

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

March 27, 2020

PERMIT TO INSTALL
178-19

ISSUED TO
Energy Developments Lansing, LLC

LOCATED AT
16980 Wood Road
Lansing, Michigan 48906

IN THE COUNTY OF
Clinton and Ingham

STATE REGISTRATION NUMBER
N5997

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: January 24, 2020	
DATE PERMIT TO INSTALL APPROVED: March 27, 2020	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

COMMON ACRONYMS 2
POLLUTANT / MEASUREMENT ABBREVIATIONS..... 3
GENERAL CONDITIONS 4
EMISSION UNIT SPECIAL CONDITIONS..... 6
 EMISSION UNIT SUMMARY TABLE 6
 EUCONDSYS 7
 EUTOX 9
 FLEXIBLE GROUP SUMMARY TABLE 14
 FGRNG&NEWFLARES 15
APPENDIX A..... 17

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 ₂ 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 ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	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 ₂	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 conditions 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
EUCONDSYS	Landfill gas conditioning system using a membrane filtering technology to condition landfill gas into renewable natural gas (RNG) by removing hydrogen sulfide (H ₂ S), volatile organic compounds (VOCs), carbon dioxide (CO ₂), nitrogen (N ₂), and oxygen (O ₂). Processed gas can either route to the landfill flares (EUUF1 and EUUF2), thermal oxidizer (EUTOX), or a natural gas pipeline.	To be determined	FGRNG, FGRNG&NEWFLARES
EUTOX	A 2,000 standard cubic feet per minute (scfm) thermal oxidizer (enclosed flare) used for destruction of waste gas (components removed during the conditioning of the gas and off-spec RNG).	To be determined	FGRNG, FGRNG&NEWFLARES

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

Landfill gas conditioning system using a membrane filtering technology to condition landfill gas into renewable natural gas (RNG) by removing sulfur compounds, volatile organic compounds (VOCs), carbon dioxide (CO₂), nitrogen (N₂), and oxygen (O₂) from the gas. The desulfurization process will use a scrubber with regenerative iron-redox technology, followed by a non-regenerative dry media system, or an equivalent sulfur removal technology. A regenerative pressure swing adsorption (PSA) and non-regenerative activated carbon, or equivalent technology, will be used for removal of VOCs, CO₂, O₂, and N₂. The tail-end gas created by removal of these pollutants will be burned in the thermal oxidizer (EUTOX).

The processed gas will be routed to a natural gas pipeline or if it is not to pipeline specification then it will be sent to EUTOX or FGNEWFLARES.

Prior to being conditioned to create pipeline quality natural gas, the landfill gas will undergo compression, dewatering, and filtering (to at least 10 microns) to comply with the landfill gas treatment requirements per 40 CFR 60.752(b)(2)(iii)(C).

Flexible Group ID: FGRNG, FGRNG&NEWFLARES

POLLUTION CONTROL EQUIPMENT

Thermal oxidizer (EUTOX).

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. No later than 30 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. At a minimum, this should include:
 - i. Method for evaluating breakthrough of adsorption media.
 - ii. Process to replace media.
 - iii. Description of media redundancy during changeouts.
 - iv. How to determine when the bypass following the sulfur-removal system will be used.
 - v. How the flow of gas will be switched between the bypass or the full conditioning system.
 - 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) & (3), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912, R 336.2803, R 336.2804)**

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 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) & (3), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**
2. 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) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.1910, R 336.2803, R 336.2804)**
3. The permittee shall keep, in a satisfactory manner, records of the monthly hours of operation of EUCONDSYS. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), 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 EUCONDSYS. **(R 336.1201(7)(a))**
2. Within 30 days after commencement of initial startup of EUCONDSYS, the permittee or the authorized agent shall notify the AQD District Supervisor, in writing. **(R 336.1201)**

VIII. STACK/VENT RESTRICTION(S)

1. The permittee shall route all exhaust gases from EUCONDSYS to either EUTOX or FGNEWFLARES. **(R 336.1225, R 336.2803, R 336.2804)**

IX. OTHER REQUIREMENT(S)

1. The permittee shall not operate EUCONDSYS until all reciprocating internal combustion engines at the landfill gas-to-energy facility have permanently ceased operation. All reciprocating internal combustion engines shall be physically disconnected from any gas source on or before October 1, 2021. **(R 336.1205(1)(a) & (3), R 336.2802)**

**EUTOX
 EMISSION UNIT CONDITIONS**

DESCRIPTION

A 2,000 standard cubic feet per minute (scfm) enclosed flare used for destruction of waste gas (components removed during the conditioning of the gas and off-spec RNG). Supplemental natural gas may be used to maintain process temperature.

Flexible Group ID: FGRNG, FGRNG&NEWFLARES

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit*	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. NO _x	0.060 lb/MMBTU	Hourly	EUTOX	SC V.1, SC VI.2, SC VI.4	R 336.1205(1)(a) & (3), R 336.2803, R 336.2804
2. NO _x	6.40 tpy	12-month rolling time period as determined at the end of each calendar month	EUTOX	SC VI.7, SC VI.8	R 336.1205(1)(a) & (3)
3. CO	0.20 lb/MMBTU	Hourly	EUTOX	SC V.1, SC VI.2, SC VI.4	R 336.1205(1)(a) & (3), R 336.2803, R 336.2804
4. CO	21.3 tpy	12-month rolling time period as determined at the end of each calendar month	EUTOX	SC VI.7, SC VI.8	R 336.1205(1)(a) & (3)
5. SO ₂	0.40 pph	Hourly	EUTOX	SC V.1, SC VI.6	R 336.1205(1)(a) & (3), R 336.2803, R 336.2804
6. SO ₂	1.65 tpy	12-month rolling time period as determined at the end of each calendar month	EUTOX	SC V.2, SC VI.6, SC VI.7, SC VI.8	R 336.1205(1)(a) & (3)

*Limits are based on a Higher Heating Value equal to 203 BTU/ft³ and the and gas inlet flow rate of 2,000 ft³/min.

II. MATERIAL LIMIT(S)

1. The permittee shall burn only sulfur-conditioned landfill gas or pipeline quality natural gas in EUTOX. Sulfur-conditioned landfill gas is landfill gas that has passed through the desulfurization portion of EUCONDSYS. Pipeline quality natural gas consists of gas from a natural gas pipeline or renewable natural gas from the facility that meets the requirements of entry into the natural gas pipeline. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. No later than 30 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 EUTOX. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate EUTOX 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) & (3), 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 combustor EUTOX 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 device that records flow to or bypass of the control device including either:
 - i. A gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes.
 - ii. A bypass line valve with a car-seal or a lock-and-key closed position configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)

3. The permittee shall operate EUTOX at all times when the collected gas is routed to EUTOX. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1910, R 336.1911, R 336.1912)**
4. The permittee shall operate a flame detection system in conjunction with EUTOX. In the event the flame is extinguished, shut-in of all lines feeding EUTOX shall commence automatically. Operation of EUTOX shall not be restarted unless the non-continuous pilot flame is reignited. Pilot fuel shall only be natural gas. **(R336.1201(3), R 336.1224, R 336.1225)**

5. The permittee shall only operate EUTOX when EUCONDOSYS is in operation. **(R 336.1205(1)(a) & (3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The nameplate capacity of EUTOX shall not exceed 2,000 scfm as specified by the equipment manufacturer. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)**
2. The heat input capacity of EUTOX shall not exceed a maximum of 24.4 MM BTU per hour. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702(a), R 336.2803, R 336.2804)**

V. TESTING/SAMPLING

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

1. Within 180 days after commencement of initial start-up, the permittee shall verify NO_x, CO, and SO₂ emission rates and operating parameter boundaries for EUTOX by testing at the owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in the table below. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205(1)(a) & (3), R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804)**

Pollutant	Test Method Reference
NO _x	40 CFR Part 60, Appendix A
CO	40 CFR Part 60, Appendix A
SO ₂	40 CFR Part 60, Appendix A

2. The permittee shall verify the hydrogen sulfide (H₂S) or total reduced sulfur (TRS) content of the waste gas burned in EUTOX monthly by gas sampling using an EPA approved method and laboratory analysis, at the owner's expense, in accordance with Department requirements. If at any time, the H₂S (TRS equivalent) concentration of the landfill gas sample exceeds 5 ppmv, the permittee shall sample and record the H₂S (TRS equivalent) concentration of the waste gas 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 H₂S (TRS equivalent) concentration of the waste gas determined from at least four (4) weekly consecutive samples are maintained below 5 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 Technical Programs Unit and 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(3), 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 30th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (3), 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 continuously monitor and record the operating parameters of temperature and gas flow rate or a visual inspection of the bypass line valve for EUTOX as specified in SC III.2. 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) & (3), 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 up-to-date, readily accessible records of all control system exceedances of the operational standards in 40 CFR 60.753. **(R 336.1205(1)(a) & (3))**
4. The permittee shall continuously monitor and record, in a satisfactory manner, the methane content of the waste gas burned in EUTOX. 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) & (3), 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 EUTOX. **(R 336.1205(1)(a) & (3), 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 H₂S concentration of the waste gas routed to EUTOX. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.2803, R 336.2804)**
7. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling total NO_x, CO, and SO₂ mass emissions for EUTOX. Calculations shall be performed according to Appendix A using the most recent stack test and/or gas sampling data. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.2803, R 336.2804)**
8. The permittee shall keep, in a satisfactory manner, records of the monthly hours of operation for EUTOX. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), 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 EUTOX. **(R 336.1201(7)(a))**
2. The permittee shall submit to the AQD District Supervisor, annual reports of the recorded information below. The initial annual report shall be submitted within 180 days of installation and start-up of FGRNG and shall include the initial performance test report required by SC V.1 for EUTOX, including the following:
 - a) Value and length of time for exceedance of applicable parameters monitored for temperature and gas flow rate.
 - b) Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow.
 - c) Description and duration of all periods when EUTOX was not operating for a period exceeding 1-hour and length of time EUTOX was not operating.**(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.2803, R 336.2804)**
3. Within 30 days after commencement of initial startup of EUTOX, the permittee or the authorized agent shall notify the AQD District Supervisor, in writing. **(R 336.1201)**

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:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVTOX	60	40	R 336.1225, R 336.2803, R 336.2804

IX. OTHER REQUIREMENT(S)

1. The permittee shall not operate EUTOX until all reciprocating internal combustion engines at the landfill gas-to-energy facility have permanently ceased operation. All reciprocating internal combustion engines shall be physically disconnected from any gas source on or before October 1, 2021. **(R 336.1205(1)(a) & (3), R 336.2802)**

FLEXIBLE GROUP SUMMARY TABLE

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

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGRNG	The renewable natural gas (RNG) plant will produce pipeline quality gas for sale off-site. The tail-end gas created during the conditioning of the pipeline quality gas will be burned in EUTOX. Processed landfill gas that is not pipeline quality will be burned in EUTOX or FGNEWFLARES.	EUCONDSYS, EUTOX
FGNEWFLARES	Two open utility flares that will burn landfill gas when the Renewable Gas Plant is inoperable, running at a lower capacity, or when the gas is not pipeline quality. Together the two flares have a maximum capacity of 6,000 cubic feet per minute.	EUUF1, EUUF2
FGRNG&NEWFLARES	Processed landfill gas that is not pipeline quality will be burned in EUTOX or FGNEWFLARES.	EUCONDSYS, EUTOX, EUUF1, EUUF2

**FGRNG&NEWFLARES
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

The renewable natural gas (RNG) plant will produce pipeline quality gas for sale off-site. The tail-end gas, created during the conditioning of the landfill gas to produce pipeline quality gas, will be burned in EUTOX. Gas that is not pipeline quality will be burned in EUTOX or FGNEWFLARES.

Emission Units: EUCONDSYS, EUTOX, EUUF1, EUUF2

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. SO ₂	35.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGRNG&NEWFLARES	SC VI.2	R 336.1205(1) (a) & (3)
2. CO	89.4 tpy	12-month rolling time period as determined at the end of each calendar month	FGRNG&NEWFLARES	SC VI.3	R 336.1205(1) (a) & (3)

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 30th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. (R 336.1205(1)(a) & (3), R 336.2802, R 336.2803, R 336.2804)

2. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling total SO₂ mass emissions for FGRNG&NEWFLARES. Calculations shall be performed according to Appendix A. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.2802, R 336.2803, R 336.2804)**

3. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling total CO mass emissions for FGRNG&NEWFLARES. Calculations shall be performed according to Appendix A and using the most recent operating parameters and tested emission factors. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205(1)(a) & (3), R 336.2802, R 336.2803, R 336.2804)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

APPENDIX A

Calculations for Criteria Pollutants

SO₂ Mass Emissions

The following calculation for SO₂ emissions shall utilize the actual gas usage, actual hours of operation, and the sulfur concentration from gas sampling and/or a gas chromatograph.

$$\text{SO}_2 = [(\text{scfm}) \times (60 \text{ min/hr}) \times (\text{ppmv}_{\text{sulfur}} * 1\text{E-}06) \times (\text{MW}_{\text{SO}_2})] \div [(R \times T)] = \text{pph} \times (H) = \text{pounds/day}$$

Where:

scfm = standard cubic feet per minute gas flow
ppmv_{sulfur} = parts per million by volume of Sulfur in the gas
MW_{SO₂} = Molecular Weight of SO₂ = 64.066 lb/lb-mol
H = Actual Hours of Operation per day
R = Universal Gas Constant = 0.7302 atm-ft³/lb-mol-R
T = Standard Temperature (absolute) = 519 R

NO_x and CO Mass Emissions

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

$$\text{NO}_x \text{ or CO} = [(HI) \times (EF)] = \text{pph} \times (H) = \text{pounds/month}$$
$$HI = (\text{HHV}) \times (\text{scfm}) \times (1/1.0\text{E}+06) \times 60 \text{ min/hr}$$

Where:

EF_{NO_x} = 0.060 lb/MMBTU (enclosed flare) or most recent stack test value
EF_{CO} = 0.20 lb/MMBTU (enclosed flare) or most recent stack test value
EF_{NO_x} = 0.068 lb/MMBTU (open flare)
EF_{CO} = 0.37 lb/MMBTU (open flare)
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/ft³)