

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

August 27, 2020

PERMIT TO INSTALL
250-00C

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: August 10, 2020	
DATE PERMIT TO INSTALL APPROVED: August 27, 2020	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 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
EUTURBINE1	Combustion turbines consume landfill gas for the generation of electricity. Each Solar gas turbine operates at a maximum flow rate of 3.8 MMscf/day and has a heat input design capacity of 56.33 MMBtu/hr.	1/1/88	FGTURBINES
EUTURBINE2	Combustion turbines consume landfill gas for the generation of electricity. Each Solar gas turbine operates at a maximum flow rate of 3.8 MMscf/day and has a heat input design capacity of 56.33 MMBtu/hr.	1/1/88	FGTURBINES

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.

FLEXIBLE GROUP SPECIAL CONDITIONS

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
FGTURBINES	Combustion turbines consume landfill gas for the generation of electricity. Each Solar gas turbine operates at a maximum flow rate of 3.8 MMscf/day, with an average heating value for landfill gas of 520 BTU/scf.	EUTURBINE1, EUTURBINE2

**FGTURBINES
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Combustion turbines burn landfill gas for the generation of electricity. Each Solar gas turbine operates at a maximum flow rate of 3.8 MMscf/day, with an average heating value for landfill gas of 520 Btu/scf.

Emission Unit: EUTURBINE1 and EUTURBINE2

POLLUTION CONTROL EQUIPMENT

Sulfur removal system with a removal efficiency of 85 percent or more.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Nitrogen Oxides (NO _x)	As determined by the formula specified in Appendix 7-1(1) ²	As calculated at the time of each stack test.	Each turbine	SC V.2, SC V.3, SC VI.2.a, Appendix 7-1(1)	40 CFR 60.332(a)(2), 40 CFR 60.332(c)
2. NO _x	64.6 tpy ²	12-month rolling time period as determined at the end of each calendar month	Each turbine	SC V.3 SC VI.2.b	40 CFR 52.21(c) & (d)
3. Sulfur dioxide (SO ₂)	0.015% by volume at 15% oxygen on a dry basis ^{A, 2}	Test Protocol*	Each turbine	SC V.2, Appendix 9-1	40 CFR 60.333(a)
4. SO ₂	32.0 tpy ²	12-month rolling time period as determined at the end of each calendar month ^B	FGTURBINES	SC V.4, SC V.5, SC VI.3, SC VI.4, Appendix 7-1(3), Appendix 9-1	R 336.1205(3), 40 CFR 52.21(c) & (d)
5. Carbon monoxide (CO)	15.78 pph ²	Test Protocol*	Each turbine	SC V.3, SC VI.2.c	40 CFR 52.21(d)
6. Hydrogen chloride (HCl)	2.05 pph ¹	Test Protocol*	FGTURBINES	SC V.1, SC VI.2.d, Appendix 7-1(2)	R 336.1225
7. HCl	9.0 tpy ¹	12-month rolling time period as determined at the end of each calendar month	FGTURBINES	SC V.1, SC VI.2.e	R 336.1205(3)

* Test Protocol shall determine averaging time.

^A The permittee may determine compliance with either the emission limit (SC I.4) or material limit (SC II.3).

^B Beginning with November 2016, which is the first month the pollution control equipment required by SC IV.1 was installed and operational.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Landfill gas combusted	7.6 MMscf/day ²	Calendar day	FGTURBINES	SC VI.1	R 336.1205(3)
2. Total sulfur in landfill gas	Not to exceed 140 ppm by volume	Test Protocol*	FGTURBINES	SC V.4, SC VI.3	R 336.1205(3)
3. Total sulfur in landfill gas	0.8 percent by weight ^A	Test Protocol*	FGTURBINES	SC V.2, SC VI.3	40 CFR 60.333(b)

* Test Protocol shall determine averaging time.

^A The permittee may determine compliance with either the emission limit (SC I.4) or material limit (SC II.3).

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall route all collected gas that is not combusted in FGTURBINES to a control system that complies with the requirements in either paragraph (b)(2)(iii) (A) or (B) of 40 CFR §60.752(b)(2)(iii):
 - a) An open flare designed and operated in accordance with 40 CFR §60.18, except as noted in 40 CFR §60.754(e). **(40 CFR §60.752(b)(2)(iii)(A))**
 - b) A control system designed and operated to reduce NMOC by 98 weight percent, or when an enclosed combustion device is used for control, either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen. The reduction efficiency or parts per million by volume shall be established by an initial performance test to be completed no later than 180 days after the initial startup of the approved control system using the test methods specified in §60.754(d). **(40 CFR §60.752(b)(2)(iii)(B))**
2. Within 30 calendar days of the date of permit approval, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance (PM) / malfunction abatement plan (MAP) for the sulfur control system for FGTURBINES. The permittee shall not operate FGTURBINES unless the approved PM / MAP, or an alternate plan approved by the AQD District Supervisor is implemented and maintained. The plan shall include procedures for maintaining and operating in a satisfactory manner, FGTURBINES, add-on air pollution control device, monitoring equipment during malfunction events, and a program for corrective action for such events. If the malfunction abatement plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the malfunction abatement plan within 45 days after such an event occurs and submit the revised plan to the AQD district Supervisor. **(R 336.1205, R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate FGTURBINES unless the sulfur control system is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

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

1. The permittee shall determine, by sampling, the total chlorine concentration of the landfill gas stream influent to the turbines a minimum of once per calendar year. If the sampling results indicate the hydrogen chloride emissions, based on the total chlorine concentration of the landfill gas, are less than 75 percent of the emission limits specified in SC I.6 of the emission limit table, then the sampling frequency shall be once every five years. In the event subsequent sampling results indicate the hydrogen chloride emissions exceed or are equal to 75 percent of the allowable emission limits specified in SC I.6 of the emission limit table, the sampling frequency shall return to once per calendar year.¹ **(R 336.1225)**

2. The permittee shall determine nitrogen and sulfur concentrations in the fuel according to the EPA approved custom fuel monitoring plan contained in Appendix 9-1. **(40 CFR §60.334(i))**
3. By December 14, 2022, once every five years thereafter, and upon the request of the AQD District Supervisor, the permittee shall determine, through stack testing at owner's expense, NO_x, and CO emission rates for FGTURBINES. **(R 336.2001, R 336.2003, R 336.2004)**
4. The permittee shall verify the total sulfur content of the treated landfill gas burned in FGTURBINES on a weekly basis by gas testing at the owner's expense, in accordance with Department requirements. If at any time, the sulfur concentration of the landfill gas sample exceeds 140 ppm by volume, the permittee shall sample and record total sulfur content of the landfill gas on a daily basis 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 total sulfur concentration of the landfill gas determined from the daily readings is maintained below 140 ppm volume, for a week after an exceedance, the permittee may resume weekly monitoring and recordkeeping. **(R 336.1205(3), R 336.1225, R 336.2001, R 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**
5. Weekly sampling of the treated landfill gas, as required in SC V.4, shall be done according to an EPA approved method contained in Appendix 9-1, unless an alternate test method is approved by the AQD District Supervisor. 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. 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. If at any time the AQD determines an approved alternate test method is insufficient in demonstrating compliance, the facility shall sample in accordance with an EPA approved method in Appendix 9-1. 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 336.2803, R 336.2804, 40 CFR 52.21 (c) & (d))**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall record the consumption of landfill gas and hours of operation for FGTURBINES for each operating day.² **(R 336.1205(1)(a), R 336.1205(3), 40 CFR 52.21(c) & (d))**
2. The permittee shall calculate and record the following information at the specified frequencies:
 - a) The nitrogen oxides emission rate shall be determined based on the formula in Appendix 7-1(1).
 - b) The monthly and 12-month rolling total nitrogen oxides emissions for each turbine.²
 - c) A monthly record of the hourly carbon monoxide emissions for each turbine, based on most recent stack test results.
 - d) The hourly hydrogen chloride emission rate for FGTURBINES as calculated per Appendix 7-1(2) unless stack test data becomes available.
 - e) The monthly and 12-month rolling total hydrogen chloride emissions for FGTURBINES as calculated per Appendix 7-1(2).

(R 336.1205(1)(a), R 336.1205(3), R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d), 40 CFR Part 60, Subpart GG)
3. The permittee shall record all sampling data collected of the total sulfur concentration in the landfill gas. All records shall be kept on file at the facility and make them available to the Department upon request. **(R 336.1205(3)), R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d), 40 CFR Part 60, Subpart GG)**
4. Beginning November 2016, the permittee shall calculate and record the monthly and 12-month rolling SO₂ emission rate from FGTURBINES, using the equation in Appendix 7-1(3), or other method as approved by the AQD District Supervisor. The calculations shall utilize the actual gas usage, actual hours of operation, and the sulfur concentration from the most recent gas sampling data unless otherwise requested by the AQD. All records shall be kept on file at the facility and make them available to the Department upon request. **(R 336.1205(3)), R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

VII. REPORTING

1. The permittee shall submit the landfill gas sampling data collected and SO₂ emission calculations to the AQD Detroit District Supervisor within 30 days after the end of each calendar month. **(R 336.1205(3)), R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d))**

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. SV-001	41 ²	25.5 ²	R 336.1225, 40 CFR 52.21(c) & (d)
2. SV-002	41 ²	25.5 ²	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards for Stationary Gas Turbines as specified in 40 CFR Part 60, Subpart A and GG. **(40 CFR Part 60, Subpart GG)**
2. The permittee shall vacuum-sweep all paved roads and parking lots belonging to Riverview Energy Systems on as-needed basis.¹ **(§5524 Part 55 Public Act 451 of 1994, as amended)**
3. The permittee shall treat all unpaved roads and parking lots belonging to Riverview Energy Systems with a Division-approved chemical surfactant on an as-needed basis.¹ **(§5524 Part 55 Public Act 451 of 1994, as amended)**

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

² This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

APPENDIX 7-1

Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing, or recordkeeping data to determine compliance with the applicable requirements referenced in FGTURBINES. Alternative calculations must be approved by the District Supervisor.

(1) Standard for Nitrogen Oxides

Allowable nitrogen oxides emissions shall be calculated using the following equation.

$$STD = 0.0150 \times [14.4/Y] + F$$

Where:

- STD = allowable NO_x emissions (percent by volume at 15 percent oxygen and on a dry basis
- Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour) or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.
- F = NO_x emission allowance for fuel-bound nitrogen.

Unless the permittee chooses to use a default F value of zero (as allowed in 40 CFR §60.332(a)(3)), then the value of F shall be defined according to the nitrogen content of fuel as follows:

Fuel-bound nitrogen (percent by weight) as determined in the most recent performance test under 40 CFR §60.8.	F (NO _x percent by volume)
N ≤ 0.015	0
0.015 < N ≤ 0.1	0.04(N)
0.1 < N ≤ 0.25	0.004 + 0.0067(N-0.1)
N > 0.25	0.005

Where:

N = the nitrogen content of the fuel (percent by weight)

(40 CFR §60.332(a)(2), (3) and (4))

(2) Hydrogen chloride (HCl):

Present in the landfill gas are numerous chlorinated compounds. The permittee shall calculate the emissions using the emission factor and equation listed below or an alternative method approved by the District Supervisor. The emission factor shall be established and updated through gas sampling in SC V.1 or alternative method as approved by the District Supervisor.

The following equation provides an example of how HCl emissions can be calculated using the flow rate of gas entering the turbines:

$$\text{pph HCl} = (A) * (\text{ft}^3 \text{ landfill gas burned / hr}) * (1.028 \text{ lb HCl / lb Cl})$$

where

A = pound of chlorine per cubic foot of landfill gas, determined by testing as required in FGTURBINES.

(3) Sulfur Dioxide (SO₂):

The following calculation for SO₂ emissions shall utilize the actual gas usage, hours of operation, and the sulfur concentration from the most recent laboratory test sample and/or gas sampling data. A laboratory test sample shall be used in the calculations, at least twice per year.

SO₂ Emissions (tons per month)

$$\begin{aligned} &= \frac{H_2S \text{ Gas Sample (ppmv)}}{1,000,000} \times \frac{1.1733 \text{ mols Sulfur}}{ft^3} \times \frac{32.065 \text{ grams}}{\text{mol Sulfur}} \times \frac{\text{pound}}{453.59 \text{ grams}} \times \frac{\text{ton}}{2,000 \text{ pounds}} \\ &\times \frac{1.88 SO_2}{H_2S} \text{ Molecular Weight Ratio} \times \text{Actual Monthly Landfill Gas Usage (ft}^3\text{/month)} \end{aligned}$$

APPENDIX 9-1
Custom Fuel Monitoring Schedule for Sulfur and Nitrogen Content

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

JUN 26, 1997

REPLY TO THE ATTENTION OF

(AE-17J)

James A. Van Hoy, P.E.
General Manger
Riverview Energy Systems
29261 Wall Street
Wixom, Michigan 48393

Dear Mr. Van Hoy:

Thank you for your letter dated April 10, 1997, proposing a custom fuel monitoring schedule for fuel gas sulfur analyses and a waiver for nitrogen monitoring requirements for two stationary gas turbines located at the City of Riverview landfill in Wayne County, Michigan. These turbines are operated by Riverview Energy Systems. This request was made pursuant to provisions found in Subpart GG of the New Source Performance Standards (NSPS), specifically at 40 CFR §§ 60.334(b) (2).

Based on its review of your submittal, the United States Environmental Protection Agency (U.S. EPA) hereby approves the proposed custom fuel monitoring schedule for the measurement of gas turbine fuel sulfur content at the City of Riverview landfill. This approval is subject to the following conditions:

1. This approval applies to the combustion of landfill gas only. If fuels other than landfill gas are combusted, daily fuel sampling must commence upon the use of these fuels, as required at 40 CFR § 60.334(b) (2).
2. Riverview Energy Systems must follow the Conditions for Custom Fuel Sampling schedule for Stationary Gas Turbines, as put forth by John B. Rasnic, in his memo dated August 14, 1987 (enclosed).
3. For the turbines identified above, Riverview Energy Systems must notify U.S. EPA and Wayne County Department of Energy's Air Management Division (Wayne County) of any change in fuel supply, which means any change in fuel quality and/or fuel make-up, so that U.S. EPA and Wayne County may re-examine the custom schedule.

Based on your submittal, U.S. EPA also approves Riverview Energy Systems' request for a waiver of the nitrogen monitoring requirements found at 40 CFR §60.334(b). This approval is based on data indicating no fuel-bound nitrogen in the landfill gas, which would not significantly contribute to the formation and subsequent emission of NO_x.

If you have any further questions regarding this approval, please feel free to contact Jeffrey Gahris, of my staff, at (312)886-6794.

Sincerely Yours

George Czerniak, Chief
Air Enforcement and Compliance Assurance Branch

Enclosure

cc: Wendy Barrott, Director
Air Quality Management Division
Wayne County Department of Environment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 14, 1987

Office of
AIR AND RADIATION

MEMORANDUM

SUBJECT: Authority for Approval of Custom Fuel Monitoring Schedules
Under NSPS Subpart GG

FROM: John B. Rasnic, Chief
Compliance Monitoring Branch

TO: Air Compliance Branch Chiefs
Regions II, III, IV, V, VI and IX

Air Programs Branch Chiefs Regions I-X

The NSPS for Stationary Gas Turbines (Subpart GG) at 40 CFR 60.334(b)(2) allows for the development of custom fuel monitoring schedules as an alternative to daily monitoring of the sulfur and nitrogen content of fuel fired in the turbines. Regional Offices have been forwarding custom fuel monitoring schedules to the Stationary Source Compliance Division (SSCD) for consideration since it was understood that authority for approval of these schedules was not delegated to the Regions. However, in consultation with the Emission Standards and Engineering Division, it has been determined that the Regional Offices do have the authority to approve Subpart GG custom fuel monitoring schedules. Therefore it is no longer necessary to forward these requests to Headquarters for approval.

Over the past few years, SSCD has issued over twenty custom schedules for sources using pipeline quality natural gas. In order to maintain national consistency, we recommend that any schedules Regional Offices issue for natural gas be no less stringent than the following: sulfur monitoring should be bimonthly, followed by quarterly, then semiannual, given at least six months of data demonstrating little variability in sulfur content and compliance with §60.333 at each monitoring frequency; nitrogen monitoring can be waived for pipeline quality natural gas, since there is no fuel-bound nitrogen and since the free nitrogen does not contribute appreciably to NO_x emissions. Please see the attached sample custom schedule for details. Given the increasing trend in the use of pipeline quality natural gas, we are investigating the possibility of amending Subpart GG to allow for less frequent sulfur monitoring and a waiver of nitrogen monitoring requirements where natural gas is used.

Where sources using oil request custom fuel monitoring schedules, Regional Offices are encouraged to contact SSCD for consultation on the appropriate fuel monitoring schedule. However, Regions are not required to send the request itself to SSCD for approval.

If you have any questions, please contact Sally M. Farrell at FTS 382-2875.

Attachment

cc: John Crenshaw
George Walsh
Robert Ajax
Earl Salo

Enclosure

Conditions for Custom Fuel Sampling Schedule for Stationary Gas Turbines

1. Monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbine.
2. Sulfur monitoring
 - a. Analysis for fuel sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternative method. The reference methods are: ASTM D1072-80; ASTM D3031-81; ASTM D3246-81; and ASTM D4084-82 as referenced in 40 CFR 60.335(b)(2).
 - b. Effective the date of this custom schedule, sulfur monitoring shall be conducted twice monthly for six months. If this monitoring shows little variability in the fuel sulfur content, and indicates consistent compliance with 40 CFR 60.333, then sulfur monitoring shall be conducted once per quarter for six quarters.
 - c. If after the monitoring required in item 2(b) above, or herein, the sulfur content of the fuel shows little variability and, calculated as sulfur dioxide, represents consistent compliance with the sulfur dioxide emission limits specified under 40 CFR 60.333, sample analysis shall be conducted twice per annum. This monitoring shall be conducted during the first and third quarters of each calendar year.
 - d. Should any sulfur analysis as required in items 2(b) or 2(c) above indicate noncompliance with 40 CFR 60.333, the owner or operator shall *notify the Michigan Department of Environmental Quality Air Quality Division* of such excess emissions and the custom schedule shall be re-examined by the Environmental Protection Agency. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.
3. If there is a change in fuel supply, the owner or operator must notify *the Michigan Department of Environmental Quality Air Quality Division* of such change for re-examination of this custom schedule. A substantial change in fuel quality shall be considered as a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.
4. Records of sample analysis and fuel supply pertinent to this custom schedule shall be retained for a period of three years, and be available for inspection by personnel of federal, state, and local air pollution control agencies.