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

N598758792

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:** 07/01/2021
STAFF: Michelle Luplow	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Announced, scheduled compliance inspection to determine compliance with MI-ROP-N5987-2015a and PTI 176-18.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

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

Personnel Present (EDL):

Jenna Hiltz, Operations Technician

Kevin Ackerman, Operations Technician

Adam Kamaretsos, Regional Operations Manager - Central (adam.kamaretsos@edlenergy.com)

Offsite Personnel:

Dan Zimmerman, EDL Senior Compliance Manager (dan.zimmerman@edlenergy.com)

Purpose

Conduct an announced, scheduled, partial compliance evaluation (PCE) inspection of the Brent Run Landfill and of the EDL Generating Station. Compliance was determined using the sectioned ROP, MI-ROP-N5987-2015a and PTI 176-18. 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, 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 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 that waste receipt levels at Brent Run are down compared to previous years due to the increased cost of disposal.

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, Materials Management Division (MMD), 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. T. Church said that there are no current plans to obtain a new construction/expansion permit from MMD. 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.

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. 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. This PTI will be rolled into the new ROP. The ROP is currently under renewal.

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 include 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, 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. T. Church said that he hasn't received any odor complaints for years (in particular this year or last year).

Inspection

This was an announced, scheduled inspection for both Brent Run and EDL due to COVID-19 safety precautions. The EDL inspection was conducted first, at 8:30 a.m., with the Brent Run Landfill inspection following at 10:15 a.m.

At approximately 10:15 a.m. on July 1, 2021, I met with Tim Church, Waste Connections District Manager at Brent Run. We had a discussion concerning current landfill practices with regard to compliance at the landfill and then proceeded with a drive around the landfill to observe operations.

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.

Dust from the landfill and its haul road are managed by MMD through a dust control plan. While receiving a tour of the landfill I noted that water trucks were watering down the haul roads. Opacity from the roads was minimal prior to water application.

There are no Material Limits for EULANDFILL at this time.

Emission Limits, Testing/Sampling & Monitoring/Recordkeeping

Brent Run is required to conduct quarterly surface emission monitoring (SEM) to determine compliance with the methane concentration limit of 500 ppm above background level. These SEM surveys are required to e conducted around the perimeter of the collection area and along a pattern that traverses the landfill at 30-meter (~100 ft) intervals, as well as taking readings where visual observations indicate elevated concentrations of landfill gas (such as distressed vegetation and cracks or seeps in the cover, as well as surface penetrations/protrusions (wellheads, risers, vacuum pipes, GCCS pipes, blind flange pipes). This monitoring includes documenting the monitoring route on a topographical map of the landfill.

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.

Brent Run's SEM consultants, Monitoring Control and Compliance, Inc (MCC), are required to follow the SEM map that Brent Run has constructed. T. Church said that MCC will carries the map with them when they traverse the landfill and that he doesn't believe MCC veers off the planned path by more than 10 feet.

The quarterly SEM reports are submitted semi-annually. All quarterly SEM reports are reviewed for compliance with the NSPS. These reports include a map of the route that is traversed for surface monitoring. 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.

The most recent semi-annual report contains the SEM report for the third and fourth quarters of 2020. I requested the 1st and 2nd quarter 2021 SEM reports as well (1st quarter attached). These reports were reviewed in their entirety and found in compliance with all requirements under SC V. Testing/Sampling. 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. All initial and second reading exceedances were addressed and resolved.

The monitoring is required to be conducted using an organic vapor analyzer, flame ionization detector, or other portable monitor. The semi-annual report contains what type of analyzer was used. A TVA-1000 was used for the 3rd quarter 2020 and a TVA-2020 was used for the 4th quarter 2020. Both are considered flame ionization detectors.

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. The "Calibration Precision Record" also includes the weather conditions during the surface monitoring.

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 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. 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. I was provided with the Monthly Soil Integrity Reports for 2020 and 2021, attached.

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/wdspi/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 2020) is 43,424,563 yd^3 or 16,368,481 Megagrams as of 3/31/21. 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.

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 showed me the

location on the landfill where liquid solidification occurs. 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.

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.

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 2015 renewal, as the gas treatment system is owned and operated by EDL. 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 to the treatment system. 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 geo-membrane 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 Tim Church 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.**
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> **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.**
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> **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 alternative compliance timeline requests monthly when exceedances are found, as well as submitting semi-annual summary tables of all wells that experienced positive pressure and exceedances in temperature and oxygen during each semi-annual period. Brent Run has been consistent with asking for alternative timelines for all wells not in compliance with the pressure, temperature, and oxygen requirements.

In addition to the well parameter monitoring exceedances and alternative timelines requests, Brent Run will also submit higher operating value requests when necessary.

Attached to this report is a list containing all approved oxygen, temperature and pressure higher operating values (HOVs) for various well heads within the landfill. These will be re-evaluated separately from this report to ensure that these HOVs are still necessary.

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 for each wellhead.

The collection pipes are required to be made of PVC, HDPE, fiberglass, stainless steel or other nonporous, corrosion-resistant materials. T. Church said that all horizontal collectors, all headers, and all vacuum laterials are made of HDPE. He said that HDPE tends to bend and pinch, whereas PVC tends to be brittle and break. The break allows for gas migration while a pinched well doesn't. Because of this material attribute T. Church said that they are testing the use of PVC on vertical wells; however, most of the vertical wells at this time 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 generation rate at the end of calendar year 2038 is 5,236 scfm. K. Mahmood said the existing gas collection system is designed to handle this future gas generation rate.

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.

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There are currently no Testing/Sampling requirements.

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Monitoring/Recordkeeping

Brent Run plans the well installations year by year, based on their overall goal as supplied in the Initial Design Capacity report (June 1996). 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. 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. Brent Run keeps a large plot map in their office. It contains identification numbers with all associated horizontal and vertical collectors currently in place.

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

EUENCLOSEDFLARE was not operating during the inspection. They currently operate the flare once per month for maintenance and readiness testing. EUENCLOSEDFLARE's purpose is to serve as backup to EUOPENFLARE. In December 2015, the enclosed flare had several updates, including the following 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.

The flare is rated at 1389 scfm and, according to T. Church, the was installed in the 1990's. Between the open and enclosed flare capacities, the flares can handle 2,739 scfm landfill gas. The LandGem model indicates the gas generation rate for 2021 is 4,016 scfm. The gas collection system operates at 70% collection efficiency, and therefore the maximum flow to the flares is approximately 2,811 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 flare is required to have an NMOC reduction of 98% or an NMOC outlet concentration of 20 ppmv. The April 12, 2002 performance 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 were around 1320°F. Any operations where there are 3-hour block averages where the combustion temperature is more than 28C (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 flare. 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.

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. T. Church ensured that a digital monitoring system was installed which provides continuous data for flow and temperature. MCC conducts calibrations on this equipment. Brent Run provided me with continuous temperature and flow data.

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

EUOPENFLARE was not 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, 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.

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

Emission Limits, Process/Operational Restrictions & Testing/Sampling

Visible emissions from the flare are limited to 0% opacity. 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 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/m^3 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.

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. Brent Run is currently in compliance with visible emission and net heating value restrictions, as well as exit velocity 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. 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.

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. Brent Run provided me with continuous temperature and flow records for Jan – May 2021.

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 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 and all have been reviewed for compliance.

EUASBESTOS

T. Church said that Brent Run Landfill receives friable and non-friable asbestos containing material (ACM) on an infrequent basis. From January 2019 – June 2021 Brent Run received 14 loads total of ACM (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, log the GPS coordinates it is disposed at, etc.

There are no Emission Limits, Material Limits, or Testing/Sampling requirements 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 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 (a whole is dug, ACM disposed, ACM covered with waste) or it is covered at the end of the day when the asbestos pit has been created within the daily working face. The daily cover that Brent Run uses at the end of the day includes tarps (for non-winter months) and other MMD-approved cover.

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 throughout the landfill; there is no designated location for ACM deposits and therefore all gas-producing areas are controlled; there are no areas exempt from gas collection.

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") that can be used to track the waste manifests and to identify loads within an excel spreadsheet containing the lat/long for each ACM

deposit. The RACM Load Inspection Report forms 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.

Craig Dechy, AQD Asbestos Unit, and myself reviewed the waste manifests provided by Brent Run. We found that multiple manifested loads of regulated ACM waste did not report the quantity in cubic yards or in cubic meters. C. Dechy said he would contact MIS Corporation (operator) to address the missing quantities on their waste manifests. Brent Run still maintains compliance with the recordkeeping for quantity in cubic yards received, despite the missing cubic yardage per manifest: T. Church said that multiple waste manifests will come in 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.

I reviewed the maps containing the location, depth and area of the ACM loads. Each dot represents a load of ACM comprised of multiple waste manifests, 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 (depth) (which can be used to determine the area of the ACM pit). The ACM loads are plotted on the map on a monthly basis by Brent Run's consultants (see attached).

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 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. Brent Run submitted their asbestos excavation notifications to ANS for 2021. Drilling will start around July 13th.

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. Brent Run uses mineral spirits as their solvent and according to Cameo Chemical's SDS, 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.

Compliance Statement

Brent Run Landfill is in compliance with Section 1 of MI-ROP-N5987-2015a at this time.

Section 2: EDL Generating Station Inspection

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. 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.

At approximately 8:30 a.m. I met with Adam Kamaretsos, Jenna Hiltz, and Kevin Ackerman to conduct the inspection.

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. 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 buildup in the engine cylinders.

There are no Emission or Material Limits, or Testing/Sampling requirements 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. D.Zimmerman 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.

EDL is required to have both a Preventative Maintenance Plan (PMP) and a Startup, Shutdown, Malfunction (SSM) plan for the treatment system. 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.

Any emissions from any atmospheric vents or stacks associated with the treatment system are subject to 60.752 (b)(1)(iii)(A) or (B). I was told during the inspection that treatment is a closed-loop system. There are no vents or stacks releasing to atmosphere.

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.

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. Serial numbers and total operating hours were verified onsite per engine, HP was determined by engine test cell results provided by EDL. I was told by the plant operators and A. Kamaretsos 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 the computer and logged on the computer, and the correct operating hours for these two engines is on the computer. Table 2 identifies both the hours-meter reading (lower hour-count) and the actual hours reading (higher hour-count).

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 1. Engines Present Onsite

EU	Serial #	HP (2,242)	Model #	EDL Engine ID	kW Rating	Build Date	Date Online	Last Overhaul
EUENGINE3	GZJ00550 swapped 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	644	G3520C	5	600	10/27/1986	11/19/2010	NA
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. July 1, 2021 Operating Conditions

EU	kW	Flow Rate (lb/hr)	CH4 %	O2 %	Total Operating Hours	Stack Height Measurement	Stack Height Permitted
EUENGINE3	1221	15,637	52.6	0.15	28,227	75.9	75 (old PTI says 60)
EUENGINE4	1547	19,335	52.6	0.15	19,304 (or 84,841)	75.3	75 (old PTI says 60)

EUENGINE5 Not Operating	**NA**	**NA**	**NA**	**NA**	**74,649.4**	**30.9**	**30**
EUENGINE6	**1304**	**16,510**	**52.6**	**0.15**	**31,727 (or 97,263)**	**75.8**	**70**
EUENGINE7	**1553**	**20,373**	**52.6**	**0.15**	**19,062**	**74.6**	**70**

(Max operating parameters should be ~ 1620's kW, at 2260-2270's lb/hr flow rate, 54.6% CH4 and 0% O2)

Emission Limits, Testing/Sampling, & Monitoring/Recordkeeping

By December 31, 2019, EDL was required to verify emission rates for each engine for NOx, CO, VOC, SO2, PM10, PM2.5, 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: SO2 on EUENGINE3, EUENGINE4 and EUENGINE6. The limit is 3.56 lb/hr SO2 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 SO2 limits for these 3 engines.

In addition to conducting stack tests to verify compliance with the emission limits, EDL is also required to verify hydrogen sulfide (H2S) or total reduced sulfur (TRS) concentrations in the landfill gas on a monthly basis via Draeger tubes (H2S 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 H2S or TRS equivalent exceeds 640 ppmv, EDL is required to sample and record the H2S 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 650 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 H2S concentration records from June 2019 – June 2021 and found the following deviations:

Date sampled	H2S Exceedance value (ppm)	Retest weekly?
12/3/2019	**650**	**No, done daily for 3 additional days (under 640 ppmv), and then**

		once more 2 weeks later (12/16/2019)
12/16/2019	**675**	**No**

This was the only instance where data was not collected weekly, as required by the permit and because this was a one-time occurrence, and all other H2S values from January 2020 to present were below 640 ppm, a violation notice will not be cited at this time. However, EDL will be made aware of these deviations, as well as reminded that weekly testing must occur if a value above 640 ppmv is found. A violation notice may be necessary if this discrepancy is found during future inspections/records review.

SO2 monthly and 12-month rolling emission rates are required to be calculated based on the monthly (and monthly average of weekly) H2S concentrations, the monthly gas usage, and the ratio of TRS to sulfur as H2S from the most recent lab test when sampling analysis does not give TRS values (e.g. Draeger tube sampling analysis). The SO2 limit is 71.0 tons per 12-month rolling period.

The SO2 monthly and 12-month rolling calculation spreadsheets for 2019, 2020, and a partial of 2021 were reviewed to verify that the calculation in Appendix A was followed. During review of these records it appears that the ratio of TRS to sulfur as H2S was not included in EDL's SO2 emission calculations; however, they did calculate their SO2 emissions according to the equation in Appendix A of the PTI: the equation in Appendix A does not contain the ratio of TRS to H2S as sulfur variable. The 12-month rolling period with the highest emissions of SO2 was April 2019 - March 2020 at 58.3 tons SO2. EDL did provide their TRS to H2S ratio for all lab analysis samples. The highest ratio was 1.07, which adds approximately 4 tons more of SO2 to what was reported, still within the limits of the permit. I will have a discussion with EDL and their consultants to ensure that the ratio of TRS to H2S is included in all calculations going forward, and will provide them with an updated equation to show them how they can incorporate the ratio into their calculations.

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. December 2019 stack test data is contained in Table 3 for reference. This data should have been used for all calendar year 2020 emissions. NOx emission factors will change, as testing for NOx is conducting on an annual basis. I spot-checked EDL's records to verify the emission were calculated accurately for VOC (including formaldehyde) and PM2.5. PM2.5 appears to be calculated correctly; however, VOC (including formaldehyde) emission rates appear to be miscalculated. I have requested that EDL revisit their formaldehyde calculations for 2019, 2020 and 2021 and recalculate where necessary; I have included in my request examples where discrepancies were found (e.g. monthly reported rate for VOC including formaldehyde is less than the emissions from formaldehyde alone). These calculations will have an impact on VOC (including formaldehyde) monthly and 12-month rolling emissions. Further compliance for VOC (including formaldehyde) 12-month rolling emissions will be evaluated when the records have been revised and resubmitted to me. I will also request that EDL verify that NOx was also calculated correctly. EDL is limited to 108.7 tpy NOx, 14.5 tpy PM2.5, and 91.1 tpy VOC (including formaldehyde) from all engines combined. The highest rolling totals from 2019, 2020 and 2021 combined are as follows: 65.96 tons NOx for 12-month period January 2020 – December 2020; 10.81 tons PM2.5 for 12-month period April 2019 - March 2020; 40.78 tons VOC (including formaldehyde) for 12-month period January 2020 – December 2020.

Table 3. **December 3 – 6, 2019 Test Results**

Pollutant	**EUENGINE3**	**EUENGINE4**	**EUENGINE5**	**EUENGINE6**	**EUENGINE7**

	lb/hr (g/bhp-hr)	lb/hr (g/bhp-hr)	lb/hr	lb/hr (g/bhp-hr)	lb/hr (g/bhp-hr)
NOx	3.92 (0.78)	3.86 (0.78)	0.65	3.75 (0.75)	3.53 (0.71)
Formaldehyde	1.56	1.68	0.54	1.80	1.82
VOC	2.10 (0.11)	2.24 (0.11)	0.95	2.34 (0.11)	2.56 (0.15)
PM2.5	0.47	0.49	0.20	0.52	0.56

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 month and 12-month rolling usage. The 12-month rolling landfill gas usage records for 2019, 2020 and 2021 through May were reviewed. 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 April 2019 for the ROP Renewal submittal and includes recently permitted EUENGINE7.

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 April 2019 MAP/PMP addresses each of these requirements. Records of all maintenance activities conducted according to the MAP/PMP are required to be kept.

Items to be inspected per the MAP/PMP include the engine oil (level, temperature, oil performance), oil filter pressure & filter itself, ignition spark plugs, the water pump and the radiator. I reviewed EDL's onsite maintenance board where they track 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), and oil and filters (every 1,000 hours). I requested January – May 2021 maintenance records to ensure maintenance was being conducted according to the MAP/PMP. Records indicate that maintenance is being conducted in line with the MAP/PMP.

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. 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 during the 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 NOx, CO, and VOC. EUENGINE7 was brought online March 8, 2019 and was tested in December 2019. Additionally EUENGINE3, EUENGINE4, and EUENGINE6 were also tested at that time for NOx, CO and VOC. The test report demonstrated compliance with each engine's emission limits.

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.

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.

Compliance Statement

EDL is currently in compliance with Section 2 of MI-ROP-N5987-2015a and PTI 176-18 at this time.

B.M.

NAME Michelle Luplow DATE 8/5/21 SUPERVISOR

April 21, 2021

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

Subject: **Surface Emissions Monitoring, First Quarter 2021**
Brent Run Landfill, Montrose, Michigan

Dear Mr. Church,

Enclosed, please find the first quarter, 2021 report documenting the results of the NSPS Surface Emissions Monitoring and Protrusion Scan event performed on March 16, 2021 at Brent Run Landfill. Results of the initial scan indicated four (4) areas in excess of the 500 ppm (above background) methane regulatory limit. The 1st 10-Day recheck was conducted the same day as the initial scan after Landfill operations made repairs to the 4 exceedance locations. The repairs consisted of placing hydrated bentonite, then good quality clay in all affected areas.

First Quarter 2021 Surface Emissions Monitoring					
Exceedance Identifier	**Latitude**	**Longitude**	**Initial Scan 3/16/21 (ppm)**	**10-Day Recheck 3/16/21 (ppm)**	**30-Day Recheck 4/12/21 (ppm)**
E1	43.173033	-83.840049	693.4	0	0
E2	43.172673	-83.839567	640.4	0	0
E3	43.17249	-83.839343	804.4	0	46.5
E4	43.172716	-83.840144	541.3	0	0

The survey was conducted in accordance with the published landfill performance sections: 40 CFR 60.753(d) - Surface Scan Requirements, 40 CFR 60.755(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).

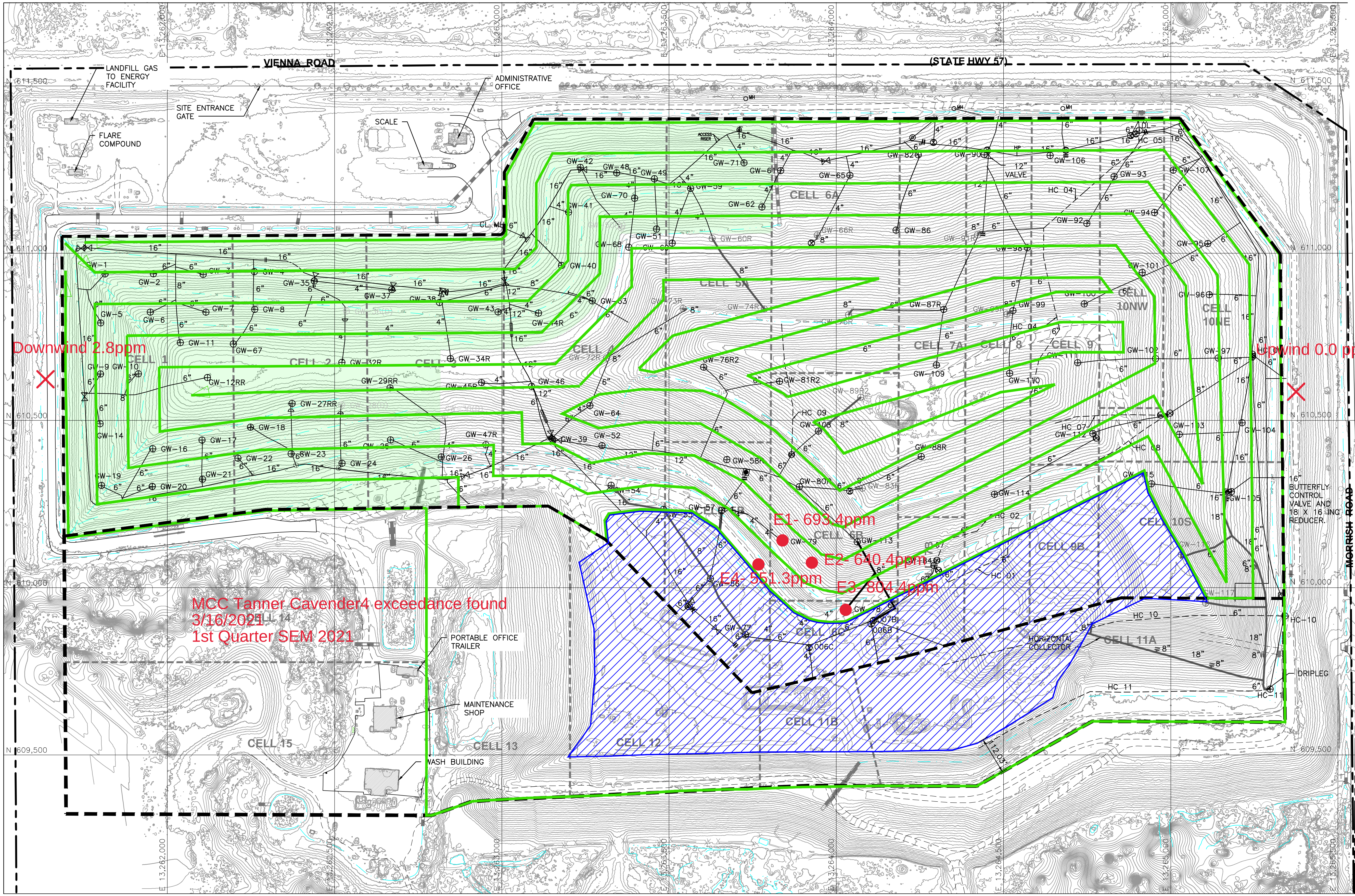
Sincerely,

Monitoring Control and Compliance, Inc.

Tom Lockwood

Tom Lockwood
Senior Manager

ATTACHMENT A



LEGEND

- PROPERTY BOUNDARY
- CELL BOUNDARY
- SOLID WASTE BOUNDARY
- EXPANSION AREA SOLID WASTE BOUNDARY
- FINAL COVER AREA
- 680 TOPO 10' CONTOUR
- TOPO 2' CONTOUR
- GW-60R 2020 AS-BUILT WELL REDRILLS
- GW-117 2020 AS-BUILT WELLS
- GW-30(D) EXISTING DECOMMISSIONED WELLS
- 2020 AS-BUILT LFG LATERAL
- 2020 AS-BUILT 8" BLIND FLANGE AND BUTTERFLY CONTROL VALVE
- EXISTING REMOTE WELLHEAD
- EXISTING CONTROL VALVE
- EXISTING FLANGE
- EXISTING DRIP LEG
- HP EXISTING HIGH POINT
- SEM PATH
- ACTIVE WASTE FILLING AREA

NOTES:

1. AERIAL TOPOGRAPHIC MAP PROVIDED BY THE ROWE PROFESSIONAL SERVICES COMPANY. DATE OF PHOTOGRAPHY: 06/25/2020.
2. FEATURES, CONTOURS, AND ELEVATIONS OF THESE BASE MAPS ARE APPROXIMATE INDICATIONS OF CURRENT CONDITIONS.
3. PIPE AND WELL LOCATIONS WERE PROVIDED BY ROWE PROFESSIONAL SERVICES COMPANY ON 09/17/20.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 3/12/2021 — DRAWN BY CDA — DESIGNED BY CDA — CHECKED BY MPB — APPROVED BY MPB

TETRA TECH

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

SURFACE EMISSIONS MONITORING PLAN
SEM PATH

SHEET NO. 1
PROJECT NO. 4211044-001

Calibration Precision Record

Monitoring Control and Compliance, Inc.

Landfill Name: **Brent Run**

Monitoring Date: Tuesday, March 16, 2021 Performed By: Tanner Cavender

Time: 7:46:00 Expiration Date: 6/16/2021

Instrument Make/Model: Irwin Serial Number 92001320

Calibration Gas Standard: 500.0 ppm CH4 (STD)

Measurement #1:

Meter Reading for zero air 0.0 ppm (1)

Meter Reading for Calibration Gas: 499.6 ppm (2)

Measurement #2:

Meter Reading for zero air 0.0 ppm (3)

Meter Reading for Calibration Gas: 497.4 ppm (4)

Measurement #3:

Meter Reading for zero air 0.0 ppm (5)

Meter Reading for Calibration Gas 498.2 ppm (6)

Calculate Precision:

= **0.32** % (result must be less than +/- 10%)

((STD-(2)+(STD-(4)+(STD-(6))/3 x (1/STD) x (100/1)

Instrument Response Time Record

Landfill Name: **Brent Run**

Monitoring Date: Tuesday, March 16, 2021 Time: 7:47:00

Instrument Make/Model: Irwin Serial Number 92001320

Measurement #1

Stabilized Reading using calibation gas 500 ppm

90% of the stabilized reading = 448.6 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 500 ppm

90% of the stabilized reading = 448.6 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 5 seconds (2)

Measurement #3

Stabilized reading using calibration gas 500 ppm

90% of the stabilized reading = 448.6 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 5 seconds (3)

Calculate Response Time = 5.00 seconds (must be less than 30 seconds)

(1) + (2) + (3) / 3

Performed By: Tanner Cavender Date: 3/16/21

Calibration Procedure and Background Report

Landfill Name: **Brent Run**

Instrument Make/Model: Irwin Serial Number 92001320

Calibration Procedure

1. Allow instrument to zero itself while introducing zero air.

2. Introduce calibration gas into the probe.
   Stabilized reading = 500 ppm

3. Adjust meter settings to read Standard Cali Gas ppm 500.0 ppm

Backround Determination Procedure

1. Upwind background reading (highest in 30 seconds) 0 ppm (1)

2. Downwind reading (highest in 30 seconds) 2.8 ppm (2)

Calculate Background Value: (1) + (2) / 2

Background = 1.4 ppm

Performed By: Tanner Cavender

Date: 03/16/21 Time: 8:02:48

Quarterly Surface Monitoring Log Sheet

Landfill Name: **Brent Run**

Performed By: Tanner Cavender

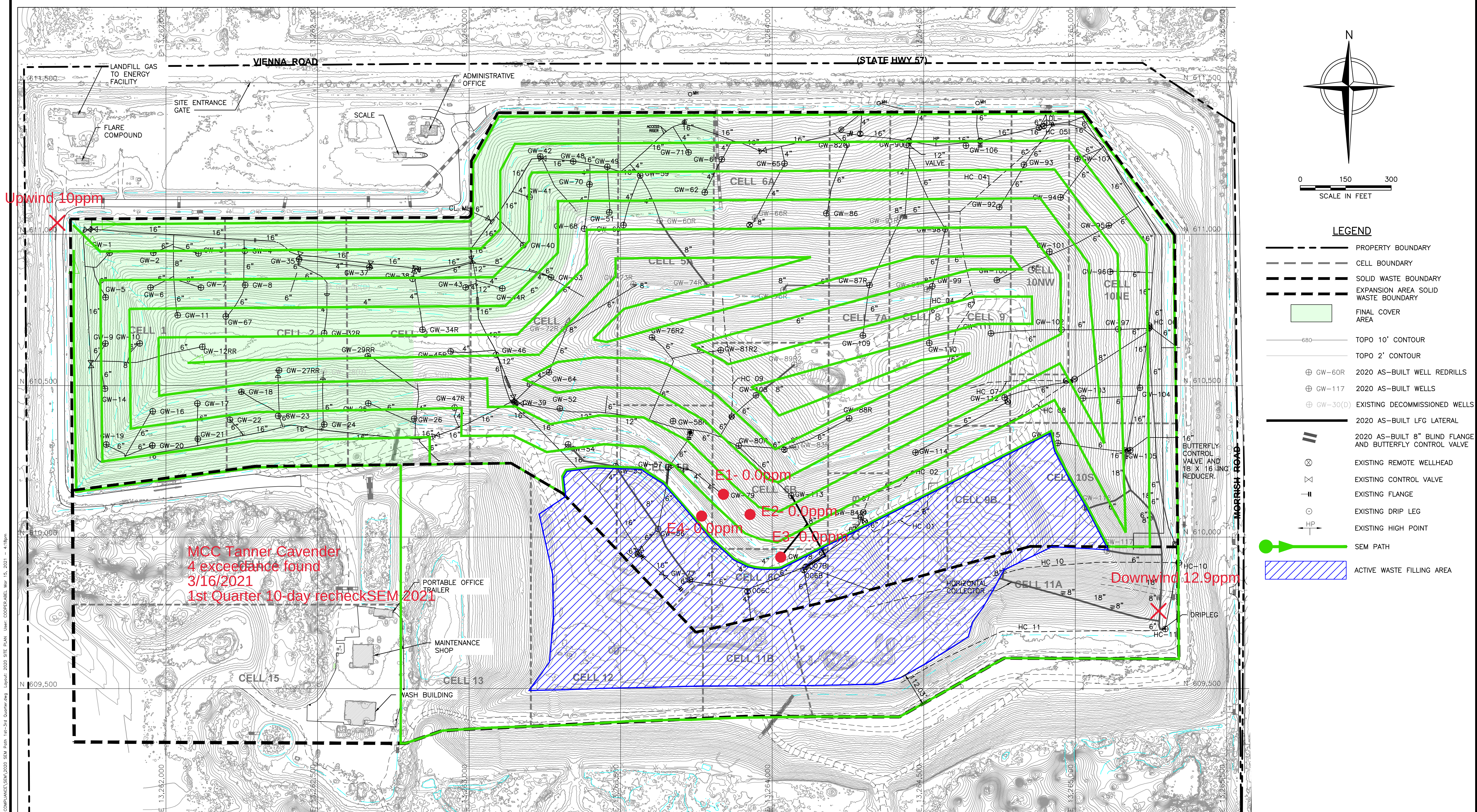
Date: Tuesday, March 16, 2021

Start Time: 8:10:00

Exceedance Identifier	Location and Time			Concentration of Exceedance (ppm)
E1	43.173033	-83.840049	11:25	693.4 ppm
E2	43.172673	-83.839567	11:29	640.4 ppm
E3	43.17249	-83.839343	11:30	804.4 ppm
E4	43.172716	-83.840144	11:32	541.3 ppm

WEATHER CONDITIONS:

Temperature:	30 ° F
Barametric Pressure:	30.01 In.
Wind Speed/Direction:	7MPH/E
Conditions:	Mostly Cloudy



NOTES:

1. AERIAL TOPOGRAPHIC MAP PROVIDED BY THE ROWE PROFESSIONAL SERVICES COMPANY. DATE OF PHOTOGRAPHY: 06/25/2020.
2. FEATURES, CONTOURS, AND ELEVATIONS OF THESE BASE MAPS ARE APPROXIMATE INDICATIONS OF CURRENT CONDITIONS.
3. PIPE AND WELL LOCATIONS WERE PROVIDED BY ROWE PROFESSIONAL SERVICES COMPANY ON 09/17/20.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 3/12/2021 — DRAWN BY CDA — DESIGNED BY CDA — CHECKED BY MPB — APPROVED BY MPB

TETRA TECH

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

SURFACE EMISSIONS MONITORING PLAN
SEM PATH

SHEET NO. 1
PROJECT NO. 4211044-001

Calibration Precision Record

Monitoring Control and Compliance, Inc.

Landfill Name: **Brent Run**

Monitoring Date: Tuesday, March 16, 2021 Performed By: Tanner Cavender

Time: 16:41:00 Expiration Date: 6/16/2021

Instrument Make/Model: Irwin Serial Number 92001320

Calibration Gas Standard: 500.0 ppm CH4 (STD)

Measurement #1:

Meter Reading for zero air 0.0 ppm (1)

Meter Reading for Calibration Gas: 501.7 ppm (2)

Measurement #2:

Meter Reading for zero air 0.0 ppm (3)

Meter Reading for Calibration Gas: 501.3 ppm (4)

Measurement #3:

Meter Reading for zero air 0.0 ppm (5)

Meter Reading for Calibration Gas 500.0 ppm (6)

Calculate Precision:

= **0.20** % (result must be less than +/- 10%)

((STD-(2)+(STD-(4)+(STD-(6))/3 x (1/STD) x (100/1)

Instrument Response Time Record

Landfill Name: **Brent Run**

Monitoring Date: Tuesday, March 16, 2021 Time: 16:42:00

Instrument Make/Model: Irwin Serial Number 92001320

Measurement #1

Stabilized Reading using calibation gas 500 ppm

90% of the stabilized reading = 450.9 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 6 seconds (1)

Measurement #2

Stabilized reading using calibration gas 500 ppm

90% of the stabilized reading = 450.9 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 6 seconds (2)

Measurement #3

Stabilized reading using calibration gas 500 ppm

90% of the stabilized reading = 450.9 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 6 seconds (3)

Calculate Response Time = 6.00 seconds (must be less than 30 seconds)

(1) + (2) + (3) / 3

Performed By: Tanner Cavender Date: 3/16/21

Calibration Procedure and Background Report

Landfill Name: **Brent Run**

Instrument Make/Model: Irwin Serial Number 92001320

Calibration Procedure

1. Allow instrument to zero itself while introducing zero air.

2. Introduce calibration gas into the probe.
   Stabilized reading = 500 ppm

3. Adjust meter settings to read Standard Cali Gas ppm 500.0 ppm

Backround Determination Procedure

1. Upwind background reading (highest in 30 seconds) 10 ppm (1)

2. Downwind reading (highest in 30 seconds) 12.9 ppm (2)

Calculate Background Value: (1) + (2) / 2

Background = 11.45 ppm

Performed By: Tanner Cavender

Date: 03/16/21 Time: 16:54:00

Quarterly Surface Monitoring Log Sheet

Landfill Name: **Brent Run**

Performed By: Tanner Cavender

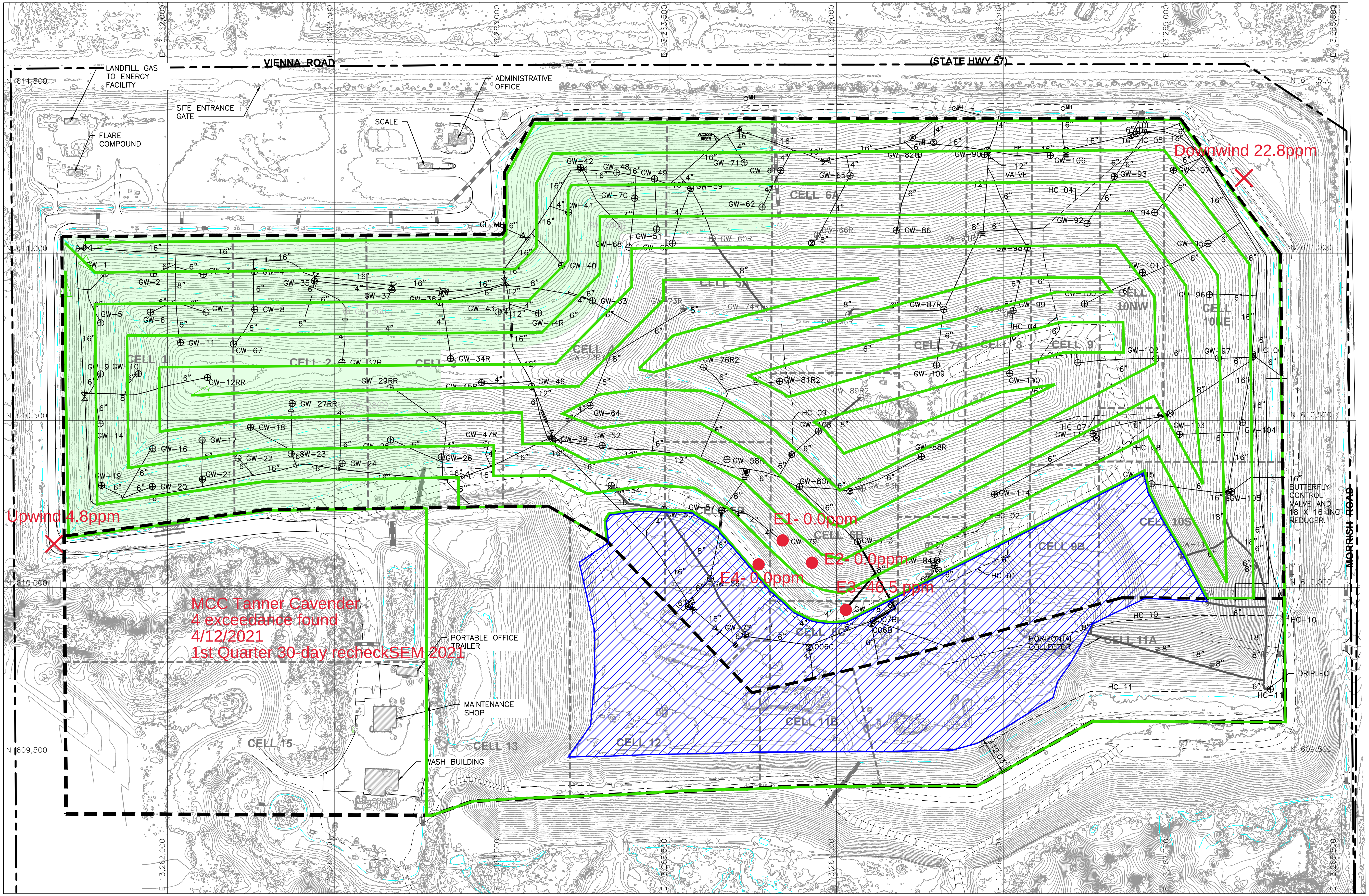
Date: Tuesday, March 16, 2021

Start Time: 16:55:00

Exceedance Identifier	Location and Time			Concentration of Exceedance (ppm)
E1	43.173033	-83.840049	17:00	0 ppm
E2	43.172673	-83.839567	17:03	0 ppm
E3	43.17249	-83.839343	17:04	0 ppm
E4	43.172716	-83.840144	16:59	0 ppm

WEATHER CONDITIONS:

Temperature:	30 ° F
Barametric Pressure:	30.01 In.
Wind Speed/Direction:	7MPH/E
Conditions:	Mostly Cloudy



N

0 150 300
SCALE IN FEET

LEGEND

- PROPERTY BOUNDARY
- CELL BOUNDARY
- SOLID WASTE BOUNDARY
- EXPANSION AREA SOLID WASTE BOUNDARY
- FINAL COVER AREA
- TOPO 10' CONTOUR
- TOPO 2' CONTOUR
- GW-60R — 2020 AS-BUILT WELL REDRILLS
- GW-117 — 2020 AS-BUILT WELLS
- GW-30(D) — EXISTING DECOMMISSIONED WELLS
- 2020 AS-BUILT LFG LATERAL
- 2020 AS-BUILT 8" BLIND FLANGE AND BUTTERFLY CONTROL VALVE
- EXISTING REMOTE WELLHEAD
- EXISTING CONTROL VALVE
- EXISTING FLANGE
- EXISTING DRIP LEG
- HP — EXISTING HIGH POINT
- SEM PATH
- ACTIVE WASTE FILLING AREA

NOTES:

1. AERIAL TOPOGRAPHIC MAP PROVIDED BY THE ROWE PROFESSIONAL SERVICES COMPANY. DATE OF PHOTOGRAPHY: 06/25/2020.
2. FEATURES, CONTOURS, AND ELEVATIONS OF THESE BASE MAPS ARE APPROXIMATE INDICATIONS OF CURRENT CONDITIONS.
3. PIPE AND WELL LOCATIONS WERE PROVIDED BY ROWE PROFESSIONAL SERVICES COMPANY ON 09/17/20.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 3/12/2021 — DRAWN BY CDA — DESIGNED BY CDA — CHECKED BY MPB — APPROVED BY MPB

TETRA TECH

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

SURFACE EMISSIONS MONITORING PLAN
SEM PATH

SHEET NO. 1
PROJECT NO. 4211044-001

Calibration Precision Record

Monitoring Control and Compliance, Inc.

Landfill Name: **Brent Run**

Monitoring Date: Monday, April 12, 2021 Performed By: Tanner Cavender

Time: 8:15:00 Expiration Date: 7/12/2021

Instrument Make/Model: Irwin Serial Number 92001320

Calibration Gas Standard: 520.0 ppm CH4 (STD)

Measurement #1:

Meter Reading for zero air 0.0 ppm (1)

Meter Reading for Calibration Gas: 512.9 ppm (2)

Measurement #2:

Meter Reading for zero air 0.0 ppm (3)

Meter Reading for Calibration Gas: 514.1 ppm (4)

Measurement #3:

Meter Reading for zero air 0.0 ppm (5)

Meter Reading for Calibration Gas 515.8 ppm (6)

Calculate Precision:

= **1.10** % (result must be less than +/- 10%)

((STD-(2)+(STD-(4)+(STD-(6))/3 x (1/STD) x (100/1)

Instrument Response Time Record

Landfill Name: **Brent Run**

Monitoring Date: Monday, April 12, 2021 Time: 8:18:00

Instrument Make/Model: Irwin Serial Number 92001320

Measurement #1

Stabilized Reading using calibation gas 520 ppm

90% of the stabilized reading = 462.9 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 520 ppm

90% of the stabilized reading = 462.9 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 6 seconds (2)

Measurement #3

Stabilized reading using calibration gas 520 ppm

90% of the stabilized reading = 462.9 ppm

Time to reach 90% of stabilized reading after switching from zero air to calibration gas. 5 seconds (3)

Calculate Response Time = 5.33 seconds (must be less than 30 seconds)

(1) + (2) + (3) / 3

Performed By: Tanner Cavender Date: 4/12/21

Calibration Procedure and Background Report

Landfill Name: **Brent Run**

Instrument Make/Model: Irwin Serial Number 92001320

Calibration Procedure

1. Allow instrument to zero itself while introducing zero air.

2. Introduce calibration gas into the probe.
   Stabilized reading = 520 ppm

3. Adjust meter settings to read Standard Cali Gas ppm 520.0 ppm

Backround Determination Procedure

1. Upwind background reading (highest in 30 seconds) 4.8 ppm (1)

2. Downwind reading (highest in 30 seconds) 22.8 ppm (2)

Calculate Background Value: (1) + (2) / 2

Background = 13.8 ppm

Performed By: Tanner Cavender

Date: 04/12/21 Time: 8:25:00

Quarterly Surface Monitoring Log Sheet

Landfill Name: **Brent Run**

Performed By: Tanner Cavender

Date: Monday, April 12, 2021

Start Time: 8:30:00

Exceedance Identifier	Location and Time			Concentration of Exceedance (ppm)
E1	43.173033	-83.840049	8:40	0.0 ppm
E2	43.172673	-83.839567	8:41	0.0 ppm
E3	43.17249	-83.839343	8:43	46.5 ppm
E4	43.172716	-83.840144	8:39	0.0 ppm

WEATHER CONDITIONS:	
Temperature:	50 ° F
Barametric Pressure:	29.63 In.
Wind Speed/Direction:	3 MPH/SW
Conditions:	Mostly Cloudy

Energy Developments Michigan, LLC
MI-ROP-N5987-2015a
Monthly Operations Record
Date: 7/6/21

(Brent Run)

TETRA TECH

Energy Developments Michigan, LLC

2020 Operation Summary

		Plant		Engine 3			Engine 4			Engine 5 (CAT 3512)		
Month/Year	Methane %	Average Flow scfm	Total Flow Mscf	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo
Jan-20	51.74	2,009.48	89,576.0	22.09	716.30	1,119,191	23.01	737.63	1,160,272	8.52	709.30	425,537
Feb-20	51.39	2,057.57	86,294.0	21.99	691.00	1,103,999	21.40	679.67	1,060,885	7.49	617.17	370,408
Mar-20	50.73	2,087.87	93,591.0	23.54	714.69	1,143,952	23.67	730.21	1,136,226	8.65	699.69	417,138
Apr-20	48.61	2,223.29	96,339.0	24.36	708.47	1,132,458	24.05	707.47	1,106,891	9.41	710.80	425,658
May-20	49.78	2,076.29	92,416.0	23.60	697.89	1,108,980	24.53	732.06	1,149,812	9.05	696.23	398,811
Jun-20	48.48	2,124.78	91,260.0	23.51	680.17	1,063,148	24.57	705.17	1,106,150	6.97	702.43	280,702
Jul-20	49.24	2,056.70	90,897.0	22.87	737.84	1,041,075	24.50	742.04	1,112,544	0.00	0.00	0
Aug-20	50.16	1,895.20	83,912.0	22.05	734.90	1,013,678	18.90	645.08	837,010	1.02	89.00	47,809
Sep-20	48.83	2,087.12	89,852.0	23.08	701.00	1,054,704	22.15	682.16	980,799	0.29	23.33	13,469
Oct-20	49.94	2,139.74	94,792.0	23.75	725.72	1,099,043	22.50	713.73	1,011,107	0.93	86.16	43,441
Nov-20	49.46	2,122.84	91,201.0	23.64	704.83	1,096,768	21.43	667.83	944,639	4.59	369.34	201,755
Dec-20	49.60	2,099.21	93,115.0	23.22	681.67	1,068,387	22.74	732.84	1,037,789	5.29	463.33	195,278
Total	**49.83**			**277.69**	**8,494.49**		**273.44**	**8,475.87**		**62.20**	**5,166.78**	

	Engine 6			Engine 7			Engines 3, 4, 5	Engines 3, 4, 5, 6, 7	Enclosed Flare		
Month/Year	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	Total Flow MMscf/mo	Hours of Operation Hr/month	Power KW-hr/mo	Total Flow MMscf	Total Flow MMscf	Total Flow SCF	Average Flow SCFM	Hours of Operation Hr/month
Jan-20	21.01	683.63	1,064,410	22.93	732.30	1,145,501	53.62	97.56	0	0.00	0.00
Feb-20	21.58	680.33	1,083,001	20.96	683.50	1,033,557	50.87	93.41	0	0.00	0.00
Mar-20	24.36	741.68	1,186,901	21.63	663.82	933,233	55.85	101.84	63,272	351.75	3.00
Apr-20	24.66	718.16	1,146,886	22.97	718.47	1,068,081	57.81	105.44	12,014	400.00	0.50
May-20	23.62	733.23	1,115,561	20.54	733.89	957,732	57.19	101.35	4,023	405.00	0.17
Jun-20	23.39	707.77	1,063,921	20.29	717.50	920,539	55.05	98.74	0	0.00	0.00
Jul-20	23.47	740.00	1,069,600	20.97	743.17	956,938	47.36	91.81	0	0.00	0.00
Aug-20	22.49	736.74	1,035,029	20.99	737.02	956,418	41.97	85.45	0	0.00	0.00
Sep-20	23.34	711.33	1,066,960	21.60	693.33	948,433	45.51	90.45	0	0.00	0.00
Oct-20	23.77	722.33	1,100,420	25.37	737.39	1,162,912	47.18	96.32	0	0.00	0.00
Nov-20	22.25	696.17	1,033,521	24.39	707.66	1,111,549	49.66	96.29	105,140	955.96	1.83
Dec-20	23.88	730.83	1,102,814	23.69	688.83	1,009,111	51.25	98.82	111,345	463.75	4.00
Total	**277.82**	**8,602.20**		**266.34**	**8,556.88**				**295,794**		**9.50**

TETRA TECH

Energy Developments Michigan, LLC

Anticipated Next Performance Test Date

Month/Year	Engine 3[1]		Engine 4[1]		Engine 5		Engine 6[1]		Engine 7	
	Hours of Operation	Cumulative Hours of Operation	Hours of Operation	Cumulative Hours of Operation	Hours of Operation	Cumulative Hours of Operation	Hours of Operation	Cumulative Hours of Operation	Hours of Operation	Cumulative Hours of Operation
	Hr	Hr	Hr	Hr	Hr	Hr	Hr	Hr	Hr	Hr
Dec-20	682	682	733	733	463	5,846	731	731	689	689
Hours Until Next Test:		8,078		8,027		2,914		8,029		8,071
Days Until Next Test:		337		334		121		335		336
Deadline for Next Performance Test As of : 1/1/2021		12/3/21		12/1/21		5/2/21		12/1/21		12/3/21

Highlighting indicates stack test due within two months

[1)] Previous Performance Testing for Engines 5 performed December 3-6, 2019.

[2)]Previous Performance Testing for Engines 3, 4, 6 & 7 performed December 1-2, 2020.

*Deadline for next performance test is based on engine run time, deadline may change depending on actual hours of operation. The performance test deadline should be used for planning purposes only.

TETRA TECH

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
2020	January	716.30	8,419.38	22.09	262.77	1,119,191	13,111,769	737.63	8,556.54	23.01	267.25	1,160,272	13,195,032	709.30	5,860.88	8.52	73.70	425,537	3,486,301
	February	691.00	8,494.83	21.99	266.10	1,103,999	13,233,686	679.67	8,590.07	21.40	269.97	1,060,885	13,238,744	617.17	5,910.11	7.49	74.03	370,408	3,535,231
	March	714.69	8,492.18	23.54	269.85	1,143,952	13,230,477	730.21	8,598.96	23.67	273.91	1,136,226	13,248,222	699.69	5,944.94	8.65	74.08	417,138	3,554,730
	April	708.47	8,506.43	24.36	270.52	1,132,458	13,265,293	707.47	8,599.85	24.05	273.92	1,106,891	13,248,611	710.80	5,960.06	9.41	74.44	425,658	3,569,894
	May	697.89	8,482.61	23.60	270.42	1,108,980	13,220,300	732.06	8,597.86	24.53	274.58	1,149,812	13,242,297	696.23	5,933.90	9.05	74.10	398,811	3,536,326
	June	680.17	8,470.48	23.51	271.67	1,063,148	13,189,015	705.17	8,588.40	24.57	276.17	1,106,150	13,222,458	702.43	6,138.19	6.97	74.79	280,702	3,518,814
	July	737.84	8,484.28	22.87	270.16	1,041,075	13,091,897	742.04	8,605.57	24.50	276.11	1,112,544	13,215,058	0.00	5,570.53	0.00	67.49	0	3,178,844
	August	734.90	8,512.03	22.05	271.08	1,013,678	13,099,377	645.08	8,525.82	18.90	272.47	837,010	12,994,611	89.00	5,629.03	1.02	68.11	47,809	3,208,395
	September	701.00	8,522.98	23.08	273.59	1,054,704	13,132,343	682.16	8,505.67	22.15	273.01	980,799	12,920,532	23.33	5,652.36	0.29	68.40	13,469	3,221,863
	October	725.72	8,553.82	23.75	276.65	1,099,043	13,175,488	713.73	8,502.20	22.50	274.03	1,011,107	12,857,107	86.16	5,495.19	0.93	66.46	43,441	3,119,401
	November	704.83	8,550.40	23.64	277.87	1,096,768	13,143,065	667.83	8,484.28	21.43	274.02	944,639	12,765,263	369.34	5,382.70	4.59	65.23	201,755	3,032,184
	December	681.67	8,494.49	23.22	277.69	1,068,387	13,045,382	732.84	8,475.87	22.74	273.44	1,037,789	12,644,124	463.33	5,166.78	5.29	62.20	195,278	2,820,005

		Engine 6 - G3520 C							Engine 7 - G3520 C [4]						Engines 3, 4 and 5			Plant (Engines 3, 4, 6, & 7)		Engines 3, 4, 5, 6, and 7		
		Hours of Operation		Landfill Gas Usages [1]		Power Output		Is Total MMscf within the ROP Limit? [1]	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? [2]	Plant LFG Usages	Plant Power Output	Landfill Gas Usages****		Is Total MMscf within the PTI Limit? [3]
		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	KW-hr/mo	MMscf/ month	Rolling MMscf/ 12-month	Yes/No
2020	January	683.63	6,486.03	21.01	262.85	1,064,410	13,124,565	YES	732.30	6,777.41	22.93	157.02	1,145,501	10,343,069	53.62	603.72	YES	89.58	4,489,374	97.56	892.21	YES
	February	680.33	6,522.56	21.58	265.67	1,083,001	13,180,555	YES	683.50	7,460.91	20.96	177.97	1,033,557	11,376,625	50.87	610.10	YES	86.29	4,281,442	93.41	985.62	YES
	March	741.68	6,535.41	24.36	270.02	1,186,901	13,205,815	YES	663.82	8,124.73	21.63	199.60	933,233	12,309,858	55.85	617.84	YES	93.59	4,400,312	101.84	1,087.47	YES
	April	718.16	6,544.00	24.66	270.23	1,146,886	13,219,076	YES	718.47	8,227.70	22.97	212.45	1,068,081	12,393,168	57.81	618.89	YES	96.34	4,454,316	105.44	1,101.56	YES
	May	733.23	6,573.18	23.62	270.74	1,115,560.6	13,210,863	YES	733.89	8,240.37	20.54	218.41	957,732	12,196,451	57.19	619.11	YES	92.42	4,332,085	101.35	1,108.25	YES
	June	707.77	6,573.81	23.39	271.12	1,063,921.2	13,143,526	YES	717.50	8,462.73	20.29	222.50	920,539	12,317,734	55.05	622.63	YES	91.26	4,153,758	98.74	1,116.25	YES
	July	740.00	6,575.44	23.47	268.87	1,069,600.1	13,039,171	YES	743.17	8,494.04	20.97	228.77	956,938	12,156,246	47.36	613.76	YES	90.90	4,180,157	91.81	1,111.40	YES
	August	736.74	6,578.69	22.49	270.02	1,035,029.2	13,059,860	YES	737.02	8,491.24	20.99	237.00	956,418	12,092,264	41.97	611.65	YES	83.91	3,842,136	85.45	1,118.67	YES
	September	711.33	6,602.63	23.34	273.89	1,066,959.8	13,155,185	YES	693.33	8,469.96	21.60	238.74	948,433	12,051,907	45.51	615.00	YES	89.85	4,050,896	90.45	1,127.63	YES
	October	722.33	7,279.92	23.77	275.38	1,100,419.8	13,119,809	YES	737.39	8,527.20	25.37	247.32	1,162,912	12,244,269	47.18	617.14	YES	94.79	4,373,481	96.32	1,139.84	YES
	November	696.17	7,926.41	22.25	276.61	1,033,521.3	13,096,196	YES	707.66	8,566.13	24.39	256.55	1,111,549	12,300,591	49.66	617.11	YES	91.20	4,186,477	96.29	1,150.27	YES
	December	730.83	8,602.20	23.88	277.82	1,102,813.7	13,069,025	YES	688.83	8,556.88	23.69	266.34	1,009,111	12,204,004	51.25	613.32	YES	93.12	4,218,101	98.82	1,157.48	YES

[1] 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.

[2] 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.

[3] 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

[4] Engine 7 began operation on 4/4/19

Energy Developments Michigan, LLC

Record Keeping Requirements

Rolling Monthly Emissions

		Engine 3 CAT G3520C									
		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
2020	January	1.40	8.68	5.03	61.65	1.11	14.06	0.17	2.28	0.75	3.42
	February	1.35	9.46	4.85	61.98	1.12	14.29	0.16	2.27	0.73	3.93
	March	1.40	10.18	5.02	61.73	0.97	14.22	0.17	2.24	0.75	4.43
	April	1.39	10.91	4.98	61.60	1.15	13.92	0.17	2.22	0.74	4.94
	May	1.37	11.60	4.90	61.20	1.03	13.65	0.16	2.18	0.73	5.42
	June	1.33	12.28	4.78	60.89	0.92	13.37	0.16	2.15	0.18	5.36
	July	1.45	13.04	5.18	60.75	1.09	13.23	0.17	2.13	0.20	5.31
	August	1.44	13.81	5.16	60.72	1.19	13.40	0.17	2.11	0.77	5.84
	September	1.37	14.53	4.92	60.57	1.14	13.38	0.16	2.09	0.74	6.34
	October	1.42	15.30	5.10	60.56	1.08	13.23	0.17	2.07	0.76	6.86
	November	1.38	16.01	4.95	60.31	1.10	13.14	0.17	2.04	0.74	7.36
	December	1.34	16.65	4.79	59.67	1.01	12.91	0.16	2.00	0.72	7.82

		Engine 4 - CAT G3520 C									
		NO_x		CO		SO_2		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
2020	January	1.42	12.43	4.68	52.67	1.15	14.28	0.18	2.32	0.83	3.53
	February	1.31	12.83	4.31	53.01	1.10	14.45	0.17	2.31	0.76	4.07
	March	1.41	13.22	4.63	53.21	0.99	14.40	0.18	2.29	0.82	4.64
	April	1.37	13.59	4.49	53.35	1.15	14.07	0.17	2.27	0.79	5.19
	May	1.41	13.97	4.64	53.48	1.08	13.82	0.18	2.25	0.82	5.75
	June	1.36	14.32	4.47	53.56	0.95	13.55	0.17	2.22	0.79	6.29
	July	1.43	14.73	4.71	53.81	1.09	13.41	0.18	2.21	0.83	6.87
	August	1.24	14.95	4.09	53.44	1.05	13.41	0.16	2.17	0.72	7.35
	September	1.35	15.33	4.45	53.65	1.11	13.34	0.17	2.15	0.76	7.87
	October	1.40	15.75	4.60	53.98	1.06	13.12	0.18	2.14	0.80	8.42
	November	1.36	16.11	4.47	54.10	1.04	13.02	0.17	2.12	0.75	8.93
	December	1.32	16.39	4.33	53.89	1.09	12.86	0.17	2.08	0.82	9.49

		Engine 5 - CAT G3512									
		NO_x		CO		SO_2		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
2020	January	0.23	8.52	1.41	18.36	0.41	5.24	0.07	1.10	0.34	1.31
	February	0.20	7.81	1.23	17.36	0.38	5.17	0.06	1.05	0.29	1.50
	March	0.23	6.97	1.39	16.14	0.36	5.00	0.07	0.99	0.33	1.71
	April	0.23	6.08	1.41	14.82	0.43	4.63	0.07	0.92	0.34	1.91
	May	0.23	5.14	1.38	13.37	0.39	4.30	0.07	0.84	0.33	2.11
	June	0.23	4.57	1.39	12.82	0.36	4.18	0.07	0.81	0.33	2.34
	July	0.00	3.65	0.00	10.59	0.00	3.66	0.00	0.70	0.00	2.24
	August	0.03	3.63	0.18	10.65	0.14	3.77	0.01	0.70	0.04	2.27
	September	0.01	3.64	0.01	10.65	0.04	3.81	0.00	0.71	0.01	2.28
	October	0.03	3.28	0.03	10.29	0.13	3.70	0.01	0.67	0.04	2.28
	November	0.12	2.62	0.12	9.64	0.57	3.83	0.04	0.61	0.18	2.36
	December	0.15	1.68	0.15	8.69	0.69	3.90	0.05	0.52	0.22	2.45

		Engine 6 - G3520									
		NO_x		CO		SO_2		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
2020	January	1.28	12.83	4.64	40.61	1.06	10.74	0.18	3.23	0.80	2.62
	February	1.28	12.82	4.62	41.24	1.10	10.92	0.18	3.15	0.80	3.21
	March	1.39	12.76	5.03	41.75	1.00	10.87	0.19	3.06	0.87	3.84
	April	1.35	12.70	4.87	42.22	1.17	10.55	0.19	2.97	0.84	4.45
	May	1.37	12.67	4.97	42.83	1.08	10.36	0.19	2.88	0.86	5.08
	June	1.33	12.59	4.80	43.25	0.96	10.10	0.18	2.79	0.83	5.68
	July	1.39	12.51	5.02	43.70	1.09	9.94	0.19	2.69	0.87	6.31
	August	1.38	12.43	5.00	44.15	1.20	10.07	0.19	2.60	0.86	6.94
	September	1.33	12.40	4.83	44.71	1.15	10.08	0.18	2.51	0.83	7.55
	October	1.35	13.66	4.90	49.33	1.08	11.07	0.19	2.43	0.85	8.39
	November	1.31	14.87	4.72	53.75	1.08	12.07	0.18	2.34	0.81	9.21
	December	1.37	16.13	4.96	58.37	1.09	13.07	0.18	2.22	0.86	10.06

		Engine 7 - G3520									
		NO_x		CO		SO_2		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
2020	January	1.29	7.01	4.78	49.21	1.14	11.56	0.21	1.86	0.94	15.88
	February	1.21	8.21	4.46	53.68	1.11	12.67	0.19	2.05	0.87	16.75
	March	1.17	9.38	4.33	58.01	0.90	13.57	0.19	2.24	0.85	17.60
	April	1.27	10.07	4.69	58.18	1.17	13.45	0.20	2.27	0.92	17.00
	May	1.30	10.68	4.79	57.67	1.08	13.23	0.21	2.28	0.94	16.16
	June	1.27	11.48	4.69	58.72	0.97	13.34	0.20	2.34	0.92	15.85
	July	1.31	12.12	4.85	58.34	1.09	13.23	0.21	2.36	0.95	15.05
	August	1.30	12.72	4.81	57.71	1.20	13.36	0.21	2.36	0.94	14.16
	September	1.22	13.27	4.53	56.99	1.13	13.29	0.19	2.36	0.89	13.28
	October	1.30	13.93	4.82	56.80	1.10	13.17	0.21	2.38	0.94	12.54
	November	1.25	14.55	4.62	56.51	1.10	13.16	0.20	2.39	0.91	11.80
	December	1.22	15.10	4.50	55.88	1.03	13.01	0.19	2.40	0.88	10.95

		PTI No. 176-18 FGICEENGINES (Engines 3, 4, 5, 6, and 7)											
		NOx [1]		Is Total tpy within the PTI Limit [1]	SO2 [2]		Is Total tpy within the PTI Limit [2]	PM10 / PM2.5 [3]		Is Total tpy within the PTI Limit [3]	VOC [4] (including formaldehyde)		Is Total tpy within the PTI Limit [4]
		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
2020	January	5.63	41.56	YES	4.88	49.02	YES	0.80	9.25	YES	3.65	25.15	YES
	February	5.35	46.91	YES	4.82	53.83	YES	0.76	10.01	YES	3.45	28.60	YES
	March	5.60	52.51	YES	4.21	58.04	YES	0.80	10.81	YES	3.62	32.22	YES
	April	5.60	53.35	YES	5.06	56.62	YES	0.80	10.64	YES	3.63	33.49	YES
	May	5.68	54.06	YES	4.67	55.36	YES	0.81	10.43	YES	3.68	34.52	YES
	June	5.52	55.24	YES	4.16	54.55	YES	0.79	10.32	YES	3.05	35.54	YES
	July	5.58	56.05	YES	4.36	53.46	YES	0.76	10.09	YES	2.85	35.78	YES
	August	5.40	57.55	YES	4.78	54.00	YES	0.74	9.94	YES	3.34	36.56	YES
	September	5.29	59.17	YES	4.56	53.89	YES	0.72	9.81	YES	3.23	37.32	YES
	October	5.51	61.92	YES	4.44	54.29	YES	0.75	9.68	YES	3.39	38.50	YES
	November	5.42	64.16	YES	4.90	55.22	YES	0.76	9.49	YES	3.38	39.65	YES
	December	5.39	65.95	YES	4.91	55.75	YES	0.74	9.21	YES	3.49	40.78	YES

[1] Total Ton/12-month NO_x for Engines 3, 4, 5, 6, and 7 not to exceed 108.7 Ton/12-month rolling per PTI 176-18, FGICENGINES Condition I.3.
[2] Total Ton/12-month SO_2 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.
[3] 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.
[4] 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.

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Energy Developments Michigan, LLC

Source of Emissions Factors

Jan-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.10	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **1/10/20** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.24	lbs/hr	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **1/10/20** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted December 3, 2019
	PM_{10}	-	-	0.49	lbs/hr	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs (including formaldehyde)	0.22	g/bhp-hr	0.95	lbs/hr	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	575	ppmv	1.17	lbs/hr	Site Specific ppmv **1/10/20** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.34	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **1/10/20** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs (including formaldehyde)	0.15	g/bhp-hr	2.56	lbs/hr	Stack Test Conducted December 5, 2019
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	Stack Test Conducted December 5, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **1/10/20** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

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Source of Emissions Factors

Feb-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.10	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **2/10/20** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.24	lbs/hr	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **2/10/20** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted December 3, 2019
	PM_{10}	-	-	0.49	lbs/hr	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs (including formaldehyde)	0.22	g/bhp-hr	0.95	lbs/hr	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	600	ppmv	1.22	lbs/hr	Site Specific ppmv **2/10/20** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.34	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **2/10/20** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs (including formaldehyde)	0.15	g/bhp-hr	2.56	lbs/hr	Stack Test Conducted December 5, 2019
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	Stack Test Conducted December 5, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **2/10/20** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

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Energy Developments Michigan, LLC

Source of Emissions Factors

Mar-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.10	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **3/9/20** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.24	lbs/hr	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **3/9/20** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted December 3, 2019
	PM_{10}	-	-	0.49	lbs/hr	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs (including formaldehyde)	0.22	g/bhp-hr	0.95	lbs/hr	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	500	ppmv	1.02	lbs/hr	Site Specific ppmv **3/9/20** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.34	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **3/9/20** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs (including formaldehyde)	0.15	g/bhp-hr	2.56	lbs/hr	Stack Test Conducted December 5, 2019
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	Stack Test Conducted December 5, 2019
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **3/9/20** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

TETRA TECH

Energy Developments Michigan, LLC

Source of Emissions Factors

Apr-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.10	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **04/09/20** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.24	lbs/hr	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **04/09/20** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted December 3, 2019
	PM_{10}	-	-	0.49	lbs/hr	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs (including formaldehyde)	0.22	g/bhp-hr	0.95	lbs/hr	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	600	ppmv	1.22	lbs/hr	Site Specific ppmv **04/09/20** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs (including formaldehyde)	0.11	g/bhp-hr	2.34	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **04/09/20** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs (including formaldehyde)	0.15	g/bhp-hr	2.56	lbs/hr	Stack Test Conducted December 5, 2019
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	Stack Test Conducted December 5, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **04/09/20** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

TETRA TECH

Energy Developments Michigan, LLC

Source of Emissions Factors

May-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	2.10	lbs/hr	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	546	ppmv	2.96	lbs/hr	Site Specific ppmv - **5/14 and 5/18/20** samples
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr(2)	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	2.24	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	546	ppmv	2.96	lbs/hr	Site Specific ppmv - **5/14 and 5/18/20** samples
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted December 3, 2019
	PM_{10}	-	-	0.49	lbs/hr(2)	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.95	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	546	ppmv	1.11	lbs/hr	Site Specific ppmv - **5/14 and 5/18/20** samples
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr(2)	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	2.34	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	546	ppmv	2.96	lbs/hr	Site Specific ppmv - **5/14 and 5/18/20** samples
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr(2)	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	2.56	lbs/hr(1)	Stack Test Conducted December 5, 2019
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	Stack Test Conducted December 5, 2019
	SO_x	546	ppmv	2.96	lbs/hr	Site Specific ppmv - **5/14 and 5/18/20** samples
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr(2)	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

TETRA TECH

Energy Developments Michigan, LLC

Source of Emissions Factors

Jun-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **June 5, 8, and 23, 2020** samples
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr(2)	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	2.24	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	500.00	ppmv	2.71	lbs/hr	Site Specific ppmv **June 5, 8, and 23, 2020** samples
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted November 30, 2018
	PM_{10}	-	-	0.49	lbs/hr(2)	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.95	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	500	ppmv	1.02	lbs/hr	Site Specific ppmv **June 5, 8, and 23, 2020** samples
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr(2)	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	2.34	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **June 5, 8, and 23, 2020** samples
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr(2)	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	2.56	lbs/hr(1)	PTI Application - October 3, 2018
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	PTI Application - October 3, 2018
	SO_x	500	ppmv	2.71	lbs/hr	Site Specific ppmv **June 5, 8, and 23, 2020** samples
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr(2)	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

TETRA TECH

Energy Developments Michigan, LLC

Source of Emissions Factors

Jul-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	544	ppmv	2.94	lbs/hr	Site Specific ppmv **July 1, 9, 10, 17, 23, 28 2020** samples
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.47	lbs/hr(2)	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	2.24	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	544	ppmv	2.94	lbs/hr	Site Specific ppmv **July 1, 9, 10, 17, 23, 28 2020** samples
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted November 30, 2018
	PM_{10}	-	-	0.49	lbs/hr(2)	Stack Test Conducted December 3, 2019
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted December 3, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.95	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	544	ppmv	1.10	lbs/hr	Site Specific ppmv **July 1, 9, 10, 17, 23, 28 2020** samples
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	-	-	0.20	lbs/hr(2)	Stack Test Conducted December 6, 2019
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	2.34	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	544	ppmv	2.94	lbs/hr	Site Specific ppmv **July 1, 9, 10, 17, 23, 28 2020** samples
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	-	-	0.52	lbs/hr(2)	Stack Test Conducted December 4, 2019
	Formaldehyde	-	-	1.80	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	2.56	lbs/hr(1)	PTI Application - October 3, 2018
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	PTI Application - October 3, 2018
	SO_x	544	ppmv	2.94	lbs/hr	Site Specific ppmv **July 1, 9, 10, 17, 23, 28 2020** samples
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	-	0.56	lbs/hr(2)	Stack Test Conducted December 5, 2019
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-1 (November 1998)/ Site Specific Formaldehyde

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

TETRA TECH

Energy Developments Michigan, LLC

Source of Emissions Factors

Aug-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **August 7, 14, 18 2020** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **August 7, 14, 18 2020** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted November 30, 2018
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	PTI (105-12) Application & Stack Test Conducted January 23, 2013

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.56	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **August 7, 14, 18 2020** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.40	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **August 7, 14, 18 2020** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	2.72	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	0.74	lbs/hr(1)	PTI Application - October 3, 2018
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	PTI Application - October 3, 2018
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **August 7, 14, 18 2020** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

TETRA TECH

Energy Developments Michigan, LLC

Source of Emissions Factors

Sep-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **September 18 2020** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **September 18 2020** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted November 30, 2018
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	PTI (105-12) Application & Stack Test Conducted January 23, 2013

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.56	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **September 18 2020** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.40	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **September 18 2020** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	2.72	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	0.74	lbs/hr(1)	PTI Application - October 3, 2018
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	PTI Application - October 3, 2018
	SO_x	600	ppmv	3.25	lbs/hr	Site Specific ppmv **September 18 2020** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

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Source of Emissions Factors

Oct-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **October 21 2020** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **October 21 2020** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted November 30, 2018
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	PTI (105-12) Application & Stack Test Conducted January 23, 2013

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.56	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **October 21 2020** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.40	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **October 21 2020** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	2.72	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	0.74	lbs/hr(1)	PTI Application - October 3, 2018
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	PTI Application - October 3, 2018
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **October 21 2020** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

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Source of Emissions Factors

Nov-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.78	g/bhp-hr	3.92	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **November 6, 13, 25 2020** sample
	CO	2.8	g/bhp-hr	14.05	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 3, 2019
	NO_x	0.78	g/bhp-hr	3.86	lbs/hr	Stack Test Conducted December 3, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **November 6, 13, 25 2020** sample
	CO	2.56	g/bhp-hr	12.69	lbs/hr	Stack Test Conducted November 30, 2018
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	PTI (105-12) Application & Stack Test Conducted January 23, 2013

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.56	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **November 6, 13, 25 2020** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.40	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.11	g/bhp-hr	0.54	lbs/hr(1)	Stack Test Conducted December 4, 2019
	NO_x	0.75	g/bhp-hr	3.75	lbs/hr	Stack Test Conducted December 4, 2019
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **November 6, 13, 25 2020** sample
	CO	2.72	g/bhp-hr	13.57	lbs/hr	Stack Test Conducted December 4, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	2.72	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	0.74	lbs/hr(1)	PTI Application - October 3, 2018
	NO_x	0.71	g/bhp-hr	3.53	lbs/hr	PTI Application - October 3, 2018
	SO_x	575	ppmv	3.11	lbs/hr	Site Specific ppmv **November 6, 13, 25 2020** sample
	CO	2.62	g/bhp-hr	13.06	lbs/hr	Stack Test Conducted December 5, 2019
	PM_{10}	-	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

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Source of Emissions Factors

Dec-20

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 3 - CAT G3520C	VOCs	0.14	g/bhp-hr	0.71	lbs/hr(1)	Stack Test Conducted December 1-2, 2020
	NO_x	0.48	g/bhp-hr	2.42	lbs/hr	Stack Test Conducted December 1-2, 2020
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **December 14, 2020** sample
	CO	2.8	g/bhp-hr	14.10	lbs/hr	Stack Test Conducted December 1-2, 2020
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.56	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.75	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 4 - CAT G3520C	VOCs	0.14	g/bhp-hr	0.67	lbs/hr(1)	Stack Test Conducted December 1-2, 2020
	NO_x	0.36	g/bhp-hr	1.77	lbs/hr	Stack Test Conducted December 1-2, 2020
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **December 14, 2020** sample
	CO	2.35	g/bhp-hr	11.60	lbs/hr	Stack Test Conducted December 1-2, 2020
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.68	lbs/hr	Stack Test Conducted January 23, 2013
	Total HAPs (Including Formaldehyde)	-	-	1.87	lbs/hr	PTI (105-12) Application & Stack Test Conducted January 23, 2013

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 5 - CAT G3512	VOCs	0.22	g/bhp-hr	0.56	lbs/hr(1)	Stack Test Conducted December 6, 2019
	NO_x	0.34	g/bhp-hr	0.65	lbs/hr	Stack Test Conducted December 6, 2019
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **December 14, 2020** sample
	CO	2.1	g/bhp-hr	3.97	lbs/hr	Stack Test Conducted December 6, 2019
	PM_{10}	48	lb/MM dscf CH_4(2)	0.40	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	0.54	lbs/hr	Stack Test Conducted December 6, 2019
	Total HAPs (Including Formaldehyde)	-	-	0.61	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 6 - CAT G3520	VOCs	0.13	g/bhp-hr	0.65	lbs/hr(1)	Stack Test Conducted December 1-2, 2020
	NO_x	0.54	g/bhp-hr	2.72	lbs/hr	Stack Test Conducted December 1-2, 2020
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **December 14, 2020** sample
	CO	2.51	g/bhp-hr	12.60	lbs/hr	Stack Test Conducted December 1-2, 2020
	PM_{10}	48	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	2.72	g/bhp-hr	Stack Test Conducted December 4, 2019
	Total HAPs (Including Formaldehyde)	-	-	1.99	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

Emission Source	Regulated Pollutants	Emission Factors				Emission Factors Basis
LFG-Fired Engine 7 - CAT G3520	VOCs	0.15	g/bhp-hr	0.75	lbs/hr(1)	Stack Test Conducted December 1-2, 2020
	NO_x	0.49	g/bhp-hr	2.47	lbs/hr	Stack Test Conducted December 1-2, 2020
	SO_x	550	ppmv	2.98	lbs/hr	Site Specific ppmv **December 14, 2020** sample
	CO	2.84	g/bhp-hr	14.30	lbs/hr	Stack Test Conducted December 1-2, 2020
	PM_{10}	-	lb/MM dscf CH_4(2)	0.55	lbs/hr(2)	EPA, AP-42, Table 2.4-5 (November 1998)
	Formaldehyde	-	-	1.82	lbs/hr	Stack Test Conducted December 5, 2019
	Total HAPs (Including Formaldehyde)	-	-	2.01	lbs/hr	EPA, AP-42, Table 2.4-5 (November 1998)/ Site Specific

SO_2 Emissions

[(scfm) x (60 min/hr) x (individual $ppmv_{sulfur}$ * 1E-06) x (MW SO_2)] ÷ [(R x T)] = lb/hr

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RecordKeeping Requirements

2020

LFG-Fired Engine 3 - CAT G3520C								
	Hours of Operation (Hr/yr)	NOx	CO	SO2	PM10	VOC	Formaldehyde	Total HAPs (Including Formaldehyde)
Total (Tons)	8,494	16.65	59.67	12.91	2.00	8.92	6.63	7.42
Total (lbs)		33298.39	119347.56	25829.28	3992.41	17838.43	13251.40	14833.29

LFG-Fired Engine 4 - CAT G3520C								
	Hours of Operation (Hr/yr)	NOx	CO	SO2	PM10	VOC	Formaldehyde	Total HAPs (Including Formaldehyde)
Total (Tons)	8,476	16.36	53.78	12.86	2.08	9.49	7.12	7.91
Total (lbs)		32716.84	107558.74	25727.14	4153.17	18985.94	14239.45	15817.88

LFG-Fired Engine 5 - CAT G3512								
	Hours of Operation (Hr/yr)	NOx	CO	SO2	PM10	VOC	Formaldehyde	Total HAPs (Including Formaldehyde)
Total (Tons)	5,167	1.68	10.26	3.90	0.52	2.45	1.40	1.58
Total (lbs)		3358.41	20512.12	7790.78	1033.36	4908.44	2790.06	3150.97

LFG-Fired Engine 6 CAT 3520								
	Hours of Operation (Hr/yr)	NOx	CO	SO2	PM10	VOC	Formaldehyde	Total HAPs (Including Formaldehyde)
Total (Tons)	8,602	16.13	58.37	13.07	2.24	10.06	7.74	8.54
Total (lbs)		32258.24	116731.81	26131.73	4473.14	20129.14	15483.95	17085.90

LFG-Fired Engine 7 CAT 3520								
	Hours of Operation (Hr/yr)	NOx	CO	SO2	PM10	VOC	Formaldehyde	Total HAPs (Including Formaldehyde)
Total (Tons)	8,557	15.10	55.88	13.01	2.40	10.95	7.79	8.58
Total (lbs)		30205.79	111752.88	26019.45	4791.85	21905.62	15573.53	17167.03

TOTAL EMISSIONS (TPY)	-	65.92	237.95	55.75	9.22	41.88	30.67	34.03
Total Emissions (lbs/yr)	-	131837.68	475903.11	111498.38	18443.94	83767.56	61338.40	68055.07
MAERS Emission Factor (lbs/mmscf)		120.59	435.29	101.98	16.87	76.62	56.10	62.25

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Gas Information - 3520 Engine

Methane Heating Value [HHV]	1,013 Btu/ft^3
LFG Moisture (1)	8%
LFG Methane Content (3)	49.83% ppmv
Carbon Dioxide Content (8)	50.0%
LFG Heating Value	505 Btu/ft^3
LFG Temperature (2)	77 ^oF
LFG Temperature [absolute]	537 R
LFG Inlet Flow [wet] (4)	535 scfm
LFG Inlet Flow [dry]	492 scfm
Methane Inlet Flow [dry] LFG	245 scfm
Heat Input	16.2 MMBtu/hr

Destruction and Conversion Efficiences

Halogenated Compounds (5,6)	98%
Non-Halogenated Compounds (5,6)	91%
Sulfur to SO2 (7)	99.70%

[1]Typical

[2] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Page 2.4-5, Nov. 1998 Use AP 42 value if LFG temp not known

[3] Site Specific

[4] Equipment rating

[5] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Page 2.4-3, Nov. 1998.

[6] According to AP42, control efficiencis for halogenated and non-halogenated compounds range from 91%-99% and from 38%-99% respectively. "Typical" control efficiencies for halogenated and non-halogenated compounds are 98% and 99.7% respectively.

[7] Sulfur-containing compounds are non-halogenated; therefore 99.7% conversion to SO2 is assumed. Use other amount if credible source can be referenced.

[8] Derived from user-supplied methane content.

Gas Information - 3512 Engine

Methane Heating Value [HHV]	1,013 Btu/ft^3
LFG Moisture (1)	8%
LFG Methane Content (3)	49.83% ppmv
Carbon Dioxide Content (8)	50.0%
LFG Heating Value	505 Btu/ft^3
LFG Temperature (2)	77 ^oF
LFG Temperature [absolute]	537 R
LFG Inlet Flow [wet] (4)	201 scfm
LFG Inlet Flow [dry]	185 scfm
Methane Inlet Flow [dry] LFG	92 scfm
Heat Input	6.1 MMBtu/hr

Destruction and Conversion Efficiences

Halogenated Compounds (5,6)	98%
Non-Halogenated Compounds (5,6)	91%
Sulfur to SO2 (7)	99.70%

[1]Typical

[2] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Page 2.4-5, Nov. 1998 Use AP 42 value if LFG temp not known

[3] Site Specific

[4] Equipment rating

[5] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Page 2.4-3, Nov. 1998.

[6] According to AP42, control efficiencis for halogenated and non-halogenated compounds range from 91%-99% and from 38%-99% respectively. "Typical" control efficiencies for halogenated and non-halogenated compounds are 98% and 99.7% respectively.

[7] Sulfur-containing compounds are non-halogenated; therefore 99.7% conversion to SO2 is assumed. Use other amount if credible source can be referenced.

[8] Derived from user-supplied methane content.

Sulfur to SO_2

Sulfur coversion to SO2 (4).....	99.7%
Total Sulfur Compound Concentration in LFG (6).....	550.00 ppmv

[1] Manufacturer's guarantee

[2] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Table 2.4-5, November 1998

[3] $PM_{2.5}$ is assumed to be equal to PM_{10}

[4] See footnote 8 on "Fuel and Equipment" worksheet.

[5] AP42 5th Ed., Table 2.4-2, November 1998

6 LFG Testing performed March 13, 2015; Draeger tube results as of January 2020

Sulfur to SO_2

Sulfur coversion to SO2 (4).....	99.7%
Total Sulfur Compound Concentration in LFG (6).....	550.00 ppmv

[1] Manufacturer's guarantee

[2] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Table 2.4-5, November 1998

[3] $PM_{2.5}$ is assumed to be equal to PM_{10}

[4] See footnote 8 on "Fuel and Equipment" worksheet.

[5] AP42 5th Ed., Table 2.4-2, November 1998

6 LFG Testing performed March 13, 2015; Draeger tube results as of January 2020

LFG Inlet Flow = 535 scfm — 3520 Engines

LFG Compound	Halo-genated	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[1]	Compound Conc & Mass in Inlet Gas lb/hr	DE[4] (%)	Emissions (lb/hr)	Emissions (tpy)
1,1,1 - Trichloroethane (methyl chloroform)	x	x	--	71-55-6	133.41	**0.48**	**6.12E-03**	98%	1.22E-04	0.00E+00
1,1,2,2 - Tetrachloroethane	x	x	x	79-34-5	167.85	**1.11**	**1.78E-02**	98%	3.16E-04	0.00E+00
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	x	79-00-5	133.41	**0.1**	**1.28E-03**	98%	2.26E-05	0.00E+00
1,1 - Dichloroethane (ethylidene dichloride)	x	x	x	75-34-3	98.96	**2.35**	**2.22E-02**	98%	3.94E-04	0.00E+00
1,1 - Dichloroethene (vinylidene chloride)	x	x	x	75-35-4	96.94	**0.201**	**1.86E-03**	98%	3.30E-05	0.00E+00
1,2 - Dichloroethane (ethylene dichloride)	x	x	x	107-06-2	98.96	**0.407**	**3.85E-03**	98%	6.83E-05	0.00E+00
1,2 - Dichloropropane (propylene dichloride)	x	x	x	78-87-5	112.99	**0.18**	**1.94E-03**	98%	3.45E-05	0.00E+00
2-Propanol (isopropyl alcohol)	--	--	x	67-63-0	60.11	**50.1**	**2.88E-01**	91%	2.30E-02	0.00E+00
Acetone (2-propanone)	--	--	--	67-64-1	58.08	**7.01**	**3.89E-02**	91%	3.10E-03	0.00E+00
Acrylonitrile (Propenenitrile)	--	x	x	107-13-1	53.06	**6.33**	**3.21E-02**	91%	2.56E-03	0.00E+00
Benzene	--	x	x	71-43-2	78.12	**1.91**	**1.43E-02**	91%	1.14E-03	0.00E+00
Bromodichloromethane	x	--	x	75-27-4	163.83	**3.13**	**4.90E-02**	98%	8.69E-04	0.00E+00
Butane	--	--	x	106-97-8	58.12	**5.03**	**2.80E-02**	91%	2.23E-03	0.00E+00
Carbon Disulfide	--	x	x	75-15-0	76.14	**0.583**	**4.24E-03**	99.7%	1.13E-05	0.00E+00
Carbon Tetrachloride	x	x	x	56-23-5	153.84	**0.004**	**5.88E-05**	98%	1.04E-06	0.00E+00
Carbonyl Sulfide	--	x	x	463-58-1	60.07	**0.49**	**2.81E-03**	99.7%	7.48E-06	0.00E+00
Chlorobenzene (monochlorobenzene)	x	x	x	108-90-7	112.56	**0.254**	**2.73E-03**	98%	4.85E-05	0.00E+00
Chlorodifluoromethane (CFC-22, freon-22)	x	--	--	75-45-6	86.47	**1.3**	**1.07E-02**	98%	1.91E-04	0.00E+00
Chloroethane (ethyl chloride)	x	x	x	75-00-3	64.52	**1.25**	**7.71E-03**	98%	1.37E-04	0.00E+00
Chloroform (trichloromethane)	x	x	x	67-66-3	119.38	**0.03**	**3.42E-04**	98%	6.07E-06	0.00E+00
Chloromethane (methyl chloride)	x	x	x	74-87-3	50.49	**1.21**	**5.84E-03**	98%	1.04E-04	0.00E+00
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	x	106-46-7	147	**0.213**	**2.99E-03**	98%	5.31E-05	0.00E+00
Dichlorodifluoromethane (CFC-12, freon-12)	x	--	--	75-71-8	120.91	**15.7**	**1.81E-01**	98%	3.22E-03	0.00E+00
Dichlorofluoromethane (freon-21)	x	--	--	75-43-4	102.92	**2.62**	**2.58E-02**	98%	4.57E-04	0.00E+00
Dichloromethane (methylene chloride)	x	x	--	75-09-2	84.93	**14.3**	**1.16E-01**	98%	2.06E-03	0.00E+00
Dimethyl Sulfide (methyl sulfide)	--	--	x	75-18-3	62.13	**7.82**	**4.65E-02**	99.7%	1.24E-04	0.00E+00
Ethane	--	--	--	74-84-0	30.07	**889**	**2.56E+00**	91%	2.04E-01	0.00E+00
Ethanol (ethyl alcohol)	--	--	x	64-17-5	46.08	**27.2**	**1.20E-01**	91%	9.56E-03	0.00E+00
Ethyl Mercaptan	--	--	x	75-08-1	62.13	**1.25**	**7.43E-03**	99.7%	1.97E-05	0.00E+00
Ethylbenzene	--	x	x	100-41-4	106.17	**4.61**	**4.68E-02**	91%	3.73E-03	0.00E+00
Ethylene dibromide (1,2 dibromoethane)	x	x	x	106-93-4	187.88	**0.001**	**1.80E-05**	98%	3.18E-07	0.00E+00
Fluorotrichloromethane (CFC-11, freon-11)	x	--	--	75-69-4	137.37	**0.76**	**9.98E-03**	98%	1.77E-04	0.00E+00
Formaldehyde	x	x	x			**1.74**	**0.00E+00**	0%	0.00E+00	0.00E+00
Hexane	--	x	x	110-54-3	86.18	**6.57**	**5.41E-02**	91%	4.32E-03	0.00E+00
Hydrogen Sulfide[5]	--	--	--	7783-06-4	34.08	**537.37**	**1.75E+00**	99.7%	4.66E-03	0.00E+00
Mercury (total)	--	x	--	7439-97-6	200.61	**2.92E-04**	**5.60E-06**	0%	4.96E-06	0.00E+00
Methyl Ethyl Ketone (2-butanone)	--	--	x	78-93-3	72.11	**7.09**	**4.89E-02**	91%	3.90E-03	0.00E+00
Methyl Isobutyl Ketone (hexone)	--	x	x	108-10-1	100.16	**1.87**	**1.79E-02**	91%	1.43E-03	0.00E+00
Methyl Mercaptan	--	--	x	74-93-1	48.11	**2.49**	**1.15E-02**	99.7%	3.05E-05	0.00E+00
Pentane	--	--	x	109-66-0	72.15	**3.29**	**2.27E-02**	91%	1.81E-03	0.00E+00
Tetrachloroethylene (perchloroethylene, -ethene)	x	x	--	127-18-4	165.83	**3.73**	**5.91E-02**	98%	1.05E-03	0.00E+00
Propane	--	--	x	74-98-6	44.1	**11.1**	**4.68E-02**	91%	3.73E-03	0.00E+00
Toluene (methylbenzene)	--	x	x	108-88-3	92.14	**39.3**	**3.46E-01**	91%	2.76E-02	0.00E+00
Trichloroethylene (trichloroethene)	x	x	x	79-01-6	131.38	**2.82**	**3.54E-02**	98%	6.28E-04	0.00E+00
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	x	--	x	156-60-5	96.94	**2.84**	**2.63E-02**	98%	4.67E-04	0.00E+00
Vinyl Chloride (chloroethylene, VCM)	x	x	x	75-01-4	62.50	**7.34**	**4.39E-02**	98%	7.77E-04	0.00E+00
Xylenes (m, o, p)	--	x	x	1330-20-7	106.17	**12.1**	**1.23E-01**	91%	9.80E-03	0.00E+00
Hydrogen Chloride[2,3]		x	--	7647-01-0	36.5	**42**	**1.46E-01**	0%	1.30E-01	0.00E+00
Total Sulfur	--	--	--	--	--	**550.00**	--	--	--	--
Total HAP	--	--	--	--	--	--	--	--	**0.19**	**0.00**
Maximum Single HAP	--	--	--	--	--	--	--	--	**0.13**	**0.00**

LFG Inlet Flow = 201 scfm — 3512 Engines

LFG Compound	Halo-genated	HAP	VOC	CAS	MW (lb/lb-mol)	Compound Conc & Mass in Inlet Gas (ppmv)[1]	Compound Conc & Mass in Inlet Gas lb/hr	DE[4] (%)	Emissions (lb/hr)	Emissions (tpy)
1,1,1 - Trichloroethane (methyl chloroform)	x	x	--	71-55-6	133.41	**0.48**	**2.30E-03**	98%	4.07E-05	0.00E+00
1,1,2,2 - Tetrachloroethane	x	x	x	79-34-5	167.85	**1.11**	**6.68E-03**	98%	1.18E-04	0.00E+00
1,1,2 - Trichloroethane (1,1,2 TCA)	x	x	x	79-00-5	133.41	**0.1**	**4.78E-04**	98%	8.48E-06	0.00E+00
1,1 - Dichloroethane (ethylidene dichloride)	x	x	x	75-34-3	98.96	**2.35**	**8.34E-03**	98%	1.48E-04	0.00E+00
1,1 - Dichloroethene (vinylidene chloride)	x	x	x	75-35-4	96.94	**0.201**	**6.99E-04**	98%	1.24E-05	0.00E+00
1,2 - Dichloroethane (ethylene dichloride)	x	x	x	107-06-2	98.96	**0.407**	**1.44E-03**	98%	2.56E-05	0.00E+00
1,2 - Dichloropropane (propylene dichloride)	x	x	x	78-87-5	112.99	**0.18**	**7.29E-04**	98%	1.29E-05	0.00E+00
2-Propanol (isopropyl alcohol)	--	--	x	67-63-0	60.11	**50.1**	**1.08E-01**	91%	8.62E-03	0.00E+00
Acetone (2-propanone)	--	--	--	67-64-1	58.08	**7.01**	**1.46E-02**	91%	1.16E-03	0.00E+00
Acrylonitrile (Propenenitrile)	--	x	x	107-13-1	53.06	**6.33**	**1.20E-02**	91%	9.61E-04	0.00E+00
Benzene	--	x	x	71-43-2	78.12	**1.91**	**5.35E-03**	91%	4.27E-04	0.00E+00
Bromodichloromethane	x	--	x	75-27-4	163.83	**3.13**	**1.84E-02**	98%	3.26E-04	0.00E+00
Butane	--	--	x	106-97-8	58.12	**5.03**	**1.05E-02**	91%	8.36E-04	0.00E+00
Carbon Disulfide	--	x	x	75-15-0	76.14	**0.583**	**1.59E-03**	99.7%	4.23E-06	0.00E+00
Carbon Tetrachloride	x	x	x	56-23-5	153.84	**0.004**	**2.21E-05**	98%	3.91E-07	0.00E+00
Carbonyl Sulfide	--	x	x	463-58-1	60.07	**0.49**	**1.06E-03**	99.7%	2.81E-06	0.00E+00
Chlorobenzene (monochlorobenzene)	x	x	x	108-90-7	112.56	**0.254**	**1.03E-03**	98%	1.82E-05	0.00E+00
Chlorodifluoromethane (CFC-22, freon-22)	x	--	--	75-45-6	86.47	**1.3**	**4.03E-03**	98%	7.15E-05	0.00E+00
Chloroethane (ethyl chloride)	x	x	x	75-00-3	64.52	**1.25**	**2.89E-03**	98%	5.13E-05	0.00E+00
Chloroform (trichloromethane)	x	x	x	67-66-3	119.38	**0.03**	**1.28E-04**	98%	2.28E-06	0.00E+00
Chloromethane (methyl chloride)	x	x	x	74-87-3	50.49	**1.21**	**2.19E-03**	98%	3.88E-05	0.00E+00
1,4 Dichlorobenzene (p-dichlorobenzene)	x	x	x	106-46-7	147	**0.213**	**1.12E-03**	98%	1.99E-05	0.00E+00
Dichlorodifluoromethane (CFC-12, freon-12)	x	--	--	75-71-8	120.91	**15.7**	**6.81E-02**	98%	1.21E-03	0.00E+00
Dichlorofluoromethane (freon-21)	x	--	--	75-43-4	102.92	**2.62**	**9.67E-03**	98%	1.71E-04	0.00E+00
Dichloromethane (methylene chloride)	x	x	--	75-09-2	84.93	**14.3**	**4.36E-02**	98%	7.72E-04	0.00E+00
Dimethyl Sulfide (methyl sulfide)	--	--	x	75-18-3	62.13	**7.82**	**1.74E-02**	99.7%	4.63E-05	0.00E+00
Ethane	--	--	--	74-84-0	30.07	**889**	**9.59E-01**	91%	7.65E-02	0.00E+00
Ethanol (ethyl alcohol)	--	--	x	64-17-5	46.08	**27.2**	**4.50E-02**	91%	3.59E-03	0.00E+00
Ethyl Mercaptan	--	--	x	75-08-1	62.13	**1.25**	**2.79E-03**	99.7%	7.41E-06	0.00E+00
Ethylbenzene	--	x	x	100-41-4	106.17	**4.61**	**1.76E-02**	91%	1.40E-03	0.00E+00
Ethylene dibromide (1,2 dibromoethane)	x	x	x	106-93-4	187.88	**0.001**	**6.74E-06**	98%	1.19E-07	0.00E+00
Fluorotrichloromethane (CFC-11, freon-11)	x	--	--	75-69-4	137.37	**0.76**	**3.74E-03**	98%	6.64E-05	0.00E+00
Formaldehyde	x	x	x			**0.34**	**0.00E+00**	0%	0.00E+00	0.00E+00
Hexane	--	x	x	110-54-3	86.18	**6.57**	**2.03E-02**	91%	1.62E-03	0.00E+00
Hydrogen Sulfide[5]	--	--	--	7783-06-4	34.08	**537.37**	**6.57E-01**	99.7%	1.75E-03	0.00E+00
Mercury (total)	--	x	--	7439-97-6	200.61	**2.92E-04**	**2.10E-06**	0%	1.86E-06	0.00E+00
Methyl Ethyl Ketone (2-butanone)	--	--	x	78-93-3	72.11	**7.09**	**1.83E-02**	91%	1.46E-03	0.00E+00
Methyl Isobutyl Ketone (hexone)	--	x	x	108-10-1	100.16	**1.87**	**6.72E-03**	91%	5.36E-04	0.00E+00
Methyl Mercaptan	--	--	x	74-93-1	48.11	**2.49**	**4.30E-03**	99.7%	1.14E-05	0.00E+00
Pentane	--	--	x	109-66-0	72.15	**3.29**	**8.51E-03**	91%	6.79E-04	0.00E+00
Tetrachloroethylene (perchloroethylene, -ethene)	x	x	--	127-18-4	165.83	**3.73**	**2.22E-02**	98%	3.93E-04	0.00E+00
Propane	--	--	x	74-98-6	44.1	**11.1**	**1.76E-02**	91%	1.40E-03	0.00E+00
Toluene (methylbenzene)	--	x	x	108-88-3	92.14	**39.3**	**1.30E-01**	91%	1.04E-02	0.00E+00
Trichloroethylene (trichloroethene)	x	x	x	79-01-6	131.38	**2.82**	**1.33E-02**	98%	2.36E-04	0.00E+00
t - 1,2 - Dichloroethene (1,2 dichloroethylene)	x	--	x	156-60-5	96.94	**2.84**	**9.87E-03**	98%	1.75E-04	0.00E+00
Vinyl Chloride (chloroethylene, VCM)	x	x	x	75-01-4	62.50	**7.34**	**1.65E-02**	98%	2.92E-04	0.00E+00
Xylenes (m, o, p)	--	x	x	1330-20-7	106.17	**12.1**	**4.61E-02**	91%	3.68E-03	0.00E+00
Hydrogen Chloride[2,3]		x	--	7647-01-0	36.5	**42**	**5.49E-02**	0%	4.87E-02	0.00E+00
Total Sulfur	--	--	--	--	--	**550.00**	--	--	--	--
Total HAP	--	--	--	--	--	--	--	--	**0.07**	**0.00**
Maximum Single HAP	--	--	--	--	--	--	--	--	**0.05**	**0.00**

[1] AP42 5th Ed., "Compilation of Air Pollutant Emissions Factors, Vol. 1: Stationary Point and Area Sources," Table 2.4-1, Nov. 1998

[2] Product of combustion

[3] Because HCl is a production of combustion, a default ionic Cl LFG concentration of 42 ppmv is listed; AP-42, Section 2.4.4.

[4] AP-42 gives ranges for control efficiencies . Control efficiencies for halogenated compounds and non-halogenated compounds range from 91-99.7 percent and 38-91 percent respectively.

[5] TRS values **based on January 10, 2020 Draeger testing**, TRS assumed to be H2S; **LFG Testing performed March 13, 2015;**

DE - Destruction Efficiency

deg F to Rankine	460
universal gas constant	0.7302 atm-ft3/lb-mol-R
million	1.00E+06
# minutes per hour	60
# lbs per ton	2000
# lbs per kg	2.205
ppm	1.00E-06
MW SO_2 (lb/lb-mol)	64.066
ppm to percent	10000
LFG Moisture %	8%
LFG Temperature °F	100
Methane Heating Value (HHV)	1013
Standard Temperature (3)	60
Standard Temperature [absolute]	520
Standard Pressure	1
Universal Gas Constant	0.7302
MW SO_2 (lb/lb-mol)	64.066
MW Hexane (lb/lb-mol)	86.18

NON-LEAP YEAR TABLE

31	Jan-15	January	744	31
28	Feb-15	February	672	29
31	Mar-15	March	744	31
30	Apr-15	April	720	30
31	May-15	May	744	31
30	Jun-15	June	720	30
31	Jul-15	July	744	31
31	Aug-15	August	744	31
30	Sep-15	September	720	30
31	Oct-15	October	744	31
30	Nov-15	November	720	30
31	Dec-15	December	744	31
			8,760	

LEAP YEAR TABLE

Jan-16	January	744
Feb-16	February	696
Mar-16	March	744
Apr-16	April	720
May-16	May	744
Jun-16	June	720
Jul-16	July	744
Aug-16	August	744
Sep-16	September	720
Oct-16	October	744
Nov-16	November	720
Dec-16	December	744
		8,784

	2015 HOLIDAYS	2016 HOLIDAYS
1-Jan	1/1/2015	1/1/2016
1-May	5/25/2015	5/30/2016
1-Jul	7/4/2015	7/4/2016
1-Sep	9/7/2015	9/5/2016
1-Nov	11/26/2015	11/24/2016
1-Dec	12/25/2015	12/26/2016

2017 HOLIDAYS	2018 HOLIDAYS	2019 HOLIDAYS
1/2/2017	1/1/2018	1/1/2019
5/29/2017	5/28/2018	5/27/2019
7/5/2017	7/4/2018	7/4/2019
9/4/2017	9/3/2018	9/2/2018
11/23/2017	11/22/2018	11/28/2019
12/25/2017	12/25/2018	12/25/2019

Completed By

Monitoring Control and Compliance, Inc.

Soil Cover Integrity Report
Waste Connections
Brent Run Landfill
8247 West Vienna Road

Date	Initials	Location	Description Of Issue	Corrective Action Taken (Date and Description)	Resolved (Y/N)
1/10/2020	JB	Near well 86	Torn cover		
2/12/2020	JB		No issues found		
3/10/2020	JB		No issues found		
4/7/2020	JB		No issues found		
5/12/2020	JB		No issues found		
6/10/2020	JB		No issues found		
7/2/2020	JB		No issues found		
8/18/2020	JB		No issues found		
9/15/2020	DT		No issues found		
10/27/2020	DT		No issues found		
11/10/2020	DT	20-30' downslope of 81R2 @ berm	Area needs cover and gradeed / eroisions		N
12/11/2020	DT	Upslope of 58R & 57R	Cover and grade		N
12/11/2020	DT	Upslope of 79 & 80	Cover and grade		N

Monitoring Control and Compliance, Inc.

Soil Cover Integrity Report
Waste Connections
Brent Run Landfill
8247 West Vienna Road

Date	Tech	Location	Description Of Issue	Corrective Action Taken (Date and Description)	Resolved (Y/N)
1/13/2021	TC	NA	No issues found	NA	N/A
2/19/2021	DT	N/A	Snow Covered	N/A	N/A
3/2/2021	TC	West center of landfill	Erosion rills	Corrections will be made summer 2021 when dry enough to get equipment in the area.	N
4/9/2021	TC	N/A	No issues found	N/A	N/A
5/7/2021	DT	N/A	No issues found	N/a	N/A

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.

NOTE:
MONTHLY ASBESTOS DISPOSAL LOCATIONS PROVIDED BY THE CLIENT.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 12/04/20
DRAWN BY CDA
DESIGNED BY MPB
CHECKED BY KM
APPROVED BY KM

TETRA TECH

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

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

ASBESTOS DISPOSAL
2020 LOCATIONS

SHEET NO.
5
PROJECT NO.
4201227.006

2020 ASBESTOS LOCATIONS				
TICKET	NORTHING	EASTING	ELEV.	DATE
601549	610112.75	13264856.27	718	4/16/2020
607215	610180.04	13264931.44	762	6/18/2020
609249	610101.13	13264940.82	823	7/9/2020
618492	609618.50	13264503.71	689	10/5/2020

NOTE:

NO ASBESTOS WAS RECEIVED IN THE MONTHS OF JANUARY, FEBRUARY, MARCH, MAY, AUGUST, SEPTEMBER OR NOVEMBER.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 12/04/20

DRAWN BY CDA
DESIGNED BY MPB
CHECKED BY KM
APPROVED BY KM

TETRA TECH

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

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

ASBESTOS DISPOSAL
2020 DATA

SHEET NO. 5A

PROJECT NO. 4201227.006

File: X:\PROJECTS\BRENT RUN\4201227 - 2020 AIR COMPLIANCE\PLAN SETS\BRLF 2020 ASBESTOS FIGURES.dwg Layout: 2020 ASBESTOS DATA User: COOPER.ABEL Dec 04, 2020 - 11:42am

Brent Run Maintenance Report January 1 2021 through June 30 2021

Work Ord	Plant	Plant Description	Scheduled	Finish Date	Status	Type	Priority	Work Description
0076727	BRR-AS-01	Air Compressor Quincy	1-Jan-21	19-Jan-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0076728	BRR-AS-02	Air Compressor Quincy	1-Jan-21	19-Jan-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0076729	BRR-MD	All Modules	1-Jan-21	4-Feb-21	Complete	PM	M	Day Tank top up Oil...update and order
0076730	BRR-SE	Station Electrical	1-Jan-21	18-Jan-21	Complete	PM	C	4001-EGM-00-SWI-007 GEAMS Visual Plant Inspection 3M
0076731	BRR-SG	Station General	1-Jan-21	18-Jan-21	Complete	CM	M	Critical Air Conditioner Maintenance
0076732	BRR-SG	Station General	1-Jan-21	26-Jan-21	Complete	PM	M	Monthly Safety Inspection
0076733	BRR-SG	Station General	1-Jan-21	4-Feb-21	Complete	PM	H	Engine Hour Monthly update for PI
0077037	BRR-GP-GA01	Gas Analyzer 1	3-Jan-21	11-Feb-21	Complete	CM	M	Methane analyser calibration
0077042	BRR-SG	Station General	4-Jan-21	18-Jan-21	Complete	PM	M	Combined Services Winterization PM
0077041	BRR-MD-03EN	Basic Engine	6-Jan-21	18-Jan-21	Complete	PM	M	AIR FILTER CHANGE
0077038	BRR-MD-01EN	Brr-md-01en	8-Jan-21	18-Jan-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0077039	BRR-MD-01EN	Brr-md-01en	8-Jan-21	24-Nov-20	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0077040	BRR-MD-02EN	Basic Engine	9-Jan-21	24-Nov-20	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0077207	BRR-GP-GA01	Gas Analyzer 1	10-Jan-21	11-Feb-21	Complete	CM	M	Methane analyser calibration
0077211	BRR-MD-04EN	Basic Engine	10-Jan-21	25-Nov-20	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0077213	BRR-SG	Station General	11-Jan-21	21-Jan-21	Complete	PM	M	Monthly Heat Exchanger, Radiators and Glycol Pump Inspect
0077209	BRR-MD-02EN	Basic Engine	12-Jan-21	29-Dec-20	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0077935	BRR	Brent Run Power Station	12-Jan-21	4-Feb-21	Complete	RM	H	call out parts used
0077212	BRR-MD-04EN	Basic Engine	14-Jan-21	1-Jan-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0077208	BRR-MD-01EN	Brr-md-01en	15-Jan-21	22-Jan-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0077210	BRR-MD-02EN	Basic Engine	15-Jan-21	29-Dec-20	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0077491	BRR-GP-GA01	Gas Analyzer 1	17-Jan-21	11-Feb-21	Complete	CM	M	Methane analyser calibration
0077493	BRR-SG	Station General	18-Jan-21	9-Feb-21	Complete	PM	M	Combined Services Winterization PM
0078604	BRR-MD-05	Module 5 - GM5 Cat 3512	22-Jan-21	26-Feb-21	Complete	RM	H	Cylinder head replacement
0077636	BRR-GP-GA01	Gas Analyzer 1	24-Jan-21	11-Feb-21	Complete	CM	M	Methane analyser calibration
0077638	BRR-MD-04EN	Basic Engine	24-Jan-21	10-Feb-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0077637	BRR-MD-03EN	Basic Engine	27-Jan-21	3-Feb-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0077778	BRR-GP-GA01	Gas Analyzer 1	31-Jan-21	11-Feb-21	Complete	CM	M	Methane analyser calibration
0075546	BRR-SE	Station Electrical	1-Feb-21	4-Jan-21	Complete	PM	C	4001-EGM-00-SWI-030 GEAMS Visual Plant Inspection 6M
0077968	BRR-AS-01	Air Compressor Quincy	1-Feb-21	23-Feb-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0077969	BRR-AS-01	Air Compressor Quincy	1-Feb-21	23-Feb-21	Complete	PM	M	Air Compressor Maintenance- Quarterly
0077970	BRR-AS-02	Air Compressor Quincy	1-Feb-21	23-Feb-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0077971	BRR-AS-02	Air Compressor Quincy	1-Feb-21	23-Feb-20	Complete	PM	M	Air Compressor Maintenance- Quarterly
0077972	BRR-GP-BL01	Blower 1	1-Feb-21	4-Mar-21	Complete	PM	M	COOLANT TEST
0077974	BRR-GP-BL02	Blower 2	1-Feb-21	4-Mar-21	Complete	PM	M	COOLANT TEST
0077976	BRR-MD	All Modules	1-Feb-21	4-Mar-21	Complete	PM	M	Day Tank top up Oil...update and order
0077978	BRR-SG	Station General	1-Feb-21	3-Mar-21	Complete	PM	M	Combined Services Winterization PM
0077979	BRR-SG	Station General	1-Feb-21	3-Mar-21	Complete	CM	M	Critical Air Conditioner Maintenance
0077980	BRR-SG	Station General	1-Feb-21	23-Feb-21	Complete	PM	M	Monthly Safety Inspection
0077981	BRR-SG	Station General	1-Feb-21	4-Mar-21	Complete	PM	H	Engine Hour Monthly update for PI
0077973	BRR-GP-BL01	Blower 1	2-Feb-21	9-Feb-21	Complete	PM	M	GREASE MOTOR SHAFT END BEARING
0078949	BRR	Brent Run Power Station	2-Feb-21	8-Feb-21	Complete	RM	H	inventory update
0077977	BRR-MD-03EN	Basic Engine	3-Feb-21	3-Feb-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0078284	BRR-GP-GA01	Gas Analyzer 1	7-Feb-21	4-Mar-21	Complete	CM	M	Methane analyser calibration
0078285	BRR-SG	Station General	11-Feb-21	22-Feb-21	Complete	PM	M	Monthly Heat Exchanger, Radiators and Glycol Pump Inspect
0078954	BRR-MD-03EN	Basic Engine	12-Feb-21	3-Feb-21	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0078422	BRR-GP-GA01	Gas Analyzer 1	14-Feb-21	4-Mar-21	Complete	CM	M	Methane analyser calibration
0078423	BRR-SG	Station General	15-Feb-21	23-Feb-21	Complete	PM	M	Combined Services Winterization PM
0079614	BRR-MD-03EN	Basic Engine	18-Feb-21	4-Mar-21	Complete	RM	L	troubleshoot shutdown
0078732	BRR-GP-GA01	Gas Analyzer 1	21-Feb-21	4-Mar-21	Complete	CM	M	Methane analyser calibration
0078733	BRR-MD-01EN	Brr-md-01en	22-Feb-21	4-Mar-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0078734	BRR-MD-02EN	Basic Engine	25-Feb-21	5-Apr-21	Complete	PM	M	COOLANT TEST
0078735	BRR-MD-02EN	Basic Engine	25-Feb-21	9-Feb-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0078736	BRR-MD-04EN	Basic Engine	26-Feb-21	10-Feb-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0078870	BRR-GP-GA01	Gas Analyzer 1	28-Feb-21	19-Mar-21	Complete	CM	M	Methane analyser calibration
0078871	BRR-MD-02EN	Basic Engine	28-Feb-21	9-Feb-20	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0079006	BRR-AS-01	Air Compressor Quincy	1-Mar-21	15-Mar-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0079007	BRR-AS-02	Air Compressor Quincy	1-Mar-21	15-Mar-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0079008	BRR-MD	All Modules	1-Mar-21	19-Feb-21	Complete	PM	M	Day Tank top up Oil...update and order
0079009	BRR-MD-01EN	Brr-md-01en	1-Mar-21	4-Mar-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0079010	BRR-SG	Station General	1-Mar-21	11-Mar-21	Complete	PM	M	Combined Services Winterization PM
0079011	BRR-SG	Station General	1-Mar-21	11-Mar-21	Complete	CM	M	Critical Air Conditioner Maintenance
0079012	BRR-SG	Station General	1-Mar-21	15-Mar-21	Complete	PM	M	Monthly Safety Inspection
0079013	BRR-SG	Station General	1-Mar-21	19-Mar-21	Complete	PM	H	Engine Hour Monthly update for PI
0079349	BRR-GP-GA01	Gas Analyzer 1	7-Mar-21	19-Mar-21	Complete	CM	M	Methane analyser calibration
0080062	BRR-MD-02	Module 2 - GM2 Cat 3520(	9-Mar-21	8-Mar-21	Complete	RM	H	Cylinder head replacement
0079350	BRR-MD-04EN	Basic Engine	10-Mar-21	14-Mar-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0079351	BRR-SG	Station General	11-Mar-21	15-Mar-21	Complete	PM	M	Monthly Heat Exchanger, Radiators and Glycol Pump Inspect
0079650	BRR-MD-03EN	Basic Engine	11-Mar-21	16-Mar-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0079348	BRR-GP-BL02	Blower 2	12-Mar-21	16-Mar-21	Complete	PM	M	GREASE MOTOR OPPOSITE SHAFT END BEARING
0079490	BRR-GP-GA01	Gas Analyzer 1	14-Mar-21	19-Mar-21	Complete	CM	M	Methane analyser calibration
0077467	BRR-MD-05EN	Basic Engine	15-Mar-21	7-May-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0077468	BRR-MD-05EN	Basic Engine	15-Mar-21	7-May-21	Complete	PM	M	1000 HOUR VALVE ADJUSTMENT-3520
0077492	BRR-MD-05EN	Basic Engine	15-Mar-21	7-May-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0079491	BRR-SG	Station General	15-Mar-21	12-Mar-21	Complete	PM	M	Combined Services Winterization PM
0079656	BRR-GP-BL01	Blower 1	16-Mar-21	5-Apr-21	Complete	PM	M	GREASE MOTOR OPPOSITE SHAFT END BEARING
0079657	BRR-MD-05EN	Basic Engine	17-Mar-21	7-May-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0079658	BRR-MD-05EN	Basic Engine	17-Mar-21	7-May-21	Complete	PM	M	1000 HOUR VALVE ADJUSTMENT-3520
0080884	BRR-MD-04	Module 4 - GM4 Cat 3520(	17-Mar-21	18-Mar-21	Complete	RM	H	Bonnet seal replacement
0079704	BRR-GP-GA01	Gas Analyzer 1	21-Mar-21	5-Mar-21	Complete	CM	M	Methane analyser calibration
0079705	BRR-MD-03EN	Basic Engine	24-Mar-21	16-Mar-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0079845	BRR-GP-GA01	Gas Analyzer 1	28-Mar-21	5-Mar-21	Complete	CM	M	Methane analyser calibration
0079846	BRR-SG	Station General	29-Mar-21	1-Apr-21	Complete	PM	M	Combined Services Winterization PM
0081235	BRR-MD-02	Module 2 - GM2 Cat 3520(	29-Mar-21	30-Mar-21	Complete	RM	H	Regulator swap gen 2
0081252	BRR-MD-01	Module 1 - GM1 Cat 3516L	30-Mar-21	30-Mar-21	Complete	RM	H	swap J/W regulators
0077975	BRR-GP-DR01	Dryer 1	1-Apr-21	5-Apr-21	Complete	PM	M	Gas Skid Dryer/Chiller Quarterly Maintenance
0080100	BRR-AS-01	Air Compressor Quincy	1-Apr-21	14-Apr-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0080101	BRR-AS-01	Air Compressor Quincy	1-Apr-21	14-Apr-21	Complete	PM	M	Air Compressor Maintenance- 6 Monthly
0080102	BRR-AS-02	Air Compressor Quincy	1-Apr-21	14-Apr-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0080103	BRR-AS-02	Air Compressor Quincy	1-Apr-21	14-Apr-21	Complete	PM	M	Air Compressor Maintenance- 6 Monthly
0080104	BRR-MD	All Modules	1-Apr-21	19-Apr-21	Complete	PM	C	GEAMS-MS-0003 6 MTH HV and LV Alternator Inspection
0080105	BRR-MD	All Modules	1-Apr-21	19-Apr-21	Complete	PM	M	Day Tank top up Oil...update and order
0080106	BRR-MD	All Modules	1-Apr-21	25-Mar-21	Complete	PM	M	Clean Radiator Panels.
0080107	BRR-SE	Station Electrical	1-Apr-21	19-Apr-21	Complete	PM	C	4001-EGM-00-SWI-007 GEAMS Visual Plant Inspection 3M
0080108	BRR-SE	Station Electrical	1-Apr-21	15-Apr-20	Complete	PM	C	3001-EGM-00-SWI-031 Class 4 Switchgear Online RCD Testing 6M
0080109	BRR-SG	Station General	1-Apr-21	19-Apr-21	Complete	CM	M	Critical Air Conditioner Maintenance
0080110	BRR-SG	Station General	1-Apr-21	9-Apr-21	Complete	PM	M	Monthly Safety Inspection
0080111	BRR-SG	Station General	1-Apr-21	13-Apr-21	Complete	PM	H	Engine Hour Monthly update for PI
0080577	BRR-GP-GA01	Gas Analyzer 1	4-Apr-21	20-Apr-21	Complete	CM	M	Methane analyser calibration
0080578	BRR-MD-01EN	Brr-md-01en	4-Apr-21	16-Apr-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0080580	BRR-MD-01EN	Brr-md-01en	5-Apr-21	14-Jun-21	Complete	PM	M	Change Coolant and Regulator
0080582	BRR-MD-02EN	Basic Engine	8-Apr-21	10-May-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0080576	BRR-GP-BL01	Blower 1	9-Apr-21	20-Apr-21	Complete	PM	M	GREASE MOTOR SHAFT END BEARING
0080737	BRR-GP-GA01	Gas Analyzer 1	11-Apr-21	27-Apr-21	Complete	CM	M	Methane analyser calibration
0080739	BRR-MD-02EN	Basic Engine	11-Apr-21	17-Mar-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0080741	BRR-SG	Station General	11-Apr-21	28-Apr-21	Complete	PM	M	Monthly Heat Exchanger, Radiators and Glycol Pump Inspect
0080740	BRR-MD-04EN	Basic Engine	12-Apr-21	1-Apr-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0080920	BRR-MD-03EN	Basic Engine	12-Apr-21	23-Apr-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0080738	BRR-MD-01EN	Brr-md-01en	13-Apr-21	16-Apr-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0080955	BRR-GP-GA01	Gas Analyzer 1	18-Apr-21	27-Apr-21	Complete	CM	M	Methane analyser calibration
0080956	BRR-MD-04EN	Basic Engine	19-Apr-21	1-Apr-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0081953	BRR	Brent Run Power Station	19-Apr-21	20-Apr-21	Complete	RM	H	inventory clean up
0081337	BRR-MD-03EN	Basic Engine	23-Apr-21	23-Apr-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0081089	BRR-GP-GA01	Gas Analyzer 1	25-Apr-21	27-Apr-21	Complete	CM	M	Methane analyser calibration
0081090	BRR-MD-03EN	Basic Engine	27-Apr-21	23-Apr-21	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0081355	BRR-AS-01	Air Compressor Quincy	1-May-21	10-May-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0081356	BRR-AS-01	Air Compressor Quincy	1-May-21	10-May-21	Complete	PM	M	Air Compressor Maintenance- Quarterly

0081357	BRR-AS-02	Air Compressor Quincy	1-May-21	15-Mar-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0081358	BRR-AS-02	Air Compressor Quincy	1-May-21	10-May-21	Complete	PM	M	Air Compressor Maintenance- Quarterly
0081359	BRR-GP-DR01	Dryer 1	1-May-21	10-May-21	Complete	PM	M	Gas Skid Dryer/Chiller Quarterly Maintenance
0081360	BRR-MD	All Modules	1-May-21	27-Apr-21	Complete	PM	M	Day Tank top up Oil...update and order
0081361	BRR-SG	Station General	1-May-21	24-Apr-21	Complete	PM	M	Decommission heat tape (temporary & permanent)
0081362	BRR-SG	Station General	1-May-21	27-Apr-21	Complete	CM	M	Critical Air Conditioner Maintenance
0081363	BRR-SG	Station General	1-May-21	27-May-21	Complete	PM	M	Monthly Safety Inspection
0081364	BRR-SG	Station General	1-May-21	11-Jun-21	Complete	PM	H	Engine Hour Monthly update for PI
0081615	BRR-GP-GA01	Gas Analyzer 1	2-May-21	10-May-21	Complete	CM	M	Methane analyser calibration
0080581	BRR-MD-02EN	Basic Engine	3-May-21	10-May-21	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0080583	BRR-MD-04EN	Basic Engine	4-May-21	26-May-21	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0081616	BRR-MD-01EN	Brr-md-01en	5-May-21		In Progress	PM	M	COOLANT TEST
0081617	BRR-MD-03EN	Basic Engine	5-May-21	14-Jun-21	Complete	PM	M	COOLANT TEST
0081618	BRR-MD-04EN	Basic Engine	5-May-21	10-May-21	Complete	PM	M	COOLANT TEST
0082404	BRR	Brent Run Power Station	6-May-21	10-May-21	Complete	RM	H	inventory update
0081747	BRR-GP-GA01	Gas Analyzer 1	9-May-21	16-May-21	Complete	CM	M	Methane analyser calibration
0081748	BRR-SG	Station General	11-May-21	12-Mar-21	Complete	PM	M	Monthly Heat Exchanger, Radiators and Glycol Pump Inspect
0081994	BRR-GP-GA01	Gas Analyzer 1	16-May-21	18-May-21	Complete	CM	M	Methane analyser calibration
0081995	BRR-MD-01EN	Brr-md-01en	16-May-21	8-Jun-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0081996	BRR-MD-02EN	Basic Engine	19-May-21	10-May-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0081997	BRR-MD-02EN	Basic Engine	22-May-21	10-May-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0082131	BRR-GP-GA01	Gas Analyzer 1	23-May-21	8-Jun-21	Complete	CM	M	Methane analyser calibration
0082133	BRR-MD-04EN	Basic Engine	23-May-21	14-May-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0082132	BRR-MD-01EN	Brr-md-01en	24-May-21	8-Jun-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0080579	BRR-MD-01EN	Brr-md-01en	26-May-21	8-Apr-21	Complete	PM	M	2000 HOUR VALVE ADJUSTMENT-3520
0082262	BRR-GP-GA01	Gas Analyzer 1	30-May-21	6-Jun-21	Complete	CM	M	Methane analyser calibration
0082263	BRR-MD-03EN	Basic Engine	31-May-21	27-May-21	Complete	PM	M	1000 HOUR SPARK PLUGS-3520
0082495	BRR-AS-01	Air Compressor Quincy	1-Jun-21	11-Jun-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0082496	BRR-AS-02	Air Compressor Quincy	1-Jun-21	11-Jun-21	Complete	PM	M	Air Compressor Maintenance- Monthly-
0082497	BRR-MD	All Modules	1-Jun-21		In Progress	CM	M	Visual Inspection of the Alternator Coupling 6M
0082498	BRR-MD	All Modules	1-Jun-21	11-Jun-21	Complete	PM	M	Day Tank top up Oil...update and order
0082499	BRR-MD-01EN	Brr-md-01en	1-Jun-21	14-Jun-21	Complete	PM	M	AIR FILTER CHANGE
0082501	BRR-SE	Station Electrical	1-Jun-21	28-Jun-21	Complete	PM	C	4001-EGM-00-SWI-030 GEAMS Visual Plant Inspection 6M
0082502	BRR-SG	Station General	1-Jun-21	11-Jun-21	Complete	CM	M	Critical Air Conditioner Maintenance
0082503	BRR-SG	Station General	1-Jun-21		In Progress	PM	M	Monthly Safety Inspection
0082504	BRR-SG	Station General	1-Jun-21		In Progress	PM	H	Engine Hour Monthly update for PI
0083419	BRR	Brent Run Power Station	1-Jun-21	14-Jun-21	Complete	RM	H	inventory update
0082500	BRR-MD-03EN	Basic Engine	4-Jun-21	27-May-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0082804	BRR-GP-GA01	Gas Analyzer 1	6-Jun-21	11-Jun-21	Complete	CM	M	Methane analyser calibration
0083085	BRR-MD-04EN	Basic Engine	9-Jun-21	26-May-21	Complete	PM	M	1000 HOUR OIL CHANGE-3520
0082805	BRR-MD-05EN	Basic Engine	11-Jun-21		In Progress	PM	M	AIR FILTER CHANGE
0082806	BRR-SG	Station General	11-Jun-21		In Progress	PM	M	Monthly Heat Exchanger, Radiators and Glycol Pump Inspect
0084050	BRR	Brent Run Power Station	11-Jun-21		In Progress	RM	H	Inventory update
0082938	BRR-GP-GA01	Gas Analyzer 1	13-Jun-21		In Progress	CM	M	Methane analyser calibration
0083090	BRR-MD-05EN	Basic Engine	17-Jun-21		In Progress	PM	M	COOLANT TEST
0083139	BRR-GP-BL01	Blower 1	20-Jun-21		In Progress	PM	M	GREASE MOTOR SHAFT END BEARING
0083140	BRR-GP-GA01	Gas Analyzer 1	20-Jun-21		In Progress	CM	M	Methane analyser calibration
0083261	BRR-GP-GA01	Gas Analyzer 1	27-Jun-21		In Progress	CM	M	Methane analyser calibration
0083262	BRR-MD-02EN	Basic Engine	27-Jun-21		In Progress	PM	M	2000 HOUR VALVE ADJUSTMENT-3520

Draeger Gas Sampling Results - Brent Run Landfill (N59

#	Date	H2S (ppm)	Calculated TRS (ppm)	CH4 (%)	O2 (%)	Technician
2	5/3/2019	600	**621**			
3	6/6/2019	620	**642**			
4	7/8/2019	600	**621**			
5	8/6/2019	500	**518**			
6	9/9/2019	600	**621**			
7	9/23/2019	575	**595**			
8	10/9/2019	640	**663**	53.1	0.03	
9	11/8/2019	600	**621**	51.1	0.16	
10	12/3/2019	650	**673**			
11	12/4/2019	525	**544**			
12	12/5/2019	600	**621**			
13	12/6/2019	600	**621**			
14	12/16/2019	675	**699**	50.5	0.04	Jenna Hiltz
15	1/10/2020	575	**595**	50.8	0.07	Jenna Hiltz
16	2/10/2020	600	**621**	50.7	0.09	Jenna Hiltz
17	3/9/2020	500	**517**	51.5	0.04	Jenna Hiltz
18	4/9/2020	600	**621**	51.0	0.00	Jenna Hiltz
19	5/14/2020	450	**466**	48.3	0.20	Jenna Hiltz
20	6/5/2020	500	**528**	50.8	0.17	Jenna Hiltz
21	6/8/2020	550	**581**	50.6	0.15	Jenna Hiltz
22	6/20/2020	475	**502**	48.6	0.20	Jenna Hiltz
23	6/23/2020	475	**502**	48.6	0.20	Jenna Hiltz
24	7/1/2020	425	**449**	45.3	0.41	Kevin Ackerman
25	7/10/2020	600	**639**	49.0	0.22	Kevin Ackerman
26	7/17/2020	600	**639**	48.2	0.34	Kevin Ackerman
27	7/23/2020	600	**639**	50.3	0.26	Kevin Ackerman
28	7/28/2020	600	**639**	51.0	0.24	Kevin Ackerman
29	7/30/2020	550	**586**	N/A	N/A	I C&T
30	7/30/2020	550	**586**	N/A	N/A	I C&T
31	7/30/2020	550	**586**	N/A	N/A	I C&T
32	7/30/2020	420	**447**	N/A	N/A	I C&T
33	7/30/2020	520	**554**	N/A	N/A	I C&T
34	7/30/2020	500	**533**	N/A	N/A	I C&T
35	7/31/2020	570	**586**	N/A	N/A	I C&T
36	7/31/2020	580	**596**	N/A	N/A	I C&T
37	7/31/2020	570	**586**	N/A	N/A	I C&T
38	8/7/2020	600	**616**	50.7	0.22	Kevin Ackerman
39	8/14/2020	600	**616**	51.5	0.21	Kevin Ackerman
41	9/18/2020	600	**616**	49.5	0.34	Kevin Ackerman
42	10/21/2020	550	**565**	N/A	N/A	I C&T
43	10/21/2020	550	**565**	N/A	N/A	I C&T

44	11/6/2020	575	**608**	49.7	0.04	Kevin Ackerman
45	11/13/2020	575	**608**	48.7	0.09	Kevin Ackerman
46	11/25/2020	575	**608**	50.5	0.34	Kevin Ackerman
47	12/14/2020	550	**582**	50.5	0.34	Kevin Ackerman
48	1/15/2021	575	**608**	51.2	0.29	Kevin Ackerman
49	2/5/2021	550	**582**	48.7	0.09	Kevin Ackerman
50	3/19/2021	550	**582**	51.0	0.58	Kevin Ackerman
51	4/6/2021	575	**608**	52.0	N/A	IC&T
52	4/16/2021	500	**525**	52.8	0.64	Kevin Ackerman
53	4/23/2021	600	**631**	53.0	0.16	Jenna Hiltz
54	4/29/2021	400	**420**	51.2	0.29	Kevin Ackerman
55	5/6/2021	450	**473**	50.6	0.30	Kevin Ackerman
56	5/14/2021	475	**499**	50.0	0.08	Kevin Ackerman
57	6/28/2021	525	**552**	52.9	0.18	Kevin Ackerman
58						
59						
	min	**400**	**420**	**45**	**0**	
	max	**675**	**699**	**53**	**1**	
	Average	**555**	**580**	**50**	**0**	

** **Location 1 - LFG common header after the discharge side of the gas**

Semi-Annual Gas Sampling Results - Brent Run Landfill (N5987)

#	Date	H2S (ppm)	TRS (ppm)	TRS/H2S Ratio	CH4 (%)	O2 (%)	Location**	Lab
1	9/23/2019	618	640	**1.04**	52.4	N/A	1	SPL
2	12/6/2019	545	564	**1.03**			1	SPL
3	5/18/2020	608	642	**1.06**	51.8	N/A	1	SPL
4	7/9/2020	480	511.3	**1.07**	48.3	N/A	1	SPL
5	7/30/2020	430	441.7	**1.03**			1	ALS
6	7/30/2020	680	695.3	**1.02**			1	ALS
7	10/21/2020	610	645.4	**1.06**	51.3	N/A	1	SPL
8	4/6/2021	620	651.6	**1.05**	52.9	N/A	1	SPL
9								
10								

min	**430**
max	**680**
Average	**536**

** **Location 1 - LFG common header after the discharge side of the gas blower**

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

Annual Landfill Reports (25) *CYDS = Cubic Yards

Reporting Year	Total MCW	Total IW	Total C&D	Total ADC	Total CS	Total Waste
2020	580,118 CYDS	88,021 CYDS	55,484 CYDS	-	989 CYDS	724,612 CYDS
2019	643,966 CYDS	200,763 CYDS	324,719 CYDS	-	-	1,169,447 CYDS
2018	922,174 CYDS	240,374 CYDS	1,055,242 CYDS	-	-	2,217,790 CYDS
2017	1,036,635 CYDS	260,535 CYDS	1,123,113 CYDS	-	-	2,420,283 CYDS
2016	833,112 CYDS	159,239 CYDS	946,594 CYDS	-	-	1,938,945 CYDS
2015	1,406,406 CYDS	134,452 CYDS	1,054,947 CYDS	-	-	2,595,805 CYDS
2014	1,327,711 CYDS	131,894 CYDS	1,162,258 CYDS	-	-	2,621,863 CYDS
2013	1,665,145 CYDS	149,265 CYDS	700,582 CYDS	-	-	2,514,992 CYDS
2012	1,408,529 CYDS	343,437 CYDS	638,953 CYDS	-	-	2,480,919 CYDS
2011	1,822,657 CYDS	144,291 CYDS	455,974 CYDS	-	-	2,422,922 CYDS
2010	1,748,811 CYDS	199,214 CYDS	447,246 CYDS	-	-	2,395,271 CYDS
2009	1,988,482 CYDS	538,192 CYDS	-	-	-	2,526,674 CYDS
2008	1,480,991 CYDS	358,764 CYDS	-	-	-	1,839,755 CYDS
2007	1,610,584 CYDS	320,246 CYDS	-	-	-	1,930,830 CYDS
2006	1,667,148 CYDS	433,507 CYDS	-	-	-	2,100,655 CYDS
2005	1,587,560 CYDS	222,652 CYDS	-	-	-	1,810,212 CYDS
2004	1,125,145 CYDS	526,887 CYDS	-	-	-	1,652,032 CYDS
2003	1,579,905 CYDS	-	-	-	-	1,579,905 CYDS
2002	1,141,710 CYDS	551,558 CYDS	-	-	-	1,693,268 CYDS
2001	548,151 CYDS	607,104 CYDS	-	-	-	1,155,255 CYDS
2000	540,889 CYDS	341,931 CYDS	-	-	-	882,820 CYDS
1999	95,211 CYDS	170,301 CYDS	-	-	-	265,512 CYDS
1998	798,881 CYDS	-	-	-	-	798,881 CYDS
1997	777,843 CYDS	-	-	-	-	777,843 CYDS
1996	908,052 CYDS	-	-	-	-	908,052 CYDS