

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

N821059175

| | | |
|--|--|----------------------------------|
| FACILITY: Generate Fremont Digester, LLC | | SRN / ID: N8210 |
| LOCATION: 1634 LOCUST ST, FREMONT | | DISTRICT: Grand Rapids |
| CITY: FREMONT | | COUNTY: NEWAYGO |
| CONTACT: Leon Scott , Facility Manager | | ACTIVITY DATE: 07/07/2021 |
| STAFF: Kaitlyn DeVries | COMPLIANCE STATUS: Non Compliance | SOURCE CLASS: SM OPT OUT |
| SUBJECT: The purpose of this inspection was to determine compliance with permit to install number 378-08B and other applicable air quality rules and regulations. | | |
| RESOLVED COMPLAINTS: | | |

On Wednesday July 7, 2021, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) staff Kaitlyn DeVries (KD) and Michael Cox (MC) conducted an unannounced, scheduled inspection of the Generate Fremont Digester, LLC located at 1634 Locust St. Fremont Michigan. The purpose of this inspection was to determine compliance with permit to install number 378-08B and other applicable air quality rules and regulations.

Prior to arriving on site, EGLE AQD Staff conducted odor surveys in the vicinity of the digester. The facility has had historic odor complaints with a few odor complaints having been received by the AQD in the past year. Conditions were mostly cloudy with a temperature of 73 with a slight southerly wind 0-5 mph. Odors were barely detectable off site only on Locust Street, the street that the facility is located on. In addition to surveying for odors, AQD staff had a RKI Multi-Gas Meter to detect H2S. No detection of H2S were noted off site.

Staff arrived on site shortly before 10:00 am and met with Mr. Leon Scott, Facility Manager, who accompanied staff on the walk through of the facility.

Facility Description

Generate Fremont Digester (GFD) is a complete mix anaerobic digester facility located in the City of Fremont, just north of Lake Fremont. The facility uses a variety of food waste materials as well as manure feed stock in the digesters to generate gas. The gas that is generated is combusted in the two (2) reciprocating internal combustion engines. The facility has the capability to also combust the gas in a boiler as well. The facility was previously owned and operated by Novi Energy; Novi Energy obtained the original permit, constructed the facility, and operated it until 2015. The facility was idle until it was purchased by Generate Capital in 2016.

Regulatory Analysis

GFD is currently operating under permit to install (PTI)I No. 378-08B. As a result of a Violation Notice issued to the facility in 2018, GFD consolidated the two (2) permits that were previously issued to the facility. PTI No. 378-08B also permitted some equipment that was formerly thought to be exempt but was determined to not be able to meet the requirements of the exemptions. Additionally, PTI 378-08B established synthetic minor limits for Carbon Monoxide (CO), Sulfur Dioxides (SO2), and Nitrogen Oxides (NOx). The engines are subject to the Standards of Performance (NSPS) 40 CFR Part 60 Subpart JJJJ for Spark Ignition Internal Combustion Engines and to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 Subpart ZZZZ. Compliance with

Subpart ZZZZ is demonstrated via compliance with subpart JJJJ. The boiler is subject to the provisions of NSPS 40 CFR Part 60 Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units.

Compliance Evaluation

EUWASTETRANS

This emission unit is for the waste transfer station with biofilter control. This transfer station is comprised of a basic building for receiving the trucks which pump, or dump, the waste feedstock into the digester receiving system. The building is to be operated under negative pressure during truck unloading operations and the evacuated air is routed to the biofilter.

The facility also has an unpacking area that receives product, which needs to be unpacked prior to being put into the digester receiving system. KD noted a lot of products located just outside of the receiving area. At one point, KD had been informed that FGFD would be constructing a warehouse to store product that was received prior to being put into the feedstock. KD asked Mr. Scott about this, and he indicated that this is still the plan; GFD is still in the design and engineering stages of the plan for an additional warehouse area for storage.

Per Mr. Scott, both sides of the biofilter have now been re-built. Previously, GFD had re-built one of the sides due to a failure on one of the sides, but now both sides have been re-built. During the inspection AQD staff was able to see GFD staff conduct one of their daily biofilter checks. KD asked the GFD staff what they were looking for when they did the visual inspection of the biofilter. GFD Staff indicated they look for any breakthrough of the wood chip biofilter down to the bottom, check the temperature and humidity as well, as per the PMP.

EUWASTE_TRANSFER requires a PMP to be maintained and operated in accordance with. GFD was required to submit an updated plan within 90 days of issuance of the permit. GFD submitted the plan to the AQD, but the AQD identified some deficiencies in the plan. As of the date of this report, the AQD is still waiting for an approvable PMP. This has been conveyed to Mr. Scott as well as others from Generate Capital.

In addition to the PMP, EUWASTETRANS also requires a plan for how odors will be minimized during all startups, shutdowns, and malfunctions. This plan was also required to be submitted within 90 days of issuance of the permit, was submitted, and the AQD identified deficiencies. The AQD is also awaiting an approvable nuisance minimization plan for odors.

EUWASTETRANS requires that the biofilter be installed, maintained, and operated in a satisfactory manner. Part of the proper operation requires the biofilter be operating within specified operating parameters including temperature, humidity, pressure and/or oxygen levels. An alarm is required to be installed to monitor the temperature and humidity of the biofilter. These specifications are to be identified in the PM/MAP, but as previously mentioned, updates are still needed for those plans. At the time of the inspection, the temperature and humidity for sides 1 and 2 of the biofilter were 60°F and 41°F and 46% and 50%. Per records, GFD is tracking the temperature and humidity, as required.

GFD is properly tracking the maintenance conducted on the emission unit, with the most recent maintenance being conducted on June 10, 2021, and included the changing of belts on the air handler. Throughout the walkthrough of the site, Mr. Scott indicated that GFD has been doing several improvement projects throughout the facility including sealing up some doors to try to help with odors. This was done in the area of EUWASTETRANS.

GFD is also required to keep track of all odor complaints that are received as well as any actions taken as a result of the investigation into the odor complaints. In reviewing the complaints, for which EGLE did not receive most of them, GFD did respond to the complaints. KD did note perhaps a pattern in some of the complaints that most of them were received during the middle of the day not in the early morning or extremely late in the evening.

EUBOILER

This emission unit is for a dual-fuel boiler with a maximum design heat input of 11 MMBTU that can be fired on biogas or natural gas. This emission unit is also included in FG BIOGAS, which will be evaluated later in this report. This boiler is a Cleaver Brooks boiler that was manufactured in 2012.

This emission unit was not in use at the time of the inspection, and per records, this emission unit has not been in use since issuance of the permit.

This emission unit was also required to have a PMP submitted to the AQD within 90 days of issuance of the permit, for which GFD submitted the plan.

As mentioned in the Regulatory Analysis section of this report, this emission unit is subject to NSPS Da. GFD submitted the required initial notification in accordance with 40 CFR 60.7 and 60.48c to the AQD on April 29, 2021.

FG BIOGAS

This flexible group consists of all emission units involved in producing or burning biogas including EUDIGESTER, EUBOILER, EUFLARE, EUCENGINE1 and EUCENGINE1. EUDIGESTER is an anaerobic digester system that is capable of converting organic waste products into biogas. Methane is the main component of this biogas. The produced biogas is processed in a biological scrubber desulfurization unit to remove H₂S. EUFLARE is a biogas-burning flare with a maximum capacity of 1,250 CFM. The other three (2) emission units are further described in their respective places in this report (see EUBOILER, FGICENGINES and FGRICENSPS for more details).

Biogas being burned in all of these emission units that comprise this flexible group is limited to 301,000 MMBTU per year, based upon a 12-month rolling time period. Based upon the June 2021 records a total of 36,541.5 MMBTU has been burned in the engines and the flare. No biogas has been burned in EUBOILER.

As mentioned above, the biogas is processed in a biological scrubber desulfurization unit to remove H₂S. The H₂S concentration of the biogas combusted in any emission unit of FG BIOGAS shall not exceed 1,730 ppmv. GFD is required to verify the H₂S content of the biogas burned in FG BIOGAS no less than three (3) times per week on non-consecutive

days by sampling the biogas. GFD is properly taking samples of the biogas and per the records, through June 2021, GFD had instances on May 27, 2021, June 6-11, 2021, and June 24, 2021, where the H₂S concentration exceeded the allowable limit at concentrations of 2,440 ppmv, 2,282 ppmv, 1,910 ppmv, 2,120 ppmv, 2,004 ppmv, 2,092 ppmv, and 1,756 ppmv, respectively. GFD did follow the permit requirements to conduct daily sampling until the H₂S concentration is below 1,730 ppmv for seven (7) consecutive days. KD asked Mr. Scott about the May 27 exceedance in particular, and he indicated that this was due to some waste being taken in that killed off the organisms in the biological scrubber, thus the higher H₂S concentration in the biogas. Mr. Scott went on to say that once they realized this, they took action to get the H₂S concentration back down below the 1,730 ppmv limit, but the biogas was burned in the engines during that time period. KD asked what GFD will do in the event of this occurring again, and Mr. Scott indicated that they have purchased items for the scrubber to prevent this type of issue in the future. GFD will be more conscientious about receiving that type of product again. While GFD did act when they had the high H₂S concentration of the biogas, these exceedances are a violation of FGBIOGAS Special Condition II.2. A Violation notice will be issued.

GFD was required to submit a PM/MAP for EULARE, EUDIGESTER, and the desulfurization unit as well as a nuisance minimization plan for odors no later than 90 days after permit issuance. GFD did submit these plans, however deficiencies were identified in both, including EUFLARE being omitted from the PM/MAP. The AQD did request updates to those plans but as of the date of this report updated plans have not yet been received. The AQD will reiterate the need for updated plans in the Violation Notice.

GFD has installed devices to monitor pressure and oxygen levels of the desulfurization equipment and has installed an alarm system. GFD is tracking these in the records that are submitted to the AQD on a monthly basis and notes any times the alarms were set off. GFD is also monitoring the gas flow rate to EUFLAR, EUBOILER, EUENGINE1 and EUENGINE2, as required.

GFD is conducting maintenance on each of these units, as required, with the last maintenance being conducted on the flare in May 2021, the engines in July (see FGCIENGINES) and other maintenance activities for the digesters and for FGBIOAS in June 2021.

GFD is also required to track and make note of any corrective actions that are taken as a result of odor complaints. GFD is tracking those, for which GD has received many more odor complaints than have come directly to the AQD. As mentioned in EUWASTETRANS, KD reviewed the odor complaints and there were several complaints around the same time of the day. Additionally, many of the odor complaints came in on the days in and around where there where H₂S biogas concentration exceedances. GFD should take a closer look at that correlation.

The stack for the flare, while not explicitly measured, appeared to be correct.

FGCIENGINES

This flexible group covers two (2) spark ignition reciprocating internal combustion (RICE) engines rated at 1,966 bhp that were manufactured after 7/11/2010. Each RICE combusts biogas to drive an associated generator to set to produce approximately 1.5 MW gross electrical output, each. Each RICE is equipped with an air-to-fuel ratio controller. Both RICE are subject to the provisions of the National Emission Standards for Hazardous Air

Pollutants promulgated in 40 CFR Part 63, Subpart ZZZZ and the New Source Performance Standards (NSPS) promulgated in 40 CFR Part 60 Subpart JJJJ. Compliance with Part 63 Subpart ZZZZ is demonstrated through Compliance with Part 30 Subpart JJJJ. Specifics for NSPS JJJJ are found in FGRICENSPS in this report.

Emissions from these each engine is limited to the emission limits outlined in Table 1, below. The actual emissions will be reported in the upcoming August 2021 stack test. The actual emissions reported in Table 1, below are calculated emissions.

Table 1: FGICENGINES Emission Limits

| Engine Number | Pollutant | Emission Limit | Actual Emissions |
|----------------------|------------------|-----------------------|-------------------------|
| Engine 1 | NOx | 6.93 pph ^A | 1.35 pph |
| | CO | 11.27 pph | 9.83 pph |
| | SO2 | 6.11 pph | 5.79 pph |
| Engine 2 | NOx | 6.93 pph ^A | 1.32 pph |
| | CO | 11.27 pph | 8.81 pph |
| | SO2 | 6.11 pph | 5.45 pph |

^A pph – pounds per hour

Testing is required to verify emission rates for NOx and CO from each engine in accordance with what is required in FGRICENSPS (see FGRICENSPS section of this report). Additionally, testing of the SO2 emission rates from each engine is required within 180 days after issuance of this permit (PTI 374-08B). This permit was issued on January 25, 2021, thus 180 days after issuance of the permit coincides with July 24, 2021. KD had previously reminded GFD staff of this requirement but reiterated it with Mr. Scott on the day of the inspection. Subsequent testing was scheduled to occur on August 19, 2021, however, this is beyond the 180 days that was required. A violation notice will be issued to the facility for the failure to test within the 180-day deadline.

In addition to the emission limitations, the two (2) engines have a limit of 230,000 MMBTU biogas burned per 12-month rolling time period. As of June 2021, these engines have burned a total of 34,474.0 MMBTU biogas (15,535.8 scf). GFD is properly tracking the gas usage and the BTU content of the biogas.

GFD was required to submit a PM/MAP for these engines within 90 days of issuance of the permit. GFD successfully submitted the plan and is conducting routine maintenance. Per maintenance records, the most recent maintenance conducted on the engines were on July 1, and July 12 adding coolant to both engines.

Stack dimensions, while not explicitly verified, appeared to be correct.

FGRICENSPS

This flexible group covers the requirements for the non-emergency engines greater than 500 hp, fueled with digester gas (biogas) that are subject to the provisions of NSPS JJJJ. Both EUCENGINE1 and EUCENGINE2 are part of this flexible group and subject to the provisions of NSPS JJJJ.

Each engine has emission limits for Carbon Monoxide (CO), Nitrogen Oxides (NOx), and Volatile Organic Compounds (VOCs). These emission limits, as well as the most recent stack test data, are outlined in Table 2.

Table 2: Emission Limits for FGICENGINES

| Engine Number | Pollutant | Emission Limit | Actual Emissions |
|----------------------|------------------|---|-------------------------|
| Engine 1 | CO | 5.0 g/bhp-hr or 610 ppmvd at 15% O ₂ | 2.34 g/bhp-hr |
| | NOx | 2.0 g/bhp-hr or 150 ppmvd at 15% O ₂ | 0.32 g/bhp-hr |
| | VOC | 1.0 g/bhp-hr or 80 ppmvd at 15% O ₂ | 0.17 g/bhp-hr |
| Engine 2 | CO | 5.0 g/bhp-hr or 610 ppmvd at 15% O ₂ | 2.25 g/bhp-hr |
| | NOx | 2.0 g/bhp-hr or 150 ppmvd at 15% O ₂ | 0.35 g/bhp-hr |
| | VOC | 1.0 g/bhp-hr or 80 ppmvd at 15% O ₂ | 0.18 g/bhp-hr |

These engines were most recently tested in May 2019. Testing to verify compliance with the emission limits is required after 8760 hours of operation, or every three (3) years, whichever comes first. GFD has testing scheduled again for these units in August 2021.

The engines are required to have an air/fuel ratio controller, and an hour meter for recording the number of hours the units have operated. The facility is required to keep track of the hours of operation for each engine, for which they are doing.

FGFACILITY

This flexible group applies source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment, and exempt equipment.

Emission limitations for the facility, all based upon a 12-month rolling time period are 60.7 tons per year (tpy) for NOx, 98.7 tpy for CO, and 52.1 tpy for SO₂. As of June 2021, the facility wide emissions were 1.2 tons for NOx, 2.25 tons for SO₂, and 8.1 tons for CO. This rolling emissions data is compiled for a three (3) month time period at this point in time.

It should also be noted that the practicably enforceable restrictions limiting the Potential to Emit for NOx, CO, and SO₂ are located in other flexible groups, including FGBIOGAS, FGICENGINES, and FGRICENSPS.

Miscellaneous equipment

GFD has one (1) 40 hp natural gas emergency generator. This emission unit appears to be exempt from rule 201 permitting under Rule 282(2)(b)(i). This unit was manufactured in 2012 and would therefore be subject to the provisions of 40 CFR Part 60 Subpart JJJJ the New Source Performance Standards for Spark Ignition Internal Combustion Engines. This unit would also be subject to the Area Source Requirements of the National Emissions Standards for Hazardous Air Pollutants 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines (RICE). Compliance with Subpart ZZZZ is

demonstrated via Compliance with Subpart JJJJ. However, per Mr. Scott, this unit is not currently able to run.

GFD has one (1) cold cleaner that is exempt from Rule 201 permitting under Rule 281(2) (h). At the time of the inspection this unit was closed and not in use.

Compliance Determination

Based upon the observations made during the time of the inspection and a subsequent review of the records it appears Generate Fremont Digester is not in compliance with PTI No. 378-08B. A Violation Notice will be issued for the following:

1. PTI No. 378-08B FGBIOGAS Special Condition II.2 – Exceedance of the H2S material limit.
2. PTI No. 378-08B FGICENGINES Special Condition V.2 – Failure to verify SO2 emission rates from each engine in FGICENGINES within 180 days after issuance of the permit.

NAME Kaitlyn Durin

DATE 8/4/2021

SUPERVISOR HH