documentation of the location, depth and area, and quantity in cubic meters (or cubic yards) of ACM waste material within the disposal site, on a map or diagram.

T. Church said that Brent Run generates tickets (the "RACM Load Inspection Report Form") with associated ticket numbers that can be used to find waste manifests, which contain the waste generator name, transporter name, number of cubic yards brought in for that ticket, and a checklist of items to look for both when receiving the waste and disposing of the waste. The ticket numbers are also used for reference in the Disposal Location Chart with Garmin GPS coordinates (longitude, latitude) that Cornerstone staff convert to northing and easting coordinates and elevation (depth) once per year, which are then plotted onto diagrams for each year of ACM acceptance. As the landfill waste settles, the location of the ACM will change over time, but the logged coordinates remain the same. T. Church provided both Matt Karl and I examples of the maps and coordinates used to calculate location and depth of ACM waste (2014-2018). He also provided us with examples of ACM waste manifests Brent Run has received, and the "RACM Load Inspection Report Form" which documents the ticket number and Gatehouse Inspection of the asbestos loads.

Matt Karl reviewed the waste manifests and "RACM Load Inspection Report Form" documents to determine compliance with the Asbestos NESHAP. On the Asbestos Disposal Manifest for Sheridan Community Hospital, he documented that the manifest was missing the quantity of ACM in addition to Brent Run not reconciling the discrepancy between the estimated ACM amount and the transporter 2 certification ACM amount. The discrepancies Matt Karl found also document violations of EUASBESTOS Monitoring/Recordkeeping requirements. Matt Karl sent a violation notice (VN) on January 2, 2019 to address these violations of the asbestos NESHAP, which is considered sufficient for addressing these violations with the company. Brent Run is in non-compliance for waste manifest recordkeeping at this time. See attachments for copies of Matt Karl's inspection report and VN.

I reviewed the maps containing the location, depth and area of the ACM loads (see attached for 2017 and 2018). Each red dot represents a load of ACM, with associated ticket number, which can be used to find the quantity of ACM disposed of at that location. The back of the map contains northing and easting coordinates, including elevation (which can be used to determine depth and area of the ACM pit). During the inspection, T. Church had told Matt Karl and I that the 2018 ACM loads had not yet been plotted on the map. Matt Karl and I agreed that loads should be plotted on a map a minimum of monthly, rather than yearly.

VII. 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 sending out a notification at the beginning of each calendar year explaining that excavations will occur on a continuous basis throughout the year and explain the way in which they will control ACM dust during these excavations. These notifications are submitted through AQD's Asbestos Notification System (ANS) electronically. 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 notification they submit at the beginning of the year also includes these situations. Locations for installing vertical wells are chosen in less concentrated areas of ACM disposal. Brent Run does not have plans to drill until Quarter 3 of 2019. Brent Run has submitted their asbestos excavation notifications to ANS from 2014 – 2018.

Any of the waste that is excavated from the waste pile is treated like non-friable ACM, including wetting it to ensure dust is suppressed.

FGCOLDCLEANERS

Brent Run Landfill has one cold cleaner present onsite in their maintenance building. The cold cleaner 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 oil in their cold cleaner.

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 only chemical in their cold cleaner is mineral oil, which does 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. Brent Run uses mineral spirits as their solvent and according to Cameo Chemical's SDS, has a RVP of 0.13 psia. This cold cleaner is 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. Brent Run is in compliance with this condition.

Compliance Statement: Brent Run Landfill is in non-compliance with Section 1 of MI-ROP-N5987-2015a at this time for EUASBESTOS recordkeeping violations. Matt Karl has sent T. Church a Violation Notice to address these issues.

Section 2: EDL Generating Station Inspection

The Generating Station inspection was conducted on November 30, 2018 during the annual stack testing on the engines. Upon entry to EDL's plant yard for the stack test, I saw no signs of opacity being emitted from any of the engines stacks. A slight landfill gas odor was detected (level 2), but it is my professional judgment that the odor's frequency and duration would not constitute a nuisance at this time.

EUTREATMENTSYS

This emission unit treats the landfill gas coming into the electric plant by removing moisture and particulate, making it suitable for combustion in the landfill gas engines. The compressor within the treatment system limits how much of the gas can be treated at a time. D. Zimmerman said that EDL has 2 compressors which can handle 1800 scfm. D. Zimmerman explained that if the compression or cooling systems malfunction, the engines will be shut down, as well as in situations where the filtration system used to remove particulates and oil from compressor from the gas malfunctions.

There are no Emission or Material Limits for EUTREATMENTSYS 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.

EDL is required to have both a Preventative Maintenance Plan (PMP) and a Startup, Shutdown, Malfunction (SSM) plan for the treatment system. Both were provided to me during the 2015 ROP Renewal Submittal, but I asked for another copy of the PMP during this inspection. EDL's PMP provides all preventative maintenance that they conduct on the landfill gas treatment system, including the parts present within the treatment system, the areas where problems could occur, and an example of a daily readings log sheet that personnel use to check system performance.

There are currently no Testing/Sampling conditions for EUTREATMENTSYS at this time.

Reporting

Semi-annual reports are required for exceedances, or periods when the treatment system was not operating for periods exceeding 1 hour. EDL reports treatment system downtime in exceedance of 1 hour, which includes the total duration of downtime and exact shutdown and startup times for these occurrences for all semi-annual reporting.

Startup, Shutdown and Malfunction (SSM) reports are required to be submitted semi-annually as well. All SSM reports submitted by EDL have been submitted and reviewed by AQD.

Landfill Gas Engines Present Onsite

Table 4 contains a list of all engines currently present onsite. Each serial number was verified by Patrick Walters. Overhaul dates listed are those that were conducted at the Granger Electric site; it does not take into account overhauls conducted on the engine previous to be installed at this site. Table 5 provides a list of the engines and associated operating parameters recorded during the inspection, but did not record data on EUENGINE5, the 3512 engine. All 5 engines were running during the inspection. The ROP's EUENGINE4 was swapped with a newer engine, manufactured in 2008, thus making it subject to NSPS Subpart JJJJ requirements. On November 29, 2018, EDL submitted a Rule 278a demonstration (attached) for the installation of the new EUENGINE4, although installation on the engine commenced on June 18, 2018. I informed D. Zimmerman that the NSPS Subpart JJJJ requires notification of installation within 30 days of commencing installation. The Rule 278a demonstration serves as notification for the installation, albeit late. D. Zimmerman has been made aware of this and has agreed to pay attention to the notification requirement for future installations (see attached email). Table 4 reflects the information for the new EUENGINE4. Currently Brent Run has a Permit to Install application in house with AQD for replacement of EUENGINE1 (3516) with a newer 3520 engine. The AQD sent a PTI waiver approval letter on November 15, 2018. As of January 4, 2019, EDL has yet to return the letter with an original signature in order to institute the PTI waiver and start construction on the new engine.

Table 4. Engines Present Onsite with Associated Installation Parameters

Engine FG	ROP Engine ID	EDL Engine ID	kW Rating	Build Date	Date Online	Last Overhaul Date	Serial #	Model #
NA	EUENGINE1	1	800	3/21/1995	3/1998	NA	4EK00464	G3516
NA	EUENGINE6	2	1600	On or after 7/1/2007. Actual date TBD	10/18/2016	NA	GZJ00387	G3520
FGICEENGINES	EUENGINE3	3	1600	11/27/2011	11/2012	NA	GZJ00550	G3520C
	EUENGINE4	4	1600	5/7/2008	6/18/18	NA	GZJ00394	G3520C
	EUENGINE5	5	600	10/27/1986	11/2010	NA	4KC00096	G3512

Table 5. Process information recorded on EUENGINES1, 3-6 during inspection

	EUENGINE1	EUENGINE3	EUENGINE4	EUENGINE5	EUENGINE6
Kilowatts (kW)	797	1675	1628	NA	1551
Flow (lb/hr)	NA	2545	2490	NA	2487
% Load	99	105	102	NA	97
CH ₄ (%)	48.8	48.8	48.8	48.8	48.8
O ₂ (%)	0.05	0.05	0.05	0.05	0.05
Total Hours	NA	NA	NA	NA	NA

EUENGINE1

This EU was once included in FGICEENGINES2, but has since been made its own emission unit in the ROP, as EUENGINE2 of this flexible group has been removed. The flexible group is no longer in the ROP.

There are no Material Limits, Process/Operational Restrictions, Design/Equipment Parameters, or Monitoring/Recordkeeping requirements for EUENGINE1 at this time.

Emission Limits & Testing/Sampling

The formaldehyde emission rate from this unit is required to be verified once per permitting cycle. EDL has until October 13, 2020 (expiration data of the current ROP) to conduct this testing. The last stack test for formaldehyde was performed on 1/22/13. According to the stack test report by Derenzo & Associates, formaldehyde emissions during the test were below the emission limit of 0.75 lb/hr.

Reporting

All required annual and semi-annual reporting has been submitted to-date.

EUENGINE6

(Requirements for EUENGINE6 fall under EUENGINE6, FGRICENSPS and FGRICEMACT).

Emission Limits & Testing/Sampling

Within 180 days after initial startup of EUENGINE6, and every 5 years from the most recent stack test thereafter, EDL is required to verify NO_x, CO, SO₂, and VOC, and formaldehyde emission rates at maximum routine operating conditions. D. Zimmerman said EUENGINE6 went online in October 2016. Initial testing for all pollutants was conducted on December 8, 2016, and based on the review of the stack test report (1/31/2017) EDL was meeting the emission limits for each of the pollutants at that time. Since that time, EUENGINE6 has been tested for NO_x, CO, and VOC emission rates (established under NSPS Subpart JJJJ [FGRICENSPS] and Rules 702, 205, 40 CFR 52.21 and Rule 225) annually. EDL has until December 8, 2021 to test EUENGINE6 for formaldehyde and SO₂.

Material Limits & Monitoring/Recordkeeping

EUENGINE6 is limited to 284.34 MMscf landfill gas per 12-month rolling time period. EDL is required to continuously monitor and record the landfill gas usage. D. Zimmerman provided me with a record of the 12-month rolling landfill gas usage for all of 2017, and 2018 through October for EUENGINE6 (see attached). The 12-month rolling period with the highest landfill gas usage was November 2017 – October 2018, which yielded a usage of 279.31 MMscf. EDL is in compliance with their material limit.

Process/Operational Restrictions

A previously approved malfunction abatement plan (MAP)/preventative maintenance plan (PMP) is required to be implemented and maintained if EDL wishes to operate these EUENGINE6. The most recent plan was updated in December 2016 after the issuance of PTI 78-16, to include EUENGINE6 and remove EUENGINE2.

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 December 2016 MAP/PMP addresses each of these requirements.

Design/Equipment Parameters

EUENGINE6 is required to have an air-to-fuel ratio controller that is operated in a satisfactory manner. Each engine regulates its own air:fuel ratio in order to maintain a specific output. D. Zimmerman explained that the air:fuel controller has internal calculations that tell the engine the BTU of the gas, and this controls how the controller adjusts air:fuel, i.e. the air:fuel ratio is automatically controlled.

Monitoring/Recordkeeping

EDL is also required to monitor and record the hours of operation for EUENGINE6 on a monthly and 12-month rolling basis. There are no limits associated with this requirement, but the information is considered useful for determining compliance with emission limits. The 12-month and monthly operating hours were provided for November 2017 – October 2018. The operating hours were highest during the November 2017 – October 2018 12-month rolling period. By the end of October 2018 this engine had operated 8357.28 hours. This information corroborates with the landfill gas usage at the end of October 2018 being the highest fuel usage during the November 2017 – October 2018 12-month period.

Records of maintenance activities are also required to be kept, and the activities are required to be in alignment with the MAP/PMP. At the inspection, D. Zimmerman provided me with copies of the "Plant Maintenance Log" from July 2018 – November 2018. He also showed me logs of daily inspections that are conducted on each of these engines. Combined, these two types of documents are sufficient for documentation to demonstrate that proper maintenance is being conducted.

Reporting

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

Stack/Vent Restrictions

The stack is required to be 60' minimum above ground, with a maximum diameter of 14'. D. Zimmerman provided me with a mechanical design of the stack dimensions. The design plan indicates that the stack is 60' above ground level, which includes a 2' raincap. The exhaust diameter of the pipe, prior to the raincap is 14", and the diameter of the raincap is 20". Working with Andy Drury, Permits Section, and Jim Haywood, AQD modeler, we discussed the impact of a 2-foot long, 20" raincap on dispersion. Tracey McDonald modeled the emissions based on a 13.8' diameter exhaust stack. Jim Haywood said that, relatively speaking, 2' out of 60' is not enough to impact the dispersion of the exhaust gases. Engines tend to release gases at a high enough velocity that the 20" diameter raincap will not have a significant effect, and therefore the dimensions

of the stack as built are acceptable.

FGRICENSPS (EUENGINE3, EUENGINE4, & EUENGINE6)

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

Emission Limits & Testing/Sampling

EDL is required to conduct performance testing within one year after startup and every 8760 hours after that to determine compliance with the NSPS g/bhp-hr limits for NO_x, CO, and VOC. EUENGINE4 was installed in June 2018, and was tested, along with EUENGINE3 and EUENGINE6 on November 30, 2018, thus meeting the requirement to test under the NSPS Subpart JJJJ within one year of startup. The test report for the November 30th testing has not yet been received and is due January 30, 2019. Granger Electric/EDL has conducted stack tests on EUENGINE3 and EUENGINE6 annually since their respective installations.

There are currently no Material Limits for FGRICENSPS at this time.

Process/Operational Restrictions & Monitoring/Recordkeeping

Non-certified engines are required to be maintained to minimize emissions. The implementation of the MAP/PMP satisfies this condition. Additionally, Bill Prestin, during the previous inspection, explained that staff conduct visual walkthrough/inspections, maintenance and repair of the engines on a daily basis and keeps an organized inventory of all maintenance parts. There is a routine maintenance schedule board for all maintenance activities that need to be performed on a routine basis and that are based on the number of operating hours of each engine. Maintenance conducted is recorded in their maintenance logs, as previously discussed.

Design/Equipment Parameters

All 3 engines are required by the NSPS to have non-resettable hours meters installed. I verified during previous inspections that each engine has its own non-resettable hours meter.

Monitoring/Recordkeeping

Operating hours are required to be continuously monitored for the NSPS on EUENGINE3. Operating hours are being recorded on a monthly and 12-month rolling basis for this engine (see attached).

Reporting

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

FGICEENGINES (EUENGINE3, EUENGINE4, and EUENGINE5)

This FG consists of the two 1600 kW, G3520C engines, and one 600 kW, Cat 3512 engine.

Emission Limits & Testing/Sampling

EDL is required to test EUENGINE3 or EUENGINE4, and EUENGINE5 once per permitting cycle for formaldehyde emissions. They have until October 13, 2020 to complete this testing. The last formaldehyde testing was conducted on 1/22/13 for EUENGINE 4 and 5. Each met their formaldehyde emissions limits, 2.10 lb/hr and 0.75 lb/hr, respectively.

Granger Electric and now EDL, have tested EUENGINE3 annually for CO, NO_x, and VOC to ensure compliance with the lb/hr limits. The most recent test was conducted on November 30, 2018, along with the required NSPS Subpart JJJJ testing.

Material Limits & Monitoring Recordkeeping

A limit of 724.88 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. D. Zimmerman provided me with a record of the 12-month rolling landfill gas usage for all 3 engines combined for all of calendar year 2017 and November 2017 – October 2018 (see attached). The 12-month rolling period with the highest landfill gas usage was September 2017 – August 2018, which yielded a usage of 667.66 MMscf. EDL is in compliance with their material limit.

Process/Operational Restrictions

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 December 2016 after the issuance of PTI 78-16, to include EUENGINE6 and remove EUENGINE2.

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 December 2016 MAP/PMP addresses each of these requirements.

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. I asked B.

Prestin about the control of the air:fuel ratio during a previous inspection, and he explained that each engine regulates its own air:fuel ratio in order to maintain a specific output. He said the air:fuel on EUENGINES 1 and 5 are manually adjusted.

EUENGINES3 & 4 are also required to have nonresettable hours meters installed. EUENGINES1, 3, 4, 5, and 6 all have nonresettable hours meters.

Monitoring/Recordkeeping

EDL is required to continuously monitor the kW output from EUENGINES3-5 and record the kW output at least once per day. The "Granger Electric Brent Run Power Plant" data sheet is where the Granger Electric operators will record various engine parameters daily. Kilowatt output is one of those parameters. The readings are taken from digital output monitors for each engine which monitor the kW output continuously. I requested a day's worth of continuous kW data (October 1, 2018), attached. The data are collected every 10 minutes and all data indicate routine operating conditions (operating +/-10% of the rated maximum kW output).

The hours of operation for EUENGINES3 & 4 are required to be monitored continuously and recorded on a monthly and 12-month rolling period. The engine operations technicians record the total hours of operation for each engine daily on the "Granger Electric Brent Run Power Plant" record sheet. The flow to each engine is continuously monitored through a computer program and the hours of operation are based on the hours recorded on the engines' nonresettable hours meter. The total hours for the 12-month rolling period from November 2017 – October 2018 is 8,413.76 hours for EUENGINE3 and 8,449.28 hours for EUENGINE4 (see attachment).

Records of all maintenance activities conducted according to the MAP/PMP are required to be kept. At the inspection, D. Zimmerman provided me with copies of the "Plant Maintenance Log" from July 2018 – November 2018. He also showed me logs of daily inspections that are conducted on each of these engines where staff record the date, description and which engine maintenance activities were conducted. Combined, these two types of documents are sufficient for documentation to demonstrate that proper maintenance is being conducted.

Reporting

All required annual and semi-annual reporting has been submitted and reviewed for compliance to-date.

FGRICEMACT: (EUENGINE3-6)

These requirements only apply to all engines onsite, except for EUENGINE1.

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 EUENGINES 3-6 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

Granger 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.

Compliance Statement: EDL is currently in compliance with Section 2 of MI-ROP-N5987-2015a at this time.

NAME Melvin M. Lynch

DATE 11/8/19

SUPERVISOR [Signature]