

**MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
AIR QUALITY DIVISION**

July 5, 2022

**PERMIT TO INSTALL  
88-22**

**ISSUED TO  
Riverview Energy Systems, LLC**

**LOCATED AT  
20000 Grange Road  
Riverview, Michigan 48193**

**IN THE COUNTY OF  
Wayne**

**STATE REGISTRATION NUMBER  
M4469**

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: <b>May 2, 2022</b>	
DATE PERMIT TO INSTALL APPROVED: <b>July 5, 2022</b>	SIGNATURE: 
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

**PERMIT TO INSTALL**

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## COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

\*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

## POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H <sub>2</sub> S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO <sub>x</sub>	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO <sub>2</sub>	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

## GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
  - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
  - b) A visible emission limit specified by an applicable federal new source performance standard.
  - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

## EMISSION UNIT SPECIAL CONDITIONS

### EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUCONSYS	Treated landfill gas conditioning system is comprised of liquid and gas separation vessels and compressors are used to condition landfill gas into renewable natural gas (RNG) by removing compounds including sulfur compounds, volatile organic compounds (VOCs), carbon dioxide (CO <sub>2</sub> ), nitrogen (N <sub>2</sub> ), and oxygen (O <sub>2</sub> ) from the gas. The primary tail gas created by removal of these pollutants will be burned in the thermal oxidizer (EUTO) and the secondary tail gas created by removal of these pollutants will be burned in the recuperative thermal oxidizer (EURECUPTOX).	TBD	FGRNGPLANT
EUTO	A 431 standard cubic feet per minute (scfm) primary tail gas to the thermal oxidizer used for destruction of the primary tail gas (components removed during the conditioning of the gas). Supplemental natural gas may be used to maintain process temperature.	TBD	FGRNGPLANT
EURECUPTOX	A 3,200 scfm secondary tail gas to the recuperative thermal oxidizer used for destruction of secondary tail gas (components removed during the conditioning of the gas). Supplemental natural gas may be used to maintain process temperature.	TBD	FGRNGPLANT
EUFLARE	A 6,000 scfm flare that will burn landfill gas or off-specification renewable natural gas during start-up, shut-down, malfunctions of the Renewable Gas Plant or when the gas is not pipeline quality.	TBD	FGRNGPLANT
EUAMINEREBOILER	A 2.63 MMBtu/hr heat input natural gas-fired boiler	TBD	FGRNGPLANT

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

## **EUCONDSYS EMISSION UNIT CONDITIONS**

### **DESCRIPTION**

Treated landfill gas conditioning system is comprised of liquid and gas separation vessels and compressors are used to condition landfill gas into renewable natural gas (RNG) by removing compounds including sulfur compounds, volatile organic compounds (VOCs), carbon dioxide (CO<sub>2</sub>), nitrogen (N<sub>2</sub>), and oxygen (O<sub>2</sub>) from the gas. The primary tail gas created by removal of these pollutants will be burned in the thermal oxidizer (EUTO) and the secondary tail gas created by removal of these pollutants will be burned in the recuperative thermal oxidizer (EURECUPTOX).

The processed gas will be routed to a natural gas pipeline, existing turbines EUTURBINE1 and EUTURBINE2, or if it is not to pipeline specification, then it will be sent to EUFLARE.

**Flexible Group ID:** FGRNGPLANT

### **POLLUTION CONTROL EQUIPMENT**

Thermal oxidizer (EUTO) and recuperative thermal oxidizer (EURECUPTOX)

#### **I. EMISSION LIMIT(S)**

NA

#### **II. MATERIAL LIMIT(S)**

NA

#### **III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. No later than 60 days after startup, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for EUCONDSYS. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate EUCONDSYS unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:
  - a) Identification of all equipment and, if applicable, air-cleaning device(s) and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.
  - b) Description of the items or conditions to be inspected and frequency of the inspections or repairs.
  - c) Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
  - d) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the PM / MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the PM / MAP within 45 days after such an event occurs. The permittee shall also amend the PM / MAP within 45 days if new equipment is installed or upon request from the AQD District Supervisor. The permittee shall submit the PM / MAP and any amendments to the PM / MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the PM / MAP or amended PM / MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**



**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

NA

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. (R 336.1201(3))

1. The permittee shall keep, in a satisfactory manner, all records related to, or as required by, the PM / MAP. The permittee shall keep all records on file at the facility and make them available to the Department upon request. (R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)
2. The permittee shall keep, in a satisfactory manner, records of the monthly hours of operation of EUCONDYSYS. The permittee shall keep all records on file and make them available to the Department upon request. (R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.2803, R 336.2804)

**VII. REPORTING**

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of EUCONDYSYS. (R 336.1201(7)(a))

**VIII. STACK/VENT RESTRICTION(S)**

1. The permittee shall route all exhaust gases from EUCONDYSYS to either EUTO, EURECUPTOX, or EUFLARE. (R 336.1225)

**IX. OTHER REQUIREMENT(S)**

NA

**EUFLARE  
 EMISSION UNIT CONDITIONS**

**DESCRIPTION**

A 6,000 scfm flare that will burn landfill gas or off-specification renewable natural gas during start-up, shut-down, malfunctions of the Renewable Gas Plant or when the gas is not pipeline quality.

**Flexible Group ID:** FGRNGPLANT

**POLLUTION CONTROL EQUIPMENT**

NA

**I. EMISSION LIMIT(S)**

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. CO	79.4 tpy	12-month rolling time period as determined at the end of each calendar month	EUFLARE	SC VI.4	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804
2. SO <sub>2</sub>	36.6 tpy	12-month rolling time period as determined at the end of each calendar month	EUFLARE	SC VI.4	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804

**II. MATERIAL LIMIT(S)**

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Biogas	512,249 MMBtu/yr	12-month rolling time period as determined at the end of each calendar month	EUFLARE	SC VI.3	R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1901, R 336.2803, R 336.2804
2. Sulfur concentration of the biogas	140 ppmv	Calendar month average	EUFLARE	SC V 1	R 336.1224, R 336.1225, R 336.2803, R 336.2804

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. No later than 60 days after startup, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for EUFLARE. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate EUFLARE unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum, the plan shall include:
  - a) Identification of the equipment and, if applicable, air-cleaning device, and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.

- b) Description of the items or conditions to be inspected and frequency of the inspections or repairs.
- c) Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
- d) Identification of the major replacement parts that shall be maintained in inventory for quick replacement.
- e) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the PM / MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the PM / MAP within 45 days after such an event occurs. The permittee shall also amend the PM / MAP within 45 days, if new equipment is installed or upon request from the AQD District Supervisor. The permittee shall submit the PM / MAP and any amendments to the PM / MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the PM / MAP or amended PM / MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The nameplate capacity of EUFLARE shall not exceed 6,000 scfm as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**
2. The heat input capacity of EUFLARE shall not exceed a maximum of 200 MMBtu per hour as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall verify the H<sub>2</sub>S or TRS content of the biogas burned in EUFLARE weekly for the first two months of operation by gas sampling using an EPA approved method and laboratory analysis or AQD approved sampling plan as approved below (Draeger Tubes, Landtec Analyzer, etc.), at the owner's expense, in accordance with Department requirements. After the first two months of operation, the permittee shall verify the H<sub>2</sub>S or TRS content of the biogas burned in EUFLARE monthly by gas sampling using an EPA approved method and laboratory analysis or AQD approved sampling plan as approved below (Draeger Tubes, Landtec Analyzer, etc.), at the owner's expense, in accordance with Department requirements. If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the biogas sample exceeds 125 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the biogas weekly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc) and shall review all operating and maintenance activities for the biogas collection and treatment system along with keeping records of corrective actions taken. Once the H<sub>2</sub>S (TRS equivalent) concentration of the biogas determined from at least four (4) weekly consecutive samples are maintained below 125 ppmv, the permittee may resume monthly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, the permittee shall submit a complete test plan to the AQD District Office. The AQD must approve the final plan prior to the first test for each type of gas sampling. Thereafter, the permittee shall submit a test plan upon the request of the AQD District Supervisor or if any changes are made to the approved testing protocol. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804)**

#### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the end of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.2803, R 336.2804)**

2. The permittee shall monitor and record at least every 15-minutes, in a satisfactory manner acceptable to the AQD District Supervisor, the hours of operation, volumetric flow rate, and the methane content of the gas burned in EUFLARE. This information shall be used to calculate the annual heat input. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1901, R 336.2803, R 336.2804)**
3. The permittee shall calculate and keep, in a satisfactory manner, a record of the heat input on a monthly and 12-month rolling time period basis as determined at the end of each calendar month for EUFLARE. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702, R 336.2803, R 336.2804)**
4. The permittee shall calculate and keep, in a satisfactory manner, a record of the CO and SO<sub>2</sub> emissions on a monthly and 12-month rolling time period basis as determined at the end of each calendar month for EUFLARE using the equation in Appendix A. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702, R 336.2803, R 336.2804)**
5. The permittee shall keep, in a satisfactory manner, gas sampling records of the H<sub>2</sub>S concentration of the biogas routed to EUFLARE. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.2803, R 336.2804)**
6. The permittee shall keep, in a satisfactory manner, all records related to, or as required by, the PM / MAP for EUFLARE. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, R 336.2803, R 336.2804)**

**VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter / Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV-005	NA	45	R 336.1225, R 336.2803, R 336.2804

**IX. OTHER REQUIREMENT(S)**

NA

**EUAMINEREBOILER  
EMISSION UNIT CONDITIONS**

**DESCRIPTION**

A 2.63 MMBtu/hr heat input natural gas-fired boiler

**Flexible Group ID:** FGRNGPLANT

**POLLUTION CONTROL EQUIPMENT**

NA

**I. EMISSION LIMIT(S)**

NA

**II. MATERIAL LIMIT(S)**

1. The permittee shall burn only pipeline quality natural gas in EUAMINEREBOILER. **(R 336.1205(1)(a), R 336.1224, R 336.1225, R 336.1702(a))**

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The maximum design heat input capacity for EUAMINEREBOILER shall not exceed 2.63 MMBTU per hour on a fuel heat input basis. **(R 336.1205(1)(a), R 336.1225)**

**V. TESTING/SAMPLING**

NA

**VI. MONITORING/RECORDKEEPING**

NA

**VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter / Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV-006	14.4	20	R 336.1225, R 336.2803, R 336.2804

**IX. OTHER REQUIREMENT(S)**

NA

## FLEXIBLE GROUP SPECIAL CONDITIONS

### FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

<b>Flexible Group ID</b>	<b>Flexible Group Description</b>	<b>Associated Emission Unit IDs</b>
FGTOX	Primary tail gas from the RNG Plant operation is controlled with the Thermal Oxidizer (EUTO). The secondary tail gas from the RNG Plant is controlled with the Recuperative Thermal Oxidizer (EURECUPTOX). Supplemental natural gas may be used to maintain process temperature.	EUTO, EURECUPTOX
FGRNGPLANT	High BTU landfill gas compression and treatment plant with a capacity of 6,000 standard cubic feet per minute (scfm). Emissions are controlled by a 431 scfm thermal oxidizer, a 3,200 scfm recuperative thermal oxidizer, and a 6,000 scfm open flare.	EUTO, EUFLARE, EURECPTOX, EUAMINEREBOILER, EUCONDSYS

**FGTOX  
 FLEXIBLE GROUP CONDITIONS**

**DESCRIPTION**

Primary tail gas from the RNG Plant operation is controlled with the Thermal Oxidizer (EUTO). The secondary tail gas from the RNG Plant is controlled with the Recuperative Thermal Oxidizer (EURECUPTOX). Supplemental natural gas may be used to maintain process temperature.

**Emission Unit:** EUTO, EURECUPTOX

**POLLUTION CONTROL EQUIPMENT**

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring / Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. CO	14.2 tpy	12-month rolling time period as determined at the end of each calendar month	EURECUPTOX	SC VI.10	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804

**I. EMISSION LIMIT(S)**

NA

**II. MATERIAL LIMIT(S)**

<b>Material</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring / Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. Primary tail gas combusted	226.5 MMscf/year	12-month rolling time period as determined at the end of each calendar month	EUTO	SC VI.8	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804
2. Natural gas combusted	31.2 MMscf/year	12-month rolling time period as determined at the end of each calendar month	EUTO	SC VI.8	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804
3. Secondary tail gas combusted	1,681.9 MMscf/year	12-month rolling time period as determined at the end of each calendar month	EURECUPTOX	SC VI.9	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804
4. Natural gas combusted	38.9 MMscf/year	12-month rolling time period as determined at the end of each calendar month	EURECUPTOX	SC VI.9	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

- No later than 60 days after startup, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for FGTOX. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate FGTOX unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum, the plan shall include:



- a) Identification of the equipment and, if applicable, air-cleaning device, and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.
- b) Description of the items or conditions to be inspected and frequency of the inspections or repairs.
- c) Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
- d) Identification of the major replacement parts that shall be maintained in inventory for quick replacement.
- e) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the PM / MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the PM / MAP within 45 days after such an event occurs. The permittee shall also amend the PM / MAP within 45 days, if new equipment is installed or upon request from the AQD District Supervisor. The permittee shall submit the PM / MAP and any amendments to the PM / MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the PM / MAP or amended PM / MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**

2. The permittee shall install, calibrate, maintain and operate the following equipment for the closed combustors EUTO and EURECUPTOX according to the manufacturer's specifications and the approved PM / MAP, as required in SC III.1:
  - a) A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of plus or minus 1 percent of the temperature being measured expressed in degrees centigrade or plus or minus 0.5 degrees centigrade, whichever is greater.
  - b) A gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**
3. The permittee shall operate FGTOX at all times when the collected gas is routed to FGTOX. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**
4. The permittee shall only flow tail gas to FGTOX when EUCONDSYS is in operation. **(R 336.1205(1)(a) & (b))**

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The nameplate capacity of EUTO tail gas flow shall not exceed 431 scfm as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**
2. The heat input capacity of EUTO shall not exceed a maximum of 4.8 MMBtu per hour as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**
3. The nameplate capacity of EURECUPTOX tail gas flow shall not exceed 3,200 scfm as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**
4. The heat input capacity of EURECUPTOX shall not exceed a maximum of 8.4 MMBtu per hour as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (b), R 336.1225, R 336.1702(a))**

#### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall verify the H<sub>2</sub>S or TRS content of the biogas burned in EUTO and EURECUPTOX monthly by gas sampling using an EPA approved method and laboratory analysis or AQD approved sampling plan as approved below (Draeger Tubes, Landtec Analyzer, etc.), at the owner's expense, in accordance with Department requirements. If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 20 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the biogas weekly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc) and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of

corrective actions taken. Once the H<sub>2</sub>S (TRS equivalent) concentration of the biogas determined from at least four (4) weekly consecutive samples are maintained below 20 ppmv, the permittee may resume monthly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, the permittee shall submit a complete test plan to the AQD District Office. The AQD must approve the final plan prior to the first test for each type of gas sampling. Thereafter, the permittee shall submit a test plan upon the request of the AQD District Supervisor or if any changes are made to the approved testing protocol. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804)**

## **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the end of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.2803, R 336.2804)**
2. The permittee shall monitor and record the operating parameters of temperature and gas flow rate as specified in SC III.2 at least every 15 minutes. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1331, R 336.1702(a), R 336.1910, R 336.2803, R 336.2804)**
3. The permittee shall keep, in a satisfactory manner, operating temperature records for each EUTO and EURECUPTOX as required by SC VI.2. If the measured operating temperature of either EUTO and EURECUPTOX falls below 1400°F during operation of FGRNGPLANT, the permittee may demonstrate compliance based upon a three-hour average temperature, by calculating the average operating temperature for each three-hour period which includes one or more temperature readings below 1400°F. As an alternative, the EUTO or EURECUPTOX must be operated within the parameter ranges established during the initial or most recent performance test. The permittee shall keep all records and calculations on file and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**
4. The permittee shall monitor and record at least every 15 minutes, in a satisfactory manner, the methane content of the biogas burned in each EUTO and EURECUPTOX. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)**
5. The permittee shall keep, in a satisfactory manner, all records related to, or as required by, the PM / MAP for FGTOX. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, R 336.2803, R 336.2804)**
6. The permittee shall keep, in a satisfactory manner, gas sampling records of the H<sub>2</sub>S concentration of the biogas routed to EUTO. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.2803, R 336.2804)**
7. The permittee shall keep, in a satisfactory manner, records of the monthly hours of operation for each emission unit within FGTOX. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.2803, R 336.2804)**
8. The permittee shall calculate and keep, in a satisfactory manner, a record of the primary tail gas and natural gas usage, in MMscf, on a monthly and 12-month rolling time period basis as determined at the end of each calendar month for EUTO. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702, R 336.2803, R 336.2804)**
9. The permittee shall calculate and keep, in a satisfactory manner, a record of the secondary tail gas and natural gas usage, in MMscf, on a monthly and 12-month rolling time period basis as determined at the end of each calendar month for EURECUPTOX. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702, R 336.2803, R 336.2804)**

10. The permittee shall calculate and keep, in a satisfactory manner, a record of the CO emissions on a monthly and 12-month rolling time period basis as determined at the end of each calendar month for EURECUPTOX using the equation in Appendix A. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702, R 336.2803, R 336.2804)**

**VII. REPORTING**

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of FGTOX. **(R 336.1201(7)(a))**

**VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter / Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SV-004 (Thermal Oxidizer)	42	25	R 336.1225, R 336.2803, R 336.2804
2. SV-007 (Recuperative Thermal Oxidizer)	30	33	R 336.1225, R 336.2803, R 336.2804

**IX. OTHER REQUIREMENT(S)**

NA

**FGRNGPLANT  
 FLEXIBLE GROUP CONDITIONS**

**DESCRIPTION**

High BTU landfill gas compression and treatment plant with a capacity of 6,000 standard cubic feet per minute (scfm). Emissions are controlled by a 431 scfm thermal oxidizer, a 3,200 scfm recuperative thermal oxidizer, and a 6,000 scfm open flare.

**Emission Unit:** EUTO, EUFLARE, EURECUPTOX, EUAMINEREBOILER, EUCONDSYS

**POLLUTION CONTROL EQUIPMENT**

431 scfm thermal oxidizer, a 3,200 scfm recuperative thermal oxidizer, and a 6,000 scfm open flare

**I. EMISSION LIMIT(S)**

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring / Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. CO	99.9 tpy <sup>A</sup>	12-month rolling time period as determined at the end of each calendar month	FGRNGPLANT	SC VI.2	R 336.1205(1)(a) & (b), R 336.2803, R 336.2804

<sup>A</sup> Emissions are restricted by the annual heat input in EUFLARE. The potential emissions from EUTO, EURECUPTOX, and EUAMINEREBOILER were calculated based on 8,760 hours per year for each emission unit.

**II. MATERIAL LIMIT(S)**

1. The permittee shall burn only sulfur-conditioned landfill gas or pipeline quality natural gas within FGRNGPLANT. Sulfur-conditioned landfill gas is landfill gas that has passed through the desulfurization portion of FGTURBINES. (R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

NA

**IV. DESIGN/EQUIPMENT PARAMETER(S)**

NA

**V. TESTING/SAMPLING**

1. The permittee shall verify the H<sub>2</sub>S or TRS content of the gas processed in FGRNGPLANT monthly by gas sampling using an EPA approved method and laboratory analysis or AQD approved sampling plan as approved below (Draeger Tubes, Landtec Analyzer, etc.), at the owner's expense, in accordance with Department requirements. If at any time, the H<sub>2</sub>S (TRS equivalent) concentration of the landfill gas sample exceeds 140 ppmv, the permittee shall sample and record the H<sub>2</sub>S (TRS equivalent) concentration of the biogas weekly by gas sampling (e.g. Draeger Tubes, Tedlar Sampling Bags, etc) and shall review all operating and maintenance activities for the landfill gas collection and treatment system along with keeping records of corrective actions taken. Once the H<sub>2</sub>S (TRS equivalent) concentration of the biogas determined from at least four (4) weekly consecutive samples are maintained below 140 ppmv, the permittee may resume monthly monitoring and recordkeeping. No less than 30 days prior to the initial test for each type of gas sampling, the permittee shall submit a complete test plan to the AQD District Office. The AQD must approve the final plan

prior to the first test for each type of gas sampling. Thereafter, the permittee shall submit a test plan upon the request of the AQD District Supervisor or if any changes are made to the approved testing protocol. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804)**

**VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the end of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911, R 336.2803, R 336.2804)**
2. The permittee shall calculate and keep, in a satisfactory manner, a record of the monthly and 12-month rolling time period basis as determined at the end of each calendar month CO emissions from FGRNGPLANT using the equation in Appendix A. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702, R 336.2803, R 336.2804)**
3. The permittee shall keep, in a satisfactory manner, all records of analyzed gas from sampling and/or the gas chromatograph. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205(1)(a) & (b), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.2803, R 336.2804)**

**VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

NA

## FGFACILITY CONDITIONS

### DESCRIPTION

The following conditions apply source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment, and exempt equipment.

### POLLUTION CONTROL EQUIPMENT

NA

#### I. EMISSION LIMIT(S)

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring / Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. Each Individual HAP	Less than 10 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205 (1)
2. Aggregate HAPs	Less than 25 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205 (1)

#### II. MATERIAL LIMIT(S)

NA

#### III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

#### IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

#### V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

#### VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the end of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1))**
2. The permittee shall keep the following information for FGFACILITY:
  - a) Individual and aggregate HAP emission calculations determining the monthly emission rate of each in tons per calendar month.

- b) Individual and aggregate HAP emission calculations determining the annual emission rate of each in tons per 12-month rolling time period as determined at the end of each calendar month. For the first month following permit issuance, the calculations shall include the summation of emissions from the 11-month period immediately preceding the issuance date. For each month thereafter, calculations shall include the summation of emissions for the appropriate number of months prior to permit issuance plus the months following permit issuance for a total of 12 consecutive months.

If stack test results for FGFACILITY exist for any of the aforementioned pollutants, those stack test results may be used to estimate pollutant emissions subject to the approval of the AQD. In the event that stack test results do not exist for a specific pollutant, the applicable emission factor listed in the Emission Limit Table shall be used to estimate the emissions of a pollutant from FGFACILITY. The permittee shall keep the records on file in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205(1))**

**VII. REPORTING**

NA

**VIII. STACK/VENT RESTRICTION(S)**

NA

**IX. OTHER REQUIREMENT(S)**

NA

### APPENDIX A Calculations for Criteria Pollutants

#### SO<sub>2</sub> Mass Emissions

The following calculation for SO<sub>2</sub> emissions shall utilize the actual gas usage, actual hours of operation, and the sulfur concentration from gas sampling and/or a gas chromatograph.

$$SO_2 \left( \frac{tons}{month} \right) = \text{Monthly Average of Monthly H}_2\text{S Gas Samples} \frac{ppmv}{1,000,000} \times 1.1733 \text{ mols} \frac{S}{ft^3} \times 34.08 \frac{grams}{mols} \times \frac{pound}{453.59grams} \times \frac{1ton}{2000pounds} \times \frac{1.88SO_2}{H_2S} \times \text{Total} \frac{S}{Sulfur} \text{ as H}_2\text{S} \times \text{Monthly Biogas} \frac{ft^3}{month}$$

#### CO Mass Emissions

The following calculation for CO emissions shall utilize the actual HHV of the gas, gas flow rate, and hours of operation.

$$CO = [(HI) \times (EF)] = \text{pph} \times (H) = \text{pounds/month}$$

$$HI = (HHV) \times (\text{scfm}) \times (1/1.0E+06) \times 60 \text{ min/hr}$$

The following calculation for CO emissions shall utilize the actual methane percent of the gas, gas flow rate, and hours of operation.

$$CO = [(FR) \times (EF)] = \text{pph} \times (H) = \text{pounds/month}$$

$$FR = (\text{CH}_4 \%/100) \times (\text{scfm tail gas}) \times (1/1.0E+06) \times 60 \text{ min/hr}$$

#### Where:

- EF<sub>CO</sub> = 0.31 lb/MMBtu (flare)
- EF<sub>CO</sub> = 750 lb/MMscf CH<sub>4</sub> (Thermal Oxidizer and Recuperative Thermal Oxidizer tail gas)
- EF<sub>CO</sub> = 0.08 lb/MMBtu (Amine Reboiler, Thermal Oxidizer and Recuperative assist gas)
- scfm = standard cubic feet per minute gas flow
- H = Actual Hours of Operation per month
- HI = Heat Input (MMBtu/hr)
- HHV = Average Hourly LFG Higher Heating Value (Btu/ft<sup>3</sup>)
- CH<sub>4</sub> % = The percentage of methane in the tail gas
- FR = Flow Rate (MMscf CH<sub>4</sub>/hr)