

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

N821064784

<b>FACILITY:</b> Generate Fremont Digester, LLC		<b>SRN / ID:</b> N8210
<b>LOCATION:</b> 1634 LOCUST ST, FREMONT		<b>DISTRICT:</b> Grand Rapids
<b>CITY:</b> FREMONT		<b>COUNTY:</b> NEWAYGO
<b>CONTACT:</b> Leon Scott , Facility Manager		<b>ACTIVITY DATE:</b> 07/12/2022
<b>STAFF:</b> Kaitlyn DeVries	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> SM OPT OUT
<b>SUBJECT:</b> The purpose of this inspection was to determine compliance with permit to install number 378-08B and other applicable air quality rules and regulations.		
<b>RESOLVED COMPLAINTS:</b>		

On Tuesday July 12, 2022, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) staff Kaitlyn DeVries (KD) 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 70°F with a NNW wind at 10-12 mph. Prior to going on site, odor observations were made in the vicinity of the facility. No odors were detected around the facility. Additional odor observations were made after leaving the facility, and no odors were detected 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 for electricity production. 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 and put back into service.

### Regulatory Analysis

GFD is currently operating under permit to install (PTI) 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 (SO<sub>2</sub>), and Nitrogen Oxides (NO<sub>x</sub>). The engines are subject to the Standards of Performance (NSPS) 40 CFR Part 60 Subpart JJJ 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. During the last inspection, in 2021, Mr. Scott indicated that GFD wanted to construct a warehouse to store product prior to being put into the feedstock. KD asked Mr. Scott about this, and he indicated that this is still the plan, but things are moving slower than desired. GFD is still in the design and engineering stages of the plan for an additional warehouse area for storage. Mr. Scott went on to say that GFD has been keeping better track on the amount of feedstock that is housed on site as not to stockpile more than they can process each day and may include refusing to accept some feedstock. Mr. Scott said this was done to try to keep any odors from the feedstock stored outside to a minimum.

The biofilter previously had both sides re-built. 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.

EUWASTETRANS requires a PMP to be implemented and maintained. 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. GFD submitted an acceptable plan to the AQD on September 13, 2022.

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. GFD also submitted an acceptable plan to the AQD on September 13, 2022.

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. Per records, GFD is tracking the temperature and humidity, as required.

GFD is properly tracking the maintenance conducted on the emission unit. Throughout the walkthrough of the site, Mr. Scott indicated that GFD has been doing several improvement projects throughout the facility including a redesign of the spray system and routinely washing the unpacking floor.

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 as per their odor minimization plan.

#### *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 FGBIOGAS, 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 Dc. GFD submitted the required initial notification in accordance with 40 CFR 60.7 and 60.48c to the AQD on April 29, 2021.

Mr. Scott mentioned that GFD is considering obtaining a new boiler. KD reminded Mr. Scott that any changes should be vetted and any permitting taken into consideration prior to obtaining a new boiler, including any exemption determinations submitted to the AQD.

#### *FGBIOGAS*

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 H<sub>2</sub>S. EUFLARE is a biogas-burning flare with a maximum capacity of 1,250 CFM. The other three (3) 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 July 2022 records a total of 266,731.9 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 H<sub>2</sub>S. The H<sub>2</sub>S concentration of the biogas combusted in any emission unit of FGBIOGAS shall not exceed 1,730 ppmv. GFD is required to verify the H<sub>2</sub>S content of the biogas burned in FGBIOGAS no less than three (3) times per week on non-consecutive days by sampling the biogas. If the biogas concentration exceeds 1,400 ppm, then GFD is required to sample and record the H<sub>2</sub>S concentration of the biogas one time per day, on each day that the facility is staffed, for seven (7)

consecutive days. GFD is properly taking samples of the biogas and per the records the H<sub>2</sub>S concentration over the previous 12-months was typically in and around the 1200-1400 ppm range.

Since the previous inspection, GFD is planning to install a system to continuously dose the biogas with ferric chloride to provide additional control for the H<sub>2</sub>S. Previously, GFD had been manually dosing the gas when the sulfur levels were high.

GFD was required to submit a PM/MAP for EUFLARE, 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 received updated, acceptable PM/MAP on September 13, 2022.

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 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 GFD has received many more odor complaints than have come directly to the AQD.

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 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 reported in Table 1, below are the emissions reported from the 2022 Stack Test.

*Table 1: FGCIENGINES Emission Limits*

<b>Engine Number</b>	<b>Pollutant</b>	<b>Emission Limit</b>	<b>Actual Emissions</b>
Engine 1	NO <sub>x</sub>	6.93 pph <sup>A</sup>	5.03 pph
	CO	11.27 pph	9.53 pph
	SO <sub>2</sub>	6.11 pph	0.53 pph
Engine 2	NO <sub>x</sub>	6.93 pph <sup>A</sup>	4.97 pph
	CO	11.27 pph	9.53 pph
	SO <sub>2</sub>	6.11 pph	1.16 pph

<sup>A</sup> pph – pounds per hour

Testing is required to verify emission rates for NO<sub>x</sub> and CO from each engine in accordance with what is required in FGRICENSPS (see FGRICENSPS section of this report), and one time testing for SO<sub>2</sub> emissions from each engine. The testing deadlines had previously been missed; thus, a Violation Notice was issued for the missed stack test; the violation has subsequently been resolved. Stack testing was subsequently conducted on February 11, 2022 and indicated passing results.

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 July 2022, these engines have burned a total of 176,606.8 MMBTU biogas (22,937.0 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.

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 (NO<sub>x</sub>), 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 <sub>2</sub>	2.19 g/bhp-hr
	NO <sub>x</sub>	2.0 g/bhp-hr or 150 ppmvd at 15% O <sub>2</sub>	1.16 g/bhp-hr
	VOC	1.0 g/bhp-hr or 80 ppmvd at 15% O <sub>2</sub>	0.09 g/bhp-hr
Engine 2	CO	5.0 g/bhp-hr or 610 ppmvd at 15% O <sub>2</sub>	2.15 g/bhp-hr
	NO <sub>x</sub>	2.0 g/bhp-hr or 150 ppmvd at 15% O <sub>2</sub>	1.15 g/bhp-hr
	VOC	1.0 g/bhp-hr or 80 ppmvd at 15% O <sub>2</sub>	0.12 g/bhp-hr

These engines were most recently tested in February 2022. Testing to verify compliance with the emission limits is required every 8760 hours of operation, or every three (3) years, whichever

comes first. As previously mentioned, testing was missed, a violation notice was previously issued and the violation has subsequently been resolved.

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 SO<sub>2</sub>. As of July 2022, the facility wide emissions were 14.8 tons for NOx, 13.8 tons for SO<sub>2</sub>, and 36.4 tons for CO.

It should also be noted that the practicably enforceable restrictions limiting the Potential to Emit for NOx, CO, and SO<sub>2</sub> 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 Generate Fremont Digester is in compliance with PTI No. 378-08B.

NAME 

DATE 9/26/2022

SUPERVISOR 