MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

July 8, 2015

PERMIT TO INSTALL
546-95B

ISSUED TO
City of St. Louis Municipal Electric Utility

LOCATED AT
412 North Mill Street
St. Louis, Michigan

IN THE COUNTY OF
Gratiot

STATE REGISTRATION NUMBER
N5724

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. 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: **June 2, 2015**	
DATE PERMIT TO INSTALL APPROVED: **July 8, 2015**	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

Section **Page**

Common Abbreviations / Acronyms

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	BTU	British Thermal Unit
BACT	Best Available Control Technology	°C	Degrees Celsius
CAA	Clean Air Act	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
CO_2e	Carbon Dioxide Equivalent	°F	Degrees Fahrenheit
COM	Continuous Opacity Monitoring	gr	Grains
EPA	Environmental Protection Agency	Hg	Mercury
EU	Emission Unit	hr	Hour
FG	Flexible Group	H_2S	Hydrogen Sulfide
GACS	Gallon of Applied Coating Solids	hp	Horsepower
GC	General Condition	lb	Pound
GHGs	Greenhouse Gases	kW	Kilowatt
HAP	Hazardous Air Pollutant	m	Meter
HVLP	High Volume Low Pressure *	mg	Milligram
ID	Identification	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	NO_x	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality (Department)	PM	Particulate Matter
MSDS	Material Safety Data Sheet	PM10	PM with aerodynamic diameter ≤10 microns
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	PM with aerodynamic diameter ≤ 2.5 microns
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	psia	Pounds per square inch absolute
PTI	Permit to Install	psig	Pounds per square inch gauge
RACT	Reasonably Available Control Technology	scf	Standard cubic feet
ROP	Renewable Operating Permit	sec	Seconds
SC	Special Condition	SO_2	Sulfur Dioxide
SCR	Selective Catalytic Reduction	THC	Total Hydrocarbons
SRN	State Registration Number	tpy	Tons per year
TAC	Toxic Air Contaminant	µg	Microgram
TEQ	Toxicity Equivalence Quotient	VOC	Volatile Organic Compound
VE	Visible Emissions	yr	Year

* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

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 Environmental Quality, 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 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 R 336.1219 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 R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(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 R 336.1301, 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 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 R 336.1370(2). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

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 (Process Equipment & Control Devices)	Flexible Group ID
EUENGINE1	12 cylinder 1,360 KW (Nameplate: 1920 HP) Fairbanks Morse reciprocating engine, with dual fuel firing capability (diesel and natural gas). Catalytic converter installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	FGENGINES1237
EUENGINE2	5 cylinder 690 KW (Nameplate: 1000 HP) Fairbanks Morse reciprocating engine, fired with diesel fuel. Catalytic converter installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	FGENGINES1237
EUENGINE3	7 cylinder 980 KW (Nameplate: 1400 HP) Fairbanks Morse reciprocating engine, fired with diesel fuel. Catalytic converter installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	FGENGINES1237
EUENGINE7	10 cylinder 1,136 KW (Nameplate: 1600 HP) Fairbanks Morse reciprocating engine, with dual fuel firing capability (diesel and natural gas). Catalytic converter installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	FGENGINES1237
EUENGINE8	10 cylinder 1500 KW (Nameplate: 2095 HP) Fairbanks Morse reciprocating engine, fired with diesel fuel. Catalytic converter installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	FGENGINES89
EUENGINE9	12 cylinder 1365 KW (Nameplate: 1920 HP) Fairbanks Morse reciprocating engine, fired with diesel fuel. Catalytic converter installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	FGENGINES89
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 336.1290.		

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
FGENGINES1237	Flexible group of four (4) Fairbanks Morse engines. EUENGINE2 and EUENGINE3 burn diesel, and EUENGINE1 and EUENINGE7 have dual fuel firing capability (diesel and natural gas). Engines have catalytic converters installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	EUENGINE1 EUENGINE2 EUENGINE3 EUENGINE7
FGENGINES89	Flexible group of two (2) Fairbanks Morse diesel fired engines. Engines have catalytic converters installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).	EUENGINE8 EUENGINE9
FGFACILITY	All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.	NA

The following conditions apply to:
FGENGINES1237

DESCRIPTION: Flexible group of four (4) Fairbanks Morse engines. EUENGINE2 and EUENGINE3 burn diesel, and EUENGINE1 and EUENINGE7 have dual fuel firing capability (diesel and natural gas).

Emission Units: EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE7

POLLUTION CONTROL EQUIPMENT: Engines have catalytic converters installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	203.7 lb/hr	Test Protocol*	All engines in FGENGINES1237 combined	SC V.1	**40 CFR 52.21(c) and (d)**
2. NOx	39.0 tpy	12-month rolling time period as determined at the end of each calendar month	EUENGINE7	SC VI.2, SC VI.3, SC VI.4, Appendix A	**R 336.1205**
3. CO	4.3 tpy	12-month rolling time period as determined at the end of each calendar month	All engines in FGENGINES1237 combined	SC VI.2, SC VI.3, SC VI.4, Appendix A	**40 CFR 52.21(d)**
4. Visible Emissions	20% opacity	6-minute average	FGENGINES1237	GC 13	**R 336.1301**
* Test protocol shall specify averaging time.					

II. MATERIAL LIMITS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. sulfur content in diesel	0.50 percent by weight	24-hour average	FGENGINES1237	SC VI.1	**R 336.1401**
2. natural gas	13,267,000 scf/yr	12-month rolling time period as determined at the end of each calendar month	EUENGINE1 and EUENGINE7 combined	SC VI.3	**R 336.1205, 40 CFR 52.21(c) and (d)**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. No later than 30 days after the engines come online, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for FGENGINES1237. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate FGENGINES1237 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 the 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 plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM / MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1910, R 336.1911, R 336.1912)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor the fuel usage for each engine in FGENGINES1237 on a continuous basis whenever the engine is in operation. **(R 336.1205(1)(a) and (3))**

V. TESTING/SAMPLING

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

1. Upon request by the AQD District Supervisor, the permittee shall verify NO_x and/or CO emission rates from FGENGINES1237, by testing at owner's expense, in accordance with Department requirements. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) and (d))**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall maintain a record of the diesel fuel characteristics, including maximum total sulfur content (percent by weight) for each shipment of fuel. **(R 336.1401)**

2. The permittee shall monitor and record, in a satisfactory manner, the diesel fuel usage rate for FGENGINES1237 on a monthly and 12-month rolling time period basis. Records shall be kept on file and made available to the Air Quality Division upon request. **(R 336.1205, 40 CFR 52.21(c) and (d))**

3. The permittee shall keep, in a satisfactory manner, natural gas fuel usage records for FGENGINES1237 on a monthly and 12-month rolling time period basis. Records shall be kept on file and made available to the Air Quality Division upon request. **(R 336.1205, 40 CFR 52.21(c) and (d))**

4. The permittee shall keep, in a satisfactory manner, NOx and CO emission calculations on a monthly and 12-month rolling time period basis for FGENGINES1237, as required by SC I.2 and SC I.3, and as specified in Appendix A. These records shall be made available to the Department upon request. **(R 336.1205, 40 CFR 52.21(c) and (d))**

VII. REPORTING

1. Within 7 days after completion of the engine testing that will be performed in association with the overhaul of the engines, the permittee shall notify the AQD District Supervisor, in writing, of the completion of the activity. **(40 CFR 52.21(c) and (d))**

2. Within 7 days after completion of the modification of engine stacks required by SC VIII.1 and VIII.4, the permittee shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the modification shall occur not later than commencement of normal operation of engines. **(40 CFR 52.21(c) and (d))**

VIII. STACK/VENT RESTRICTIONS

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. SVENGINE1	20	39*	**40 CFR 52.21(c) and (d)**
2. SVENGINE2	20	29	**40 CFR 52.21(c) and (d)**
3. SVENGINE3	20	29	**40 CFR 52.21(c) and (d)**
4. SVENGINE7	18	39*	**40 CFR 52.21(c) and (d)**
*The minimum stack height above ground level listed in SC VIII.1 and SVIII.4, for SVENGINE1 and SVENGINE7, shall not apply until after the engine testing that will be performed in association with the overhaul of the engines. Normal operation of the engines shall not resume until the stacks meet the minimum height requirement. For the purposes of this permit, “normal operation” includes readiness testing and any time engines are run to supply power to the grid.			

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ, for Stationary Reciprocating Internal Combustion Engines. **(40 CFR 63.6595, 40 CFR Part 63, Subparts A and ZZZZ)**

The following conditions apply to:
FGENGINES89

DESCRIPTION: Flexible group of two (2) Fairbanks Morse diesel fired engines.

Emission Units: EUENGINE8, EUENGINE9

POLLUTION CONTROL EQUIPMENT: Engines have catalytic converters installed to comply with the RICE NESHAP (40 CFR 63 Subpart ZZZZ).

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	39 tpy	12-month rolling time period as determined at the end of each calendar month	EUENGINE8 and EUENGINE9 combined	SC VI.2, SC VI.3, Appendix A	**R 336.1205**

II. MATERIAL LIMITS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. sulfur content in diesel	0.2 percent by weight	Annual average	FGENGINES89	SC VI.1	**R 336.1401**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. No later than 30 days after the engines come online, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for FGENGINES89. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate FGENGINES89 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 the 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 plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM / MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. **(R 336.1910, R 336.1911, R 336.1912)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor the natural gas usage for each engine in FGENGINES89 on a continuous basis whenever the engine is in operation. **(R 336.1205(1)(a) and (3))**

V. TESTING/SAMPLING

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

1. Upon request by the AQD District Supervisor, the permittee shall verify NO_x emission rates from FGENGINES89, by testing at owner's expense, in accordance with Department requirements. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) and (d))**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall maintain a record of the diesel fuel characteristics, including maximum total sulfur content (percent by weight) for each shipment of fuel. **(R 336.1401)**

2. The permittee shall monitor and record, in a satisfactory manner, the diesel fuel usage rate for FGENGINES89 on a monthly and 12-month rolling time period basis. Records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205)**

3. The permittee shall keep, in a satisfactory manner, NOx emission calculations on a monthly and 12-month rolling time period basis for FGENGINES89, as required by SC I.1, and as specified in Appendix A. These records shall be made available to the Department upon request. **(R 336.1205)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ, for Stationary Reciprocating Internal Combustion Engines. **(40 CFR 63.6595, 40 CFR Part 63, Subparts A and ZZZZ)**

The following conditions apply Source-Wide to: FGFACILITY

DESCRIPTION: All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NOx	80 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.3	**R 336.1205(3)**

II. MATERIAL LIMITS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Total fuel burned (diesel and natural gas)	209,150 gallons per year [a]	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	**R 336.1205(1)(a) and (3)**
[a] Fuel usage of natural gas shall be determined using Gasoline Gallon Equivalents (GGE). One GGE is equal to 126.6 standard cubic feet (scf) of natural gas.					

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

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 last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205(1)(a) and (3))**

2. The permittee shall monitor and record, in a satisfactory manner, the total fuel usage rate for all fuel-burning equipment in FGFACILITY on a monthly and 12-month rolling time period basis, as required by SC II.1. The total fuel use shall consist of the combined gallons of diesel fuel and the Gasoline Gallon Equivalents (GGE) of natural gas burned. Records shall be kept on file and made available to the Air Quality Division upon request. **(R 336.1205(1)(a) and (3))**

3. The permittee shall keep, in a satisfactory manner, NOx emission calculations on a monthly and 12-month rolling time period basis for FGFACILITY, as required by SC I.1, and as specified in Appendix A. These records shall be made available to the Department upon request. **(R 336.1205(1)(a) and (3))**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

NA

APPENDIX A
Procedures for Calculating NOx and CO Emissions

The permittee shall demonstrate compliance with the NOx and CO emission limits by keeping track of all fuel usage for all equipment using fuel at this facility and multiplying that fuel usage by an equipment-specific emission factor. The emission factors are typically expressed as the mass of pollutant per unit of fuel.

Each engine included in FGENGINES1237 and FGENGINES89:
The permittee shall use emission factors from vendor data or from source specific testing (stack testing), as available for each engine. This also applies to engine(s) from engine change-out(s). If emission factors from sources other than vendor data or stack testing are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions.

All fuel burning equipment at the facility:
The permittee shall use emission factors contained in the most recent AP-42 (Compilation of Air Pollutant Emission Factors) or the most recent FIRE (Factor Information Retrieval) database if vendor or stack testing data is not available. If emission factors from other sources are used, the permittee shall obtain the approval of the AQD District Supervisor before using the emission factors to calculate emissions.

The permittee shall document the source of each emission factor used in the calculations.

Preventative Maintenance / Malfunction Abatement Plan (PM / MAP)
Content Checklist for Engines Required to Submit a PM / MAP

	PM / MAP Content	Location	
		Page	Section / Table
1	Contact Person		
	Engines		
2	Engine Identification: Include the engine make / model and type of engine (i.e. rich or lean burn). Identify engines with add on control and AFRC. If add on control is present, identify type of control.		
3	Engine Operating Variables To Be Monitored. Include a copy of the normal engine maintenance log.		
4	Corrective procedures or operational changes that will be taken in the event of a malfunction.		
5	Major parts replacement inventory for engines.		
	Add-On Controls		
6	Catalytic Converter operating variables to be monitored. Include the method and frequency of monitoring these variables; provide the normal operating range of these variables.		
7	Corrective actions to be taken in event of malfunction of the catalytic converter.		
8	AFRC O_2 Sensor replacement schedule or operating variables to be monitored		
9	Corrective actions to be taken in event of malfunction of the AFRC		
10	Emission testing utilizing portable analyzer		
11	Scheduled maintenance of control equipment		
12	Major parts replacement inventory for add on control.		
13	Identify supervisory personnel responsible for overseeing inspection, maintenance and repair of add on controls.		
14	Recordkeeping and retention of records.		
15	Updates of PM / MAP as necessary.		

Guidance Document For
Preventative Maintenance / Malfunction Abatement Plan (PM / MAP) Checklist

1. Contact Person: Include the name, title, telephone number (extension if applicable) and e-mail address for the person that may be contacted with questions regarding this Preventative Maintenance / Malfunction Abatement Plan (PM / MAP) with the transmittal letter accompanying the PM / MAP rather than within the body of the PM / MAP.

Engines

2. Engine Identification: For each engine at the facility, list the engine manufacturer, model and type of engine (rich burn or lean burn) and the type of add-on control equipment used (oxidation catalyst, three-way catalyst), if any. Also, identify each engine with an air to fuel ratio controller (AFRC).

3. Engine operating variables to be monitored: Provide the normal engine maintenance log.

4. Corrective procedures in the event of an engine malfunction: Provide a brief summary of the procedures that will take place in the event of an engine malfunction. A malfunction is defined in Rule 113(d) of the State of Michigan Air Pollution Control Rules which states, in part, 'any sudden, infrequent and not reasonable preventable failure of the equipment to operate in a normal or usual manner. Failures caused in part by poor maintenance or careless operations are not malfunctions.'

5. Major parts replacement inventory: Provide a list of major replacement parts that shall be maintained in inventory for quick replacement. If no replacement parts are kept on site provide a statement that no parts shall be kept.

Add-On Controls

6. Catalytic converter operating variables to be monitored: Provide the following:
   a. A list of variables that will be monitored to measure catalytic converter performance including the catalytic converter inlet and outlet temperature, pressure differential across the catalytic converter, and any other relevant catalytic converter variables that are monitored.
   b. The normal operating range that has been developed for each variable; acceptable ranges shall include documentation as to how the range was determined (i.e. manufacturer's recommendations or determined in the field with documentation or testing).
   c. The method of monitoring the variables, and
   d. The frequency of monitoring the variables.

7. Corrective procedures in the event of a malfunction of the catalytic converter: Malfunction is defined in number four above. Provide information on what steps shall be taken when a variable is out of range. This could include monitoring of emissions or cleaning and/or replacement of the catalytic converter.

8. AFRC O_2 sensor replacement schedule or operating variables to be monitored: Chose either (a) or (b).
   a. O_2 sensor replacement interval or sensor life detector
   b. If monitoring, provide:
      i. A list of variables monitored to measure AFRC performance (i.e. millivolt output, O_2, and/or any other relevant AFRC variables that are monitored).
      ii. The normal operating range that has been developed for each variable; acceptable ranges shall include documentation as to how the range was determined (i.e. manufacturer's recommendations or determined in the field with documentation or testing).
      iii. The method of monitoring the variables.
      iv. The frequency of monitoring the variables.

9. Corrective procedures in the event of a malfunction of the AFRC: Malfunction is defined in number 4 above. If choosing monitoring in paragraph 8.b above, provide information on what steps shall be taken when a variable is out of range.

10. Emission checks: Describe when a portable analyzer would be used and how it will be used.
    a. Calibration of the analyzer will be conducted as required by manufacturer's specifications. Records shall be kept on file and made available to the Air Quality Division upon request.
    b. Checks for both CO and NO_x.
    c. Checks to be used to:
        i. Check performance if monitored parameter is out of normal range, e.g. low inlet temperature (an engine specific minimum inlet temperature could then be established).
        ii. When vendor cleaned catalyst is installed. This check will normally occur in the 12-18 month window as specified for routine cleaning.
    d. Companies may choose to perform any of following the three valid methods:
        i. Inlet and outlet checks and estimate destruction efficiency.
        ii. Outlet testing and check for g/hp-hr compared to levels used for permitting.
        iii. Outlet testing and use the uncontrolled vendor data to establish destruction efficiency.

11. Scheduled maintenance: Describe the <u>scheduled</u> cleaning and/or replacement of the catalytic converter.
    a. Frequency of catalytic converter inspection and field catalyst media cleaning (vacuum catalyst face): Follow vendor recommendations, typically 12-18 months unless parameters (pressure drop, temperature deviations, etc) indicate otherwise.
    b. Catalyst media removal and wash in chemical solution by manufacturer (if catalyst media does not respond to field cleaning). A replacement catalyst media will be used during the cleaning process.
    c. Catalytic converter gasket replacement: Follow vendor recommendations, typically 12-18 months when catalyst is serviced.
    d. Replace catalyst media if not functioning properly after vendor cleaning, or in lieu of vendor cleaning.

12. Major parts replacement inventory: Provide a list of major replacement parts that shall be maintained in inventory for quick replacement. If no replacement parts are kept on site provide a statement that no parts shall be kept.

13. Supervisory personnel responsible for maintenance of the control equipment: Include the contact information. This person or position can be a company employee or contractor and may or may not be the same person / position listed in number one above.

14. Retention of records: Records shall be kept on file and retained as described in the permit.

15. Updates of PM / MAP: Any updates to the plan shall be submitted to the AQD District Supervisor for written approval as required in the permit (the Department of Environmental Quality recommends the PM / MAP be reviewed annually).