Technical Support Document
for
Draft Air Emission Permit No. 04900005- 004

This technical support document (TSD) is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General information

1.1 Applicant and stationary source location

Table 1. Applicant and source address

Applicant/Address	**Stationary source/Address** (SIC Code: 4911 – Electric Services)
Xcel Energy 414 Nicollet Mall # 414-2 Minneapolis, Minnesota 55401-1927	Xcel Energy - Red Wing Generating Plant 801 5th St Red Wing, MN 55066-2760
Contact: Hannah Mathers Phone: 763-647-4338	

1.2 Facility description

Xcel Energy - Red Wing Generating Plant (Xcel – Red Wing, or Facility) is a waste combustor electric power generating facility located along the Mississippi River in Red Wing, Minnesota. The Facility is rated at 25 Megawatts (MW) and consists of two boilers that primarily burn Refuse Derived Fuel (RDF). The RDF burned at this facility is processed under contract with the City of Red Wing Resource & Recovery Facility and the Ramsey/Washington Resource Recovery Facility in Newport, MN.

Energy is produced through combustion of RDF in the two traveling grate boilers installed in 1947. The units are identified in the permit as EQUIs 1 and 2. The units each have a rated capacity of 198 MMBtu/hr, which to equates 18 tons of RDF per hour (at an assumed heat content of 5,500 Btu/lb). The waste combustors also burn wood and waste oil under the conditions of the permit, and natural gas which is used at start-up and is necessary to maintain proper combustion conditions.

Each boiler exhausts through separate pollution control equipment; dry lime injection for the control of acid gases and sulfur dioxide (SO_2), and a fabric filter for the control of particulate matter (PM), particulate matter less than 10 microns (PM_{10}), and particulate matter less than 2.5 microns ($PM_{2.5}$). Exhaust gases from each boiler are continuously monitored for carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NO_X), opacity, and oxygen (O_2). Operating parameters, including control equipment inlet temperature, lime feed rate, and steam flow rate, are also monitored continuously.

Hot water for internal use when EQUIs 1 and 2 are not in operation is provided by a natural gas-fired boiler. Ash produced in the course of waste combustion is stored in an enclosed area at the facility. The ash is transported using covered trucks to the Red Wing Ash Landfill. Other sources of PM emissions are the lime storage silos and RDF receiving building.

1.3 Description of the activities allowed by this permit action

This permit action is Part 70 Reissuance. No construction is authorized.

1.4 Description of notifications and applications included in this action

This permit action includes two administrative amendments, each for a 120-day extension for annual performance testing for EQUIs 1 and 2. The administrative amendment submitted in 2020 granted an extension for testing originally due April 30, 2020 only and did not change performance testing due dates for future testing. Additionally, the administrative amendment submitted in 2024 granted an extension for testing due May 3, 2024 only and does not change future performance testing due dates.

Table 2. Notifications and applications included in this action

Date received	Application/Notification type and description
04/23/2024	Administrative Amendment (IND20240001)
03/27/2020	Administrative Amendment (IND20200001)
12/03/2008	Part 70 Reissuance (IND20080003)

1.5 Facility emissions

Table 3. Total facility potential to emit summary

	PM tpy	**PM_{10}** tpy	**$PM_{2.5}$** tpy	**SO_2** tpy	**NO_x** tpy	**CO** tpy	**CO_2e** tpy	**VOC** tpy	**Single HAP** tpy	**All HAPs** tpy
Total facility limited potential emissions	72.0	72.0	72.0	120	747	365	357,391	24.4	55.0	56.1
Total facility actual emissions (2022)	2.00	2.00	1.62	102	524	130	*	0.08	*	

*Not reported in Minnesota emission inventory.

Table 4. Facility classification

Classification	Major	Synthetic minor/area	Minor/Area
New Source Review	X		
Part 70	X		
Part 63	X		

1.6 Changes to permit

The permit does not authorize any specific modifications, however, the MPCA has a combined operating and construction permitting program under Minnesota Rules Chapter 7007, and under Minn. R. 7007.0800, the MPCA has authority to include additional requirements in an operating permit. The following changes to the permit are made through this permit action:

- The permit has been updated to reflect current MPCA templates and standard citation formatting;
- Some requirements have been reordered or moved to help with clarity:
    - Limits, requirements, and performance testing that apply to each individual waste combustor are moved from COMG 1 and added under the emission unit level (EQUI 1 and EQUI 2).

- Most requirements that apply to CEMS are moved to COMG 2. CEMS requirements that apply to the individual monitors are listed under the emission unit level (EQUIs 21, 22, 27, 28, 41-48).
- Requirements that apply to COMS are moved to COMG 3 and requirements that apply to the individual monitors are added under the emissions unit level (EQUI 29 and EQUI 49).
- Fabric filter requirements apply to each individual control and are moved under the control equipment level (TREA 5 and 6).

- CAM has been added as discussed in Table 5 of this TSD;
- Monitoring and recordkeeping requirements are added to the permit for gas scrubbers (TREAs 1 and 2), and for fabric filters (TREAs 5 and 6);
- Subject item details have been updated based on the equipment that was actually installed;
- The insignificant activities for the facility have been updated to reflect changes to these rules since the last permit was issued; and
- Appendix I Visible Emissions Checklist(s) Requirements in permit no. 04900005-003 applies to the lime storage silos and are moved under EQUIs 36 and 37.
- Minn. R. 7011.0510 does not apply to EQUIs 1 and 2 and is removed from the permit for these units.
- RDF fuel usage limits are included in the permit for EQUIs 1 and 2 to maintain classification as waste combustors.
- The front-half particulate matter, lead, and cadmium Minn. R. 7011.1227 limits that apply to EQUIs 1 and 2 are corrected with this permit action.
- The SO_2 set point limit for TREA 2 is removed and replaced with a lime feed rate limit. A lime feed rate limit is also added for TREA 1.

2. Regulatory and/or statutory basis

2.1 New source review (NSR)

The facility is an existing major source under New Source Review regulations. No modifications are authorized by this permit.

2.2 Part 70 permit program

The facility is a major source under the Part 70 permit program.

2.3 New source performance standards (NSPS)

The Permittee has stated that New Source Performance Standards apply to operations at this facility. 40 CFR pt. 60, subp. Cb, Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors (MWC) that are Constructed on or Before September 20, 1994, applies to each MWC unit with a combustion capacity greater than 250 tons per day of municipal solid waste for which construction was commenced on or before September 20, 1994. Minnesota submitted a State Plan to EPA for implementing the 40 CFR pt. 60, subp. Cb MWC emission guidelines on April 28, 1998. The EPA approved Minnesota's State Plan that includes state rules, Title V permits, and Administrative Orders as enforceable mechanisms to implement the MWC emission guidelines.

Emission guidelines for 40 CFR pt. 60, subp. Cb were amended on May 10, 2006. The MPCA updated the state rules for the emission guidelines so that the emission limits in the state rules are equal to or more stringent than the emission guidelines in 40 CFR pt. 60, subp. Cb. The MPCA has not amended the State Plan for the May 10, 2006 changes. Therefore, for the particulate matter emission guideline from 40 CFR pt. 60, subp. Cb is incorporated in the permit and cited as Minn. R. 7007.0800, subp. 2(A).

2.4 National emission standards for hazardous air pollutants (NESHAP)

The facility is an existing major source of HAPs. Auxiliary boiler, EQUI 39, is subject to 40 CFR pt. 63, subp. DDDDD, National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters. The facility completed the 40 CFR pt. 63, subp. DDDDD, Table 3 requirement to have a one-time energy assessment in 2015.

2.5 Minnesota municipal waste combustor ash testing requirements

The MPCA issued a variance from Minn. R. 7035.2910 pertaining to ash testing requirements for municipal solid waste (MSW) combustors in 1996. Variances from ash testing requirements include individual analysis of quarterly ash samples and quarterly test frequency. The MPCA approved MSW combustor ash testing variance is included as Appendix G to the permit.

2.6 Acid rain program

EQUIs 1 and 2 are exempt solid waste incinerators under 40 CFR Section 72.6(b)(7). However, during any three-calendar year period after November 15, 1990, if EQUI 1 or 2 consumes 20 percent or more (on a Btu basis) fossil fuels, then the incinerator will be an affected source under the Acid Rain Program.

2.7 Approval and Promulgation of State Plans for Designated Facilities and Pollutants

40 CFR pt. 62, subp. FFF applies to each MWC unit with a capacity to combust greater than 250 tons per day of municipal solid waste for which construction was commenced on or before September 20, 1994 that is not regulated by an EPA approved and currently effective State or Tribal plan. All MWC units with unit capacities greater than 93.75 million British thermal units per hour on a heat input basis (250 tons per day) located in Minnesota are listed under Table 1 of 40 CFR pt. 62, subp. FFF as MWC units excluded from and not regulated under 40 CFR pt. 62, subp. FFF.

2.8 Compliance assurance monitoring (CAM)

The table below lists the sources subject to CAM, the control equipment used, whether the source is a large or other pollutant specific emission unit (PSEU), and the pollutants triggering CAM.

Table 5. CAM summary

Unit	Control	CAM applicability	Pollutant	Emission Limitation Basis
EQUI 1	TREA 1 fabric filter	Other	PM/PM_{10}	Minn. R. 7011.1227
	TREA 5 dry limestone injection	Other	SO_2 and HCl	Minn. R. 7011.1227
EQUI 2	TREA 2 fabric filter	Other	PM/PM_{10}	Minn. R. 7011.1227
	TREA 6 dry limestone injection	Other	SO_2 and HCl	Minn. R. 7011.1227

See Attachment 3 to this document for the CAM Plan submitted by the applicant.

2.9 Regulatory Overview

Table 6. Regulatory overview of facility

Subject item*	Applicable regulations	Rationale
TFAC 2 - Air Quality Total Facility	Minn. R. 7007.0801	Conditions for Air Emission Permits for Waste Combustors**
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	Minn. R. 7035.2910	Municipal Waste Combustor Ash Testing Requirements**

Subject item*	Applicable regulations	Rationale
COMG 1 – Waste Combustors and Control Equipment (EQUIs 1 and 2, TREAs 1, 2, 5, and 6)	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
COMG 2 – Continuous Emission Monitors	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
	40 CFR 60.13, Minn. R. 7017.1010-1130	Monitoring and Testing Requirements for Continuous Monitoring Systems
COMG 3 – Continuous Opacity Monitors	40 CFR 60.13	Standards of Performance for New Stationary Sources, General Provisions for Monitoring requirements
	Minn. R. 7017.1002-1220	Monitoring and Testing Requirements for Continuous Monitoring Systems
EQUI 1 – Boiler 1	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
EQUI 2 – Boiler 2		
EQUI 36 – Lime Storage Silo	Minn. R. 7011.0715	Standards of Performance for post-1969 Industrial Process Equipment. Equipment for which there is no other promulgated performance standard is subject to the opacity and PM limits in this rule. Construction of the unit was on or after July 9, 1969.
EQUI 37 – Lime Storage Silo		
EQUI 39 – Auxiliary Boiler	40 CFR pt. 63, subp. DDDDD, Minn. R. 7011.7050	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters. Applicability criteria include: • the facility is a major source of HAP emissions; • the unit is existing; • the unit burns gas 1 fuel (natural gas only); and • the unit has a heat input capacity greater than 5 MMBtu/hr and less than or equal to 10 MMBtu/hr.
	Minn. R. 7011.0515	Standards of Performance for Existing Indirect Heating Equipment. • construction of the unit was before January 31, 1977; • the unit burns gaseous fuels; • the facility is located outside the cities in Table I of the rule; • the unit capacity is less than or equal to 250 MMBtu/hr; and • the facility has less than 250 MMBtu/hr of indirect heating equipment.
EQUI 40 – Ash Conveyor	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
TREA 1 - Dry Limestone Injection (EQUI 1)	40 CFR pt. 64, Minn. R. 7017.0200	Compliance Assurance Monitoring (CAM). The facility meets the following criteria: • the facility is a part 70 source; • EQUI 1 is subject to an emission limit or standard; • EQUI 1 uses an add-on control device (TREA 1) to meet the limit or standard; and • the pre-control emissions of each unit are > 100 tpy.

Subject item*	Applicable regulations	Rationale
TREA 2 - Dry Limestone Injection (EQUI 2)	40 CFR pt. 64, Minn. R. 7017.0200	Compliance Assurance Monitoring (CAM). The facility meets the following criteria: • the facility is a part 70 source; • EQUI 2 is subject to an emission limit or standard; • EQUI 2 uses an add-on control device (TREA 2) to meet the limit or standard; and • the pre-control emissions of each unit are > 100 tpy.
TREA 5 - Fabric Filter (EQUI 1)	40 CFR pt. 64, Minn. R. 7017.0200	Compliance Assurance Monitoring (CAM). The facility meets the following criteria: • the facility is a part 70 source; • EQUI 1 is subject to an emission limit or standard; • EQUI 1 uses an add-on control device (TREA 5) to meet the limit or standard; and • the pre-control emissions of each unit are > 100 tpy.
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
TREA 6 - Fabric Filter (EQUI 2)	40 CFR pt. 64, Minn. R. 7017.0200	Compliance Assurance Monitoring (CAM). The facility meets the following criteria: • the facility is a part 70 source; • EQUI 2 is subject to an emission limit or standard; • EQUI 2 uses an add-on control device (TREA 6) to meet the limit or standard; and • the pre-control emissions of each unit are > 100 tpy.
	Minn. R. 7011.1201-1285	Standards for Stationary Sources, Waste Combustors**
TREA 7 - Fabric Filter (EQUI 36)	Minn. R. 7011.0060-0080	Standard of Performance for Control Equipment. Control efficiency and other operating parameter requirements to limit PM/PM_{10} PTE. Limits reflect that the units have total enclosures. Permit specifies that replacement fabric filters must meet the TREA 7 requirements.
TREA 8 - Fabric Filter (EQUI 37)	Minn. R. 7011.0060-0080	Standard of Performance for Control Equipment. Control efficiency and other operating parameter requirements to limit PM/PM_{10} PTE. Limits reflect that the units have total enclosures. Permit specifies that replacement fabric filters must meet the TREA 8 requirements.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

**The language 'This is a state-only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act' refers to permit requirements that are established only under state law and are not established under or required by the federal Clean Air Act. The language is to clarify the distinction between permit conditions that are required by federal law and those that are required only under state law. State law-only requirements are not enforceable by the EPA or by citizens under the federal Clean Air Act, but are fully enforceable by the MPCA and citizens under provisions of state law.

3. Technical information

3.1 Calculations of potential to emit (PTE)

Attachment 1 to this TSD contains Form GI-07, which summarizes the PTE of the facility and contains detailed spreadsheets and supporting information prepared by the MPCA and the Permittee.

The PTE is updated for the two waste combustor boilers, EQUI 1 and EQUI 2 when combusting refuse derived fuel (RDF). Xcel provided the RDF maximum design capacity of 180 MMBtu/hr for each boiler in the previous permits and calculations. Xcel is not physically increasing the boiler capacity; however, the maximum capacity is now calculated using the maximum RDF throughput rate of 18 tons per hour and the higher heating value (HHV) of 5,500 Btu/lb from AP-42 Table 2.1-8, Emission Factors for Refuse-Derived Fuel-Fired Combustors. Calculating the maximum hourly heat input based on the maximum RDF throughput of 18 tons per hour and HHV of 5,500 Btu/lb results in a maximum capacity of 198 MMBtu/hr per boiler.

Calculating the PTE using the maximum achievable MMBtu/hr based on the HHV of 5,500 Btu/lb and the design RDF throughput is a conservative approach. Municipal solid waste fuel characteristics vary and can affect the maximum boiler heat input for waste combustors. The HHV of 5,500 Btu/lb is also consistent with the standard F-factor of 9,570 dscf/MMBtu which is used in 40 CFR pt. 60, Appendix A-7, Test Method 19 and AP-42 Section 2.1 to convert concentrations of pollutants to a mass rate for emissions and continuous emissions monitor (CEMS) calculations.

Uncontrolled PTE estimates are based on AP-42, Compilation of Air Pollutant Emissions Factors, Section 2.1 emissions factors except for volatile organic compounds (VOC) which are based on AP-42, 4th Edition Supplement C, Sept 1990, Table 2.1-1 "Emission Factors for Municipal Waste Combustors" for uncontrolled and limited PTE. Carbon dioxide equivalent (CO2e) calculations are based on emission factors and global warming potentials from 40 CFR pt. 98 for uncontrolled and limited PTE.

Particulate matter (PM), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), lead (Pb), hydrogen chloride (HCl), cadmium (Cd), mercury (Hg), and dioxin/furan (PCDD/PCDF) limited PTE is based on applicable limits and AP-42 Table 2.1-11 conversion factors. Particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$) PTE are assumed equal to PM PTE.

Arsenic (As), cadmium (Cd), chromium (Cr), mercury (Hg), and nickel (Ni) uncontrolled PTE are based on AP-42, Section 2.1 emissions factors and AP-42 Table 2.1-11 conversion factors. Limited PTE from As, Cr, Hg, and Ni are based on stack test results. Limited PTE from Cd is based on the applicable permit limit. AP-42 does not provide emission factors for antimony, beryllium, cobalt, manganese, phosphorus, and selenium, therefore the uncontrolled and limited PTE are based on stack test results.

3.2 Control equipment

Each waste combustor is controlled by a dry limestone injection scrubber (TREAs 1 and 2) for acid gases including dioxin/furans, HCl, and SO_2, and a fabric filter (TREAs 5 and 6) for PM, PM_{10}, and $PM_{2.5}$. The permit includes calibration, inspection, and recordkeeping requirements to ensure that the control equipment use is enforceable in a practicable manner, however no control efficiencies for TREAs 1, 2, 5, and 6 are included in the permit. Xcel conducts performance tests for PM, PM_{10}, $PM_{2.5}$, Hg, HCl, and PCDD/PCDF and uses the results to calculate actual emissions.

3.3 Scrubber Lime Feed Rates

Dry limestone injection scrubber (TREAs 1 and 2) lime feed rates are added as limits to the permit. Xcel's lime feed rates are controlled by the SO_2 CEMS. The lime feed rates are automatically regulated to meet SO_2 limits, and the rates can vary significantly during all periods of waste combustor operation. Xcel must also ensure that compliance is met with the HCl limits that apply.

The lime feed rates are monitored as an operating parameter during HCl performance testing. The MPCA is requiring in addition to the performance test, Xcel provide the SO_2 CEMS data recorded during the time of the performance test because the lime feed rates are controlled by the SO_2 CEMS. The MPCA wants to review and analyze the data on HCl and SO_2 emissions to determine a relationship, if any, between HCl and SO_2 emissions and to ensure that compliance with the HCl limit is continuously being met even though the lime feed rates are based on SO_2 emissions. A requirement is included in the permit for Xcel to submit the

SO_2 inlet and outlet CEMS data as recorded during testing as an appendix to their HCl performance testing report.

3.4 Performance testing

Minn. R. 7011.1270 allows for performance tests for state regulated pollutants to be completed once every thirty months if compliance with state emission limits is demonstrated for three consecutive years, except for mercury. Performance testing for mercury may be reduced from once every quarter (three months) to once every thirty-six months if the facility's mercury emissions are less than 50 percent of the state's long term emission limit (30 micrograms per dry standard cubic meter) as measured by annual tests for three consecutive years.

Performance testing results for EQUI 1 (Boiler 1) and EQUI 2 (Boiler 2) are listed in Table 7 and Table 8, respectively.

Table 7. EQUI 1, Boiler 1 Performance Testing Results

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
Cadmium	40	micrograms/dscm	1.75	5/14/2007	Compliant	
			2.48	5/13/2008	Compliant	
			1.42	4/21/2009	Compliant	
			2.02	4/20/2010	Compliant	
			1.537	6/13/2011	Compliant	
			1.325	4/17/2012	Compliant	
			0.495	6/24/2014	Compliant	
			0.665	4/21/2015	Compliant	
			0.21	4/19/2016	Compliant	
			0.128	7/18/2017	Compliant	
			0.57	7/17/2018	Compliant	
			0.16	7/15/2019	Compliant	
			1.73	7/21/2020	Compliant	
			0.3	4/20/2021	Compliant	
			0.06	4/19/2022	Compliant	
			0.16	4/3/2023	Compliant	
Dioxins/Furans	30	nanograms/dscm	3.67	10/8/2008	Compliant	
			0.47	4/21/2009	Compliant	
			1.57	6/13/2011	Compliant	
			1.03	4/21/2015	Compliant	
			2.27	7/18/2017	Compliant	
			3.45	7/15/2019	Compliant	
			2.8	4/20/2021	Compliant	
			0.37	4/3/2023	Compliant	
Front-half PM	0.012	grains/dscf	0.0015	5/14/2007	Compliant	
			0.003	5/13/2008	Compliant	
			0.0023	4/21/2009	Compliant	
			0.0115	4/20/2010	Compliant	
			0.0133	6/13/2011	Noncompliant	

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
			0.0034	9/15/2011	Compliant	
			0.0007	4/17/2012	Compliant	
			0.0009	6/24/2014	Compliant	4 Fabric Filter Modules
			0.0015	6/24/2014	Compliant	3 Fabric Filter Modules
			0.0019	4/21/2015	Compliant	4 Fabric Filter Modules
			0.0021	4/21/2015	Compliant	3 Fabric Filter Modules
			0.001	4/19/2016	Compliant	
			0.0008	7/18/2017	Compliant	
			0.0003	7/17/2018	Compliant	
			0.0007	7/15/2019	Compliant	
			0.0008	7/21/2020	Compliant	
			0.0003	4/20/2021	Compliant	
			0.0006	4/19/2022	Compliant	
			0.0008	4/3/2023	Compliant	
HCl	29	ppm	61	5/14/2007	Noncompliant	
	95	% control efficiency	93	5/14/2007	Noncompliant	
	29	ppm	20.3	8/2/2007	Compliant	
	29	ppm	22	8/2/2007	Compliant	
	95	% control efficiency	97.7	8/2/2007	Compliant	
	95	% control efficiency	98.4	8/2/2007	Compliant	
	29	ppm	5.55	5/13/2008	Compliant	680.8 lb/hour Lime Feed Rate
	29	ppm	3.81	4/21/2009	Compliant	39% Lime Setting
	95	% control efficiency	99.5	4/21/2009	Compliant	39% Lime Setting
	29	ppm	2.38	4/20/2010	Compliant	46.16% Lime Setting
	95	% control efficiency	99.7	4/20/2010	Compliant	46.16% Lime Setting
	29	ppm	3.42	6/13/2011	Compliant	46% Lime Setting
	29	ppm	9.4	6/13/2011	Compliant	39% Lime Setting
	95	% destruction efficiency	97.66	6/13/2011	Compliant	32% Lime Setting
	29	ppm	6.87	4/17/2012	Compliant	30% Lime Setting
	29	ppm	21.22	6/24/2014	Compliant	20% Lime Setting and 4 Fabric Filter Modules
	29	ppm	28.3	6/24/2014	Compliant	20% Lime Setting and 3 Fabric Filter Modules
	29	% destruction efficiency	10.89	4/21/2015	Compliant	25% Lime Setting and 3 Fabric Filter Modules
	29	ppm	11.4	4/21/2015	Compliant	25% Lime Setting and 4 Fabric Filter Modules
	29	ppm	12.9	4/21/2015	Compliant	20% Lime Setting and 4 Fabric Filter Modules
	29	ppm	19	4/21/2015	Compliant	20% Lime Setting and 3 Fabric Filter Modules
	95	% destruction efficiency	98	4/21/2015	Compliant	20% Lime Setting and 3 Fabric Filter Modules

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
	29	ppm	8.29	4/19/2016	Compliant	20% Lime Setting
	29	ppm	5.75	4/19/2016	Compliant	25% Lime Setting
	29	ppm	15.66	7/18/2017	Compliant	15% Lime Setting
	29	ppm	9.52	7/18/2017	Compliant	25% Lime Setting
	29	ppm	22.42	7/17/2018	Compliant	13% Lime Setting
	29	ppm	11.58	7/15/2019	Compliant	20% Lime Setting
	29	ppm	9.36	7/21/2020	Compliant	20% Lime Setting
	29	ppm	21.46	4/20/2021	Compliant	17.7% Lime Setting
	29	ppm	16.49	4/20/2021	Compliant	20% Lime Setting
	29	ppm	3.86	4/19/2022	Compliant	15% Lime Setting
	29	ppm	5.14	4/19/2022	Compliant	18% Lime Setting
	29	ppm	2.74	4/3/2023	Compliant	14.9% Lime Setting
Lead	440	micrograms/dscm	0.97	5/14/2007	Compliant	
			1.07	5/13/2008	Compliant	
			7.1	4/21/2009	Compliant	
			41.95	4/20/2010	Compliant	
			41.067	6/13/2011	Compliant	
			1.49	4/17/2012	Compliant	
			1.102	4/11/2013	Compliant	
			0.35	9/5/2014	Compliant	
			2.345	4/21/2015	Compliant	
			37.09	4/19/2016	Compliant	
			1.055	7/18/2017	Compliant	
			2.17	7/17/2018	Compliant	
			1.12	7/15/2019	Compliant	
			1.36	7/21/2020	Compliant	
			0.79	4/20/2021	Compliant	
			1.1	4/19/2022	Compliant	
			0.9	4/3/2023	Compliant	
Mercury	30	micrograms/dscm	1.19	5/14/2007	Compliant	
			2.05	5/13/2008	Compliant	
			1.21	4/21/2009	Compliant	
			1.93	4/20/2010	Compliant	
			4.449	6/13/2011	Compliant	
			4.989	4/17/2012	Compliant	
			3.653	6/24/2014	Compliant	
			2.539	4/21/2015	Compliant	
			5.701	4/19/2016	Compliant	
			1.948	7/18/2017	Compliant	
			1.43	7/17/2018	Compliant	
			1.1	7/15/2019	Compliant	
			1.75	7/21/2020	Compliant	
			0.46	4/20/2021	Compliant	

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
			0.39	4/19/2022	Compliant	
			0.93	4/3/2023	Compliant	
Opacity	10	% opacity	0	5/14/2007	Compliant	
			0	5/13/2008	Compliant	
			0	4/21/2009	Compliant	
			0	4/20/2010	Compliant	
			0	6/13/2011	Compliant	
			0	4/17/2012	Compliant	
			0	6/24/2014	Compliant	
			0	4/21/2015	Compliant	
			0	4/19/2016	Compliant	
			0	7/18/2017	Compliant	
			0	7/17/2018	Compliant	
			0	7/15/2019	Compliant	
			0	7/21/2020	Compliant	
			0	4/20/2021	Compliant	
			0	4/19/2022	Compliant	
			0	4/3/2023	Compliant	
PM	0.02	grains/dscf	0.0017	5/14/2007	Compliant	
	0.6	lbs/MMBtu heat input	0.0035	5/14/2007	Compliant	
	0.02	grains/dscf	0.0044	5/13/2008	Compliant	
	0.6	lbs/MMBtu heat input	0.0037	5/13/2008	Compliant	
	0.02	grains/dscf	0.0024	4/21/2009	Compliant	
	0.6	lbs/MMBtu heat input	0.0071	4/21/2009	Compliant	
	0.02	grains/dscf	0.015	4/20/2010	Compliant	
	0.6	lbs/MMBtu heat input	0.0333	4/20/2010	Compliant	
	0.02	grains/dscf	0.0135	6/13/2011	Compliant	
	0.6	lbs/MMBtu heat input	0.0454	6/13/2011	Compliant	
	0.02	grains/dscf	0.001	4/17/2012	Compliant	
	0.6	lbs/MMBtu heat input	0.0029	4/17/2012	Compliant	
	0.02	grains/dscf	0.001	6/24/2014	Compliant	4 Fabric Filter Modules
	0.02	grains/dscf	0.0015	6/24/2014	Compliant	3 Fabric Filter Modules
	0.6	lbs/MMBtu heat input	0.0024	6/24/2014	Compliant	4 Fabric Filter Modules
	0.6	lbs/MMBtu heat input	0.0041	6/24/2014	Compliant	3 Fabric Filter Modules
	0.02	grains/dscf	0.0022	4/21/2015	Compliant	
	0.02	grains/dscf	0.0025	4/21/2015	Compliant	
	0.6	lbs/MMBtu heat input	0.0054	4/21/2015	Compliant	
	0.6	lbs/MMBtu heat input	0.0067	4/21/2015	Compliant	
	0.02	grains/dscf	0.0011	4/19/2016	Compliant	
	0.6	lbs/MMBtu heat input	0.0025	4/19/2016	Compliant	
	0.02	grains/dscf	0.0014	7/18/2017	Compliant	
	0.6	lbs/MMBtu heat input	0.0038	7/18/2017	Compliant	
	0.02	grains/dscf	0.0012	7/17/2018	Compliant	

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
	0.6	lbs/MMBtu heat input	0.0024	7/17/2018	Compliant	
	0.02	grains/dscf	0.0014	7/15/2019	Compliant	
	0.6	lbs/MMBtu heat input	0.0039	7/15/2019	Compliant	
	0.02	grains/dscf	0.001	7/21/2020	Compliant	
	0.6	lbs/MMBtu heat input	0.0022	7/21/2020	Compliant	
	0.02	grains/dscf	0.0007	4/20/2021	Compliant	
	0.6	lbs/MMBtu heat input	0.0015	4/20/2021	Compliant	
	0.02	grains/dscf	0.0008	4/19/2022	Compliant	
	0.6	lbs/MMBtu heat input	0.002	4/19/2022	Compliant	
	0.02	grains/dscf	0.0011	4/3/2023	Compliant	
	0.6	lbs/MMBtu heat input	0.0023	4/3/2023	Compliant	

Table 8. EQUI 2, Boiler 2 Performance Testing Results

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
Cadmium	40	micrograms/dscm	0.81	5/14/2007	Compliant	
			1.12	5/13/2008	Compliant	
			0.85	4/23/2009	Compliant	
			1.911	4/20/2010	Compliant	
			1.595	4/10/2012	Compliant	
			0.18	4/16/2013	Compliant	
			0.173	7/8/2014	Compliant	
			0.337	4/12/2016	Compliant	
			0.165	4/18/2017	Compliant	
			0.52	7/17/2018	Compliant	
			0.59	7/15/2019	Compliant	
			2.86	7/21/2020	Compliant	
			0.33	4/20/2021	Compliant	
			0.09	4/19/2022	Compliant	
			0.16	4/03/2023	Compliant	
Dioxin/Furans	30	nanograms/dscm	1.4	5/13/2008	Compliant	
			1.34	4/20/2010	Compliant	
			1.02	6/7/2011	Compliant	
			1.716	6/7/2011	Compliant	
			6.1	4/10/2012	Compliant	
			5.13	7/8/2014	Compliant	
			1.05	4/12/2016	Compliant	
			1.56	7/17/2018	Compliant	
			1.08	7/21/2020	Compliant	
			1.46	4/19/2022	Compliant	
Front-half PM	0.012	grains/dscf	0.002	5/14/2007	Compliant	

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
			0.0044	5/13/2008	Compliant	
			0.0032	4/23/2009	Compliant	
			0.0052	4/20/2010	Compliant	
			0.0043	6/7/2011	Compliant	
			0.0011	4/10/2012	Compliant	
			0.001	4/16/2013	Compliant	
			0.0013	7/8/2014	Compliant	
			0.0017	7/8/2014	Compliant	
			0.0008	4/12/2016	Compliant	
			0.0007	4/18/2017	Compliant	
			0.0004	7/17/2018	Compliant	
			0.001	7/15/2019	Compliant	
			0.0003	7/21/2020	Compliant	
			0.0003	4/19/2022	Compliant	
			0.0004	4/3/2023	Compliant	
HCl	29	ppm	36.1	5/14/2007	Noncompliant	
	95	% control efficiency	96	5/14/2007	Noncompliant	
	29	ppm	5.77	5/13/2008	Compliant	652.8 lb/hour Lime Feed Rate
	29	ppm	3.82	4/23/2009	Compliant	31% Lime Setting
	95	% control efficiency	99.2	4/23/2009	Compliant	31% Lime Setting
	29	ppm	4.53	4/20/2010	Compliant	31.05% Lime Setting
	95	% control efficiency	99.5	4/20/2010	Compliant	31.05% Lime Setting
	29	ppm	11.06	6/7/2011	Compliant	26% Lime Setting
	29	ppm	11.12	6/7/2011	Compliant	31% Lime Setting
	29	ppm	12.63	6/7/2011	Compliant	22% Lime Setting
	29	ppm	4.86	4/10/2012	Compliant	30% Lime Setting
	29	ppm	8.95	4/10/2012	Compliant	22% Lime Setting
	29	ppm	9.46	4/10/2012	Compliant	20% Lime Setting
	29	ppm	13.01	4/16/2013	Compliant	30% Lime Setting
	29	ppm	20.65	4/16/2013	Compliant	20% Lime Setting
	29	ppm	20.04	7/8/2014	Compliant	20% Lime Setting
	29	ppm	11.12	10/30/2014	Compliant	20% Lime Setting
	95	% destruction efficiency	95.28	4/12/2016	Compliant	20% Lime Setting
	95	% destruction efficiency	96.25	4/12/2016	Compliant	25% Lime Setting
	29	ppm	3.09	4/18/2017	Compliant	20% Lime Setting
	29	ppm	3.13	4/18/2017	Compliant	25% Lime Setting
	29	ppm	26.69	7/17/2018	Compliant	10% Lime Setting
	29	ppm	28.13	7/15/2019	Compliant	15% Lime Setting
	29	ppm	9.79	7/21/2020	Compliant	20% Lime Setting
	29	ppm	33.01	4/20/2021	Compliant	17% Lime Setting

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
	29	ppm	12.71	4/20/2021	Compliant	20% Lime Setting
	29	ppm	10.39	4/19/2022	Compliant	15% Lime Setting
	29	ppm	10.04	4/19/2022	Compliant	18% Lime Setting
	29	ppm	99.46	4/3/2023	Compliant	14.9% Lime Setting
Lead	440	micrograms/dscm	0.72	5/14/2007	Compliant	
			2.09	5/13/2008	Compliant	
			7.08	4/23/2009	Compliant	
			42.715	4/20/2010	Compliant	
			8.581	6/7/2011	Compliant	
			7.974	4/10/2012	Compliant	
			2.996	4/16/2013	Compliant	
			59.418	7/8/2014	Compliant	
			1.770	4/29/2015	Compliant	
			26.16	4/12/2016	Compliant	
			1.721	4/18/2017	Compliant	
			3.15	7/17/2018	Compliant	
			2.7	7/15/2019	Compliant	
			1.23	7/21/2020	Compliant	
			2.03	4/20/2021	Compliant	
			0.64	4/19/2022	Compliant	
			0.79	4/3/2023	Compliant	
Mercury	30	micrograms/dscm	0.83	5/14/2007	Compliant	
			0.98	5/13/2008	Compliant	
			1.39	4/23/2009	Compliant	
			4.388	4/20/2010	Compliant	
			3.371	6/7/2011	Compliant	
			4.989	4/10/2012	Compliant	
			1.99	4/16/2013	Compliant	
			5.935	7/8/2014	Compliant	
			2.265	4/12/2016	Compliant	
			1.733	4/18/2017	Compliant	
			1.68	7/17/2018	Compliant	
			2.2	7/15/2019	Compliant	
			1.09	7/21/2020	Compliant	
			0.16	4/20/2021	Compliant	
			1.44	4/19/2022	Compliant	
			2.18	4/3/2023	Compliant	
Opacity	10	% opacity	0	5/14/2007	Compliant	
			0	5/13/2008	Compliant	
			0	4/23/2009	Compliant	
			0	4/20/2010	Compliant	
			0	6/7/2011	Compliant	

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
			0	4/10/2012	Compliant	
			0	4/16/2013	Compliant	
			0	7/8/2014	Compliant	
			0	4/12/2016	Compliant	
			0	4/18/2017	Compliant	
			0	7/17/2018	Compliant	
			0	7/15/2019	Compliant	
			0	7/21/2020	Compliant	
			0	4/20/2021	Compliant	
			0	4/19/2022	Compliant	
			0	4/3/2023	Compliant	
PM	0.02	grains/dscf	0.002	5/14/2007	Compliant	
	0.6	lbs/MMBtu heat input	0.0046	5/14/2007	Compliant	
	0.02	grains/dscf	0.0044	5/13/2008	Compliant	
	0.6	lbs/MMBtu heat input	0.0062	5/13/2008	Compliant	
	0.02	grains/dscf	0.0033	4/23/2009	Compliant	
	0.6	lbs/MMBtu heat input	0.0092	4/23/2009	Compliant	
	0.02	grains/dscf	0.006	4/20/2010	Compliant	
	0.6	lbs/MMBtu heat input	0.014	4/20/2010	Compliant	
	0.02	grains/dscf	0.0044	6/7/2011	Compliant	
	0.6	lbs/MMBtu heat input	0.0454	6/7/2011	Compliant	
	0.02	grains/dscf	0.0001	4/10/2012	Compliant	
	0.6	lbs/MMBtu heat input	0.0012	4/10/2012	Compliant	
	0.02	grains/dscf	0.0011	4/16/2013	Compliant	
	0.6	lbs/MMBtu heat input	0.0027	4/16/2013	Compliant	
	0.02	grains/dscf	0.0022	7/8/2014	Compliant	3 Fabric Filter Modules
	0.02	grains/dscf	0.0023	7/8/2014	Compliant	4 Fabric Filter Modules
	0.6	lbs/MMBtu heat input	0.0062	7/8/2014	Compliant	3 Fabric Filter Modules
	0.6	lbs/MMBtu heat input	0.0075	7/8/2014	Compliant	4 Fabric Filter Modules
	0.02	grains/dscf	0.0009	4/12/2016	Compliant	
	0.6	lbs/MMBtu heat input	0.0021	4/12/2016	Compliant	
	0.02	grains/dscf	0.0007	4/18/2017	Compliant	
	0.6	lbs/MMBtu heat input	0.0016	4/18/2017	Compliant	
	0.02	grains/dscf	0.0008	7/17/2018	Compliant	
	0.6	lbs/MMBtu heat input	0.002	7/17/2018	Compliant	
	0.02	grains/dscf	0.0011	7/15/2019	Compliant	
	0.6	lbs/MMBtu heat input	0.0024	7/15/2019	Compliant	
	0.02	grains/dscf	0.0005	7/21/2020	Compliant	
	0.6	lbs/MMBtu heat input	0.0011	7/21/2020	Compliant	
	0.02	grains/dscf	0.0006	4/20/2021	Compliant	
	0.6	lbs/MMBtu heat input	0.0012	4/20/2021	Compliant	
	0.02	grains/dscf	0.0005	4/19/2022	Compliant	
	0.6	lbs/MMBtu heat input	0.0013	4/19/2022	Compliant	

Parameter	Limit	Units	Test Result	Stack Test Start Date	Status	Control Parameter(s)
	0.02	grains/dscf	0.0008	4/3/2023	Compliant	
	0.6	lbs/MMBtu heat input	0.0016	4/3/2023	Compliant	

3.5 Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- the likelihood of the facility violating the applicable requirements;
- whether add-on controls are necessary to meet the emission limits;
- the variability of emissions over time;
- the type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- the technical and economic feasibility of possible periodic monitoring methods; and
- the kind of monitoring found on similar units elsewhere.

The Table below summarizes the monitoring requirements.

Table 9. Monitoring

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
EQUI 1 – Boiler 1 (TREAs 1 and 5)	Steam Flow <= 122,719 pounds per hour on a four-hour block average. [Minn. R. 7011.1240, subp. 5]	Continuous monitoring; Performance testing	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Front-half PM <= 0.011 grains/dscf [Minn. R. 7011.1227]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	PM <= 0.020 grains/dscf [Minn. R. 7011.1227]		
	PM <= 25 mg/dscm, corrected to 7% O_2 [Minn. R. 7007.0800, subp. 2(A)]		
	Opacity <= 10% opacity, 6-minute average. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(F)]	Performance testing: annually; COMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Combustion Ash Visible Emissions <= 5% of the observation period [Minn. R. 7011.1225, subp. 1(B)]	Visible emission observations	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	SO_2 <= 29 ppm or 75% control, whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(D)]	CEMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	CO <= 200 ppm using a daily 24-hour arithmetic average [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(C)]	CEMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	NO_X <= 250 ppm using the one-hour arithmetic average emission concentration [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]	CEMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	NO_X <= 230 ppm, 24-hour block average basis when averaged over all combustor units. [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]		
	Lead <= 400 micrograms/dscm [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	PCDD/PCDF <= 30 nanograms/dscm, measured as total PCDD/PCDF [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(B)]	Performance testing: annually, or every other year if all tested PCDD/PCDF emissions for all units for a two-year period are less than or equal to 15 ng/dscm corrected to 7% O_2 from each unit	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Cadmium <= 35 micrograms/dscm [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Mercury <= 50 micrograms/dscm or 85% removal (short term), whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]	Performance testing: annually, or every three months if the limit is exceeded and until compliance is demonstrated	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Mercury <= 30 micrograms/dscm or 85% removal (long-term), whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]		
	HCl <= 29 ppm or 95% control, whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(A)]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Fuel Usage > 30% by weight RDF of the total fuel input as measured on a 24-hour basis. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1201, subp. 17]	Daily calculations and recordkeeping	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Fuel Usage <= 180 gallons/hour for used oil. [Minn. R. 7007.0800, subp. 2(A)]	Daily recordkeeping	Records can be generated daily of the quantity of used oil and sorbents containing used oil that are combusted, the number of hour(s) that the oil or sorbents are burned, and the source of the used oil.
EQUI 2 – Boiler 2 (TREAs 2 and 6)	Steam Flow <= 123,277 lbs/hour on a four-hour block average. [Minn. R. 7011.1240, subp. 5]	Continuous monitoring; Performance testing	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Front-half PM <= 0.011 grains/dscf [Minn. R. 7011.1227]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	PM <= 0.020 grains/dscf [Minn. R. 7011.1227]		
	PM <= 25 mg/dscm, corrected to 7% O2 [Minn. R. 7007.0800, subp. 2(A)]		
	Opacity <= 10% opacity, 6-minute average. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(F)]	Performance testing: annually; COMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Combustion Ash Visible Emissions <= 5% of the observation period [Minn. R. 7011.1225, subp. 1(B)]	Visible emission observations	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	SO_2 <= 29 ppm or 75% control, whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(D)]	CEMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	CO <= 200 ppm using a daily 24-hour arithmetic average [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(C)]	CEMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	NO_X <= 250 ppm using the one-hour arithmetic average emission concentration [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]	CEMS	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	NO_X <= 230 ppm, 24-hour block average basis when averaged over all combustor units. [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]		
	Lead <= 400 micrograms/dscm [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	PCDD/PCDF <= 30 nanograms/dscm, measured as total PCDD/PCDF [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(B)]	Performance testing: annually, or every other year if all tested PCDD/PCDF emissions for all units for a two-year period are less than or equal to 15 ng/dscm corrected to 7% O_2 from each unit	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Cadmium <= 35 micrograms/dscm [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Mercury <= 50 micrograms/dscm or 85% removal (short term), whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]	Performance testing: annually, or every three months if the limit is exceeded and until compliance is demonstrated	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Mercury <= 30 micrograms/dscm or 85% removal (long-term), whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]		
	HCl <= 29 ppm or 95% control, whichever is less stringent. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(A)]	Performance testing: annually	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Fuel Usage > 30% by weight RDF of the total fuel input as measured on a 24-hour basis. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1201, subp. 17]	Daily calculations and recordkeeping	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Fuel Usage <= 180 gallons/hour for used oil. [Minn. R. 7007.0800, subp. 2(A)]	Daily recordkeeping	Records can be generated daily of the quantity of used oil and sorbents containing used oil that are combusted, the number of hour(s) that the oil or sorbents are burned, and the source of the used oil.
EQUI 36 - Lime Storage Silo (TREA 7)	Opacity <= 20% opacity. [Minn. R. 7011.0715, subp. 1(B)]	See TREA 7 for specific monitoring	Other limits at TREA 7 (and associated monitoring) ensure that this applicable requirement is being met. These other operational limits give this unit a PTE of 0.17 lb/hr PM. Applicable rule limit at maximum airflow is 1.80 lb/hr PM.
	PM <= 0.30 grains/dscf [Minn. R. 7011.0715, subp. 1(A)]		
EQUI 37 - Lime Storage Silo (TREA 8)	Opacity <= 20% opacity. [Minn. R. 7011.0715, subp. 1(B)]	See TREA 8 for specific monitoring	Other limits at TREA 8 (and associated monitoring) ensure that this applicable requirement is being met. These other operational limits give this unit a PTE of 0.17 lb/hr PM. Applicable rule limit at maximum airflow is 1.80 lb/hr PM.
	PM <= 0.30 grains/dscf [Minn. R. 7011.0715, subp. 1(A)]		
EQUI 39 – Auxiliary Boiler	Filterable PM <= 0.6 lbs/MMBtu heat input [Minn. R. 7011.0510, subp. 1]	Recordkeeping: fuel records	This unit uses natural gas; therefore, the likelihood of violating either of the emission limits is very small. The Permittee can demonstrate that this unit will continue to operate such that emissions are well below the emission limits by only burning natural gas. Design based PTE for this unit, using AP-42, is 0.00745 lbs/MMBtu of PM compared to the rule limit of 0.6 lbs/MMBtu of PM.
	Opacity <= 20% [Minn. R. 7011.0510, subp. 2]		

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
	Work practice standards	Boiler tune-ups every 2 years; recordkeeping, reporting	Monitoring required by 40 CFR pt. 63, subp. DDDDD is adequate to demonstrate compliance with the requirements of the standard because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.
EQUI 40 – Ash Conveyor	Combustion Ash Visible Emissions <= 5% of the observation period [Minn. R. 7011.1225, subp. 1(B)]	Visible emission observations	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
TREA 1 – Dry Limestone Injection	Lime feed rate >= 14.9%, 8-hour block average [Minn. R. 7007.0800, subp. 2(A)]	Continuous monitoring; Performance testing	Monitoring based on the Minnesota Performance Standard for Control Equipment and the approved CAM plan is adequate to have a reasonable assurance of compliance.
TREA 2 – Dry Limestone Injection	Lime feed rate >= 14.9%, 8-hour block average [Minn. R. 7007.0800, subp. 2(A)]	Continuous monitoring; Performance testing	Monitoring based on the Minnesota Performance Standard for Control Equipment and the approved CAM plan is adequate to have a reasonable assurance of compliance.
TREA 5 – Fabric Filter	Inlet Temperature <= 312° F on a four-hour arithmetic mean. [Minn. R. 7011.1240, subp. 2]	Continuous monitoring; Performance testing	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Pressure Drop >= 2.0 and <= 15.5 inches of water. [Minn. R. 7007.0800, subp. 2(A)]	Continuous monitoring	Continuous monitoring is adequate to have a reasonable assurance of compliance.
	Opacity < 5.0% [40 CFR 64.3, Minn. R. 7017.0200]	Continuous monitoring; Performance testing	Monitoring based on the Minnesota Performance Standard for Control Equipment and the approved CAM plan is adequate to have a reasonable assurance of compliance.
TREA 6 – Fabric Filter	Inlet Temperature <= 305° F on a four-hour arithmetic mean. [Minn. R. 7011.1240, subp. 2]	Continuous monitoring; Performance testing	Monitoring required by the Minnesota Standards of Performance for Waste Combustors is adequate to demonstrate compliance with the standards.
	Pressure Drop >= 2.0 and <= 15.5 inches of water. [Minn. R. 7007.0800, subp. 2(A)]	Continuous monitoring	Continuous monitoring is adequate to have a reasonable assurance of compliance.
	Opacity < 5.0% [40 CFR 64.3, Minn. R. 7017.0200]	Continuous monitoring; Performance testing	Monitoring based on the Minnesota Performance Standard for Control Equipment and the approved CAM plan is adequate to have a reasonable assurance of compliance.

Subject Item*	Requirement (basis)	What is the monitoring?	Why is this monitoring adequate?
TREA 7 – Fabric Filter	PM >= 99% control efficiency [Minn. R. 7011.0070, subp. 1(A)]	Visible emission checks and recordkeeping at least once each day of operation	Monitoring required by the Minnesota Performance Standard for Control Equipment is adequate to have a reasonable assurance of compliance for both the Control Equipment Rule limits and the site-specific limit for $PM_{2.5}$.
	PM_{10} >= 93% control efficiency [Minn. R. 7011.0070, subp. 1(A)]		
	$PM_{2.5}$ >= 93% control efficiency [Minn. R. 7011.0800, subp. 2(A)]		
TREA 8 – Fabric Filter	PM >= 99% control efficiency [Minn. R. 7011.0070, subp. 1(A)]	Visible emission checks and recordkeeping at least once each day of operation	Monitoring required by the Minnesota Performance Standard for Control Equipment is adequate to have a reasonable assurance of compliance for both the Control Equipment Rule limits and the site-specific limit for $PM_{2.5}$.
	PM_{10} >= 93% control efficiency [Minn. R. 7011.0070, subp. 1(A)]		
	$PM_{2.5}$ >= 93% control efficiency [Minn. R. 7011.0800, subp. 2(A)]		

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3.6 Insignificant activities

Xcel Energy - Red Wing Generating Plant has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in Appendix A to the permit.

The permit is required to include periodic monitoring for all emissions units, including insignificant activities, per EPA guidance. The insignificant activities at this Facility are only subject to general applicable requirements. Using the criteria outlined earlier in this TSD, the following table documents the justification why no additional periodic monitoring is necessary for the current insignificant activities. See Attachment 1 of this TSD for PTE information for the insignificant activities.

Table 10. Insignificant activities

Insignificant activity	General applicable emission limit	Discussion
Brazing, soldering, torch-cutting, or welding equipment	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	*Welding equipment* For these units, based on EPA published emissions factors, it is highly unlikely that they could violate the applicable requirement. In addition, these units are typically operated and vented inside a building, so testing for PM or opacity is not feasible.

Insignificant activity	General applicable emission limit	Discussion
Individual units with potential emissions less than 2000 lb/year of certain pollutants	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	*RDF conveyor, RDF unloading* Conveying and unloading operations are operated and vented inside a building, so testing for PM or opacity is not feasible. The Permittee complies with housekeeping requirements in Appendix F to minimize PM emissions.
	PM <= 0.4 lb/MMBtu Opacity <= 20% with exceptions (Minn. R. 7011.0515)	*Space heaters (3)* Xcel contracts up to three space heaters to be brought onsite for outages each with a maximum heat of 150,000 Btu/hr. For space heater units, based on the fuels used and EPA published emissions factors, it is highly unlikely that it could violate the applicable requirement. In addition, these types of units are typically operated and vented inside a building, so testing for PM or opacity is not feasible.
Fugitive dust emissions from unpaved roads and parking lots	Requirement to take reasonable measures to prevent PM from becoming airborne (Minn. R. 7011.0150)	*Road and parking lot* The facility has some unpaved roads and parking lot space. The Permittee must meet the general requirement to take reasonable measure to prevent PM from becoming airborne from these sources.

3.7 Permit organization

This permit generally meets the MPCA Tempo Guidance for ordering and grouping of requirements as well as the use of permit appendices. Federal requirements from NESHAPs are included in two different formats. The requirements for 40 CFR pt. 63, subp. DDDDD are incorporated into the permit as individual permit requirements, which has historically been MPCA's standard practice. However, the requirements for the associated General Provisions in 40 CFR pt. 63, subp. A are included as one requirement in Section 5 of the permit that lists the citations of all of the applicable parts of the standard along with a reference to the permit appendix where the full text of the standard is included. 40 CFR pt. 63, subp. A is included in Appendix B.

3.8 Comments received

Public Notice Period: [start date] – [end date]
EPA Review Period: [start date] – [end date]

This section will be completed after the respective periods.

4. Permit fee assessment

This permit action is the reissuance of an individual Part 70; therefore, no application fees apply under Minn. R. 7002.0016, subp. 1 to the changes that are covered by the reissuance application. The permit action also rolls in two administrative permit application; however, no fees apply.

5. Conclusion

Based on the information provided by Xcel Energy - Red Wing Generating Plant the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 04900005- 004 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff members on permit team: Andrea Behrendt (permit engineer)
Marin Morrell (enforcement)
Amrill Okonkwo (peer reviewer)
Marc Severin (compliance)
Madeline Conowall (data coordinator)
Beckie Olson (permit writing assistant)
Laurie O'Brien (administrative support)

Tempo Activities: Administrative Amendment (IND20240001), Administrative Amendment (IND20200001), Part 70 Reissuance (IND20080003)

Attachments:
1. PTE summary and calculation spreadsheets
2. Subject item inventory and facility requirements
3. CAM Plan

Attachment 1 – PTE Summary and Calculation Spreadsheets

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Alternate Format

GI-07 Spreadsheet

Facility Emissions Summary
Air Quality Permit Program
Doc Type: Permit Application

1a) AQ Facility ID number: 04900005
1b) Agency Interest ID number: 1888
2) Facility name: Xcel Energy - Red Wing

You may use and submit this spreadsheet in place of Form GI-07. Follow the instructions for Form GI-07 to complete this spreadsheet. This spreadsheet can be copied into a tab for your emissions spreadsheet and must be submitted on a CD with your application. If you need to provide emissions information for more emissions units, add more sets of columns (3a through 3f) to the right as needed in the Emissions by Source table. If you need to provide information for more pollutants, add rows as needed.

Emissions by Source Table

3a) Delta ID number:		EU 001				3a) Delta ID number:		EU 002				3a) Delta ID number:		EU 005			
3b) Tempo SI ID No.:		EQUI 1				3b) Tempo SI ID No.:		EQUI 2				3b) Tempo SI ID No.:		EQUI 36			
3c) Pollutant Name	3d) CAS #	3e) Potential lbs per hr	3e) Potential tpy un-restricted	3e) Potential tpy limited	3f) Actual tpy	3c) Pollutant Name	3d) CAS #	3e) Potential lbs per hr	3e) Potential tpy un-restricted	3e) Potential tpy limited	3f) Actual tpy	3c) Pollutant Name	3d) CAS #	3e) Potential lbs per hr	3e) Potential tpy un-restricted	3e) Potential tpy limited	3f) Actual tpy
PM		8.11	5,487.3	35.54		PM		8.11	5,487.3	35.5		PM		0.17	73.74	0.74	
PM_{10}		8.11	5,487.3	35.54		PM_{10}		8.11	5,487.3	35.5		PM_{10}		0.17	73.74	0.74	
$PM_{2.5}$		8.11	5,487.3	35.54		$PM_{2.5}$		8.11	5,487.3	35.5		$PM_{2.5}$		0.17	73.74	0.74	
SO_2		13.7	307.5	59.9		SO_2		13.7	307.5	59.9		SO_2		-	-	-	
NO_x		85.1	395.8	372.5		NO_x		85.1	395.8	372.5		NO_x		-	-	-	
VOC		3.17	12.1	12.1		VOC		3.17	12.1	12.1		VOC		-	-	-	
CO		41.4	389.4	181.3		CO		41.4	389.4	181.3		CO		-	-	-	
CO_2e		40,487	177,335.2	177,335.2		CO_2e		40,487	177,335.2	177,335.2		CO_2e		-	-	-	
Total HAPs		6.40	568.6	28.0		Total HAPs		6.40	568.6	28.0		Total HAPs		-	-	-	
1,4-Dichlorobenzene		-	-	-		1,4-Dichlorobenzene		-	-	-		1,4-Dichlorobenzene		-	-	-	
2,4,6-Trichlorophenol		2.06E-06	6.30E-06	6.30E-06		2,4,6-Trichlorophenol		2.06E-06	6.30E-06	6.30E-06		2,4,6-Trichlorophenol		-	-	-	
2,4-Dinitrophenol		3.37E-05	1.03E-04	1.03E-04		2,4-Dinitrophenol		3.37E-05	1.03E-04	1.03E-04		2,4-Dinitrophenol		-	-	-	
4-Nitrophenol		2.06E-05	6.30E-05	6.30E-05		4-Nitrophenol		2.06E-05	6.30E-05	6.30E-05		4-Nitrophenol		-	-	-	
Acetaldehyde		1.55E-01	4.76E-01	4.76E-01		Acetaldehyde		1.55E-01	4.76E-01	4.76E-01		Acetaldehyde		-	-	-	
Acetophenone		5.99E-07	1.834E-06	1.834E-06		Acetophenone		5.99E-07	1.834E-06	1.834E-06		Acetophenone		-	-	-	
Acrolein		7.49E-01	2.293	2.293		Acrolein		7.49E-01	2.293	2.293		Acrolein		-	-	-	
Antimony		1.463E-03	4.831E-03	4.831E-03		Antimony		1.463E-03	4.831E-03	4.831E-03		Antimony		-	-	-	
Arsenic		1.96E-02	4.68E-01	6.08E-02		Arsenic		1.96E-02	4.68E-01	6.08E-02		Arsenic		-	-	-	
Benzene		7.86E-01	2.41E+00	2.41E+00		Benzene		7.86E-01	2.41E+00	2.41E+00		Benzene		-	-	-	
Beryllium		2.04E-04	6.47E-04	6.47E-04		Beryllium		2.04E-04	6.47E-04	6.47E-04		Beryllium		-	-	-	
bis (2-ethylhexyl) phthalate (DEHP)		8.80E-06	2.694E-05	2.69E-05		bis (2-ethylhexyl) phthalate (DEHP)		8.80E-06	2.69E-05	2.69E-05		bis (2-ethylhexyl) phthalate (DEHP)		-	-	-	
Cadmium		8.21E-03	6.90E-01	2.72E-02		Cadmium		8.21E-03	6.90E-01	2.72E-02		Cadmium		-	-	-	
Carbon Tetrachloride		8.42E-03	2.58E-02	2.58E-02		Carbon Tetrachloride		8.42E-03	2.58E-02	2.58E-02		Carbon Tetrachloride		-	-	-	
Chlorine		1.48E-01	4.53E-01	4.53E-01		Chlorine		1.48E-01	4.53E-01	4.53E-01		Chlorine		-	-	-	
Chlorobenzene		6.18E-03	1.89E-02	1.89E-02		Chlorobenzene		6.18E-03	1.89E-02	1.89E-02		Chlorobenzene		-	-	-	
Chloroform		5.24E-03	1.60E-02	1.60E-02		Chloroform		5.24E-03	1.60E-02	1.60E-02		Chloroform		-	-	-	
Chromium		4.13E-03	1.30E+00	1.81E-02		Chromium		4.13E-03	1.10E+00	1.81E-02		Chromium		-	-	-	
Cobalt		1.202E-03	3.81E-03	3.81E-03		Cobalt		1.202E-03	3.81E-03	3.81E-03		Cobalt		-	-	-	
Ethyl Benzene		5.80E-03	1.777E-02	1.777E-02		Ethyl Benzene		5.80E-03	1.777E-02	1.777E-02		Ethyl Benzene		-	-	-	
Formaldehyde		8.24E-01	2.522	2.522		Formaldehyde		8.24E-01	2.522	2.522		Formaldehyde		-	-	-	
Hexane		-	-	-		Hexane		-	-	-		Hexane		-	-	-	
Hydrogen chloride		6.27	549.51	27.48		Hydrogen chloride		6.27	549.51	27.48		Hydrogen chloride		-	-	-	
Lead		9.87E-02	15.85	3.97E-01		Lead		9.87E-02	15.85	3.97E-01		Lead		-	-	-	
Manganese		2.96E-01	9.20E-01	9.20E-01		Manganese		2.96E-01	9.20E-01	9.20E-01		Manganese		-	-	-	
Mercury		5.32E-03	4.34E-01	2.33E-02		Mercury		5.32E-03	4.34E-01	2.33E-02		Mercury		-	-	-	
Naphthalene		1.82E-02	5.56E-02	5.56E-02		Naphthalene		1.82E-02	5.56E-02	5.56E-02		Naphthalene		-	-	-	
Nickel		6.11E-03	1.44E-01	2.04E-02		Nickel		6.11E-03	1.44E-01	2.04E-02		Nickel		-	-	-	
o-Xylenes		4.68E-03	1.423E-02	1.423E-02		o-Xylenes		4.68E-03	1.423E-02	1.423E-02		o-Xylenes		-	-	-	

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Alternate Format

GI-07 Spreadsheet

Facility Emissions Summary
Air Quality Permit Program
Doc Type: Permit Application

1a) AQ Facility ID number: 04900005
1b) Agency Interest ID number: 1888
2) Facility name: Xcel Energy - Red Wing

You may use and submit this spreadsheet in place of Form GI-07. Follow the instructions for Form GI-07 to complete this spreadsheet. This spreadsheet can be copied into a tab for your emissions spreadsheet and must be submitted on a CD with your application. If you need to provide emissions information for more emissions units, add more sets of columns (3a through 3f) to the right as needed in the Emissions by Source table. If you need to provide information for more pollutants, add rows as needed.

Emissions by Source Table

3a) Delta ID number:		EU 006				3a) Delta ID number:					
3b) Tempo SI ID No.:		EQUI 37				3b) Tempo SI ID No.:		EQUI 39			
3c) Pollutant Name	3d) CAS #	3e) Potential lbs per hr	3e) Potential tpy un-restricted	3e) Potential tpy limited	3f) Actual tpy	3c) Pollutant Name	3d) CAS #	3e) Potential lbs per hr	3e) Potential tpy un-restricted	3e) Potential tpy limited	3f) Actual tpy
PM		0.17	73.74	0.74		PM		0.04	0.17	0.17	
PM_{10}		0.17	73.74	0.74		PM_{10}		0.04	0.17	0.17	
$PM_{2.5}$		0.17	73.74	0.74		$PM_{2.5}$		0.04	0.17	0.17	
SO_2		-	-	-		SO_2		3.12E-03	0.01	0.01	
NO_x		-	-	-		NO_x		0.52	2.28	2.28	
VOC		-	-	-		VOC		0.03	0.13	0.13	
CO		-	-	-		CO		0.44	1.91	1.91	
CO_2e		-	-	-		CO_2e		621	2,720	2,720	
Total HAPs		-	-	-		Total HAPs		0.01	0.04	0.04	
1,4-Dichlorobenzene		-	-	-		1,4-Dichlorobenzene		6.24E-06	2.73E-05	2.73E-05	
2,4,6-Trichlorophenol		-	-	-		2,4,6-Trichlorophenol		-	-	-	
2,4-Dinitrophenol		-	-	-		2,4-Dinitrophenol		-	-	-	
4-Nitrophenol		-	-	-		4-Nitrophenol		-	-	-	
Acetaldehyde		-	-	-		Acetaldehyde		-	-	-	
Acetophenone		-	-	-		Acetophenone		-	-	-	
Acrolein		-	-	-		Acrolein		-	-	-	
Antimony		-	-	-		Antimony		-	-	-	
Arsenic		-	-	-		Arsenic		1.04E-06	4.56E-06	4.56E-06	
Benzene		-	-	-		Benzene		1.09E-05	4.78E-05	4.78E-05	
Beryllium		-	-	-		Beryllium		6.24E-08	2.73E-07	2.73E-07	
bis (2-ethylhexyl) phthalate (DEHP)		-	-	-		bis (2-ethylhexyl) phthalate (DEHP)		-	-	-	
Cadmium		-	-	-		Cadmium		5.72E-06	2.51E-05	2.51E-05	
Carbon Tetrachloride		-	-	-		Carbon Tetrachloride		-	-	-	
Chlorine		-	-	-		Chlorine		-	-	-	
Chlorobenzene		-	-	-		Chlorobenzene		-	-	-	
Chloroform		-	-	-		Chloroform		-	-	-	
Chromium		-	-	-		Chromium		7.28E-06	3.19E-05	3.19E-05	
Cobalt		-	-	-		Cobalt		4.37E-07	1.91E-06	1.91E-06	
Ethyl Benzene		-	-	-		Ethyl Benzene		-	-	-	
Formaldehyde		-	-	-		Formaldehyde		3.90E-04	1.71E-03	1.71E-03	
Hexane		-	-	-		Hexane		9.36E-03	4.10E-02	4.10E-02	
Hydrogen chloride		-	-	-		Hydrogen chloride		-	-	-	
Lead		-	-	-		Lead		2.66E-06	1.14E-05	1.14E-05	
Manganese		-	-	-		Manganese		1.98E-06	8.65E-06	8.65E-06	
Mercury		-	-	-		Mercury		1.35E-06	5.92E-06	5.92E-06	
Naphthalene		-	-	-		Naphthalene		3.17E-06	1.39E-05	1.39E-05	
Nickel		-	-	-		Nickel		1.09E-05	4.78E-05	4.78E-05	
o-Xylenes		-	-	-		o-Xylenes		-	-	-	

Emissions Summary Table

4a) Pollutant Name	4b) Potential (lbs/hr)	4c) Potential (tpy) Unrestricted	4c) Potential (tpy) Limited	4d) Actual tons/year
PM	16.6	11,048	72.0	
PM_{10}	16.4	11,048	72.0	
$PM_{2.5}$	16.4	11,048	72.0	
SO_2	27.4	615	120	
NO_x	171	794	747	
VOC	6.38	24.4	24.4	
CO	83.2	781	385	
CO_2e	81,598	357,391	357,391	
Total HAPs	12.8	1,137	56.1	
1,4-Dichlorobenzene	6.24E-06	2.73E-05	2.73E-05	
2,4,6-Trichlorophenol	4.12E-06	1.26E-05	1.26E-05	
2,4-Dinitrophenol	6.74E-05	2.06E-04	2.06E-04	
4-Nitrophenol	4.12E-05	1.26E-04	1.26E-04	
Acetaldehyde	0.31	0.95	0.95	
Acetophenone	1.20E-06	3.67E-06	3.67E-06	
Acrolein	1.50	4.59	4.59	
Antimony	2.93E-03	9.662E-03	9.662E-03	
Arsenic	0.04	0.94	0.12	
Benzene	1.57	4.81	4.81	
Beryllium	4.07E-04	1.30E-03	1.30E-03	
bis (2-ethylhexyl) phthalate (DEHP)	1.76E-05	5.39E-05	5.39E-05	
Cadmium	0.01	1.38	0.05	
Carbon Tetrachloride	0.02	0.05	0.05	
Chlorine	0.30	0.91	0.91	
Chlorobenzene	0.01	0.04	0.04	
Chloroform	0.01	0.03	0.03	
Chromium	0.01	2.21	0.04	
Cobalt	2.41E-03	7.62E-03	7.62E-03	
Ethyl Benzene	1.16E-02	3.55E-02	3.55E-02	
Formaldehyde	1.65	5.05	5.05	
Hexane	9.36E-03	4.10E-02	4.10E-02	
Hydrogen chloride	12.5	1,099	55.0	
Lead	0.20	31.7	0.79	
Manganese	0.59	1.84	1.84	
Mercury	0.01	0.87	0.05	
Naphthalene	0.04	0.11	0.11	
Nickel	0.01	0.29	0.04	
o-Xylenes	9.36E-03	2.87E-02	2.87E-02	

Red Wing Generating Plant
Boiler 1 (with Scrubber, TREA 1 and Fabric Filter, TREA 5)
EQUI 1

Worste Case Scenario Information for Potential to Emit	
Scenario #	**Scenario Description**
Scenario #1	The facility may combust up to 100% RDF on an annual basis.
Scenario #2	The facility has a federally enforceable limit of >30% RDF combustion on a daily basis, by weight, and that wood must not be combusted as a separate waste stream. This scenario assumes that RDF is combusted 30.1% of the time, with wood combusted 69.9% of the time.
Scenario #3	The facility has a federally enforceable limit of 180 gal/hr of used oil, >30% RDF combustion on a daily basis, by weight, and that used oil must not be combusted as a separate waste stream. This scenario assumes that RDF is combusted 30.1% of the time, with used oil combusted 69.9% of the time.

The Permittee uses natural gas only to warm the combustion chamber and pollution control devices, and maintain good combustion conditions in the combustion chamber. Emissions from natural gas combustion will be lower than RDF, wood, or waste oil combustion based on published emission factors, and therefore the PTE from natural gas combustion is not evaulated.

[1] For RDF/Wood and RDF/Used Oil, the lb/hr emissions are the maximum emissions between combusting RDF and 1.254% RDF combusted during any one-hour period in combination with wood or oil (equal to 30.1% RDF for a 24-hr period). The maximum of RDF and RDF/wood or RDF/used oil is utilized as the worst-case lb/hr.

[2] Limited emissions for all scenarios are based on the permit limits for RDF combustion, which will be met at all times.

Criteria Pollutant Emissions

Pollutant	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)
	Scenario #1 (RDF):			Scenario #2 (RDF/Wood)[1]:			Scenario #3 (RDF
PM	5,487	8.11	35.54	1,982	8.11	27.23	1,694
PM_{10}	5,487	8.11	35.54	1,948	8.11	25.51	1,685
$PM_{2.5}$	5,487	8.11	35.54	1,908	8.11	23.51	1,685
SO_2	307	13.68	59.90	106.88	13.68	21.61	153.31
NO_x	396	85.05	372.52	245.22	85.05	238.22	129.60
VOC[3]	7.88	1.80	7.88	12.12	3.17	12.12	2.92
CO	151	41.40	181.33	389	41.40	170.20	48.32
CO_2e	177,335	40,487	177,335	173,482	40,487	173,482	65,827
Lead	15.85	0.07	0.31	4.80	0.07	0.10	5.98

Hazardous Air Pollutant Emissions

Pollutant	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)
	Scenario #1 (RDF):			Scenario #2 (RDF/Wood)[1]:			Scenario #3 (RDF
2,4,6-Trichlorophenol	-	-	-	6.30E-06	2.06E-06	6.30E-06	-
2,4-Dinitrophenol	-	-	-	1.03E-04	3.37E-05	1.03E-04	-
4-Nitrophenol	-	-	-	6.30E-05	2.06E-05	6.30E-05	-
Acetaldehyde	-	-	-	4.76E-01	1.55E-01	4.76E-01	-
Acetophenone	-	-	-	1.83E-06	5.99E-07	1.83E-06	-
Acrolein	-	-	-	2.29E+00	7.49E-01	2.29E+00	-
Antimony	1.01E-03	2.30E-04	1.01E-03	4.83E-03	1.46E-03	4.83E-03	3.03E-04
Arsenic	4.68E-01	1.14E-04	5.01E-04	1.54E-01	4.07E-03	1.28E-02	2.02E-01
Benzene	-	-	-	2.41E+00	7.86E-01	2.41E+00	-
Beryllium	5.65E-05	1.29E-05	5.65E-05	6.47E-04	2.04E-04	6.47E-04	1.70E-05
bis(2-Ethylhexyl)phthalate	-	-	-	2.69E-05	8.80E-06	2.69E-05	-
Cadmium	6.90E-01	6.21E-03	2.72E-02	2.10E-01	6.21E-03	1.05E-02	2.13E-01
Carbon tetrachloride	-	-	-	2.58E-02	8.42E-03	2.58E-02	-
Chlorine	-	-	-	4.53E-01	1.48E-01	4.53E-01	-
Chlorobenzene	-	-	-	1.89E-02	6.18E-03	1.89E-02	-
Chloroform	-	-	-	1.60E-02	5.24E-03	1.60E-02	-
Chromium	1.10E+00	4.13E-03	1.81E-02	3.44E-01	4.13E-03	1.75E-02	3.43E-01
Cobalt	2.82E-04	6.43E-05	2.82E-04	3.81E-03	1.20E-03	3.81E-03	2.01E-04
Ethylbenzene	-	-	-	1.78E-02	5.80E-03	1.78E-02	-
Formaldehyde	-	-	-	2.52E+00	8.24E-01	2.52E+00	-
HCl	549.51	6.27	27.48	1.76E+02	6.27E+00	8.81E+00	1.76E+02
Lead	1.58E+01	7.09E-02	3.11E-01	4.80E+00	7.09E-02	1.00E-01	5.98E+00
Manganese	1.01E-02	2.31E-03	1.01E-02	9.20E-01	2.96E-01	9.20E-01	4.05E-02
Mercury	4.34E-01	5.32E-03	2.33E-02	1.33E-01	5.32E-03	9.02E-03	1.31E-01
Naphthalene	-	-	-	5.56E-02	1.82E-02	5.56E-02	-
Nickel	3.44E-01	1.15E-03	5.04E-03	1.22E-01	6.11E-03	2.04E-02	1.10E-01
PCDD/PCDF	7.47E-04	5.32E-06	2.33E-05	2.25E-04	5.32E-06	7.02E-06	2.25E-04
Pentachlorophenol	-	-	-	2.92E-05	9.55E-06	2.92E-05	-
Phenol	-	-	-	2.92E-02	9.55E-03	2.92E-02	-
Phosphorus	1.75E-01	3.99E-02	1.75E-01	6.81E-02	3.99E-02	6.81E-02	5.26E-02
POM	-	-	-	1.60E-02	5.23E-03	1.60E-02	-
Propionaldehyde	-	-	-	3.50E-02	1.14E-02	3.50E-02	-
Selenium	2.82E-04	6.43E-05	2.82E-04	1.69E-03	5.18E-04	1.69E-03	8.48E-05
Styrene	-	-	-	1.09E+00	3.56E-01	1.09E+00	-
Toluene	-	-	-	5.27E-01	1.72E-01	5.27E-01	-
Vinyl chloride	-	-	-	1.03E-02	3.37E-03	1.03E-02	-
o-Xylenes	-	-	-	1.43E-02	4.68E-03	1.43E-02	-
Total HAP	568.59	6.40	28.05	193.04	6.40	19.98	183.39

Red Wing Generating Plant
Boiler 1 (with Scrubber and Fabric Filter)
EQUI 1

Unit Information		
Description:	Boiler 1	
Unit ID:	EQUI 1	
Stack ID:	STRU 11	
Control Equipment ID:	TREA 1 & 5	
Fuel	RDF	
Max Fuel Input Capacity	18	tons/hour
Fuel Heat Value	5,500	Btu/lb
Heat Input Capacity	198.0	MMBtu/hr
Hours Unlimited	8,760	hours/yr
Fd Factor	9,570	dscf/MMBtu

Permit Limits	
PM	<0.020 grains/dscf @ 7% O2
SO2	<29 ppm or 75% reduction
CO	≤200 ppm @ 7% O2
NOx	≤250ppm @ 7% O2
Lead	≤400 micrograms/dscm @ 7% O2
Cadmium	≤35 micrograms/dscm @ 7% O2
HCl	≤29 ppm or 95% reduction
Mercury	≤30 micrograms/dscm or 85% reduction
PCDD/PCDF	≤30 nanograms/dscm @ 7% O2
Fuel Usage	RDF greater than 30% by weight of the total fuel input as measured on a 24-hour basis.
Fuel Usage	Combust all allowed fuels other than RDF in combination with RDF and not as a separate waste stream

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference
PM	69.60	5,487	-	8.11	35.5	AP-42 Table 2.1-8 (10/96)
PM_{10}	69.60	5,487	-	8.11	35.5	AP-42 Table 2.1-8 (10/96) - assumed equal to PM
$PM_{2.5}$	69.60	5,487	-	8.11	35.5	AP-42 Table 2.1-8 (10/96) - assumed equal to PM
SO_2	3.90	307	-	13.68	59.9	AP-42 Table 2.1-8 (10/96)
NO_x	5.02	396	-	85.05	373	AP-42 Table 2.1-8 (10/96)
VOC	0.10	7.88	-	1.80	7.9	AP-42, 4th Edition Supplement C , Sept 1990, Table 2.1-1
CO	1.92	151	-	41.40	181.3	AP-42 Table 2.1-8 (10/96)
Lead	0.201	15.85	-	0.071	0.311	AP-42 Table 2.1-8 (10/96)

[1] SO_2, lead, PM, PM_{10}, and $PM_{2.5}$ control efficiency is not taken to account when calculating emissions. EQUI 1 is controlled by a dry limestine injection scrubber (TREA 1) and a fabric filter (TREA 5).
[2] The emission rate and limited emissions for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, and lead are calculated based on the permit limits that apply to EQUI 1, and conversion rates provided in AP-42 Table 2.1-10.

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference	CAS #
Antimony	9.47E-06	7.46E-04	-	1.70E-04	7.46E-04	Stack Test May 2004	
Arsenic	5.94E-03	0.47	-	1.14E-04	5.01E-04	AP-42 Table 2.1-8 (10/96) (3.71E-06 lb/ton 2004 stack test)	--
Beryllium	7.40E-07	5.83E-05	-	1.33E-05	5.83E-05	Stack Test May 2004	
Cadmium	8.75E-03	0.69	-	6.21E-03	2.72E-02	AP-42 Table 2.1-8 (10/96) (3.00E-06 lb/ton 2004 stack test)	--
Chromium	1.40E-02	1.10	-	4.13E-03	1.81E-02	AP-42 Table 2.1-8 (10/96) (5.60E-05 lb/ton 2004 stack test)	--
Cobalt	6.33E-06	4.99E-04	-	1.14E-04	4.99E-04	Stack Test May 2004	
Hydrogen chloride	6.97	550	95.0%	6.27	27.48	AP-42 Table 2.1-8 (10/96)	7647010
Lead	2.01E-01	15.8	-	7.09E-02	3.11E-01	AP-42 Table 2.1-8 (10/96) (2.41E-05 lb/ton 2004 stack test)	
Manganese	1.31E-04	1.03E-02	-	2.35E-03	1.03E-02	Stack Test May 2004	
Mercury	5.50E-03	0.43	-	5.32E-03	2.33E-02	AP-42 Table 2.1-8 (10/96) (6.27E-05 lb/ton 2004 stack test)	--
Nickel	4.36E-03	0.34	-	1.15E-03	5.04E-03	AP-42 Table 2.1-8 (10/96) (2.62E-05 lb/ton 2004 stack test)	--
Phorspohous	2.30E-03	0.18	-	4.13E-02	1.81E-01	Stack Test May 2004	
Selenium	3.71E-06	2.925E-04	-	6.68E-05	2.93E-04	Stack Test May 2004	
PCDD/PCDF	9.47E-06	7.466E-04	-	5.32E-06	2.33E-05	AP-42 Table 2.1-8 (10/96)	132649, 1746016
Total HAPs	-	569	-	6.40	28.1		

[1] HCl control efficiency from TREA 1 is demonstrated during performance testing, 95% is accounted for when calculating emissions. Permit limits on HCL result in 7.83 lb/hr and 34.3 tpy.
[2] The emission rate and limited emissions for cadmium, lead, mercury, and PCDD/PCDF are calculated based on the permit limits that apply to EQUI 1.

2004 Stack Test

Fuel Input	16.9
Antimony	1.60E-04
Arsenic	6.27E-05
Beryllium	1.25E-05
Cadmium	5.07E-05
Chromium	9.46E-04
Cobalt	1.07E-04
Lead (Pb)	4.08E-04
Manganese	2.21E-03
Mercury (Hg)	1.06E-03
Nickel	4.43E-04
Phosphorus	3.88E-02
Selenium	6.27E-05

Greenhouse Gas Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Reference	GWP
CO_2	199.96	173,413	-	39,592	173,413	40 CFR 98, Subpart C, Table C-1	1
CH_4	7.05E-02	61.18	-	13.97	61.18	40 CFR 98, Subpart C, Table C-2	25
N_2O	9.26E-03	8.03	-	1.83	8.03	40 CFR 98, Subpart C, Table C-2	298
CO_2e	-	177,335	-	40,487	177,335	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)	-

Red Wing Generating Plant
Boiler 1 (with Scrubber and Fabric Filter)
EQUI 1

Unit Information		
Description:	Boiler 1	
Unit ID:	EQUI 1	
Stack ID:	STRU 11	
Control Equipment ID:	TREA 1 & 5	
Fuel	Wood	
Max Fuel Input Capacity	18	tons/hour
Fuel Heat Value	5,200	Btu/lb
Heat Input Capacity	187.2	MMBtu/hr
Hours Unlimited	8,760	hours/yr
Fd Factor	9,240	dscf/MMBtu

Permit Limits	
PM	<0.020 grains/dscf @ 7% O_2
SO2	<29 ppm @ 7% O_2 or 75% reduction
CO	≤200 ppm @ 7% O_2
NOx	≤250ppm @ 7% O_2
Lead	≤400 micrograms/dscm @ 7% O_2
Cadmium	≤35 micrograms/dscm @ 7% O_2
HCl	≤29 ppm @ 7% O_2 or 95% reduction
Mercury	≤30 micrograms/dscm or 85% reduction
PCDD/PCDF	≤30 nanograms/dscm @ 7% O_2
Fuel Usage	RDF greater than 30% by weight of the total fuel input as measured on a 24-hour basis.
Fuel Usage	Combust all allowed fuels other than RDF in combination with RDF and not as a separate waste stream

[2] *Assume 40% moisture as the typical fuel (AP-42, Appendix A).*

[2] *Calculations assume 69.9% fuel usage (>30% RDF Combusted Permit Limit)*

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Limited Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference
PM	0.58	331	95.0%	0.04	5.40	16.5	AP-42 Table 1.6-1 (04/22)(fabric filter control EF, 0.117 lb/MMBtu)
PM_{10}	0.52	296	95.0%	0.04	4.84	14.8	AP-42 Table 1.6-1 (04/22)(fabric filter control EF, 0.091 lb/MMBtu)
$PM_{2.5}$	0.45	256	95.0%	0.04	4.18	12.8	AP-42 Table 1.6-1 (04/22)(fabric filter control EF, 0.082 lb/MMBtu)
SO_2	0.025	14.3	75.0%	0.07	1.17	3.6	AP-42 Table 1.6-2 (04/22)
NO_x	0.22	126	-	0.41	41.18	126	AP-42 Table 1.6-2 (04/22)
VOC	0.017	9.7	-	-	3.18	9.7	AP-42 Table 1.6-3 (04/22)
CO	0.60	344	-	0.20	37.8	116	AP-42 Table 1.6-2 (04/22)
Lead	4.80E-05	0.0275	75.0%	-	2.25E-03	6.88E-03	AP-42 Table 1.6-4 (04/22)

[1] TREA 1, dry injection acid gas scrubber lead control efficiency was calculated using AP-42 emission factor and 2010 performance testing; 75% is conservatively assumed. EPA provides SO_2 removal efficiencies for dry acid gas scrubbers ranging from 85 to 95%; 75% is conservatively accounted for when calculating emissions. (https://www.epa.gov/sites/default/files/2021-05/documents/wet_and_dry_scrubbers_section_5_chapter_1_control_cost_manual_7th_edition.pdf)

[2] Limited emission factors are determined from the permit limit, and emission factors in AP-42 Section 1.6 background document. PM10 and PM2.5 are assumed equal to PM. PM lb/hr using assumed 95% control efficiency from the fabric filter is less than the lb/hr emission rate using the limited emission factor (0.020 gr/dscf = 45.77 mg/dscm, 45.77 * 0.00985 = 0.451 lb/ton, 0.451 * 18 tph = 8.11 lb/hr)

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	CAS #	Reference
2,4,6-Trichlorophenol	1.10E-08	6.30E-06	-	2.06E-06	6.30E-06	88062	AP-42 Table 1.6-3 (4/22)
2,4-Dinitrophenol	1.80E-07	1.03E-04	-	3.37E-05	1.03E-04	51285	AP-42 Table 1.6-3 (4/22)
4-Nitrophenol	1.10E-07	6.30E-05	-	2.06E-05	6.30E-05	100027	AP-42 Table 1.6-3 (4/22)
Acetaldehyde	8.30E-04	4.76E-01	-	1.55E-01	4.76E-01	75070	AP-42 Table 1.6-3 (4/22)
Acetophenone	3.20E-09	1.83E-06	-	5.99E-07	1.83E-06	98862	AP-42 Table 1.6-3 (4/22)
Acrolein	4.00E-03	2.29E+00	-	7.49E-01	2.29E+00	107028	AP-42 Table 1.6-3 (4/22)
Antimony	7.90E-06	4.53E-03	-	1.48E-03	4.53E-03	-	AP-42 Table 1.6-4 (4/22)
Arsenic	2.20E-05	1.26E-02	-	4.12E-03	1.26E-02	-	AP-42 Table 1.6-4 (4/22)
Benzene	4.20E-03	2.41E+00	-	7.86E-01	2.41E+00	71432	AP-42 Table 1.6-3 (4/22)
Beryllium	1.10E-06	6.30E-04	-	2.06E-04	6.30E-04	-	AP-42 Table 1.6-4 (4/22)
Bis (2-ethylhexyl) phthalate (DEHP)	4.70E-08	2.69E-05	-	8.80E-06	2.69E-05	117817	AP-42 Table 1.6-3 (4/22)
Cadmium	4.10E-06	2.35E-03	-	7.68E-04	2.35E-03	-	AP-42 Table 1.6-4 (4/22)
Carbon tetrachloride	4.50E-05	2.58E-02	-	8.42E-03	2.58E-02	56235	AP-42 Table 1.6-3 (4/22)
Chlorine	7.90E-04	4.53E-01	-	1.48E-01	4.53E-01	7782505	AP-42 Table 1.6-3 (4/22)
Chlorobenzene	3.30E-05	1.89E-02	-	6.18E-03	1.89E-02	108907	AP-42 Table 1.6-3 (4/22)
Chloroform	2.80E-05	1.60E-02	-	5.24E-03	1.60E-02	67663	AP-42 Table 1.6-3 (4/22)
Chromium	2.10E-05	1.20E-02	-	3.93E-03	1.20E-02	-	AP-42 Table 1.6-4 (4/22)
Cobalt	6.50E-06	3.73E-03	-	1.22E-03	3.73E-03	-	AP-42 Table 1.6-4 (4/22)
Ethyl benzene	3.10E-05	1.78E-02	-	5.80E-03	1.78E-02	100414	AP-42 Table 1.6-3 (4/22)
Formaldehyde	4.40E-03	2.52E+00	-	8.24E-01	2.52E+00	50000	AP-42 Table 1.6-3 (4/22)
Hydrogen chloride	1.90E-02	1.09E+01	95.0%	1.78E-01	5.44E-01	7647010	AP-42 Table 1.6-3 (4/22)
Lead	4.80E-05	2.75E-02	75.0%	2.25E-03	6.88E-03	-	AP-42 Table 1.6-4 (4/22)
Manganese	1.60E-03	9.17E-01	-	3.00E-01	9.17E-01	-	AP-42 Table 1.6-4 (4/22)
Mercury	3.50E-06	2.01E-03	-	6.55E-04	2.01E-03	-	AP-42 Table 1.6-4 (4/22)
Naphthalene	9.70E-05	5.56E-02	-	1.82E-02	5.56E-02	91203	AP-42 Table 1.6-3 (4/22)
Nickel	3.30E-05	1.89E-02	-	6.18E-03	1.89E-02	-	AP-42 Table 1.6-4 (4/22)
PCDD/PCDF	8.60E-12	4.93E-09	-	1.61E-09	4.93E-09	1746016	AP-42 Table 1.6-3 (4/22) (2,3,7,8-TCDD)
Pentachlorophenol	5.10E-08	2.92E-05	-	9.55E-06	2.92E-05	87865	AP-42 Table 1.6-3 (4/22)
Phenol	5.10E-05	2.92E-02	-	9.55E-03	2.92E-02	108952	AP-42 Table 1.6-3 (4/22)
Phosphorus	2.70E-05	1.55E-02	-	5.05E-03	1.55E-02	-	AP-42 Table 1.6-4 (4/22)
POM	2.80E-05	1.60E-02	-	5.23E-03	1.60E-02	-	AP-42 Table 1.6-3 (4/22)
Propionaldehyde	6.10E-05	3.50E-02	-	1.14E-02	3.50E-02	123386	AP-42 Table 1.6-3 (4/22)
Selenium	2.80E-06	1.60E-03	-	5.24E-04	1.60E-03	-	AP-42 Table 1.6-4 (4/22)
Styrene	1.90E-03	1.09E+00	-	3.56E-01	1.09E+00	100425	AP-42 Table 1.6-3 (4/22)
Toluene	9.20E-04	5.27E-01	-	1.72E-01	5.27E-01	108883	AP-42 Table 1.6-3 (4/22)
Vinyl chloride	1.80E-05	1.03E-02	-	3.37E-03	1.03E-02	75014	AP-42 Table 1.6-3 (4/22)
o-Xylenes	2.50E-05	1.43E-02	-	4.68E-03	1.43E-02	95476	AP-42 Table 1.6-3 (4/22)
Total HAPs	-	21.9	-	3.8	11.5	-	

[1] HCl control efficiency from TREA 1 is demonstrated during performance testing, 95% is accounted for when calculating emissions.

Greenhouse Gas Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	GWP	Reference
CO_2	206.79	118,521	-	38,712	118,521	1	40 CFR 98, Subpart C, Table C-1
CH_4	1.59E-02	9.10	-	2.97	9.10	25	40 CFR 98, Subpart C, Table C-2
N_2O	7.94E-03	4.55	-	1.49	4.55	298	40 CFR 98, Subpart C, Table C-2
CO_2e	-	120,104	-	39,229	120,104	-	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)

Red Wing Generating Plant
Boiler 1 (with Scrubber and Fabric Filter)
EQUI 1

Unit Information		
Description:	Boiler 1	
Unit ID:	EQUI 1	
Stack ID:	STRU 11	
Control Equipment ID:	TREA 1 & 5	
Fuel	Used Oil	
Max Fuel Input Capacity	180	gal/hr
Fuel Heat Value[1]	0.138	MMBtu/gal
Heat Input Capacity	24.8	MMBtu/hr
Hours Unlimited	8,760	hours/yr
Sulfur Content[2]	0.75	%
Ash Content[2]	1.2	%

Permit Limits	
PM	<0.020 grains/dscf @ 7% O2
SO2	<29 ppm or 75% reduction
CO	≤200 ppm @ 7% O2
NOx	≤250ppm @ 7% O2
Lead	≤400 micrograms/dscm @ 7% O2
Cadmium	≤35 micrograms/dscm @ 7% O2
HCl	≤29 ppm or 95% reduction
Mercury	≤30 micrograms/dscm or 85% reduction
PCDD/PCDF	≤30 nanograms/dscm @ 7% O2
Fuel Usage	RDF greater than 30% by weight of the total fuel input as measured on a 24-hour basis.
Fuel Usage	Combust all allowed fuels other than RDF in combination with RDF and not as a separate waste stream

[1] *From 40 CFR Part 98, Table C-1 to Subpart C.*

[2] *Highest concentration in the range, AP-42 background document to Chapter 1.11.*

[3] *Calculations assume 69.9% fuel usage (>30% RDF Combusted Permit Limit)*

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/Mgal)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference
PM	76.80	42.3	99.0%	0.14	0.42	AP-42 Table 1.11-1 (10/96) [64 * 1.2% ash Table 2-1, background document]
PM_{10}	61.20	33.7	93.0%	0.77	2.36	AP-42 Table 1.11-1 (10/96) [51 * 1.2% ash Table 2-1, background document]
$PM_{2.5}$	61.20	33.7	-	0.77	2.36	AP-42 Table 1.11-1 (10/96) [51 * 1.2% ash Table 2-1, background document]
SO_2	110.25	60.8	75.0%	4.96	15.2	AP-42 Table 1.11-2 (10/96) [147 x 0.75% sulfur]
NO_x	19.00	10.47	-	3.42	10.5	AP-42 Table 1.11-2 (10/96)
VOC	1.0	0.6	-	0.18	0.55	AP-42 Table 1.11-2 (10/96)
CO	5.00	2.76	-	0.90	2.76	AP-42 Table 1.11-3 (10/96)
Lead	2.20	1.21	75.0%	0.099	0.303	AP-42 Section 1.11 (1995) [WebFire]

[1] Minn. R. 7011.0070 control efficiencies for fabric filter (TREA 2) are used, $PM_{2.5}$ is assumed equal to PM_{10}. TREA 1, dry injection acid gas scrubber lead control efficiency was calculated using AP-42 emission factor and 2010 performance testing; 75% is conservatively assumed. EPA provides SO_2 removal efficiencies for dry acid gas scrubbers ranging from 85 to 95%; 75% is conservatively accounted for when calculating emissions. (https://www.epa.gov/sites/default/files/2021-05/documents/wet_and_dry_scrubbers_section_5_chapter_1_control_cost_manual_7th_edition.pdf)

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/Mgal)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference	CAS #
Arsenic	1.10E-01	6.06E-02	-	1.98E-02	6.06E-02	AP-42 Table 1.6-4 (4/22)	-
Cadmium	9.30E-03	5.13E-03	-	1.67E-03	5.13E-03	AP-42 Table 1.6-4 (4/22)	-
Chromium	2.00E-02	1.10E-02	-	3.60E-03	1.10E-02	AP-42 Table 1.6-4 (4/22)	-
Cobalt	2.10E-04	1.16E-04	-	3.78E-05	1.16E-04	AP-42 Table 1.6-4 (4/22)	-
Lead	2.20E+00	1.21E+00	75.0%	9.90E-02	3.03E-01	AP-42 Table 1.6-4 (4/22)	-
Manganese	6.80E-02	3.75E-02	-	1.22E-02	3.75E-02	AP-42 Table 1.6-4 (4/22)	-
Nickel	1.10E-02	6.06E-03	-	1.98E-03	6.06E-03	AP-42 Table 1.6-4 (4/22)	-
Hydrogen chloride	1.98E+01	1.09E+01	95.0%	1.78E-01	5.46E-01	AP-42 Table 1.6-4 (4/22)	-
Total HAPs	-	12.24	-	0.32	0.97		-

[1] TREA 1, dry injection acid gas scrubber lead control efficiency was calculated using AP-42 emission factor and 2010 performance testing; 75% is conservatively assumed.HCl control efficiency from TREA 1 is demonstrated during performance testing, 95% is accounted for when calculating emissions.

Greenhouse Gas Emissions

Pollutant	Factor	Emissions	Efficiency	(lb/hr)	Controlled	Reference	GWP
CO_2	163.14	12,407	-	4,052	12,407	40 CFR 98, Subpart C, Table C-1	1
CH_4	6.61E-03	0.50	-	0.16	0.50	40 CFR 98, Subpart C, Table C-2	25
N_2O	1.32E-03	0.10	-	0.03	0.10	40 CFR 98, Subpart C, Table C-2	298
CO_2e	-	12,449	-	4,066	12,449	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)	-

Red Wing Generating Plant
Boiler 2 (with Scrubber, TREA 2 and Fabric Filter, TREA 6)
EQUI 2

Worste Case Scenario Information for Potential to Emit	
Scenario #	**Scenario Description**
Scenario #1	The facility may combust up to 100% RDF on an annual basis.
Scenario #2	The facility has a federally enforceable limit of >30% RDF combustion on a daily basis, by weight, and that wood must not be combusted as a separate waste stream. This scenario assumes that RDF is combusted 30.1% of the time, with wood combusted 69.9% of the time.
Scenario #3	The facility has a federally enforceable limit of 180 gal/hr of used oil, >30% RDF combustion on a daily basis, by weight, and that used oil must not be combusted as a separate waste stream. This scenario assumes that RDF is combusted 30.1% of the time, with used oil combusted 69.9% of the time.

The Permittee uses natural gas only to warm the combustion chamber and pollution control devices, and maintain good combustion conditions in the combustion chamber. Emissions from natural gas combustion will be lower than RDF, wood, or waste oil combustion based on published emission factors, and therefore the PTE from natural gas combustion is not evaulated.

[1] For RDF/Wood and RDF/Used Oil, the lb/hr emissions are the maximum emissions between combusting RDF and 1.254% RDF combusted during any one-hour period in combination with wood or oil (equal to 30.1% RDF for a 24-hr period). The maximum of RDF and RDF/wood or RDF/used oil is utilized as the worst-case lb/hr.

[2] Limited emissions for all scenarios are based on the permit limits for RDF combustion, which will be met at all times.

Criteria Pollutant Emissions

Pollutant	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)
	Scenario #1 (RDF):			Scenario #2 (RDF/Wood)[1]:			Scenario #3 (RDF
PM	5,487	8.11	35.54	1,982	8.11	27.23	1,694
PM_{10}	5,487	8.11	35.54	1,948	8.11	25.51	1,685
$PM_{2.5}$	5,487	8.11	35.54	1,908	8.11	23.51	1,685
SO_2	307	13.68	59.90	106.88	13.68	21.61	153.31
NO_x	396	85.05	372.52	245.22	85.05	238.22	129.60
VOC[3]	7.88	1.80	7.88	12.12	3.17	12.12	2.92
CO	151	41.40	181.33	389	41.40	170.20	48.32
CO_2e	177,335	40,487	177,335	173,482	40,487	173,482	65,827
Lead	15.85	0.07	0.31	4.80	0.07	0.10	5.98

Hazardous Air Pollutant Emissions

Pollutant	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Uncontrolled Emissions (tpy)
	Scenario #1 (RDF):			Scenario #2 (RDF/Wood)[1]:			Scenario #3 (RDF
2,4,6-Trichlorophenol	-	-	-	6.30E-06	2.06E-06	6.30E-06	-
2,4-Dinitrophenol	-	-	-	1.03E-04	3.37E-05	1.03E-04	-
4-Nitrophenol	-	-	-	6.30E-05	2.06E-05	6.30E-05	-
Acetaldehyde	-	-	-	4.76E-01	1.55E-01	4.76E-01	-
Acetophenone	-	-	-	1.83E-06	5.99E-07	1.83E-06	-
Acrolein	-	-	-	2.29E+00	7.49E-01	2.29E+00	-
Antimony	1.01E-03	2.30E-04	1.01E-03	4.83E-03	1.46E-03	4.83E-03	3.03E-04
Arsenic	4.68E-01	1.14E-04	5.01E-04	1.54E-01	4.07E-03	1.28E-02	2.02E-01
Benzene	-	-	-	2.41E+00	7.86E-01	2.41E+00	-
Beryllium	5.65E-05	1.29E-05	5.65E-05	6.47E-04	2.04E-04	6.47E-04	1.70E-05
bis(2-Ethylhexyl)phthalate	-	-	-	2.69E-05	8.80E-06	2.69E-05	-
Cadmium	6.90E-01	6.21E-03	2.72E-02	2.10E-01	6.21E-03	1.05E-02	2.13E-01
Carbon tetrachloride	-	-	-	2.58E-02	8.42E-03	2.58E-02	-
Chlorine	-	-	-	4.53E-01	1.48E-01	4.53E-01	-
Chlorobenzene	-	-	-	1.89E-02	6.18E-03	1.89E-02	-
Chloroform	-	-	-	1.60E-02	5.24E-03	1.60E-02	-
Chromium	1.10E+00	4.13E-03	1.81E-02	3.44E-01	4.13E-03	1.75E-02	3.43E-01
Cobalt	2.82E-04	6.43E-05	2.82E-04	3.81E-03	1.20E-03	3.81E-03	2.01E-04
Ethylbenzene	-	-	-	1.78E-02	5.80E-03	1.78E-02	-
Formaldehyde	-	-	-	2.52E+00	8.24E-01	2.52E+00	-
HCl	549.51	6.27	27.48	1.76E+02	6.27E+00	8.81E+00	1.76E+02
Lead	1.58E+01	7.09E-02	3.11E-01	4.80E+00	7.09E-02	1.00E-01	5.98E+00
Manganese	1.01E-02	2.31E-03	1.01E-02	9.20E-01	2.96E-01	9.20E-01	4.05E-02
Mercury	4.34E-01	5.32E-03	2.33E-02	1.33E-01	5.32E-03	9.02E-03	1.31E-01
Naphthalene	-	-	-	5.56E-02	1.82E-02	5.56E-02	-
Nickel	3.44E-01	1.15E-03	5.04E-03	1.22E-01	6.11E-03	2.04E-02	1.10E-01
PCDD/PCDF	7.47E-04	5.32E-06	2.33E-05	2.25E-04	5.32E-06	7.02E-06	2.25E-04
Pentachlorophenol	-	-	-	2.92E-05	9.55E-06	2.92E-05	-
Phenol	-	-	-	2.92E-02	9.55E-03	2.92E-02	-
Phosphorus	1.75E-01	3.99E-02	1.75E-01	6.81E-02	3.99E-02	6.81E-02	5.26E-02
POM	-	-	-	1.60E-02	5.23E-03	1.60E-02	-
Propionaldehyde	-	-	-	3.50E-02	1.14E-02	3.50E-02	-
Selenium	2.82E-04	6.43E-05	2.82E-04	1.69E-03	5.18E-04	1.69E-03	8.48E-05
Styrene	-	-	-	1.09E+00	3.56E-01	1.09E+00	-
Toluene	-	-	-	5.27E-01	1.72E-01	5.27E-01	-
Vinyl chloride	-	-	-	1.03E-02	3.37E-03	1.03E-02	-
o-Xylenes	-	-	-	1.43E-02	4.68E-03	1.43E-02	-
Total HAP	568.59	6.40	28.05	193.04	6.40	19.98	183.39

Red Wing Generating Plant
Boiler 2 (with Scrubber and Fabric Filter)
EQUI 2

Unit Information		
Description:	Boiler 2	
Unit ID:	EQUI 2	
Stack ID:	STRU 8	
Control Equipment ID:	TREA 2 & 6	
Fuel	RDF	
Max Fuel Input Capacity	18	tons/hour
Fuel Heat Value	5,500	Btu/lb
Heat Input Capacity	198.0	MMBtu/hr
Hours Unlimited	8,760	hours/yr
Fd Factor	9,570	dscf/MMBtu

Permit Limits	
PM	<0.020 grains/dscf @ 7% O2
SO2	<29 ppm or 75% reduction
CO	≤200 ppm @ 7% O2
NOx	≤250ppm @ 7% O2
Lead	≤400 micrograms/dscm @ 7% O2
Cadmium	≤35 micrograms/dscm @ 7% O2
HCl	≤29 ppm or 95% reduction
Mercury	≤30 micrograms/dscm or 85% reduction
PCDD/PCDF	≤30 nanograms/dscm @ 7% O2
Fuel Usage	RDF greater than 30% by weight of the total fuel input as measured on a 24-hour basis.
Fuel Usage	Combust all allowed fuels other than RDF in combination with RDF and not as a separate waste stream

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference
PM	69.60	5,487	-	8.11	35.5	AP-42 Table 2.1-8 (10/96)
PM_{10}	69.60	5,487	-	8.11	35.5	AP-42 Table 2.1-8 (10/96) - assumed equal to PM
$PM_{2.5}$	69.60	5,487	-	8.11	35.5	AP-42 Table 2.1-8 (10/96) - assumed equal to PM
SO_2	3.90	307	-	13.68	59.9	AP-42 Table 2.1-8 (10/96)
NO_x	5.02	396	-	85.05	373	AP-42 Table 2.1-8 (10/96)
VOC	0.10	7.88	-	1.80	7.9	AP-42, 4th Edition Supplement C , Sept 1990, Table 2.1-1
CO	1.92	151	-	41.40	181.3	AP-42 Table 2.1-8 (10/96)
Lead	0.201	15.85	-	0.07	0.3	AP-42 Table 2.1-8 (10/96)

[1] SO_2, lead, PM, PM_{10}, and $PM_{2.5}$ control efficiency is not taken to account when calculating emissions. EQUI 2 is controlled by a scrubber (TREA 2) and a fabric filter (TREA 6).
[2] The emission rate and limited emissions for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, and lead are calculated based on the permit limits that apply to EQUI 2, and conversion rates provided in AP-42 Table 2.1-10.

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference	CAS #
Antimony	1.28E-05	1.01E-03	-	2.30E-04	1.01E-03	Stack Test May 2004	
Arsenic	5.94E-03	0.47	-	1.14E-04	5.01E-04	AP-42 Table 2.1-8 (10/96) (3.57E-06 lb/ton 2004 stack test	--
Beryllium	7.17E-07	5.65E-05	-	1.29E-05	5.65E-05	Stack Test May 2004	
Cadmium	8.75E-03	0.69	-	6.21E-03	2.72E-02	AP-42 Table 2.1-8 (10/96) (2.23E-06 lb/ton 2004 stack test	--
Chromium	1.40E-02	1.10	-	4.13E-03	1.81E-02	AP-42 Table 2.1-8 (10/96) (1.70E-04 lb/ton 2004 stack test	--
Cobalt	3.57E-06	2.82E-04	-	6.43E-05	2.82E-04	Stack Test May 2004	
Hydrogen chloride	6.97	550	95.0%	6.27	27.48	AP-42 Table 2.1-8 (10/96)	7647010
Lead	2.01E-01	15.8	-	7.09E-02	3.11E-01	AP-42 Table 2.1-8 (10/96) (4.74E-05 lb/ton 2004 stack test	
Manganese	1.28E-04	1.01E-02	-	2.31E-03	1.01E-02	Stack Test May 2004	
Mercury	5.50E-03	0.43	-	5.32E-03	2.33E-02	AP-42 Table 2.1-8 (10/96) (2.13E-05 lb/ton 2004 stack test	--
Nickel	4.36E-03	0.34	-	1.15E-03	5.04E-03	AP-42 Table 2.1-8 (10/96) (2.01E-05 lb/ton 2004 stack test	--
Phorspohous	2.22E-03	0.17	-	3.99E-02	1.75E-01	Stack Test May 2004	
Selenium	3.57E-06	2.816E-04	-	6.43E-05	2.82E-04	Stack Test May 2004	
PCDD/PCDF	9.47E-06	7.466E-04	-	5.32E-06	2.33E-05	AP-42 Table 2.1-8 (10/96)	132649, 1746016
Total HAPs	-	569	-	6.40	28.0		

[1] HCl control efficiency from TREA 2 is demonstrated during performance testing, 95% is accounted for when calculating emissions. Permit limits on HCL result in 7.83 lb/hr and 34.3 tpy
[2] The emission rate and limited emissions for cadmium, lead, mercury, and PCDD/PCDF are calculated based on the permit limits that apply to EQUI 2.

2004 Stack Test

Fuel Input	16.6
Antimony	2.12E-04
Arsenic	5.93E-05
Beryllium	1.19E-05
Cadmium	3.71E-05
Chromium	2.83E-03
Cobalt	5.93E-05
Lead (Pb)	7.87E-04
Manganese	2.13E-03
Mercury (Hg)	3.53E-04
Nickel	3.33E-04
Phosphorus	3.68E-02
Selenium	5.93E-05

Greenhouse Gas Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Reference	GWP
CO_2	199.96	173,413	-	39,592	173,413	40 CFR 98, Subpart C, Table C-1	1
CH_4	7.05E-02	61.18	-	13.97	61.18	40 CFR 98, Subpart C, Table C-2	25
N_2O	9.26E-03	8.03	-	1.83	8.03	40 CFR 98, Subpart C, Table C-2	298
CO_2e	-	177,335	-	40,487	177,335	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)	-

Red Wing Generating Plant
Boiler 2 (with Scrubber and Fabric Filter)
EQUI 2

Unit Information		
Description:	Boiler 2	
Unit ID:	EQUI 2	
Stack ID:	STRU 8	
Control Equipment ID:	TREA 2 & 6	
Fuel	Wood	
Max Fuel Input Capacity	18	tons/hour
Fuel Heat Value	5,200	Btu/lb
Heat Input Capacity	187.2	MMBtu/hr
Hours Unlimited	8,760	hours/yr
Fd Factor	9,240	dscf/MMBtu

Permit Limits	
PM	<0.020 grains/dscf @ 7% O_2
SO2	<29 ppm @ 7% O_2 or 75% reduction
CO	≤200 ppm @ 7% O_2
NOx	≤250ppm @ 7% O_2
Lead	≤400 micrograms/dscm @ 7% O_2
Cadmium	≤35 micrograms/dscm @ 7% O_2
HCl	≤29 ppm @ 7% O_2 or 95% reduction
Mercury	≤30 micrograms/dscm or 85% reduction
PCDD/PCDF	≤30 nanograms/dscm @ 7% O_2
Fuel Usage	RDF greater than 30% by weight of the total fuel input as measured on a 24-hour basis.
Fuel Usage	Combust all allowed fuels other than RDF in combination with RDF and not as a separate waste stream

[2] *Assume 40% moisture as the typical fuel (AP-42, Appendix A).*

[2] *Calculations assume 69.9% fuel usage (>30% RDF Combusted Permit Limit)*

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Limited Emission Factor (lb/MMBtu)	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference
PM	0.58	331	95.0%	0.04	5.40	16.5	AP-42 Table 1.6-1 (04/22)
PM_{10}	0.52	296	95.0%	0.04	4.84	14.8	AP-42 Table 1.6-1 (04/22)
$PM_{2.5}$	0.45	256	95.0%	0.04	4.18	12.8	AP-42 Table 1.6-1 (04/22)
SO_2	0.025	14.3	75.0%	0.07	1.17	3.6	AP-42 Table 1.6-2 (04/22)
NO_x	0.22	126	-	0.41	41.18	126	AP-42 Table 1.6-2 (04/22)
VOC	0.017	9.7	-	-	3.18	9.7	AP-42 Table 1.6-3 (04/22)
CO	0.60	344	-	0.20	37.8	116	AP-42 Table 1.6-2 (04/22)
Lead	4.80E-05	0.0275	75.0%	-	0.00225	0.00688	AP-42 Table 1.6-4 (04/22)

[1] TREA 2, dry injection acid gas scrubber lead control efficiency was calculated using AP-42 emission factor and 2010 performance testing; 75% is conservatively assumed. EPA provides SO_2 removal efficiencies for dry acid gas scrubbers ranging from 85 to 95%; 75% is conservatively accounted for when calculating emissions. (https://www.epa.gov/sites/default/files/2021-05/documents/wet_and_dry_scrubbers_section_5_chapter_1_control_cost_manual_7th_edition.pdf)

[2] Limited emission factors are determined from the permit limit, and emission factors in AP-42 Section 1.6 background document. PM10 and PM2.5 are assumed equal to PM. PM lb/hr using assumed 95% control efficiency from the fabric filter is less than the lb/hr emission rate using the limited emission factor (0.020 gr/dscf = 45.77 mg/dscm, 45.77 * 0.00985 = 0.451 lb/ton, 0.451 * 18 tph = 8.11 lb/hr)

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	CAS #	Reference
2,4,6-Trichlorophenol	1.10E-08	6.30E-06	-	2.06E-06	6.30E-06	88062	AP-42 Table 1.6-3 (4/22)
2,4-Dinitrophenol	1.80E-07	1.03E-04	-	3.37E-05	1.03E-04	51285	AP-42 Table 1.6-3 (4/22)
4-Nitrophenol	1.10E-07	6.30E-05	-	2.06E-05	6.30E-05	100027	AP-42 Table 1.6-3 (4/22)
Acetaldehyde	8.30E-04	4.76E-01	-	1.55E-01	4.76E-01	75070	AP-42 Table 1.6-3 (4/22)
Acetophenone	3.20E-09	1.83E-06	-	5.99E-07	1.83E-06	98862	AP-42 Table 1.6-3 (4/22)
Acrolein	4.00E-03	2.29E+00	-	7.49E-01	2.29E+00	107028	AP-42 Table 1.6-3 (4/22)
Antimony	7.90E-06	4.53E-03	-	1.48E-03	4.53E-03	-	AP-42 Table 1.6-4 (4/22)
Arsenic	2.20E-05	1.26E-02	-	4.12E-03	1.26E-02	-	AP-42 Table 1.6-4 (4/22)
Benzene	4.20E-03	2.41E+00	-	7.86E-01	2.41E+00	71432	AP-42 Table 1.6-3 (4/22)
Beryllium	1.10E-06	6.30E-04	-	2.06E-04	6.30E-04	-	AP-42 Table 1.6-4 (4/22)
Bis (2-ethylhexyl) phthalate (DEHP)	4.70E-08	2.69E-05	-	8.80E-06	2.69E-05	117817	AP-42 Table 1.6-3 (4/22)
Cadmium	4.10E-06	2.35E-03	-	7.68E-04	2.35E-03	-	AP-42 Table 1.6-4 (4/22)
Carbon tetrachloride	4.50E-05	2.58E-02	-	8.42E-03	2.58E-02	56235	AP-42 Table 1.6-3 (4/22)
Chlorine	7.90E-04	4.53E-01	-	1.48E-01	4.53E-01	7782505	AP-42 Table 1.6-3 (4/22)
Chlorobenzene	3.30E-05	1.89E-02	-	6.18E-03	1.89E-02	108907	AP-42 Table 1.6-3 (4/22)
Chloroform	2.80E-05	1.60E-02	-	5.24E-03	1.60E-02	67663	AP-42 Table 1.6-3 (4/22)
Chromium	2.10E-05	1.20E-02	-	3.93E-03	1.20E-02	-	AP-42 Table 1.6-4 (4/22)
Cobalt	6.50E-06	3.73E-03	-	1.22E-03	3.73E-03	-	AP-42 Table 1.6-4 (4/22)
Ethyl benzene	3.10E-05	1.78E-02	-	5.80E-03	1.78E-02	100414	AP-42 Table 1.6-3 (4/22)
Formaldehyde	4.40E-03	2.52E+00	-	8.24E-01	2.52E+00	50000	AP-42 Table 1.6-3 (4/22)
Hydrogen chloride	1.90E-02	1.09E+01	95.0%	1.78E-01	5.44E-01	7647010	AP-42 Table 1.6-3 (4/22)
Lead	4.80E-05	2.75E-02	75.0%	2.25E-03	6.88E-03	-	AP-42 Table 1.6-4 (4/22)
Manganese	1.60E-03	9.17E-01	-	3.00E-01	9.17E-01	-	AP-42 Table 1.6-4 (4/22)
Mercury	3.50E-06	2.01E-03	-	6.55E-04	2.01E-03	-	AP-42 Table 1.6-4 (4/22)
Naphthalene	9.70E-05	5.56E-02	-	1.82E-02	5.56E-02	91203	AP-42 Table 1.6-3 (4/22)
Nickel	3.30E-05	1.89E-02	-	6.18E-03	1.89E-02	-	AP-42 Table 1.6-4 (4/22)
PCDD/PCDF	8.60E-12	4.93E-09	-	1.61E-09	4.93E-09	1746016	AP-42 Table 1.6-3 (4/22) (2,3,7,8-TCDD)
Pentachlorophenol	5.10E-08	2.92E-05	-	9.55E-06	2.92E-05	87865	AP-42 Table 1.6-3 (4/22)
Phenol	5.10E-05	2.92E-02	-	9.55E-03	2.92E-02	108952	AP-42 Table 1.6-3 (4/22)
Phosphorus	2.70E-05	1.55E-02	-	5.05E-03	1.55E-02	-	AP-42 Table 1.6-4 (4/22)
POM	2.80E-05	1.60E-02	-	5.23E-03	1.60E-02	-	AP-42 Table 1.6-3 (4/22)
Propionaldehyde	6.10E-05	3.50E-02	-	1.14E-02	3.50E-02	123386	AP-42 Table 1.6-3 (4/22)
Selenium	2.80E-06	1.60E-03	-	5.24E-04	1.60E-03	-	AP-42 Table 1.6-4 (4/22)
Styrene	1.90E-03	1.09E+00	-	3.56E-01	1.09E+00	100425	AP-42 Table 1.6-3 (4/22)
Toluene	9.20E-04	5.27E-01	-	1.72E-01	5.27E-01	108883	AP-42 Table 1.6-3 (4/22)
Vinyl chloride	1.80E-05	1.03E-02	-	3.37E-03	1.03E-02	75014	AP-42 Table 1.6-3 (4/22)
o-Xylenes	2.50E-05	1.43E-02	-	4.68E-03	1.43E-02	95476	AP-42 Table 1.6-3 (4/22)
Total HAPs	-	21.9	-	3.8	11.5	-	

[1] HCl control efficiency from TREA 2 is demonstrated during performance testing, 95% is accounted for when calculating emissions.

Greenhouse Gas Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	GWP	Reference
CO_2	206.79	118,521	-	38,712	118,521	1	40 CFR 98, Subpart C, Table C-1
CH_4	1.59E-02	9.10	-	2.97	9.10	25	40 CFR 98, Subpart C, Table C-2
N_2O	7.94E-03	4.55	-	1.49	4.55	298	40 CFR 98, Subpart C, Table C-2
CO_2e	-	120,104	-	39,229	120,104	-	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)

Red Wing Generating Plant
Boiler 2 (with Scrubber and Fabric Filter)
EQUI 2

Unit Information		
Description:	Boiler 2	
Unit ID:	EQUI 2	
Stack ID:	STRU 8	
Control Equipment ID:	TREA 2 & 6	
Fuel	Used Oil	
Max Fuel Input Capacity	180	gal/hr
Fuel Heat Value[1]	0.138	MMBtu/gal
Heat Input Capacity	24.8	MMBtu/hr
Hours Unlimited	8,760	hours/yr
Sulfur Content[2]	0.75	%
Ash Content[2]	1.2	%

Permit Limits	
PM	<0.020 grains/dscf @ 7% O2
SO2	<29 ppm or 75% reduction
CO	≤200 ppm @ 7% O2
NOx	≤250ppm @ 7% O2
Lead	≤400 micrograms/dscm @ 7% O2
Cadmium	≤35 micrograms/dscm @ 7% O2
HCl	≤29 ppm or 95% reduction
Mercury	≤30 micrograms/dscm or 85% reduction
PCDD/PCDF	≤30 nanograms/dscm @ 7% O2
Fuel Usage	RDF greater than 30% by weight of the total fuel input as measured on a 24-hour basis.
Fuel Usage	Combust all allowed fuels other than RDF in combination with RDF and not as a separate waste stream

[1] *From 40 CFR Part 98, Table C-1 to Subpart C.*

[2] *Highest concentration in the range, AP-42 background document to Chapter 1.11.*

[3] *Calculations assume 69.9% fuel usage (>30% RDF Combusted Permit Limit)*

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/Mgal)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference
PM	76.80	42.3	99.0%	0.14	0.42	AP-42 Table 1.11-1 (10/96) [64 * 1.2% ash Table 2-1, background document]
PM_{10}	61.20	33.7	93.0%	0.77	2.36	AP-42 Table 1.11-1 (10/96) [51 * 1.2% ash Table 2-1, background document]
$PM_{2.5}$	61.20	33.7	-	0.77	2.36	AP-42 Table 1.11-1 (10/96) [51 * 1.2% ash Table 2-1, background document]
SO_2	110.25	60.8	75.0%	4.96	15.2	AP-42 Table 1.11-2 (10/96) [147 x 0.75% sulfur]
NO_x	19.00	10.47	-	3.42	10.5	AP-42 Table 1.11-2 (10/96)
VOC	1.0	0.6	-	0.18	0.55	AP-42 Table 1.11-2 (10/96)
CO	5.00	2.76	-	0.90	2.76	AP-42 Table 1.11-3 (10/96)
Lead	2.20	1.21	75.0%	0.10	0.30	AP-42 Section 1.11 (1995) [WebFire]

[1] Minn. R. 7011.0070 control efficiencies for fabric filter (TREA 2) are used, $PM_{2.5}$ is assumed equal to PM_{10}. TREA 2, dry injection acid gas scrubber lead control efficiency was calculated using AP-42 emission factor and 2014 performance testing; 75% is conservatively assumed. EPA provides SO_2 removal efficiencies for dry acid gas scrubbers ranging from 85 to 95%; 75% is conservatively accounted for when calculating emissions. (https://www.epa.gov/sites/default/files/2021-05/documents/wet_and_dry_scrubbers_section_5_chapter_1_control_cost_manual_7th_edition.pdf)

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/Mgal)	Uncontrolled Emissions (tpy)	Control Efficiency[1]	Emission Rate (lb/hr)	Limited Controlled Emissions[2] (tpy)	Reference	CAS #
Arsenic	1.10E-01	6.06E-02	-	1.98E-02	6.06E-02	AP-42 Table 1.6-4 (4/22)	-
Cadmium	9.30E-03	5.13E-03	-	1.67E-03	5.13E-03	AP-42 Table 1.6-4 (4/22)	-
Chromium	2.00E-02	1.10E-02	-	3.60E-03	1.10E-02	AP-42 Table 1.6-4 (4/22)	-
Cobalt	2.10E-04	1.16E-04	-	3.78E-05	1.16E-04	AP-42 Table 1.6-4 (4/22)	-
Lead	2.20E+00	1.21E+00	75.0%	9.90E-02	3.03E-01	AP-42 Table 1.6-4 (4/22)	-
Manganese	6.80E-02	3.75E-02	-	1.22E-02	3.75E-02	AP-42 Table 1.6-4 (4/22)	-
Nickel	1.10E-02	6.06E-03	-	1.98E-03	6.06E-03	AP-42 Table 1.6-4 (4/22)	-
Hydrogen chloride	1.98E+01	1.09E+01	95.0%	1.78E-01	5.46E-01	AP-42 Table 1.6-4 (4/22)	-
Total HAPs	-	12.2	-	0.32	0.97		-

[1] TREA 2, dry injection acid gas scrubber lead control efficiency was calculated using AP-42 emission factor and 2014 performance testing; 75% is conservatively assumed.HCl control efficiency from TREA 2 is demonstrated during performance testing, 95% is accounted for when calculating emissions.

Greenhouse Gas Emissions

Pollutant	Factor	Emissions	Efficiency	(lb/hr)	Controlled	Reference	GWP
CO_2	163.14	12,407	-	4,052	12,407	40 CFR 98, Subpart C, Table C-1	1
CH_4	6.61E-03	0.50	-	0.16	0.50	40 CFR 98, Subpart C, Table C-2	25
N_2O	1.32E-03	0.10	-	0.03	0.10	40 CFR 98, Subpart C, Table C-2	298
CO_2e	-	12,449	-	4,066	12,449	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)	-

Red Wing Generating Plant
Lime Storage Silo
EQUI 36/TREA 7

Lime is delivered to the facility by semi-truck. The trucks are connected by a hose provided by the truck driver to the silo piping. The lime is pressurized from the truck through the piping and emptied into the top of the silo until either the silo is full or the truck is empty. The majorty of emissions from the silo are expected during the unloading process as typical lime movement to the control equipment for emissions control does not result in significant enough air flow to create dust flow through the filter.

Information		
Maximum Throughput[1]	27.6	ton/hr

[1] *Lime is delivered via semi truck at a rate of 24 tons/hr.*

Criteria Pollutant Emissions						
Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions (tpy)	Control Efficiency[2]	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Emission Factor Source
PM	6.10E-01	73.7	99.0%	0.17	0.74	AP-42 Table 11.17-4, product transfer and conveying
PM_{10}	-	73.7	93.0%	0.17	0.74	PM_{10} and $PM_{2.5}$ assumed equal to PM emissions
$PM_{2.5}$	-	73.7	-	0.17	0.74	PM_{10} and $PM_{2.5}$ assumed equal to PM emissions

Red Wing Generating Plant
Lime Storage Silo
EQUI 37/TREA 8

Lime is delivered to the facility by semi-truck. The trucks are connected by a hose provided by the truck driver to the silo piping. The lime is pressurized from the truck through the piping and emptied into the top of the silo until either the silo is full or the truck is empty. The majorty of emissions from the silo are expected during the unloading process as typical lime movement to the control equipment for emissions control does not result in significant enough air flow to create dust flow through the filter.

Information		
Maximum Throughput[1]	27.6	ton/hr

[1] *Lime is delivered via semi truck at a rate of 24 tons/hr.*

Criteria Pollutant Emissions						
Pollutant	Emission Factor (lb/ton)	Uncontrolled Emissions (tpy)	Control Efficiency[2]	Emission Rate (lb/hr)	Limited Controlled Emissions (tpy)	Emission Factor Source
PM	6.10E-01	73.7	99.0%	0.17	0.74	AP-42 Table 11.17-4, product transfer and conveying
PM_{10}	-	73.7	93.0%	0.17	0.74	PM_{10} and $PM_{2.5}$ assumed equal to PM emissions
$PM_{2.5}$	-	73.7	-	0.17	0.74	PM_{10} and $PM_{2.5}$ assumed equal to PM emissions

Red Wing Generating Plant
Auxiliary Boiler
EQUI 39

Unit Information		
Description:	Auxiliary Boiler	
Unit ID:	EQUI 39	
Stack ID:	STRU 14	
Fuel	Natural Gas	
Maximum Fuel Input Capacity	0.0052	MMSCF/hr
Fuel Heat Value[1]	1020	Btu/scf
Heat Input Capacity	5.30	MMBtu/hr
Hours Unlimited	8,760	hours/yr

[1] *Typical Btu heat content from AP-42, Chapter 1.4.*

Criteria Pollutant Emissions

Pollutant	Emission Factor (lb/MMSCF)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled PTE (tpy)	Reference
PM	7.60	0.17	0%	0.04	0.17	AP-42 Table 1.4-2 (7/98)
PM_{10}	7.60	0.17	0%	0.04	0.17	AP-42 Table 1.4-2 (7/98)
$PM_{2.5}$	7.60	0.17	0%	0.04	0.17	No emissions data available - assume = PM_{10}
SO_2	0.60	0.01	0%	0.00	0.01	AP-42 Table 1.4-2 (7/98)
NO_x	100.0	2.28	0%	0.52	2.28	AP-42 Table 1.4-1 (7/98)
VOC	5.5	0.13	0%	0.03	0.13	AP-42 Table 1.4-2 (7/98)
CO	84.0	1.91	0%	0.44	1.91	AP-42 Table 1.4-1 (7/98)
Lead	5.00E-04	1.14E-05	0%	2.60E-06	1.14E-05	AP-42 Table 1.4-2 (7/98)

Hazardous Air Pollutant Emissions

Pollutant	Emission Factor (lb/MMSCF)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled PTE (tpy)	Reference	CAS #
1,4-Dichlorobenzene	1.20E-03	2.73E-05	0.00%	6.24E-06	2.73E-05	AP-42 Table 1.4-3 (7/98)	117817
Arsenic	2.00E-04	4.56E-06	0.00%	1.04E-06	4.56E-06	AP-42 Table 1.4-4 (7/98)	-
Benzene	2.10E-03	4.78E-05	0.00%	1.09E-05	4.78E-05	AP-42 Table 1.4-3 (7/98)	71432
Beryllium	1.20E-05	2.73E-07	0.00%	6.24E-08	2.73E-07	AP-42 Table 1.4-4 (7/98)	-
Cadmium	1.10E-03	2.51E-05	0.00%	5.72E-06	2.51E-05	AP-42 Table 1.4-4 (7/98)	-
Chromium	1.40E-03	3.19E-05	0.00%	7.28E-06	3.19E-05	AP-42 Table 1.4-4 (7/98)	-
Cobalt	8.40E-05	1.91E-06	0.00%	4.37E-07	1.91E-06	AP-42 Table 1.4-4 (7/98)	-
Formaldehyde	7.50E-02	1.71E-03	0.00%	3.90E-04	1.71E-03	AP-42 Table 1.4-4 (7/98)	50000
Hexane	1.80	4.10E-02	0.00%	9.36E-03	4.10E-02	AP-42 Table 1.4-4 (7/98)	7647010
Lead	5.00E-04	1.14E-05		2.60E-06	1.14E-05	AP-42 Table 1.4-2 (7/98)	
Manganese	3.80E-04	8.65E-06	0.00%	1.98E-06	8.65E-06	AP-42 Table 1.4-4 (7/98)	-
Mercury	2.60E-04	5.92E-06	0.00%	1.35E-06	5.92E-06	AP-42 Table 1.4-4 (7/98)	-
Naphthalene	6.10E-04	1.39E-05	0.00%	3.17E-06	1.39E-05	AP-42 Table 1.4-4 (7/98)	91203
Nickel	2.10E-03	4.78E-05	0.00%	1.09E-05	4.78E-05	AP-42 Table 1.4-4 (7/98)	-
POM	8.82E-05	2.01E-06	0.00%	4.59E-07	2.01E-06	AP-42 Table 1.4-3 (7/98)	-
Selenium	2.40E-05	5.47E-07	0.00%	1.25E-07	5.47E-07	AP-42 Table 1.4-4 (7/98)	-
Toluene	3.40E-03	7.74E-05	0.00%	1.77E-05	7.74E-05	AP-42 Table 1.4-4 (7/98)	108883
Total HAPs	-	**0.04**	--	**0.01**	**0.04**		

Greenhouse Gas Emissions

Pollutant	Emission Factor (lb/MMBtu)	Uncontrolled Emissions (tpy)	Control Efficiency	Emission Rate (lb/hr)	Limited Controlled PTE (tpy)	Reference	GWP
CO_2	116.98	2,717.56	0.00%	620.4	2,717.56	40 CFR 98, Subpart C, Table C-1	1
CH_4	2.20E-03	0.051	0.00%	0.012	0.051	40 CFR 98, Subpart C, Table C-2	25
N_2O	2.20E-04	0.0051	0.00%	0.0012	0.0051	40 CFR 98, Subpart C, Table C-2	298
CO_2e	-	2,720	0.00%	621	2,720	Global Warming Potential (Table A-1 40 CFR pt. 98, subp. A)	-

Activity	Criteria Pollutants	Max Process Rate (tons/hr)	Emission Factor (lb/ton)	Emission Factor Source	PTE (lb/hr)	PTE (lb/yr)	Insignificant Activity Citation	Miscellaneous Information
RDF unloading	PM	40	1.49E-03	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	5.97E-02	523	Minn. R. 7007.1300, subp. 3(F) (less than 2,000 lb/year of PM & PM_{10})	Trailers unload onto conveyor. Annual throughput based on 2 boiler capacity of 18 tons/hr + 10%. Two RDF trucks (20 tons/truck) can be unloaded in an hour.
	PM_{10}	40	7.06E-04	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	2.82E-02	247		
	$PM_{2.5}$	40	1.07E-04	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	4.28E-03	37.5		
RDF conveyor	PM	40	1.49E-03	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	5.97E-02	523	Minn. R. 7007.1300, subp. 3(F) (less than 2,000 lb/year of PM & PM_{10})	Unloading conveyor drops onto second conveyor into plant. Annual throughput based on truck and boiler capacity.
	PM_{10}	40	7.06E-04	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	2.82E-02	247		
	$PM_{2.5}$	40	1.07E-04	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	4.28E-03	37.5		
RDF transfer station	PM	40	1.49E-03	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	5.97E-02	523	Minn. R. 7007.1300, subp. 3(F) (less than 2,000 lb/year of PM & PM_{10})	RDF is transferred via conveyor. Operates 9 hrs/day, 5 days/week. Annual throughput based on truck and boiler capacity
	PM_{10}	40	7.06E-04	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	2.82E-02	247		
	$PM_{2.5}$	40	1.07E-04	AP-42 Section 13.2.4, EQ(1). u = 9 mph, m = 4.8% moisture	4.28E-03	37.5		

Conversion Constants:

ppm SO2 to lb/scf:	0.000000166
ppm NOx to lb/scf:	0.0000001194
ppm CO to lb/scf:	0.00000007267
ppm HCl to lb/scf:	0.0000000947

1 lb=	7000	grains
1 lb=	453,590,000	micrograms
1 scf=	0.02831685	scm
1 lb=	453590000000	nanograms
1 kg=	2.20462262	lbs

Fuel Heat Value		
5,500	Btu/lb	AP-42 Table 2.1-8
Fd Factor		
9,570	dscf/MMBtu	AP-42 Table 2.1-8

1.4 Natural Gas Combustion

1.4.1 General[1-2]

Natural gas is one of the major fuels used throughout the country. It is used mainly for industrial process steam and heat production; for residential and commercial space heating; and for electric power generation. Natural gas consists of a high percentage of methane (generally above 85 percent) and varying amounts of ethane, propane, butane, and inerts (typically nitrogen, carbon dioxide, and helium). Gas processing plants are required for the recovery of liquefiable constituents and removal of hydrogen sulfide before the gas is used (see Section 5.3, Natural Gas Processing). The average gross heating value of natural gas is approximately 1020 British thermal units per standard cubic foot (Btu/scf), usually varying from 950 to 1050 Btu/scf.

Natural Gas BTU: 1020 Btu/scf AP42 Chapter 1.4

Wood Btu (Moisture Dependent) Part 98

0% Moisture (Part 98):	8740	Btu/lb
10% Moisture (Part 98 Equation):	7866	Btu/lb
20% Moisture (Part 98 Equation):	6992	Btu/lb
30% Moisture (Part 98 Equation):	6118	Btu/lb
40% Moisture (Part 98 Equation):	5244	Btu/lb
50% Moisture (Part 98 Equation):	4370	Btu/lb
54% Moisture (Part 98 Equation):	4020.4	Btu/lb

EPA Typical Fuel Parameters: 5200 Btu/lb

BTU/hp-hr: 7000 Btu

Attachment 2 – Subject item inventory and facility requirements

SI List

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Category	SI Type	Subject Item ID	Delta Designation	Description	
Activity	Insignificant Air Emissions Activity	ACTV 2	Null	All IA's	
Agency Interest	Conventional Site	AISI 1888	Null	Null	
Component Group	Air Component Group	COMG 1	GP001	Waste Combustors and Control Equipment	
		COMG 2	Null	Continuous Emission Monitors	
		COMG 3	Null	Continuous Opacity Monitors	
Equipment	Boiler	EQUI 1	EU001	Boiler 1	
		EQUI 2	EU002	Boiler 2	
		EQUI 39	Null	Auxiliary Boiler	
	Continuous Emission Monitor	EQUI 21	MR005	SO2 (EQUI 1 scrubber inlet)	
		EQUI 22	MR006	O2 (EQUI 1 scrubber inlet)	
		EQUI 27	MR012	SO2 (EQUI 2 scrubber inlet)	
		EQUI 28	MR013	O2 (EQUI 2 scrubber inlet)	
		EQUI 41	Null	CO (EQUI 1 stack)	
		EQUI 42	Null	NOx (EQUI 1 stack)	
		EQUI 43	Null	SO2 (EQUI 1 stack)	
		EQUI 44	Null	O2 (EQUI 1 stack)	
		EQUI 45	Null	CO (EQU 2 stack)	
		EQUI 46	Null	NOx (EQUI 2 stack)	
		EQUI 47	Null	SO2 (EQUI 2 stack)	
		EQUI 48	Null	O2 (EQUI 2 stack)	
	Continuous Opacity Monitor	EQUI 29	MR014	Opacity (EQUI 2 stack)	
		EQUI 49	Null	Opacity (EQUI 1 stack)	
	Conveyor	EQUI 40	Null	Ash Conveyor	
	Data Acquisition System	EQUI 8	DA001	U1/U2 Server	
	Parametric Monitor	EQUI 30	MR015	Temperature (bag house inlet) (EQUI 1)	
		EQUI 31	MR016	Steam Flow (EQUI 1)	
		EQUI 32	MR017	Temperature (bag house inlet) (EQUI 2)	
		EQUI 33	MR018	Steam Flow (EQUI 2)	
	Silo/Bin	EQUI 36	EU005	Lime Storage Silo	
		EQUI 37	EU006	Lime Storage Silo	
Structure	Building	STRU 1	BG001	Power House	
		STRU 2	BG002	RDF Receiving	
		STRU 3	BG003	Ash House	
		STRU 4	BG004	RDF Scalping	
		STRU 7	BG007	Hydraulic Storage Area	
		STRU 15	Null	Oil Storage Building	
		STRU 16	Null	Sub Station House	
		STRU 17	Null	Ash Conveyor Building	
		STRU 18	Null	Air Compressor/Scrubber Air Blower Building	
		STRU 19	Null	Lunch Room Building	
		STRU 20	Null	RDF Storage Building	
		STRU 21	Null	Storage Shed No. 3	
		STRU 22	Null	Screen House	
		STRU 23	Null	Warehouse	
		STRU 24	Null	Construction Trailer No. 2	
	Stack/Vent	STRU 8	SV002	Boiler 2	
		STRU 11	SV001	Boiler 1	
		STRU 12	SV005	Lime Silo Vent	
		STRU 13	SV006	Lime SIlo Vent	
		STRU 14	Null	Auxiliary Boiler Stack	
Total Facility	Air Quality Total Facility	TFAC 2	04900005	Xcel Energy - Red Wing Generating Plant	
Treatment	016-Fabric Filter - High Temp, T>250 Degrees F	TREA 5	CE005	Fabric Filter - High Temperature, i.e., T>250 Degrees F	
		TREA 6	CE006	Fabric Filter - High Temperature, i.e., T>250 Degrees F	
	018-Fabric Filter - Low Temp, T<180 Degrees F	TREA 7	CE009	Fabric Filter - Low Temperature, i.e., T<180 Degrees F	
		TREA 8	CE010	Fabric Filter - Low Temperature, i.e., T<180 Degrees F	
	041-Dry Limestone Injection	TREA 1	CE007	Dry Limestone Injection	
		TREA 2	CE008	Dry Limestone Injection	

Insignificant Activities

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Category	SI Type	Status Description	Sub Attribute Description	
Activity	Insignificant Air Emissions Activity	Active / Existing	Minn. R. 7007.1300, subp. 3(E)	
			Minn. R. 7007.1300, subp. 3(F)	
			Minn. R. 7007.1300, subp. 3(G)	

Emission Units 1

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Firing Method	Subject to CSAPR?	Electric Generating Capacity (MW)	Construction Start Date	Operation Start Date	Modification Date	
Boiler	EQUI 1	EU001	Boiler 1	Foster Wheeler	NA	125,000	pounds/hours	Steam	Overfeed stoker (traveling grate)	N	Null	1/1/1947	1/1/1949	Null	
	EQUI 2	EU002	Boiler 2	Foster Wheeler	NA	125,000	pounds/hours	Steam	Overfeed stoker (traveling grate)	N	Null	1/1/1947	1/1/1949	Null	
	EQUI 39	Null	Auxiliary Boiler	Johnston Boiler Co.	298 series package boiler	5.3	million British thermal units/hours	Heat	Not coal burning	N	Null	1/1/1972	1/1/1985	Null	

Emission Units 3

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Construction Start Date	Operation Start Date	Modification Date	
Conveyor	EQUI 40	Null	Ash Conveyor	Custom	Custom	41	tons/hours	Ash	1/1/1987	1/1/1987	Null	
Silo/Bin	EQUI 36	EU005	Lime Storage Silo	Custom	Custom	27.6	tons/hours	Lime	6/30/2000	6/30/2000	Null	
	EQUI 37	EU006	Lime Storage Silo	Custom	Custom	27.6	tons/hours	Lime	11/1/1999	12/1/1999	Null	

Component Groups

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Group Member ID	
COMG 1	GP001	Waste Combustors and Control Equipment	EQUI 1	
			EQUI 2	
			TREA 1	
			TREA 2	
			TREA 5	
			TREA 6	
COMG 2	Null	Continuous Emission Monitors	EQUI 21	
			EQUI 22	
			EQUI 27	
			EQUI 28	
			EQUI 41	
			EQUI 42	
			EQUI 43	
			EQUI 44	
			EQUI 45	
			EQUI 46	
			EQUI 47	
			EQUI 48	
COMG 3	Null	Continuous Opacity Monitors	EQUI 29	
			EQUI 49	

PTE by SI

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Boiler	EQUI 1	EU001	Boiler 1	2,4-Dinitrophenol	3.37e-05	0.000103	0.000103	
					2,4,6-Trichlorophenol	2.06e-06	6.3e-06	6.3e-06	
					4-Nitrophenol	2.06e-05	6.3e-05	6.3e-05	
					Acetaldehyde	0.155	0.476	0.476	
					Acetophenone	5.99e-07	1.834e-06	1.834e-06	
					Acrolein	0.749	2.293	2.293	
					Antimony compounds	0.001463	0.00483	0.00483	
					Arsenic compounds	0.0196	0.468	0.0608	
					Benzene	0.786	2.41	2.41	
					Beryllium	0.000204	0.000647	0.000647	
					Bis(2-ethylhexyl) phthalate	8.8e-06	2.694e-05	2.694e-05	
					Cadmium compounds	0.00621	0.69	0.0272	
					Carbon Dioxide Equivalent	40,487	177,335.2	177,335.2	
					Carbon Monoxide	41.4	389.4	181.3	
					Carbon tetrachloride	0.00842	0.0258	0.0258	
					Chlorine	0.148	0.453	0.453	
					Chlorobenzene (Monochlorobenzene)	0.00618	0.0189	0.0189	
					Chloroform	0.00524	0.016	0.016	
					Chromium compounds	0.00413	1.1	0.0181	
					Cobalt compounds	0.001203	0.00389	0.00389	
					Ethylbenzene	0.0058	0.01777	0.01777	
					Formaldehyde	0.824	2.522	2.522	
					HAPs - Total	6.4	568.59	28.05	
					Hydrogen Chloride	6.27	549.51	27.48	
					Lead	0.0987	15.846	0.397	
					Manganese compounds	0.296	0.92	0.92	
					Mercury	0.00532	0.434	0.0233	
					Naphthalene	0.0182	0.0556	0.0556	
					Nickel compounds	0.00611	0.344	0.0204	
					Nitrogen Oxides	85.1	395.8	372.5	
					Particulate Matter	8.11	5,487.3	35.54	
					Pentachlorophenol (PCP)	9.55e-06	2.923e-05	2.923e-05	
					Phenol	0.00955	0.02923	0.02923	
					Phosphorus	0.0399	0.175	0.175	
					PM < 2.5 micron	8.11	5,487.3	35.54	
					PM < 10 micron	8.11	5,487.3	35.54	
					Polycyclic organic matter	0.00523	0.016	0.016	
					Propionaldehyde	0.0114	0.03496	0.03496	
					Selenium compounds	0.000518	0.00169	0.00169	
					Styrene	0.356	1.09	1.09	
					Sulfur Dioxide	13.7	307.5	59.9	
					Toluene	0.172	0.527	0.527	
					Total PCDD/PCDF	5.32e-06	0.000747	2.33e-05	
					Vinyl chloride (chloroethene)	0.00337	0.0103	0.0103	
					Volatile Organic Compounds	3.17	12.12	12.12	
					Xylene (o-)	0.00468	0.01433	0.01433	
		EQUI 2	EU002	Boiler 2	2,4-Dinitrophenol	3.37e-05	0.000103	0.000103	
					2,4,6-Trichlorophenol	2.06e-06	6.3e-06	6.3e-06	
					4-Nitrophenol	2.06e-05	6.3e-05	6.3e-05	
					Acetaldehyde	0.155	0.476	0.476	
					Acetophenone	5.99e-07	1.834e-06	1.834e-06	
					Acrolein	0.749	2.293	2.293	
					Antimony compounds	0.001463	0.004774	0.004774	
					Arsenic compounds	0.0196	0.468	0.0608	
					Benzene	0.786	2.41	2.41	
					Beryllium	0.000203	0.000646	0.000646	
					Bis(2-ethylhexyl) phthalate	8.8e-06	2.694e-05	2.694e-05	
					Cadmium compounds	0.00621	0.69	0.0272	
					Carbon Dioxide Equivalent	40,487	177,335.2	177,335.2	
					Carbon Monoxide	41.4	389.4	181.3	
					Carbon tetrachloride	0.00842	0.0258	0.0258	
					Chlorine	0.148	0.453	0.453	
					Chlorobenzene (Monochlorobenzene)	0.00618	0.0189	0.0189	
					Chloroform	0.00524	0.016	0.016	
					Chromium compounds	0.00413	1.1	0.0181	
					Cobalt compounds	0.001203	0.00389	0.00389	
					Ethylbenzene	0.0058	0.01777	0.01777	
					Formaldehyde	0.824	2.522	2.522	
					HAPs - Total	6.43	568.7	28.2	
					Hydrogen Chloride	6.27	549.51	27.48	

PTE by SI

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Boiler	EQUI 2	EU002	Boiler 2	Lead	0.0987	15.85	0.397	
					Manganese compounds	0.296	0.923	0.923	
					Mercury	0.00532	0.434	0.0233	
					Naphthalene	0.0182	0.0556	0.0556	
					Nickel compounds	0.00611	0.344	0.0204	
					Nitrogen Oxides	85.1	395.8	372.5	
					Particulate Matter	8.11	5,487.3	35.54	
					Pentachlorophenol (PCP)	9.55e-06	2.923e-05	2.923e-05	
					Phenol	0.00955	0.02923	0.02923	
					Phosphorus	0.0666	0.292	0.292	
					PM < 2.5 micron	8.11	5,487.3	35.54	
					PM < 10 micron	8.11	5,487.3	35.54	
					Polycyclic organic matter	0.00523	0.016	0.016	
					Propionaldehyde	0.0114	0.03496	0.03496	
					Selenium compounds	0.000519	0.001756	0.001756	
					Styrene	0.356	1.09	1.09	
					Sulfur Dioxide	13.7	307.5	59.9	
					Toluene	0.172	0.527	0.527	
					Total PCDD/PCDF	5.32e-06	0.000747	2.33e-05	
					Vinyl chloride (chloroethene)	0.00337	0.0103	0.0103	
					Volatile Organic Compounds	3.17	12.1	12.1	
					Xylene (o-)	0.00468	0.01433	0.01433	
		EQUI 39	Null	Auxiliary Boiler	1,4-Dichlorobenzene (para-)	6.24e-06	2.73e-05	2.73e-05	
					Arsenic compounds	1.04e-06	4.56e-06	4.56e-06	
					Benzene	1.09e-05	4.78e-05	4.78e-05	
					Beryllium	6.24e-08	2.73e-07	2.73e-07	
					Cadmium compounds	5.72e-06	2.51e-05	2.51e-05	
					Carbon Dioxide Equivalent	621	2,720	2,720	
					Carbon Monoxide	0.44	1.91	1.91	
					Chromium compounds	7.28e-06	3.19e-05	3.19e-05	
					Cobalt compounds	4.37e-07	1.91e-06	1.91e-06	
					Formaldehyde	0.00039	0.00171	0.00171	
					HAPs - Total	0.01	0.04	0.04	
					Hexane	0.00936	0.041	0.041	
					Lead	2.6e-06	1.14e-05	1.14e-05	
					Manganese compounds	1.98e-06	8.65e-06	8.65e-06	
					Mercury	1.35e-06	5.92e-06	5.92e-06	
					Naphthalene	3.17e-06	1.39e-05	1.39e-05	
					Nickel compounds	1.09e-05	4.78e-05	4.78e-05	
					Nitrogen Oxides	0.52	2.28	2.28	
					Particulate Matter	0.04	0.17	0.17	
					PM < 2.5 micron	0.04	0.17	0.17	
					PM < 10 micron	0.04	0.17	0.17	
					Polycyclic organic matter	4.59e-07	2.01e-06	2.01e-06	
					Selenium compounds	1.25e-07	5.47e-07	5.47e-07	
					Sulfur Dioxide	0.00312	0.01	0.01	
					Toluene	1.77e-05	7.74e-05	7.74e-05	
					Volatile Organic Compounds	0.03	0.13	0.13	
	Silo/Bin	EQUI 36	EU005	Lime Storage Silo	Particulate Matter	0.17	73.74	0.74	
					PM < 2.5 micron	0.17	73.74	0.74	
					PM < 10 micron	0.17	73.74	0.74	
		EQUI 37	EU006	Lime Storage Silo	Particulate Matter	0.17	73.74	0.74	
					PM < 2.5 micron	0.17	73.74	0.74	
					PM < 10 micron	0.17	73.74	0.74	

Relationships

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Relationship	Related SI ID	% Flow	Related SI Type	Related Delta Designation	Relationship Start Date	Relationship End Date	
Equipment	Boiler	EQUI 1	EU001	Boiler 1	is controlled by	TREA 1	100	041-Dry Limestone Injection	CE007	12/5/2002	Null	
						TREA 5	100	016-Fabric Filter - High Temp, T>250 Degrees F	CE005	1/1/1987	Null	
					is monitored by	EQUI 21	Null	Continuous Emission Monitor	MR005	3/1/2000	Null	
						EQUI 22	Null	Continuous Emission Monitor	MR006	3/1/2000	Null	
						EQUI 30	Null	Parametric Monitor	MR015	10/1/1998	Null	
						EQUI 31	Null	Parametric Monitor	MR016	6/1/1987	Null	
						EQUI 41	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 42	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 43	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 44	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 49	Null	Continuous Opacity Monitor	Null	6/1/1999	Null	
					sends to	EQUI 8	Null	Data Acquisition System	DA001	6/1/1987	Null	
						STRU 11	100	Stack/Vent	SV001	9/29/2000	Null	
		EQUI 2	EU002	Boiler 2	is controlled by	TREA 2	100	041-Dry Limestone Injection	CE008	12/5/2002	Null	
						TREA 6	100	016-Fabric Filter - High Temp, T>250 Degrees F	CE006	1/1/1987	Null	
					is monitored by	EQUI 27	Null	Continuous Emission Monitor	MR012	3/1/2000	Null	
						EQUI 28	Null	Continuous Emission Monitor	MR013	3/1/2000	Null	
						EQUI 29	Null	Continuous Opacity Monitor	MR014	6/1/1987	Null	
						EQUI 32	Null	Parametric Monitor	MR017	10/1/1998	Null	
						EQUI 33	Null	Parametric Monitor	MR018	6/1/1987	Null	
						EQUI 45	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 46	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 47	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
						EQUI 48	Null	Continuous Emission Monitor	Null	10/27/2023	Null	
					sends to	EQUI 8	Null	Data Acquisition System	DA001	6/1/1987	Null	
						STRU 8	100	Stack/Vent	SV002	9/29/2000	Null	
		EQUI 39	Null	Auxiliary Boiler	sends to	STRU 14	100	Stack/Vent	Null	3/18/2024	Null	
	Data Acquisition System	EQUI 8	DA001	U1/U2 Server	receives from	EQUI 21	Null	Continuous Emission Monitor	MR005	3/26/2024	Null	
						EQUI 22	Null	Continuous Emission Monitor	MR006	3/26/2024	Null	
						EQUI 27	Null	Continuous Emission Monitor	MR012	3/26/2024	Null	
						EQUI 28	Null	Continuous Emission Monitor	MR013	3/26/2024	Null	
						EQUI 29	Null	Continuous Opacity Monitor	MR014	3/26/2024	Null	
						EQUI 30	Null	Parametric Monitor	MR015	3/26/2024	Null	
						EQUI 31	Null	Parametric Monitor	MR016	3/26/2024	Null	
						EQUI 32	Null	Parametric Monitor	MR017	3/26/2024	Null	
						EQUI 33	Null	Parametric Monitor	MR018	3/26/2024	Null	
						EQUI 41	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 42	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 43	Null	Continuous Emission Monitor	Null	3/26/2024	Null	

Relationships

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Relationship	Related SI ID	% Flow	Related SI Type	Related Delta Designation	Relationship Start Date	Relationship End Date	
Equipment	Data Acquisition System	EQUI 8	DA001	U1/U2 Server	receives from	EQUI 44	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 45	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 46	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 47	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 48	Null	Continuous Emission Monitor	Null	3/26/2024	Null	
						EQUI 49	Null	Continuous Opacity Monitor	Null	3/26/2024	Null	
	Silo/Bin	EQUI 36	EU005	Lime Storage Silo	is controlled by	TREA 7	100	018-Fabric Filter - Low Temp, T<180 Degrees F	CE009	6/1/2004	Null	
					sends to	STRU 12	100	Stack/Vent	SV005	6/1/2004	Null	
		EQUI 37	EU006	Lime Storage Silo	is controlled by	TREA 8	100	018-Fabric Filter - Low Temp, T<180 Degrees F	CE010	6/1/2004	Null	
					sends to	STRU 13	100	Stack/Vent	SV006	6/1/2004	Null	
Treatment	041-Dry Limestone Injection	TREA 1	CE007	Dry Limestone Injection	is controlled in series by	TREA 5	Null	016-Fabric Filter - High Temp, T>250 Degrees F	CE005	3/18/2024	Null	
		TREA 2	CE008	Dry Limestone Injection	is controlled in series by	TREA 6	Null	016-Fabric Filter - High Temp, T>250 Degrees F	CE006	3/18/2024	Null	

CEMs

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter	Primary or Backup?	Bypass Capability?	Install Date (CEMs/COMs)	Certification Date	Certification Basis	Span (ppm)	System Full Scale Value (ppm)	
EQUI 21	MR005	SO2 (EQUI 1 scrubber inlet)	Ametek	721M	VV	Sulfur Dioxide	Primary	No	3/1/2000	5/1/2000	40 CFR Pt 60	750	750	
EQUI 22	MR006	O2 (EQUI 1 scrubber inlet)	Servomax	1400	65594	Oxygen	Primary	No	3/1/2000	5/1/2000	40 CFR Pt 60	25	25	
EQUI 27	MR012	SO2 (EQUI 2 scrubber inlet)	Ametek	721M	VV	Sulfur Dioxide	Primary	No	3/1/2000	5/1/2000	40 CFR Pt 60	750	750	
EQUI 28	MR013	O2 (EQUI 2 scrubber inlet)	Servomax	1400	014206/145	Oxygen	Primary	No	3/1/2000	5/1/2000	40 CFR Pt 60	25	25	
EQUI 41	Null	CO (EQUI 1 stack)	Thermo Envi	48iQ-ABN	12228021112	Carbon Monoxide	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	2,000	2,000	
EQUI 42	Null	NOx (EQUI 1 stack)	Thermo Envi	42iQLS	12228021115	Nitrogen Oxides	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	300	300	
EQUI 43	Null	SO2 (EQUI 1 stack)	Thermo Envi	42iQHL	12228021114	Sulfur Dioxide	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	750	750	
EQUI 44	Null	O2 (EQUI 1 stack)	Servomax	490008900A1	200189MULTI..	Oxygen	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	25	25	
EQUI 45	Null	CO (EQU 2 stack)	Thermo Envi	48iQ	12228021109	Carbon Monoxide	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	2,000	2,000	
EQUI 46	Null	NOx (EQUI 2 stack)	Thermo Envi	42iQLS	1228021107	Nitrogen Oxides	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	300	300	
EQUI 47	Null	SO2 (EQUI 2 stack)	Thermo Envi	42iQHL	12228021111	Sulfur Dioxide	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	750	750	
EQUI 48	Null	O2 (EQUI 2 stack)	Servomax	490008900A1	200187MULTI..	Oxygen	Primary	No	10/27/2023	12/22/2023	40 CFR Pt 60	25	25	

COMs

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter	Primary or Backup?	Bypass Capability?	Install Date (CEMs/COMs)	Certification Date	Certification Basis	Optical Path Length	
EQUI 29	MR014	Opacity (EQUI 2 stack)	Land	4500 MKII	9895321	Opacity	Primary	No	6/1/1987	6/1/1987	40 CFR Pt 60	0.5	
EQUI 49	Null	Opacity (EQUI 1 stack)	Land	4500MKII	9895324	Opacity	Primary	No	6/1/1999	6/1/1999	40 CFR Pt 60	0.5	

PMs

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter Monitored	Bypass Capability? (parametric)	Install Date (parametric)	
EQUI 30	MR015	Temperature (bag house inlet) (EQUI 1)	Rosemount	3144	0302512 0599	Temperature	No	10/1/1998	
EQUI 31	MR016	Steam Flow (EQUI 1)	Rosemount	1811957	151811957-O..	Steam Flow	No	6/1/1987	
EQUI 32	MR017	Temperature (bag house inlet) (EQUI 2)	Rosemount	3144	0302511 0599	Temperature	No	10/1/1998	
EQUI 33	MR018	Steam Flow (EQUI 2)	Bailey	1811956	3178-0150 IWG	Steam Flow	No	6/1/1987	

DAS

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Primary or Backup? (DASs)	Install Date (DASs)	
EQUI 8	DA001	U1/U2 Server	ESC	Null	Null	Primary	6/1/1987	

Building

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Height	Units (height)	Length	Units (length)	Width	Units (width)	
STRU 1	BG001	Power House	78	feet	159	feet	111	feet	
STRU 2	BG002	RDF Receiving	27	feet	150	feet	144	feet	
STRU 3	BG003	Ash House	45	feet	60	feet	20	feet	
STRU 4	BG004	RDF Scalping	25	feet	20	feet	12	feet	
STRU 7	BG007	Hydraulic Storage Area	15	feet	21	feet	13	feet	
STRU 15	Null	Oil Storage Building	13	feet	22	feet	14	feet	
STRU 16	Null	Sub Station House	12.5	feet	35	feet	20.5	feet	
STRU 17	Null	Ash Conveyor Building	14.5	feet	124	feet	8	feet	
STRU 18	Null	Air Compressor/Scrubber Air Blower Building	71	feet	44	feet	24	feet	
STRU 19	Null	Lunch Room Building	9.5	feet	64	feet	16	feet	
STRU 20	Null	RDF Storage Building	27	feet	122	feet	118	feet	
STRU 21	Null	Storage Shed No. 3	14.5	feet	66	feet	14	feet	
STRU 22	Null	Screen House	28	feet	60	feet	42	feet	
STRU 23	Null	Warehouse	22.5	feet	72	feet	48	feet	
STRU 24	Null	Construction Trailer No. 2	12	feet	55	feet	11	feet	

Stack/Vents

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item ID	Delta Designation	Description	Stack Height (feet)	Stack Diameter (feet)	Stack Length (feet)	Stack Width (feet)	Stack Flow Rate (cubic ft/min)	Discharge Temperature (°F)	Flow Rate/Temp Information Source	Discharge Direction	
STRU 8	SV002	Boiler 2	187	10	Null	Null	104,500	450	Test data	Upwards with no cap on stack/vent	
STRU 11	SV001	Boiler 1	187	7	Null	Null	104,500	450	Test data	Upwards with no cap on stack/vent	
STRU 12	SV005	Lime Silo Vent	67	3.5	Null	Null	750	70	Manufacturer	Horizontally	
STRU 13	SV006	Lime SIlo Vent	67	3.5	Null	Null	750	70	Manufacturer	Horizontally	
STRU 14	Null	Auxiliary Boiler Stack	90	1.2	Null	Null	50,000	350	Manufacturer	Upwards with a cap on stack/vent	

Fabric Filters

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item Type	Subject Item ID	Delta Designation	Description	Manufacturer (Model #)	Installation Start Date	Pollutants Controlled	Capture Efficiency (%)	Destruction/ Collect Efficiency (%)	Subject to CAM?	Large or Other PSEU?	Efficiency Basis	Other Basis Explanation	Filter Min Pressure Drop (in. of w.c.)	Filter Max Pressure Drop (in. of w.c.)	Bag leak detector in use?	
016-Fabric Filter - High Temp, T>250 Degrees F	TREA 5	CE005	Fabric Filter - High Temperature, i.e., T>250 Degrees F	UE / Marsulex (IPPJ1.4-20.5(6)-23.12)	1/1/1987	Arsenic compounds	100	81.2	No	Null	Other	AP-42	1	14	No	
						Lead	100	89.7	No	Null	Other	AP-42	1	14	No	
						Nickel compounds	100	92.2	No	Null	Other	AP-42	1	14	No	
						Particulate Matter	100	98.5	Yes	Other	Other	AP-42	1	14	No	
						PM < 10 micron	100	98.9	Yes	Other	Other	AP-42	1	14	No	
	TREA 6	CE006	Fabric Filter - High Temperature, i.e., T>250 Degrees F	UE / Marsulex (IPPJ1.4-20.5(6)-23.12)	1/1/1987	Arsenic compounds	100	81.2	No	Null	Other	AP-42	1	14	No	
						Lead	100	89.7	No	Null	Other	AP-42	1	14	No	
						Nickel compounds	100	92.2	No	Null	Other	AP-42	1	14	No	
						Particulate Matter	100	98.5	Yes	Other	Other	AP-42	1	14	No	
						PM < 10 micron	100	98.9	Yes	Other	Other	AP-42	1	14	No	
018-Fabric Filter - Low Temp, T<180 Degrees F	TREA 7	CE009	Fabric Filter - Low Temperature, i.e., T<180 Degrees F	Custom (5BTB-BVI-25, Style 2)	11/6/2000	Particulate Matter	100	99	No	Null	Control Equipment Rule	Null	0.1	8	No	
						PM < 10 micron	100	93	No	Null	Control Equipment Rule	Null	0.1	8	No	
	TREA 8	CE010	Fabric Filter - Low Temperature, i.e., T<180 Degrees F	Custom (5BTB-BVI-25, Style 2)	9/7/1999	Particulate Matter	100	99	No	Null	Control Equipment Rule	Null	0.1	8	No	
						PM < 10 micron	100	93	No	Null	Control Equipment Rule	Null	0.1	8	No	

Injection Systems

AI ID (Name): 1888 (Xcel Energy - Red Wing Generating Plant)
Activity: IND20080003

Subject Item Type	Subject Item ID	Delta Designation	Description	Manufacturer (Model #)	Installation Start Date	Pollutants Controlled	Capture Efficiency (%)	Destruction/ Collect Efficiency (%)	Subject to CAM?	Large or Other PSEU?	Efficiency Basis	Other Basis Explanation	Min Injection Rate (Units)	Max Injection Rate (Units)	Material Injected	
041-Dry Limestone Injection	TREA 1	CE007	Dry Limestone Injection	UE / Marsulex (IPPJ1.4-20.5(6)-23.12)	12/5/2002	Hydrochloric acid	100	99.2	Yes	Large	Other	AP-42	14.9 (pounds per hour)	100 (pounds per hour)	Limestone, dry	
						Sulfur Dioxide	100	88.7	Yes	Other	Other	AP-42	14.9 (pounds per hour)	100 (pounds per hour)	Limestone, dry	
	TREA 2	CE008	Dry Limestone Injection	UE / Marsulex (IPPJ1.4-20.5(6)-23.12)	12/5/2002	Hydrochloric acid	100	99.2	Yes	Large	Other	AP-42	14.9 (pounds per hour)	100 (pounds per hour)	Limestone, dry	
						Sulfur Dioxide	100	88.7	Yes	Other	Other	AP-42	14.9 (pounds per hour)	100 (pounds per hour)	Limestone, dry	

SI Id	Sequence	ID	Requirement
TFAC 2	1	1531120	The Permittee shall take a sample : Due quarterly; the Permittee shall collect ash samples. Sample collection must commence within 7 days of January 15, April 15, July 15, and October 15, unless otherwise approved by the commissioner. Quarterly samples and an annual composite sample formed from equal portions of the quarterly samples must be analyzed according to Minn. R 7035.2910, subp. 5. Quarterly samples must be analyzed within appropriate sample holding times, or 45 days after the sample is collected, whichever is less. The Permittee must analyze the annual composite sample according to Minn. R. 7035.2910, subp. 4, item A, Tables 1 and 2. [Minn. R. 7000.7000, variance (10/18/1996), Minn. R. 7007.0800, subp. 5, Minn. R. 7007.0801, subp. 2(D), Minn. R. 7035.2910, subp. 3]
TFAC 2	2	1531121	Waste Composition Study: due before the end of each calendar 60 months starting 12/31/2023. The Permittee must submit the waste composition study 45 days after completion of the study. The Waste Composition Study and Sample Analysis Report shall be conducted on each waste stream from which RDF is produced as described in Minn. R. 7007.0501, subp. 2(A), which includes Red Wing City of Red Wing Resource & Recovery Facility and Ramsey/Washington County Energy Recovery Facility. [Minn. R. 7007.0501, subp. 2(A), Minn. R. 7011.1270, subp. A(6)]
TFAC 2	3	1531123	The Permittee shall submit a report : Due annually by March 15 of each year for ash testing. The ash testing report must contain the information listed in Minn. R. 7035.2910, subp. 10(A) - (F) (listed below). A. Results of quarterly and annual analyses of ash as required by Minn. R. 7035. Total composition results must be reported on a dry weight basis. B. Discussion of the data, including identification of trends observed by comparing the most recent year's results with those of previous years. In particular, the Permittee must assess whether the waste combustor is in compliance with the goals of Minnesota Statutes, section 115A.97, subdivision 1, clause (1). C. Data quality assurance assessment, including the following: (1) precision and accuracy of each method used; (2) representativeness of the samples; (3) potential effect of any field or laboratory contamination on the sampling results; and (4) qualification or rejection of data based on the results of quality control samples. D. Information summarizing operation of the waste combustor during the ash sampling periods, and data regarding ash sample processing recorded according to Minn. R. 7035.2910, subp. 9. Operating information must include an estimate of the quantity and type of wastes other than mixed municipal solid waste which were combusted at the facility during the ash sampling period. If leachate was added to the waste during the sampling period, the quantity of leachate added and source of the leachate must be noted. E. Certification by the Permittee that samples analyzed to fulfill the requirements of this part were collected according to the plan required by Minn. R. 7035.2910, subp. 6, and that no actions were taken during the sample collection period to intentionally affect the results of ash sample analysis so that the results would not be representative of ash typically generated by the waste combustor. Such actions may include, for example, altering the type of waste combusted during the sampling period.
			F. Identification of any changes in test methods or parameters made in accordance with Minn. R. 7035.2910, subp. 4, items D and E. [Minn. R. 7035.2910, subp. 10]
TFAC 2	4	1530955	The Permittee shall design, construct, and operate the facility in compliance with the solid waste management requirements as set forth in Minn. R. 7011.1245, items A to H. Plans required in the items in Minn. R. 7011.1245 shall identify those required portions of the plan which are not applicable. A. security requirements in Minn. R. 7035.2535, subp 3; B. general inspection requirements in Minn. R. 7035.2535, subp. 4; C. household hazardous waste management requirements of Minn. R. 7035.2535, subp. 6; D. emergency preparedness and prevention plans and emergency procedures shall be prepared in accordance with Minn. R. 7035.2595 and Minn. R. 7035.2605; E. contingency action plans in Minn. R. 7035.2615; F. closure plans in Minn. R. 7035.2625 and closure procedures in Minn. R. 7035.2635; G. solid waste transfer facility requirements as required in Minn. R. 7035.2870; and H. for waste combustors accepting infectious wastes, infectious waste management requirements of Minn. R. 7035.9100 to 7035.9150. [Minn. R. 7011.1245]

SI Id	Sequence	ID	Requirement
TFAC 2	5	1532528	All industrial solid waste delivered to a solid waste management facility must be managed by the Permittee to protect human health and the environment. The industrial solid waste management plan for a municipal solid waste combustor ash land disposal facility does not need to comply with items B and C. A. The industrial waste management plan must include a discussion of how the Permittee will manage all industrial solid wastes received at the facility. The Permittee must specify: (1) a procedure for notifying industrial solid waste generators of the facility operating requirements and restrictions, including the requirements imposed on haulers serving the facility, the steps required of generators submitting a request for waste management, and the measures to be taken to inform haulers and generators of the facility requirements; (2) a procedure for evaluating waste characteristics, including the specific analyses that may be required for specific wastes, and the criteria used to determine when analyses are necessary, the frequency of testing, and the analytical methods to be used; (3) a procedure for managing the waste and for identifying any special management requirements, and the rationale for accepting or rejecting a waste based on its analysis, volume, and characteristics; (4) a procedure for inspecting industrial solid waste as it is delivered and the rationale for accepting or requiring further information and review of previously approved and unapproved waste as it is delivered. [Minn. R. 7011.1250, subp. 1, Minn. R. 7035.2535, subp. 5(A)]
TFAC 2	6	1532529	The industrial waste management plan must address how the following categories of waste will be managed to comply with the requirements of Minn. R. 7035.2535, subp. 5, item A, subitems (2) to (4): (1) empty pesticide containers; (2) asbestos; (3) waste containing polychlorinated biphenyls at a concentration less than 50 ppm; (4) spilled nonhazardous materials; (5) rendering and slaughterhouse wastes; (6) wastes that could spontaneously combust or that could ignite other waste because of high temperatures; (7) foundry waste; (8) ash from incinerators, resource recovery facilities, and power plants; (9) paint residues, paint filters, and paint dust; (10) sludges, including ink sludges, lime sludge, wood sludge, and paper sludge; (11) fiberglass, urethane, polyurethane, and epoxy resin waste; (12) spent activated carbon filters; and (13) any other wastes that can be identified. [Minn. R. 7011.1250, subp. 1, Minn. R. 7035.2535, subp. 5(B)]
TFAC 2	7	1532530	The industrial waste management plan must address how the following additional categories of solid waste will be managed to comply with the requirements of Minn. R. 7035.2535, subpart 5, item A, subitems (2) to (4), as well as state whether each of the following solid wastes will be accepted at the facility: A. spilled fossil fuels and the sorbents used to collect the spilled fossil fuels; B. infectious and pathological wastes; C. media contaminated with oil; D. problem materials as defined in Minnesota Statutes, section 115A.03, subdivision 24a; and E. any other solid wastes that can be identified that would adversely impact waste combustor operations or result in environmental and health problems if combusted. [Minn. R. 7011.1250, subp. 1, Minn. R. 7011.1250, subp. 2]
TFAC 2	8	1530957	The Permittee shall maintain and abide by the Permittee's industrial waste management plan. The Permittee must maintain copies of all waste management plans for each facility that provides refuse derived fuel (RDF) to the Permittee. [Minn. R. 7007.0501, subp. 4, Minn. R. 7007.0800, subp. 5, Minn. R. 7007.0801, subp. 2(E), Minn. R. 7011.1250]
TFAC 2	9	1530956	In applications for permit reissuance, the Permittee shall include summary performance test data collected under the requirements of Minn. R. 7011.1270 which represent the current operating practices of the waste combustor. [Minn. R. 7007.0501, subp. 3]
TFAC 2	10	1530958	The Permittee must modify the industrial waste management plan whenever the management practices or solid waste identified in the plan have changed. The Permittee must submit the amended plan to the commissioner for approval. [Minn. R. 7011.1250, subp. 3]
TFAC 2	11	1530959	The Permittee shall maintain and abide by the Permittee's plan to reduce the level of toxic contaminants in ash at the facility. [Minn. R. 7007.0501, subp. 6(A), Minn. R. 7007.0800, subp. 5]

SI Id	Sequence	ID	Requirement
TFAC 2	1240	1530960	In applications for permit reissuance, the Permittee must provide for each of the previous five years, the amount of waste combusted, the amount of flue gas conditioning chemicals used, and the amount of ash disposed. The ratio of ash generated less flue gas conditioning agents to waste combusted shall be computed for each of the previous five years. The application shall also include data on the constituents of the waste combustor's ash and how to further reduce the level of toxic contaminants in the ash. [Minn. R. 7007.0501, subp. 6(B)]
TFAC 2	1245	1530962	The Permittee must perform ash sampling according to an ash sampling plan approved by the commissioner. The Permittee shall maintain the approved ash sampling plan at the facility. Proposed changes to sampling equipment or procedures must be submitted to the commissioner, Regional Environmental Management, Metro Region, Regular Waste Management and Wastewater Sector Unit for review and approval. The plan must contain at least the following information: A. specification of the training and experience qualifications of persons who collect ash samples; B. description of equipment used to collect, process, and store ash samples; C. identification of sampling equipment cleaning procedures and other actions taken to prevent sample contamination; D. identification of the location or locations where ash samples are collected; E. description of procedures used to collect grab samples; F. description of procedures used to process grab samples to form composite samples; G. description of chain-of-custody and sample storage procedures; and H. identification of ash sampling quality assurance and quality control measures. The Permittee shall submit the plan and any amendments to the plan to the Regular Facilities Unit in the Rochester Subdistrict Office for approval. [Minn. R. 7007.0801, subp. 2(D), Minn. R. 7035.2910, subp. 6]
TFAC 2	1260	1530964	The Permittee shall maintain ash management plans for disposal of the ash generated by the waste combustor, treatment of water generated from quenching the ash at the facility, and any plans which the applicant has for ash utilization. The plans shall include the sites and processes for management and final disposal of the ash, and shall identify any permits the Permittee needs to use each site or process, including permits for leachate treatment. The Permittee shall include the ash management with any air permit application. [Minn. R. 7007.0501, subp. 7]
TFAC 2	1280	1530966	Permit Appendices: This permit contains appendices as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in Appendices: A. Insignificant activities and general applicable requirements; B. 40 CFR pt. 63, subp. A requirements; C. Fugitive Emission Control Plan; D. Waste Composition Study; E. Industrial Solid Waste Management Plan; F. RDF Transfer Station and Unloading Area Housekeeping Plan; G. 1996 MSW Combustor Ash Testing Variance; and H. Ash Management Plan. [Minn. R. 7007.0800, subp. 2(A) & (B)]
TFAC 2	1290	1444571	The Permittee must comply with Minn. Stat. 116.385. The Permittee may not use trichloroethylene at its permitted facility including in any manufacturing, processing, or cleaning processes, except as described in Minn. Stat. 116.385, subd. 2(b) and 4. This is a state-only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7007.0100, subp. 7(X), Minn. Stat. 116.385]

SI Id	Sequence	ID	Requirement
TFAC 2	1300	1262799	PERMIT SHIELD: Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements. This permit shall not alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance. [Minn. R. 7007.1800(A)(2)]
TFAC 2	1380	1530967	Comply with Fugitive Emission Control Plan: The Permittee shall follow the actions and recordkeeping specified in the fugitive dust control plan in Appendix C of this permit. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors as requested by the Commissioner. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7009.0020, Minn. R. 7011.0150, Minn. Stat. 116.07, subd. 4a(a)]
TFAC 2	1390	1346407	The Permittee shall comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0090. Compliance shall be demonstrated upon written request by the MPCA. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
TFAC 2	1400	1346408	The Permittee shall comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0090. Compliance shall be demonstrated upon written request by the MPCA. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
TFAC 2	1410	1030618	Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted. [Minn. R. 7011.0020]
TFAC 2	1420	1479361	The Permittee must at all times properly operate and maintain the facilities and systems of treatment and control and the appurtenances related to them that are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. [Minn. R. 7007.0800, subp. 16(J)]
TFAC 2	1430	1059092	Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 16(J)]
TFAC 2	1440	1440483	Operation Changes: In any shutdown, breakdown, or deviation the Permittee must immediately or as soon as possible considering plant and personnel safety take all practical steps to modify operations to reduce the emission of any regulated air pollutant. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment are permitted to operate. [Minn. R. 7019.1000, subp. 4]
TFAC 2	1450	1030622	Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150. [Minn. R. 7011.0150]
TFAC 2	1460	1030623	Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act. [Minn. R. 7030.0010-7030.0080]
TFAC 2	1470	1030624	Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A). [Minn. R. 7007.0800, subp. 9(A)]
TFAC 2	1480	1030625	The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16. [Minn. R. 7007.0800, subp. 16]
TFAC 2	1490	1091249	Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in this permit. [Minn. R. ch. 7017]

SI Id	Sequence	ID	Requirement
TFAC 2	1500	1517542	Performance Test Notifications and Submittals: Performance Test Notification and Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due seven days before each Performance Test Performance Test Report: due 45 days after each Performance Test The Notification, Test Plan, and Test Report must be submitted in a format specified by the commissioner. [Minn. R. 7017.2017, Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2]
TFAC 2	1510	1532531	HCl Performance Test Report: The Permittee must include the SO2 inlet and outlet CEMS data recorded during the time of the performance test as an appendix to the test report. The Permittee must also include chlorine as part of the ultimate fuel analysis. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7017.2017, Minn. R. 7017.2035, subp. 3]
TFAC 2	1520	1030628	Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change. [Minn. R. 7017.2025, subp. 3]
TFAC 2	1530	1124511	Monitoring Equipment Calibration - The Permittee shall either: 1. Calibrate or replace required monitoring equipment every 12 months; or 2. Calibrate at the frequency stated in the manufacturer's specifications. For each monitor, the Permittee shall maintain a record of all calibrations, including the date conducted, and any corrective action that resulted. The Permittee shall include the calibration frequencies, procedures, and manufacturer's specifications (if applicable) in the Operations and Maintenance Plan. Any requirements applying to continuous emission monitors are listed separately in this permit. [Minn. R. 7007.0800, subp. 4(D)]
TFAC 2	1540	1030630	Operation of Monitoring Equipment: Unless noted elsewhere in this permit, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system. [Minn. R. 7007.0800, subp. 4(D)]
TFAC 2	1550	1370544	Recordkeeping: Retain all records at the stationary source, unless otherwise specified within this permit, for five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A). [Minn. R. 7007.0800, subp. 5(C)]
TFAC 2	1560	1030642	Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes. [Minn. R. 7007.0800, subp. 5(B)]
TFAC 2	1570	1532534	The Permittee must maintain records adequate to document compliance at the stationary source, including at a minimum: (1) the date, place, and time of any sampling or measurement; (2) the date or dates any analyses were performed; (3) the company or entity that performed the analyses; (4) the analytical techniques or methods used; (5) the results of such analyses; and (6) the operating conditions existing at the time of sampling or measurement. [Minn. R. 7007.0800, subp. 5(A)]
TFAC 2	1610	1530971	If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For expiring permits, these records shall be kept for a period of five years from the date the change was made or until permit reissuance, whichever is longer. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format. [Minn. R. 7007.1200, subp. 4]

SI Id	Sequence	ID	Requirement
TFAC 2	1620	1487345	These following 40 CFR 52.21(r)(6) requirements apply if a reasonable possibility (RP) as defined in 40 CFR 52.21(r)(6)(vi) exists that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test (either by itself or as part of the hybrid test at 40 CFR 52.21(a)(2)(iv)(f)) and found to not be part of a major modification, may result in a significant emissions increase (SEI). If the ATPA test is not used for the project, or if there is no RP that the proposed project could result in a SEI, these requirements do not apply to that project. The Permittee is only subject to the Preconstruction Documentation requirement for a project where a RP occurs only within the meaning of 40 CFR 52.21(r)(6)(vi)(b). Even though a particular modification is not subject to New Source Review (NSR), or where there isn't a RP that a proposed project could result in a SEI, a permit amendment, recordkeeping, or notification may still be required by Minn. R. 7007.1150 - 7007.1500. [Minn. R. 7007.0800, subp. 2(A), Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
TFAC 2	1630	1487346	Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following: 1. Project description 2. Identification of any emission unit whose emissions of an NSR pollutant could be affected 3. Pre-change potential emissions of any affected existing emission unit, and the projected post-change potential emissions of any affected existing or new emission unit. 4. A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the emission unit could have accommodated during the baseline period, an explanation of why the amounts were excluded, and any creditable contemporaneous increases and decreases that were considered in the determination. The Permittee shall maintain records of this documentation. [Minn. R. 7007.0800, subps. 4-5, Minn. R. 7007.1200, subp. 4, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
TFAC 2	1640	1487347	The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using the ATPA test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using potential emissions in the hybrid test. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if the hybrid test was used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of five years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
TFAC 2	1650	1487348	The Permittee must submit a report to the Agency if the annual summed (actual, plus potential if used in hybrid test) emissions differ from the preconstruction projection and exceed the baseline actual emissions by a significant amount as listed at 40 CFR 52.21(b)(23). Such report shall be submitted to the Agency within 60 days after the end of the year in which the exceedances occur. The report shall contain: a. The name and ID number of the Facility, and the name and telephone number of the Facility contact person. b. The annual emissions (actual, plus potential if any part of the project was analyzed using the hybrid test) for each pollutant for which the preconstruction projection and significant emissions increase are exceeded. c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
TFAC 2	1670	1440484	Shutdown Notifications: Notify the commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the Permittee does not have advance knowledge of the shutdown, the Permittee must notify the commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator must inform the commissioner of the cause of the shutdown and the estimated duration. The owner or operator must notify the commissioner when the shutdown is over. [Minn. R. 7019.1000, subp. 3]

SI Id	Sequence	ID	Requirement
TFAC 2	1680	1440485	Breakdown Notifications: Notify the commissioner within 24 hours of a breakdown of more than one hour of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the Permittee must inform the commissioner of the cause of the breakdown and the estimated duration. The Permittee must notify the commissioner when the breakdown is over. [Minn. R. 7019.1000, subp. 2]
TFAC 2	1700	1440486	Notification of Deviations Endangering Human Health or the Environment: Immediately after discovery of the deviation or immediately after when the deviation reasonably should have been discovered, notify the commissioner either orally or by e-mail, or telephone the state duty officer at 800-422-0798 or 651-649-5451, of any deviation from permit conditions that could endanger human health or the environment. [Minn. R. 7019.1000, subp. 1]
TFAC 2	1703	1440487	Notification of Deviations Endangering Human Health or the Environment Report: Within two working days of discovery, notify the commissioner in writing of any deviation from permit conditions that could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. [Minn. R. 7019.1000, subp. 1]
TFAC 2	1710	1370545	The Permittee must submit a semiannual deviations report : Due semiannually, by the 30th of January and July. The first semiannual report submitted by the Permittee must cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. Submit this on form DRF-2 (Deviation Reporting Form). If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(B)(2)]
TFAC 2	1730	1376486	Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed. Upon adoption of a new or amended federal applicable requirement, and if there are three or more years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150 - 7007.1500]
TFAC 2	1740	1030651	Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H). Performance testing deadlines from the General Provisions of 40 CFR pt. 60 and pt. 63 are examples of deadlines for which the MPCA does not have authority to grant extensions and therefore do not meet the requirements of Minn. R. 7007.1400, subp. 1(H). [Minn. R. 7007.1400, subp. 1(H)]
TFAC 2	3340	1370547	The Permittee must submit a compliance certification : Due annually, by the 31st of January (for the previous calendar year). Submit this on form CR-04 (Annual Compliance Certification Report). This report covers all deviations experienced during the calendar year. If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(D)]
TFAC 2	3341	1370548	Within 15 days of a request from the Commissioner, the Permittee must provide a complete summary of all performance tests required at the facility including the subject item, pollutant, most recent test date (if applicable), and the date of the next test in an approved format. [Minn. R. 7007.0800, subp. 16(L)]
TFAC 2	3342	1030634	The Permittee shall submit an application for permit reissuance : Due 180 calendar days before Permit Expiration Date. [Minn. R. 7007.0400, subp. 2]
TFAC 2	3343	1180641	Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance. Submit in a format specified by the Commissioner. [Minn. R. 7019.3000-7019.3100]
TFAC 2	3344	1330471	Emission Fees: due 30 days after receipt of an MPCA bill. [Minn. R. 7002.0005-7002.0085]
TFAC 2	3345	1285002	The Permittee shall submit excess emission/downtime report : Due by 30 days after the end of each calendar quarter following permit issuance. Submit this on form DRF-1 (Excess Emissions Reporting) as amended. The EER shall indicate all periods of monitor bypass and exceedances of the limit including those allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions, as well as a summary of audit results and frequencies. If no excess emissions, downtime or bypasses occurred during the quarter, submit a signed report supplying the necessary monitor data needed to verify this. [Minn. R. 7017.1110, subp. 1-2]

SI Id	Sequence	ID	Requirement
COMG 1	26	1530978	During start-up from a cold furnace, the Permittee must use auxiliary fuels to achieve combustion chamber operating temperature. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1240, subp. 3]
COMG 1	27	1530979	The Permittee must use natural gas to warm the combustion and pollution control devices and maintain good combustion conditions in the combustion chamber from the time the RDF feed has been discontinued until the combustion chamber is clear of combustible material or active combustion ceases. [Minn. R. 7007.0800, subp. 2(A)]
COMG 1	28	1530980	Fuel Type: Refuse derived fuel as defined in Minn. R. 115A.03, subp. 21 and natural gas. The Permittee may burn wood, used oil generated on site and as defined in Minn. R. 7045.0020, subp.60a and sorbents that contain used oil, and other nonhazardous wastes approved through the facility's Industrial Waste Management Plan. [Minn. R. 7007.0800, subp. 2(A)]
COMG 1	29	1530995	The Permittee must not combust wood, used oil, or other approved nonhazardous wastes in any waste combustor as a separate waste stream. [Minn. R. 7007.0800, subp. 2(A)]
COMG 1	30	1530996	The Permittee must not combust yard waste or tires. [Minn. R. 7011.1220, subp. 2]
COMG 1	35	1530981	The Permittee must develop and update on a yearly basis a site specific operating manual that must, at a minimum, address the following elements of EQUI 1 and EQUI 2 operation: A. a summary of the applicable state rules and federal regulations to the activities described in the facility's air emissions permit; B. a description of basic combustion theory applicable to the facility's waste combustor unit; C. procedures for receiving, handling, and feeding solid waste; D. EQUI 1 and EQUI 2 start-up, shutdown, and malfunction procedures; E. procedures for maintaining proper combustion air levels; F. procedures for operating the waste combustors, EQUIs 1 and 2, within the standards established in Minn. R. 7011.1201 to 7011.1294; G. procedures for responding to periodic upset or off-specification conditions; H. procedures for minimizing particulate matter carryover; I. procedures for monitoring the degree of solid waste burnout; J. procedures for handling ash; K. procedures for monitoring waste combustor emissions; L. procedures for reporting and record keeping; M. timetables and procedures for routine inspection and maintenance of equipment affecting air emissions; N. procedures for activating communications and alarm systems; and O. procedures to implement the facility's industrial waste management plan. The Permittee must also include any operational changes resulting from emissions performance testing results in the operating manual. The Permittee must keep the operating manual in a location easily accessed by chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1275, subp. 3]

SI Id	Sequence	ID	Requirement
COMG 1	36	1530997	The Permittee must establish a program to review the plant-specific operating manual with waste combustor facility personnel who have responsibilities which affect the operation of EQUI 1 and/or EQUI 2, including, but not limited to, chief facility operators, shift supervisors, operator supervisors, control room personnel, ash handlers, maintenance personnel, and crane/load handlers. The waste combustor facility personnel must complete a program of instruction and on-the-job training based on the plant-specific operating manual. The Permittee must train facility personnel to maintain compliance with Minn. R. 7011.1201 to 7011.1294. Individual training must be specific to the position held and shall, at a minimum, address the items in Minn. R. 7011.1275, subp. 3. The training program must require: A. initial review of the operating manual prior to assumption of any job-related activities affecting air emissions; B. review of the operating manual relevant to a newly assigned position before assumption of new job-related activities affecting air emissions; C. that those without waste combustor or boiler operation experience, initially review the operating manual and work under the direct supervision of a certified operator or a certified operator's designee before assumption of job-related activities affecting air emissions for 40 hours; D. annual review of the operating manual; and E. the Permittee must update the manual annually. [Minn. R. 7011.1275, subp. 1-2]
COMG 1	39	1530998	The Permittee must maintain as a part of the operating record required by Minn. R. 7011.1285, subp. 2, a record of the identity of all personnel who have received training and the number of training hours. The records shall be provided to the commissioner on demand. [Minn. R. 7011.1275, subp. 4]
COMG 1	40	1530999	The Permittee must maintain at the facility for five years a record of the names of all personnel that the waste combustor examiner has certified. This record shall contain the examination dates, the nature or content of the examination, the full name of the individual certified, the date of certification, and the signature of the certified examiner for that facility with the following certification: "I certify under penalty of law that, based on my examination of these persons, these persons have demonstrated the knowledge and skills that qualify these persons to be fully certified operators at (name of waste combustor facility) in accordance with the procedures of Minnesota Rules, parts 7011.1280 to 7011.1284.". [Minn. R. 7011.1284, subp. 3]
COMG 1	41	1531000	The Permittee must maintain at the facility for five years a record of the names of all personnel who have obtained provisional and/or full certification by ASME. [Minn. R. 7011.1284, subp. 3a]
COMG 1	42	1531001	The Permittee must allow the commissioner to review all records related to the certification of operators including the facility's program for examination and certification of operators, the record required in Minn. R. 7011.1284, subp. 3, the content of the examinations, and the results on an individual's examination. [Minn. R. 7011.1284, subp. 4]
COMG 1	43	1531002	A chief facility operator or shift supervisor who holds a certificate as described in Minn. R. 7011.1281, subp. 1 must be present at the waste combustor facility at all times when solid waste is being combusted, except if individuals are assuming the duties of chief facility operator or shift supervisor, the individuals must obtain full certification as described in Minn. R. 7011.1281 within six months of assuming such duties. [Minn. R. 7011.1240, subp. 1(A), Minn. R. 7011.1240, subp. 1a, Minn. R. 7011.1281]
COMG 1	44	1531003	The Permittee must maintain and keep all records on site and all required submittals in paper copies or electronic format for at least five years. The Permittee must make all records available for submittal to the Administrator or Commissioner, or for onsite review by an inspector, Administrator, or Commissioner. The Permittee shall retain all records of continuously measured emissions for a minimum of five years. The Permittee shall retain current records of design, construction, installation, calibration, and use of nozzles and orifices for boiler load level monitoring. [Minn. R. 7007.0800, subp. 5, Minn. R. 7011.1285, subp. 1]

SI Id	Sequence	ID	Requirement
COMG 1	66	1531004	The Permittee must maintain a record of the information listed below. The Permittee must maintain a permanent record of continuously measured parameters. The record of monitoring shall contain: a) the calendar date; b) the following measurements recorded in a manner that allows the data to be immediately accessed upon inspection by the Commissioner: 1) all six-minute opacity readings; 2) all one-hour average sulfur dioxide emission concentrations at the inlet and outlet of the acid gas control device if compliance is based on a percent reduction, or at the outlet only if compliance is based on the outlet emission limit; and 3) all one-hour average carbon monoxide and nitrogen oxide emission concentrations, steam flow, or alternative unit load measurement parameter as described in Minn. R.7011.1265, subpart 4a, combustion chamber temperature, and flue gas temperatures at the inlet of the particulate matter control device; c) the following average concentrations and parameters: 1) all 24-hour daily geometric average percent reductions in sulfur dioxide emissions or all 24-hour daily geometric average sulfur dioxide emission concentrations, as applicable; 2) all 24-hour daily arithmetic average nitrogen oxides emission concentrations; 3) all four-hour block or 24-hour daily arithmetic average carbon monoxide emission concentrations, as applicable; and 4) all four-hour block arithmetic average unit load levels, and particulate matter control device inlet temperatures. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7011.1260, subp. 6]
COMG 1	67	1531005	The Permittee must submit a report containing the results of performance tests conducted to determine compliance with waste combustor unit emission limits whenever performance testing is conducted. The Permittee must submit the report according to the conditions of Minn. R. 7017.2035. [Minn. R. 7011.1285, subp. 6]
COMG 1	68	642844	Alternative continuous measuring methods in place of steam flow may be installed and operated, provided that the method continuously measures the waste combustor unit load, is equivalent to results obtained when using the method in Minn. R. 7011.1265, subp. 4, and the use of the method is approved by the commissioner. [Minn. R. 7011.1265, subp. 4a]
COMG 1	69	1531006	The Permittee must use the performance test methods and procedures specified in Minn. R. 7017.2001 to 7017.2060 except as modified in Minn. R. 7011.1265. Not operating a sorbent injection system for the sole purpose of testing in order to demonstrate compliance with the percent reduction standards for hydrogen chloride is not a modification under Minn. R. 7007.0100, subpart 14. [Minn. R. 7011.1265, subp. 1]
COMG 1	83	1531007	The Permittee must maintain records and submit reports as required in Minn. R. 7011.1285. The Permittee is subject to the recordkeeping and reporting requirements in Minn. R. 7007.0800, subparts 5 and 6. The Permittee must maintain on site all submittals required by Minn. R. 7011.1285 as paper copies for five years. [Minn. R. 7011.1285, subp. 1]
COMG 1	89	1531008	Recordkeeping: The Permittee must maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative. [Minn. R. 7007.0800, subp. 2(A)]
COMG 1	90	1531009	The Permittee must retain all continuously measured emission records for a minimum of five years. Regarding boiler load level monitoring, the Permittee must retain current records of design, construction, installation, calibration, and use of nozzles and orifices. The Permitee must maintain the above records in a reviewable format at the facility and make them available upon request. [Minn. R. 7007.0800, subp. 2(A)]
COMG 1	91	1531010	Shutdown or Breakdown Reporting Requirements: The Permittee must comply with Minn. R. 7019.1000 and Minnesota Statutes, section 116.85. Notification to the commissioner for any shutdowns/breakdown is not required if RDF feed is planned to be taken off-line in conjunction with a shutdown. [Minn. R. 7011.1240, subp. 8]

SI Id	Sequence	ID	Requirement
COMG 1	97	1531124	Quarterly Report: due 30 days after end of each calendar quarter following permit issuance. The report must contain the following items: A. calendar date; B. sulfur dioxide, nitrogen oxide, and carbon monoxide emissions, the maximum load level for each waste combustor unit, and particulate matter control device temperatures as recorded by Minn. R. 7011.1260, subp. 6(C) and the daily maximum opacity reading as recorded by Minn. R. 7011.1260, subp. 6(B)(1). The Permittee may choose to provide this information in tabular or graphic form. The graphs shall be prepared as follows: (1) the graph shall represent one operating parameter or pollutant; (2) the applicable limit of the parameter or pollutant shall be indicated on the graph; and (3) data shall be expressed in the same units as the applicable operating parameter or emissions limit; C. instances of dumpstack use; D. the identification of operating days when any of the average emission concentrations, percent reductions, operating parameters specified under Minn. R. 7011.1260, subp. 6(C) or Minn. R. 7011.1272, subp. 2, or the opacity level exceeded the applicable limits. The report shall include the emission levels recorded during the exceedance, reasons for such exceedances as well as a description of corrective actions taken; E. the percent of the operating time for the quarter that the opacity CEMS was operating and collecting valid data;
			F. the identification of operating days for which the minimum number of hours that emission concentrations, percent reductions, operating parameters specified under Minn. R. 7011.1260, subp. 6(C) or Minn. R. 7011.1272, subp. 2, or the opacity level have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken; G. the results of daily sulfur dioxide, nitrogen oxides, and carbon monoxide CEMS drift tests and accuracy assessments as required in Minn. R. 7011.1260, subp. 5; H. the information required in Minn. R. 7011.1285, subp. 2(C), (D), and (E), summarized to reflect quarterly totals; I. a compliance certification as required in Minn. R. 7007.0800, subp. 6(C); and J. if an additive is used to comply with mercury or PCDD/PCDF emission limits, the total additive used during the calendar quarter, as specified in Minn. R. 7011.1272, subp. 3(B), with supporting calculations. [Minn. R. 7011.1285, subp. 3]
COMG 2	2230	1440488	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]
COMG 2	2240	1531011	Nitrogen Oxides: Nitrogen Oxides: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 1 and EQUI 2, each. For nitrogen oxides, the arithmetic average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time must be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1260, subp. 4(E), Minn. R. 7017.1010, subp 1]
COMG 2	2242	1531013	Sulfur Dioxide: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 1 and EQUI 2, each. For sulfur dioxide, the geometric average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time shall be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1260, subp. 4(D), Minn. R. 7017.1010, subp. 1]

SI Id	Sequence	ID	Requirement
COMG 2	2244	1531014	Compliance with the sulfur dioxide emission limit and percent reduction must be determined by using a continuous emission monitor to measure sulfur dioxide and calculating a 24-hour daily geometric mean emission concentration and daily geometric mean percent reduction using 40 CFR pt. 60, Appendix A, Method 19, section 5.4, as amended, to determine the daily geometric average percent reduction in the potential sulfur dioxide emission concentration. [Minn. R. 7011.1260, subp. 4a(A)]
COMG 2	2246	1531015	Compliance with the nitrogen oxides emission standards must be determined by using a continuous emission monitor for measuring nitrogen oxides and calculating a 24-hour daily arithmetic average emission concentration using 40 CFR pt. 60, Appendix A, Method 19, section 4.1, as amended. [Minn. R. 7011.1260, subp. 4a(B)]
COMG 2	2248	1531016	The following averaging periods apply to continuous monitoring data collection, reduction, and averaging periods: - For particulate matter control device inlet temperature monitoring, four-hour arithmetic block averages calculated from four consecutive one-hour arithmetic averages. - For steam flow, four-hour arithmetic block averages. - For carbon monoxide, a daily 24-hour arithmetic average measured between 12 midnight and the following midnight. The four-hour and 24-hour average must be calculated from one-hour arithmetic averages. At least four points equally spaced in time shall be used to calculate each one-hour average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. - For oxygen or carbon dioxide, a one-hour average. [Minn. R. 7011.1260, subp. 4(A), Minn. R. 7011.1260, subp. 4(B), Minn. R. 7011.1260, subp. 4(C), Minn. R. 7011.1260, subp. 4(G)]
COMG 2	2260	1440489	Certification Test Plan due 30 days before Certification Test. Certification Test Pretest Meeting due seven days before Certification Test. Certification Test Report due 45 days after Certification Test. Notify the commissioner prior to making any planned change or if unforeseen, within two working days, when a monitor must be recertified as outlined in Minn. R. 7017.1050, subp. 2. Test plans and reports must be submitted in a format specified by the commissioner. [40 CFR 60.7(a)(5), Minn. R. 7017.1060, subp. 1-3, Minn. R. 7017.1080]
COMG 2	2270	1531017	Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. Continuous monitors must be operated to measure and record data for at least 75 percent of the hours per day for 90 percent of the days of the calendar quarter that the waste combustor is operating and combusting solid waste. [40 CFR 60.13(e), Minn. R. 7011.1260, subp. 5(B), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090]
COMG 2	2280	1363372	QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan must be on site and available for inspection within 30 days after monitor certification. The plan must contain all of the information required by 40 CFR Part 60, Appendix F, Section 3. The plan must include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list. [40 CFR pt. 60, Appendix F, 3, Minn. R. 7017.1010, subp. 1(C), Minn. R. 7017.1170, subp. 2]
COMG 2	2290	1363373	CEMS QA/QC: The Permittee is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 60, Appendix F as amended and maintain a written QA/QC program available in a form suitable for inspection. [40 CFR 60.13(a), 40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(A)]
COMG 2	2300	1363374	CEMS Daily Calibration Drift Test: Check the zero (low level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily. The zero and span must, at a minimum, be adjusted whenever the drift exceeds two times the limit specified in 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F, Section 4.3.1 must be used to determine out-of-control periods for CEMS. [40 CFR 60.13(d)(1), 40 CFR pt. 60, Appendix F, 4.1, Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1170, subp. 3]
COMG 2	2310	1363375	Recordkeeping: The Permittee shall retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [40 CFR 60.7(f), Minn. R. 7017.1130, Minn. R. 7019.0100, subp. 1]

SI Id	Sequence	ID	Requirement
COMG 2	2320	1363376	CEMS Monitor Design: Each CEMS shall be designed to complete a minimum of one cycle of sampling, analyzing, and data recording in each 15-minute period. [40 CFR 60.13(e)(2), Minn. R. 7017.1010, subp. 1(A)]
COMG 2	2360	1440490	CEMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the CEMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
COMG 3	2680	1440500	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]
COMG 3	2700	1376499	Monitoring Data: All COMS data must be reduced to six-minute averages. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each six-minute period. [40 CFR 60.13(e)(1), 40 CFR 60.13(h)(2), Minn. R. 7017.1200, subp. 1-3]
COMG 3	2720	1536888	Emissions Monitoring: The Permittee must use a COMS to measure emissions from EQUI 1 and EQUI 2, each. [40 CFR pt. 60, Subp. Cb, Minn. R. 7017.1010, subp 1]
COMG 3	2730	1265260	Continuous Operation: COMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A COMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1090]
COMG 3	2740	1265261	QC Program: the facility owner or operator must conduct quality assurance and quality control as specified in Procedure 3 - Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources, 40 CFR Pt. 60, Appendix F. [Minn. R. 7017.1215]
COMG 3	2750	1531217	COMS Daily Calibration Drift Test: The Calibration Drift must be quantified and recorded at zero (low-level) and upscale (high-level) calibration drift at least once daily according to the procedures listed in 40 CFR 60.13(d)(2) and pt. 60, Appendix B, PS 1. The zero and upscale calibration levels must be determined using the span value specified in the applicable requirement. If the applicable requirement does not specify a span value, a span value of 60, 70, or 80 percent opacity must be used unless an alternative span value is approved by the commissioner. 40 CFR pt. 60, Appendix F must be used to determine out-of-control periods for COMS. [40 CFR 60.13(d)(1), Minn. R. 7017.1215]
COMG 3	2760	1265263	COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed. [Minn. R. 7017.1220]
COMG 3	2780	1265264	Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [Minn. R. 7017.1130]
COMG 3	2790	1531218	Notification of Compliance Status: Due 30 days before performance test required by 40 CFR 60.8 if COMS data results will be used in lieu of 40 CFR, Part 60, Appendix A, Method 9 observation data to determine compliance with the opacity standard as allowed by 40 CFR 60.11(e)(5). [40 CFR 60.7(a)(7)]
COMG 3	2830	1440501	COMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the COMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [Minn. R. 7017.1050, subp. 1]
EQUI 1	1	1531018	Steam Flow <= 122,719 pounds per hour on a four hour block average. This is 110% of the steam production during the most recent EQUI 1 test (April 05-06, 2023) that demonstrated compliance for PCDD/PCDF emissions. Steam production shall not exceed 122,719 pounds per hour until a new test is conducted to establish a new maximum steam production capacity or as allowed by Minn. R. 7011.1240, subp. 5 as described below. [Minn. R. 7011.1240, subp. 5]

SI Id	Sequence	ID	Requirement
EQUI 1	2	1531020	Applicability of Standards. The standards of Minn. R. 7011.1227, Minn. R. 7011.1228, Minn. R. 7011.1229, Minn. R. 7011.1230, Minn. R. 7011.1233, Minn. R. 7011.1240, subp. 2, and Minn. R. 7011.1272, subp. 2, apply at all times when waste is being continuously burned, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction does not exceed three hours. Fugitive emissions standards applicable to ash conveying systems do not apply during maintenance and repair of ash conveying systems. "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown are not considered malfunctions. The start-up period commences when the waste combustor begins the continuous burning of solid waste and does not include any warm-up period when the waste combustor is combusting fossil fuel or other solid fuel. Continuous burning is the continuous, semicontinuous, or batch feeding of solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when municipal solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1215, subp. 4]
EQUI 1	3	1531021	The Permittee must not cause gases to be emitted from EQUI 1 in excess of the applicable standards of Minn. R. 7011.1227 and 7011.1228. Emissions, except opacity, must be calculated under standard conditions corrected to seven percent oxygen on a dry volume basis. The Permittee may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen. [Minn. R. 7011.1225, subp. 1(A)]
EQUI 1	4	1531022	The Permittee must limit combustion ash from an ash conveying system, or buildings or enclosures of ash conveying systems, including conveyor transfer points, Visible Emissions <= 5 percent of the observation period (i.e. 9 minutes per three-hour period) (hourly observation period using three 1-hour observation periods), as determined by 40 CFR pt. 60, Appendix A, Method 22, as amended. This limit does not apply to visible emissions discharged inside buildings or enclosures of ash conveying systems. [Minn. R. 7011.1225, subp. 1(B)]
EQUI 1	5	1531023	The Permittee must limit emissions of Front-half Particulate Matter <= 0.011 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. [Minn. R. 7011.1227]
EQUI 1	6	1531024	The Permittee must limit emissions of Particulate Matter <= 0.020 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. [Minn. R. 7011.1227]
EQUI 1	7	1545363	The Permittee must limit emissions of Particulate Matter <= 25 milligrams per dscm, corrected to 7 percent oxygen. [Minn. R. 7007.0800, subp. 2(A)]
EQUI 1	8	1531026	The Permittee must limit Opacity <= 10 percent opacity 6-minute average, calculated using 36 or more data points equally spaced over a six-minute period. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp.4(F)]
EQUI 1	9	1531027	The Permittee must limit emissions of Sulfur Dioxide <= 29 parts per million or 75 percent control, whichever is less stringent. The Permittee must measure emissions using the geometric average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time shall be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(D)]
EQUI 1	10	1531028	The Permittee must limit emissions of Carbon Monoxide <= 200 parts per million using a daily 24-hour arithmetic average measured between 12 midnight and the following midnight. The four-hour and 24-hour average must be calculated from one-hour arithmetic averages. At least four points equally spaced in time shall be used to calculate each one-hour average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(C)]

SI Id	Sequence	ID	Requirement
EQUI 1	11	1531029	The Permittee must limit emissions of Nitrogen Oxides <= 250 parts per million using the arithmetic average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time must be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]
EQUI 1	12	1531030	The Permittee must limit emissions of Nitrogen Oxides <= 230 parts per million 24-hour block average basis when averaging nitrogen oxide emissions across the waste combustor facility. If emissions averaging is used, the Permittee shall average nitrogen oxide emissions according to the procedures in 40 CFR 60.33b(d)(1). Prior to using emissions averaging to comply with this limit, the Permittee must identify that they plan to use emissions averaging in the annual report required in Minn. R. 7011.1285, subp. 4. Partial year averaging is allowed upon written approval of the commissioner. [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]
EQUI 1	13	1531031	The Permittee must limit emissions of Lead <= 400 microgram per dry std cubic meter, measured using 40 CFR pt. 60, Appendix A, Method 29, as amended. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for lead. The average of the lead emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]
EQUI 1	14	1531032	The Permittee must limit emissions of Muni Waste Combust Organics <= 30 nanogram per dry std cubic meter, measured as total PCDD/PCDF. The Permittee must use 40 CFR pt. 60, Appendix A, Method 23, as amended, to determine compliance with the PCDD/PCDF emission limits. The minimum sample time is four hours per test run. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 23 test run for PCDD/PCDF. The average of the PCDD/PCDF test runs is used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(B)]
EQUI 1	15	1531033	The Permittee must limit emissions of Cadmium <= 35 microgram per dry std cubic meter, measured using 40 CFR pt. 60, Appendix A, Method 29, as amended. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for cadmium. The average of the cadmium emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]
EQUI 1	16	1531034	The Permittee must limit emissions of Hydrogen Chloride <= 29 parts per million or 95 percent control, whichever is less stringent. The Permittee must use 40 CFR pt. 60, Appendix A, Method 26 or 26A, or title 40 CFR pt. 63, Appendix A, Method 320, as amended, for determining the hydrogen chloride emission rate. The minimum sampling time is one hour. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 26 test run for hydrogen chloride. The average of the hydrogen chloride emission concentration or percent reduction is used to determine compliance. The Permittee must use the formula in Minn. R. 1265, subp 3(A) to calculate the percentage reduction in the potential hydrogen chloride emissions. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(A)]
EQUI 1	17	1531035	The Permittee must limit emissions of Mercury <= 50 microgram per dry std cubic meter or 85% removal (short term), whichever is less stringent. The Permittee must use 40 CFR pt. 60, Appendix A, Method 29, as amended, for measuring emissions of mercury. To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device must be used. The minimum sample volume is 1.7 dscm. The maximum sample run time is two hours. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for mercury. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]
EQUI 1	18	1531038	The Permittee must limit emissions of Mercury <= 30 micrograms per dscm or 85% removal (long-term), whichever is less stringent. The Permittee must use 40 CFR pt. 60, Appendix A, Method 29, as amended, for measuring emissions of mercury. To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device must be used. The minimum sample volume is 1.7 dscm. The maximum sample run time is two hours. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for mercury. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]
EQUI 1	19	1531039	The Permittee must limit Fuel Usage <= 180 gallons per hour of used oil and used oil sorbents. [Minn. R. 7007.0800, subp. 2(A)]
EQUI 1	20	1531040	The Permittee must limit Fuel Usage > 30 percent by weight RDF of the total fuel input as measured on a 24-hour basis. On each day, the Permittee must calculate the fuel feed stream composition as the ratio of the weights of RDF to RDF and all other fuels delivered to the combustion chamber, for the previous calendar day. [Minn. R. 7007.0800, 2(A), Minn. R. 7011.1201, subp. 17]

SI Id	Sequence	ID	Requirement
EQUI 1	21	1531041	Daily Operating Record. The Permittee must maintain on-site a daily record for the operation of EQUI 1. The record must contain: - the calendar date; - the hours of operation; - the weight of waste (RDF) combusted (in tons); - the weight of waste requiring disposal at a solid waste land disposal facility, including separated noncombustibles, excess waste, and ash; - the amount and description of industrial solid waste received each day, the generator's name, and the method of handling; - the measurements and determination of emissions averages as required in Minn. R. 7011.1260, subpart 6; - results of performance tests conducted on waste combustor units as required in this permit; - instances of dumpstack use; - the names of persons who have completed initial review or subsequent annual review of the operating manual; - calendar dates whenever any of the pollutants or parameter levels recorded in 40 CFR 62.15305(b) or the opacity level recorded in 40 CFR 62.15305(a)(1) did not meet the emission limits or operating levels specified in 40 CFR pt. 62, subp. JJJ. - the reasons for exceeding any of the applicable emission limits, percent reductions, or operating levels and parameters specified in this permit, or six-minute average COMS measurements that exceed the opacity limit, and a description of the corrective actions the Permittee took, or is taking, to meet the emission limits or operating levels. - reasons for not obtaining the minimum number of hours or collecting the minimum amount of data required under 40 CFR 62.15205 and 62.15280 for sulfur dioxide or operational data for opacity, carbon monoxide, steam flow, load levels of the municipal waste combustion unit, and temperatures of the flue gases at the inlet of the particulate matter control device, and a description of corrective actions the Permittee took, or is taking, to meet the emission limits or operating levels.
			- the date of the calibration of all signal conversion elements associated with steam flow monitoring as required in Minn. R. 7011.1265, subp. 4. - the time when RDF begins feeding and the unit load of the steam turbine at that time; - the time when the RDF feed to the combustion chamber ceases; - the time when PM control equipment bypass begins; - the time when PM control equipment bypass ceases; - the time when auxiliary fuel use begins; - the time when auxiliary fuel use ceases; - the quantity of used oil and used oil sorbents burned on a gallon per hour basis; - the number of hours per day that the used oil an used oil sorbents are burned; - the source of the used oil; - the weight of wood combusted (in tons); - the ratio of RDF weight to the weight of RDF and all other fuels delivered to the combustion chamber for the previous 24-hour basis; - if the Permittee uses an additive to control Hg or PCDD/PCDF, the reasons for not maintaining the additive system operating parameter as determined in Minn. R. 7011.1272, subp. 2 and the corrective actions taken; and - if the Permittee uses an additive to control Hg or PCDD/PCDF, the reasons for not maintaining the additive mass feed rates as determined in Minn. R. 7011.1272, subp. 1 and the corrective actions taken. [Minn. R. 7007.0800, subps. 4-5, Minn. R. 7011.1285, subp. 2]
EQUI 1	22	1531042	During the annual PCDD/PCDF performance test and the two weeks preceding the annual PCDD/PCDF performance test, no waste combustor maximum demonstrated capacity is applicable. The commissioner shall waive the maximum demonstrated capacity limit for the purpose of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions, provided a written notification is submitted to the commissioner 30 days prior to undertaking any of the activities identified in this item, with the following information: (1) a description of the proposed project, and the outcome the project is designed to evaluate; (2) how the project conforms with the activities described in this subpart for which the maximum demonstrated capacity limit can be waived; and (3) the length of time the project will take to complete. [Minn. R. 7011.1240, subp. 5]

SI Id	Sequence	ID	Requirement
EQUI 1	23	1531043	Exceeding continuously monitored emission limits. If accurate and valid data results collected from continuous monitors for sulfur dioxide, nitrogen oxides, or carbon monoxide data exceed emission limits established in Minn. R. 7011.1225 or in this permit after normal start-up, the Permittee must undertake the following actions: A. The Permittee must report the exceedance(s) to the Commissioner as soon as reasonably possible giving consideration to matters of plant or worker safety, or access to communications. B. The Permittee must commence appropriate repairs or modifications to return EQUI 1 to compliance within 72 hours of the exceedance. C. If EQUI 1 cannot be returned to compliance within 72 hours of the occurrence of the exceedance, the Permittee must shut down EQUI 1. If the modifications to return EQUI 1 to compliance require an amendment of this permit, the Permittee must shut down EQUI 1 within 72 hours of the exceedance. D. When repairs or modifications have been completed, the Permittee must demonstrate to the Commissioner that EQUI 1 is in compliance. The Permittee may start up EQUI 1 after the Permittee has notified the Commissioner in writing of the date the Permittee plans to start up EQUI 1 and the date that compliance testing is scheduled. The Permittee must submit notification at least ten days in advance of the compliance test date. [Minn. R. 7011.1260, subp. 7]
EQUI 1	24	1531044	The Permittee must calibrate, maintain, and operate a continuous opacity monitoring system when burning solid waste. The monitoring systems must continuously read and record the following outputs: 1) for carbon monoxide at the outlet of EQUI 1; 2) for steam flow or an alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, in waste combustors which recover heat with a boiler; 3) for flue gas opacity, at a location after which the flue gas has exited the air pollution control equipment; and 4) for oxygen or carbon dioxide at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored, to report corrected concentrations of regulated pollutants; 5) for nitrogen oxides; and 6) for sulfur dioxide. If the Permittee chooses to determine compliance by monitoring the percent reduction of sulfur dioxide emissions, monitors shall be installed at the inlets and outlets of the air pollution control system. [Minn. R. 7011.1260, subp. 3, Minn. R. 7011.1265, subp. 4]
EQUI 1	25	1531045	Steam flow measurement method. The method contained in ASMEPTC 4.1, section 4, incorporate by reference in Minn. R. 7011.1205, must be used for calculating the steam flow required under Minn. R. 7011.1260, subpart 3, item A, subitem (2). The recommendations of Application: Part II of Fluid Meters, Interim Supplement 19.5 on Instruments and Apparatus, chapter 4, incorporated by reference in Minn. R. 7011.1205, must be followed for design, construction, installation, calibration, and use of nozzles and orifices, except that measurement devices such as flow nozzles and orifices are not required to be recalibrated after they are installed. All signal conversion elements associated with steam flow measurements must be calibrated according to the manufacturer's instructions before each PCDD/PCDF test, and at least once per year. This annual calibration must be recorded in the daily operating record as described in Minn. R. 7011.1285, subpart 2. [Minn. R. 7011.1265, subp. 4]
EQUI 1	26	1531046	Operation during performance testing. The Permittee must report operating conditions to the commissioner, including operating parameters of the air pollution control equipment, flue gas temperatures, air flow rates, and pressure drop across the combustion system. [Minn. R. 7011.1265, subp. 6]

SI Id	Sequence	ID	Requirement
EQUI 1	27	1531047	Exceeding emission limits. If accurate and valid data results from a performance test demonstrate an exceedance of a standard of performance under Minn. R. 7011.1225 or in the air emission facility permit after normal start-up, the Permittee must undertake the following actions: A. The Permittee must report the exceedance to the commissioner as soon as reasonably possible giving considerations to matters of plant or worker safety, and comply with the applicable reporting provisions of Minn. R. 7007.0800, subp. 6; B. The Permittee must take appropriate steps to return EQUI 1 to compliance and must demonstrate compliance by conducting a performance test within 60 days of the initial report of the exceedance, conduct a performance test and submit the results to the commissioner to demonstrate compliance with this permit; C. If Permittee does not demonstrate compliance within 60 days of the initial report of the exceedance, shut down EQUI 1 on the 61st day; D. EQUI 1 may then be restarted solely to conduct performance testing after Permittee has notified the commissioner in writing of the date on which Permittee plans to restart operation of EQUI 1. Notification must be at least 10 days in advance of the date EQUI 1 will resume operation. The notice must state the date performance testing will be conducted. E. Notwithstanding item D, if shutdown under item C is required, EQUI 1 may be restarted after demonstrating compliance and upon approval by the commissioner. [Minn. R. 7011.1265, subp. 11, Minn. Stat. 116.85, subd. 3]
EQUI 1	28	1531048	If the Permittee is required or chooses to conduct testing for mercury emissions every 90 days, Minn. R. 1265, subp. 3(D)(1) and (2) applies: (1) Procedures to determine compliance with the short-term mercury emission concentration limit are described in Minn. R. 7011.1265, subp. 3(D)(1)(a). If EQUI 1 does not show compliance as determined in Minn. R. 7011.1265, subp. 3(D)(1)(a), compliance must be determined as described in Minn. R. 7011.1265, subp. 3(D)(1)(b) and (c). - EQUI 1 is in compliance with the mercury concentration limit if the arithmetic average of three or more samples is less than or equal to the applicable short-term mercury emission concentration limit. - If the average computed in Minn. R. 7011.1265, subp. 3(D)(1)(a) exceeds the short-term mercury emission concentration limit, the removal efficiency for each run must be computed as provided in Minn. R. 7011.1265, subp. 3(D)(1)(b). - EQUI 1 is in compliance with the short-term mercury emission limit if the arithmetic average of each of the removal efficiencies as computed in Minn. R. 7011.1265, subp. 3(D)(1)(b) is greater than or equal to 85 percent. (2) Procedures to determine compliance with the long-term mercury emission concentration limit are described in Minn. R. 7011.1265, subp. 3(D)(2)(a). If EQUI 1 does not show compliance as determined in Minn. R. 7011.1265, subp. 3(D)(2)(a), compliance must be determined as described in Minn. R. 7011.1265, subp. 3(D)(2)(b). - To determine compliance with the mercury emission concentration limit, the arithmetic average of all mercury emission concentrations measured in a compliance test available for the previous calendar year must be used. Compliance with the long-term mercury concentration limit must be determined at each occurrence of mercury emission performance testing. - If the average that was computed in Minn. R. 7011.1265, subp. 3(D)(2)(a) exceeds the long-term mercury emission concentration, the removal efficiency for each run must be computed by the equation in Minn. R. 7011.1265, subp. 3(D)(2)(b)(1) . EQUI 1 is in compliance with the long-term mercury emission limit if the arithmetic average of each of the removal efficiencies is greater than or equal to 85 percent.
			If the Permittee chooses to conduct testing for mercury emissions every 12 months, Minn. R. 7011.1265, subp.3(D)(3) applies: - EQUI 1 is in compliance with the 12-month mercury emission concentration limit if the arithmetic average of three or more samples is less than the 12-month test interval mercury emission concentration limit. - If the average computed in Minn. R. 7011.1265, subp. 3(D)(3)(a) exceeds the 12-month mercury emission concentration limit, the removal efficiency for each run must be computed by the equation in Minn. R. 7011.1265, subp. 3(D)(1)(b). EQUI 1 is in compliance with the 12-month mercury emission limit if the arithmetic average of the removal efficiencies is greater than 85 percent. [Minn. R. 7011.1265, subp. 3(D)]

SI Id	Sequence	ID	Requirement
EQUI 1	29	1531125	Particulate Matter: The Permittee must conduct a performance test due annually. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Methods 5 and 202, or other method approved by MPCA in the performance test plan approval. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 5 test run for particulate matter. Particulate matter emissions, expressed in gr/dscf, must be corrected to seven percent oxygen by using the formula in Minn. R. 7011.1265, subp. 2(A). The sum of filterable and organic condensable particulate matter is the concentration of particulate matter as described in part 7017.2060, subpart 3, item B. For each sample run employing Method 5 as provided in Appendix A-3 of Code of Federal Regulations, title 40, part 60, as amended, the emission rate must be determined using: (a) oxygen or carbon dioxide measurements; (b) dry basis F factor; and (c) dry basis emission rate calculation procedures in Code of Federal Regulations, title 40, part 60, Appendix A-7, Method 19, as amended.
			Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a Notice of Compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [Minn. R. 7011.1265, subp. 2(A), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270, A, Minn. R. 7017.2020, subp. 1]
EQUI 1	30	1531127	Opacity: The Permittee shall conduct a performance test due annually to measure opacity. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 9, as amended, must be used to determine compliance with opacity limits. The first test is due by the date specified above and all subsequent tests shall be completed every 60 months thereafter by the due date (month and day) and as described below. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Methods 9, or other method approved by MPCA in the performance test plan approval. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a Notice of Compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 2(B), Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	ID	Requirement
EQUI 1	31	1531128	Mercury: The Permittee must conduct a performance test due annually to measure mercury emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. If a test shows that an emission limit for mercury from EQUI 1 combusting RDF is exceeded, testing must be conducted every three months thereafter until compliance with the standard is demonstrated. 40 CFR pt. 60, Appendix A, Method 29, as amended, must be used for measuring mercury emissions. To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device must be used. The minimum sample volume is 1.7 dscm. The maximum sample run time is two hours. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for mercury. To determine the percent reduction of mercury, concurrent sampling for mercury at the inlet and outlet of the air pollution control system must be performed at each occurrence of mercury emissions performance testing. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(D), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 1	32	1531129	Muni Waste Combust Organics: The Permittee must conduct a performance test due annually to measure Muni Waste Combust Organics (dioxins/furans or PCDD/PCDF) emissions. The Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 23, as amended, must be used to determine compliance with the PCDD/PCDF emission limits. The minimum sample time is four hours per test run. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 23 test run for PCDD/PCDF. The average of the PCDD/PCDF test runs is used to determine compliance. The maximum demonstrated capacity of EQUI 1 must be determined during each subsequent performance test during which compliance with the PCDD/PCDF emission limit in Minn. R. 7011.1225 is achieved. The Permittee must determine and record the four-hour arithmetic average gas stream temperature as measured at the inlet to TREA 5 during each subsequent performance test for PCDD/PCDFs demonstrating compliance with the PCDD/PCDF emission limit in Minn. R. 7011.1225. If all PCDD/PCDF performance tests for all units for a two-year period indicate that PCDD/PCDF emissions are less than or equal to 15 ng/dscm corrected to seven percent oxygen from each unit, then the Permittee may choose to test one unit for PCDD/PCDF once annually, but not more than 12 months following the previous performance test. Thereafter, the Permittee may continue to test a different unit for PCDD/PCDF each year, in sequence (e.g. unit 1, unit 2, etc.). If any annual performance test demonstrates a PCDD/PCDF concentration greater than 15 ng/dscm corrected to seven percent oxygen performance tests thereafter shall be conducted annually on all units until all annual performance tests for all units for a two-year period indicate a PCDD/PCDF emission concentration less than or equal to 15 ng/dscm.
			The Permittee will specify what the PCDD/PCDF performance testing schedule is each time a pretest notification is given under the conditions of Minn. R. 7017.2030. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(B), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1265, subp. 7, Minn. R. 7011.1265, subp. 8, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 1	33	1531130	Cadmium: The Permittee must conduct a performance test due annually to measure cadmium emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 29, as amended, must be used for measuring cadmium emissions. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run. The average of the cadmium emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(C), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	ID	Requirement
EQUI 1	34	1531131	Lead: The Permittee must conduct a performance test due annually to measure lead emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 29, as amended, must be used for measuring lead emissions. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run. The average of the lead emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(C), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 1	35	1531133	Hydrogen Chloride: The Permittee must conduct a performance test due annually to measure hydrogen chloride (HCl) emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. The percentage reduction in the potential hydrogen chloride emissions is computed using the formula in Minn. R. 7011.1265, subp. 3(A). 40 CFR pt. 60, Appendix A, Method 26 or 26A, or 40 CFR pt. 63, Appendix A, Method 320, as amended, must be used for determining the hydrogen chloride emission rate. The minimum sampling time is one hour. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 26 test run for hydrogen chloride. The average of the hydrogen chloride emission concentration or percent reduction is used to determine compliance. To determine the percent reduction of HCl, concurrent sampling for HCl at the inlet and outlet of the air pollution control system must be performed at each occurrence of HCl emissions performance testing. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(A), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 2	1	1531049	Steam Flow <= 123,277 pounds per hour on a four hour block average. This is 110% of the steam production during the most recent EQUI 2 test (April 21-22, 2022) that demonstrated compliance for PCDD/PCDF emissions. Steam production shall not exceed 123,277 pounds per hour until a new test is conducted to establish a new maximum steam production capacity or as allowed by Minn. R. 7011.1240, subp. 5 as described below. [Minn. R. 7011.1240, subp. 5]
EQUI 2	2	1531050	Applicability of Standards. The standards of Minn. R. 7011.1227, Minn. R. 7011.1228, Minn. R. 7011.1229, Minn. R. 7011.1230, Minn. R. 7011.1233, Minn. R. 7011.1240, subp. 2, and Minn. R. 7011.1272, subp. 2, apply at all times when waste is being continuously burned, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction does not exceed three hours. Fugitive emissions standards applicable to ash conveying systems do not apply during maintenance and repair of ash conveying systems. "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown are not considered malfunctions. The start-up period commences when the waste combustor begins the continuous burning of solid waste and does not include any warm-up period when the waste combustor is combusting fossil fuel or other solid fuel. Continuous burning is the continuous, semicontinuous, or batch feeding of solid waste for purposes of waste disposal, energy production, or providing heat to the combustion system in preparation for waste disposal or energy production. The use of solid waste solely to provide thermal protection of the grate or hearth during the start-up period when municipal solid waste is not being fed to the grate is not considered to be continuous burning. [Minn. R. 7011.1215, subp. 4]
EQUI 2	3	1531051	The Permittee must not cause gases to be emitted from EQUI 2 in excess of the applicable standards of Minn. R. 7011.1227 and 7011.1228. Emissions, except opacity, must be calculated under standard conditions corrected to seven percent oxygen on a dry volume basis. The Permittee may determine compliance with the emission limitations using carbon dioxide measurements corrected to an equivalent of seven percent oxygen. [Minn. R. 7011.1225, subp. 1(A)]

SI Id	Sequence	ID	Requirement
EQUI 2	4	1531055	The Permittee must limit combustion ash from an ash conveying system, or buildings or enclosures of ash conveying systems, including conveyor transfer points, Visible Emissions <= 5 percent of the observation period (i.e. 9 minutes per three-hour period) (hourly observation period using three 1-hour observation periods), as determined by 40 CFR pt. 60, Appendix A, Method 22, as amended. This limit does not apply to visible emissions discharged inside buildings or enclosures of ash conveying systems. [Minn. R. 7011.1225, subp. 1(B)]
EQUI 2	5	1531056	The Permittee must limit emissions of Front-half Particulate Matter <= 0.011 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. [Minn. R. 7011.1227]
EQUI 2	6	1531057	The Permittee must limit emissions of Particulate Matter <= 0.020 grains per dry standard cubic foot. This limit is applied in accordance with the "Applicability of Standards" stated in this permit. [Minn. R. 7011.1227]
EQUI 2	7	1545360	The Permittee must limit emissions of Particulate Matter <= 25 milligrams per dscm, corrected to 7 percent oxygen. [Minn. R. 7007.0800, subp. 2(A)]
EQUI 2	8	1531058	The Permittee must limit Opacity <= 10 percent opacity 6-minute average, calculated using 36 or more data points equally spaced over a six-minute period. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp.4(F)]
EQUI 2	9	1531059	The Permittee must limit emissions of Sulfur Dioxide <= 29 parts per million or 75 percent control, whichever is less stringent. The Permittee must measure emissions using the geometric average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time shall be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(D)]
EQUI 2	10	1531060	The Permittee must limit emissions of Carbon Monoxide <= 200 parts per million using a daily 24-hour arithmetic average measured between 12 midnight and the following midnight. The four-hour and 24-hour average must be calculated from one-hour arithmetic averages. At least four points equally spaced in time shall be used to calculate each one-hour average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1227, Minn. R. 7011.1260, subp. 4(C)]
EQUI 2	11	1531061	The Permittee must limit emissions of Nitrogen Oxides <= 250 parts per million using the arithmetic average of the one-hour arithmetic average emission concentration during each 24-hour daily period measured from midnight to midnight. At least four data points equally spaced in time must be used to calculate each one-hour arithmetic average. During periods of calibration, quality assurance audits, and routine maintenance, only two data points during the hour, at least 15 minutes apart, are required to calculate an hourly average. Each one-hour average must be corrected to seven percent oxygen on an hourly basis using the one-hour arithmetic average of the oxygen or carbon dioxide continuous emissions monitoring system. [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]
EQUI 2	12	1531062	The Permittee must limit emissions of Nitrogen Oxides <= 230 parts per million 24-hour block average basis when averaging nitrogen oxide emissions across the waste combustor facility. If emissions averaging is used, the Permittee shall average nitrogen oxide emissions according to the procedures in 40 CFR Section 60.33b(d)(1). Prior to using emissions averaging to comply with this limit, the Permittee must identify that they plan to use emissions averaging in the annual report required in Minn. R. 7011.1285, subp. 4. Partial year averaging is allowed upon written approval of the commissioner. [Minn. R. 7011.1228, Minn. R. 7011.1260, subp. 4(E)]
EQUI 2	13	1531063	The Permittee must limit emissions of Lead <= 400 microgram per dry std cubic meter, measured using 40 CFR pt. 60, Appendix A, Method 29, as amended. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for lead. The average of the lead emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]
EQUI 2	14	1531064	The Permittee must limit emissions of Muni Waste Combust Organics <= 30 nanogram per dry std cubic meter, measured as total PCDD/PCDF. The Permittee must use 40 CFR pt. 60, Appendix A, Method 23, as amended, to determine compliance with the PCDD/PCDF emission limits. The minimum sample time is four hours per test run. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 23 test run for PCDD/PCDF. The average of the PCDD/PCDF test runs is used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(B)]

SI Id	Sequence	ID	Requirement
EQUI 2	15	1531065	The Permittee must limit emissions of Cadmium <= 35 microgram per dry std cubic meter, measured using 40 CFR pt. 60, Appendix A, Method 29, as amended. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for cadmium. The average of the cadmium emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(C)]
EQUI 2	16	1531066	The Permittee must limit emissions of Hydrogen Chloride <= 29 parts per million or 95 percent control, whichever is less stringent. The Permittee must use 40 CFR pt. 60, Appendix A, Method 26 or 26A, or title 40 CFR pt. 63, Appendix A, Method 320, as amended, for determining the hydrogen chloride emission rate. The minimum sampling time is one hour. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 26 test run for hydrogen chloride. The average of the hydrogen chloride emission concentration or percent reduction is used to determine compliance. The Permittee must use the formula in Minn. R. 1265, subp 3(A) to calculate the percentage reduction in the potential hydrogen chloride emissions. [Minn. R. 7011.1227, Minn. R. 7011.1265, subp. 3(A)]
EQUI 2	17	1531068	The Permittee must limit emissions of Mercury <= 30 micrograms per dscm or 85% removal (long-term), whichever is less stringent. The Permittee must use 40 CFR pt. 60, Appendix A, Method 29, as amended, for measuring emissions of mercury. To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device must be used. The minimum sample volume is 1.7 dscm. The maximum sample run time is two hours. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for mercury. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]
EQUI 2	18	1531067	The Permittee must limit emissions of Mercury <= 50 microgram per dry std cubic meter or 85% removal (short term), whichever is less stringent. The Permittee must use 40 CFR pt. 60, Appendix A, Method 29, as amended, for measuring emissions of mercury. To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device must be used. The minimum sample volume is 1.7 dscm. The maximum sample run time is two hours. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for mercury. [Minn. R. 7011.1227, Minn. R. 7011.1265, subps. 3(C)-(D)]
EQUI 2	19	1531070	The Permittee must limit Fuel Usage > 30 percent by weight RDF of the total fuel input as measured on a 24-hour basis. On each day, the Permittee must calculate the fuel feed stream composition as the ratio of the weights of RDF to RDF and all other fuels delivered to the combustion chamber, for the previous calendar day. [Minn. R. 7007.0800, 2(A), Minn. R. 7011.1201, subp. 17]
EQUI 2	20	1531069	The Permittee must limit Fuel Usage <= 180 gallons per hour of used oil and used oil sorbents. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	ID	Requirement
EQUI 2	21	1531071	Daily Operating Record. The Permittee must maintain on-site a daily record for the operation of EQUI 2. The record must contain: - the calendar date; - the hours of operation; - the weight of waste (RDF) combusted (in tons); - the weight of waste requiring disposal at a solid waste land disposal facility, including separated noncombustibles, excess waste, and ash; - the amount and description of industrial solid waste received each day, the generator's name, and the method of handling; - the measurements and determination of emissions averages as required in Minn. R. 7011.1260, subpart 6; - results of performance tests conducted on waste combustor units as required in this permit; - instances of dumpstack use; - the names of persons who have completed initial review or subsequent annual review of the operating manual; - calendar dates whenever any of the pollutants or parameter levels recorded in 40 CFR 62.15305(b) or the opacity level recorded in 40 CFR 62.15305(a)(1) did not meet the emission limits or operating levels specified in 40 CFR pt. 62, subp. JJJ. - the reasons for exceeding any of the applicable emission limits, percent reductions, or operating levels and parameters specified in this permit, or six-minute average COMS measurements that exceed the opacity limit, and a description of the corrective actions the Permittee took, or is taking, to meet the emission limits or operating levels. - reasons for not obtaining the minimum number of hours or collecting the minimum amount of data required under 40 CFR 62.15205 and 62.15280 for sulfur dioxide or operational data for opacity, carbon monoxide, steam flow, load levels of the municipal waste combustion unit, and temperatures of the flue gases at the inlet of the particulate matter control device, and a description of corrective actions the Permittee took, or is taking, to meet the emission limits or operating levels.
			- the date of the calibration of all signal conversion elements associated with steam flow monitoring as required in Minn. R. 7011.1265, subp. 4. - the time when RDF begins feeding and the unit load of the steam turbine at that time; - the time when the RDF feed to the combustion chamber ceases; - the time when PM control equipment bypass begins; - the time when PM control equipment bypass ceases; - the time when auxiliary fuel use begins; - the time when auxiliary fuel use ceases; - the quantity of used oil and used oil sorbents burned on a gallon per hour basis; - the number of hours per day that the used oil and used oil sorbents are burned; - the source of the used oil; - the weight of wood combusted (in tons); - the ratio of RDF weight to the weight of RDF and all other fuels delivered to the combustion chamber for the previous 24-hour basis; - if the Permittee uses an additive to control Hg or PCDD/PCDF, the reasons for not maintaining the additive system operating parameter as determined in Minn. R. 7011.1272, subp. 2 and the corrective actions taken; and - if the Permittee uses an additive to control Hg or PCDD/PCDF, the reasons for not maintaining the additive mass feed rates as determined in Minn. R. 7011.1272, subp. 1 and the corrective actions taken. [Minn. R. 7007.0800, subps. 4-5, Minn. R. 7011.1285, subp. 2]

SI Id	Sequence	ID	Requirement
EQUI 2	22	1531073	Exceeding of continuously monitored emission limits. If accurate and valid data results collected from continuous monitors for sulfur dioxide, nitrogen oxides, or carbon monoxide data exceed emission limits established in Minn. R. 7011.1225 or in this permit after normal start-up, the Permittee must undertake the following actions: A. The Permittee must report the exceedance(s) to the Commissioner as soon as reasonably possible giving consideration to matters of plant or worker safety, or access to communications. B. The Permittee must commence appropriate repairs or modifications to return EQUI 2 to compliance within 72 hours of the exceedance. C. If EQUI 2 cannot be returned to compliance within 72 hours of the occurrence of the exceedance, the Permittee must shut down EQUI 2. If the modifications to return EQUI 2 to compliance require an amendment of this permit, the Permittee must shut down EQUI 2 within 72 hours of the exceedance. D. When repairs or modifications have been completed, the Permittee must demonstrate to the Commissioner that EQUI 2 is in compliance. The Permittee may start up EQUI 2 after the Permittee has notified the Commissioner in writing of the date the Permittee plans to start up EQUI 2 and the date that compliance testing is scheduled. The Permittee must submit notification at least ten days in advance of the compliance test date. [Minn. R. 7011.1260, subp. 7]
EQUI 2	23	1531074	The Permittee must calibrate, maintain, and operate a continuous opacity monitoring system when burning solid waste. The monitoring systems must continuously read and record the following outputs: 1) for carbon monoxide at the outlet of EQUI 2; 2) for steam flow or an alternative unit load measurement parameter as described in Minn. R. 7011.1265, subp. 4a, in waste combustors which recover heat with a boiler; 3) for flue gas opacity, at a location after which the flue gas has exited the air pollution control equipment; and 4) for oxygen or carbon dioxide at each location where carbon monoxide, sulfur dioxide, or nitrogen oxides emissions are monitored, to report corrected concentrations of regulated pollutants; 5) for nitrogen oxides; and 6) for sulfur dioxide. If the Permittee chooses to determine compliance by monitoring the percent reduction of sulfur dioxide emissions, monitors shall be installed at the inlets and outlets of the air pollution control system. [Minn. R. 7011.1260, subp. 3, Minn. R. 7011.1265, subp. 4]
EQUI 2	24	1531075	Steam flow measurement method. The method contained in ASMEPTC 4.1, section 4, incorporate by reference in Minn. R. 7011.1205, must be used for calculating the steam flow required under Minn. R. 7011.1260, subpart 3, item A, subitem (2). The recommendations of Application: Part II of Fluid Meters, Interim Supplement 19.5 on Instruments and Apparatus, chapter 4, incorporated by reference in Minn. R. 7011.1205, must be followed for design, construction, installation, calibration, and use of nozzles and orifices, except that measurement devices such as flow nozzles and orifices are not required to be recalibrated after they are installed. All signal conversion elements associated with steam flow measurements must be calibrated according to the manufacturer's instructions before each PCDD/PCDF test, and at least once per year. This annual calibration must be recorded in the daily operating record as described in Minn. R. 7011.1285, subpart 2. [Minn. R. 7011.1265, subp. 4]
EQUI 2	25	1531076	Operation during performance testing. The Permittee must report operating conditions to the commissioner, including operating parameters of the air pollution control equipment, flue gas temperatures, air flow rates, and pressure drop across the combustion system. [Minn. R. 7011.1265, subp. 6]
EQUI 2	26	1531072	During the annual PCDD/PCDF performance test and the two weeks preceding the annual PCDD/PCDF performance test, no waste combustor maximum demonstrated capacity is applicable. The commissioner shall waive the maximum demonstrated capacity limit for the purpose of evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions, provided a written notification is submitted to the commissioner 30 days prior to undertaking any of the activities identified in this item, with the following information: (1) a description of the proposed project, and the outcome the project is designed to evaluate; (2) how the project conforms with the activities described in this subpart for which the maximum demonstrated capacity limit can be waived; and (3) the length of time the project will take to complete. [Minn. R. 7011.1240, subp. 5]

SI Id	Sequence	ID	Requirement
EQUI 2	27	1531077	Exceeding emission limits. If accurate and valid data results from a performance test demonstrate an exceedance of a standard of performance under Minn. R. 7011.1225 or in the air emission facility permit after normal start-up, the Permittee must undertake the following actions: A. The Permittee must report the exceedance to the commissioner as soon as reasonably possible giving considerations to matters of plant or worker safety, and comply with the applicable reporting provisions of Minn. R. 7007.0800, subp. 6; B. The Permittee must take appropriate steps to return EQUI 2 to compliance and must demonstrate compliance by conducting a performance test within 60 days of the initial report of the exceedance, conduct a performance test and submit the results to the commissioner to demonstrate compliance with this permit; C. If Permittee does not demonstrate compliance within 60 days of the initial report of the exceedance, shut down EQUI 2 on the 61st day; D. EQUI 2 may then be restarted solely to conduct performance testing after Permittee has notified the commissioner in writing of the date on which Permittee plans to restart operation of EQUI 2. Notification must be at least 10 days in advance of the date EQUI 2 will resume operation. The notice must state the date performance testing will be conducted. E. Notwithstanding item D, if shutdown under item C is required, EQUI 2 may be restarted after demonstrating compliance and upon approval by the commissioner. [Minn. R. 7011.1265, subp. 11, Minn. Stat. 116.85, subd. 3]
EQUI 2	28	1531078	If the Permittee is required or chooses to conduct testing for mercury emissions every 90 days, Minn. R. 1265, subp. 3(D)(1) and (2) applies: (1) Procedures to determine compliance with the short-term mercury emission concentration limit are described in Minn. R. 7011.1265, subp. 3(D)(1)(a). If EQUI 2 does not show compliance as determined in Minn. R. 7011.1265, subp. 3(D)(1)(a), compliance must be determined as described in Minn. R. 7011.1265, subp. 3(D)(1)(b) and (c). - EQUI 2 is in compliance with the mercury concentration limit if the arithmetic average of three or more samples is less than or equal to the applicable short-term mercury emission concentration limit. - If the average computed in Minn. R. 7011.1265, subp. 3(D)(1)(a) exceeds the short-term mercury emission concentration limit, the removal efficiency for each run must be computed as provided in Minn. R. 7011.1265, subp. 3(D)(1)(b). - EQUI 2 is in compliance with the short-term mercury emission limit if the arithmetic average of each of the removal efficiencies as computed in Minn. R. 7011.1265, subp. 3(D)(1)(b) is greater than or equal to 85 percent. (2) Procedures to determine compliance with the long-term mercury emission concentration limit are described in Minn. R. 7011.1265, subp. 3(D)(2)(a). If EQUI 2 does not show compliance as determined in Minn. R. 7011.1265, subp. 3(D)(2)(a), compliance must be determined as described in Minn. R. 7011.1265, subp. 3(D)(2)(b). - To determine compliance with the mercury emission concentration limit, the arithmetic average of all mercury emission concentrations measured in a compliance test available for the previous calendar year must be used. Compliance with the long-term mercury concentration limit must be determined at each occurrence of mercury emission performance testing. - If the average that was computed in Minn. R. 7011.1265, subp. 3(D)(2)(a) exceeds the long-term mercury emission concentration, the removal efficiency for each run must be computed by the equation in Minn. R. 7011.1265, subp. 3(D)(2)(b)(1) . EQUI 2 is in compliance with the long-term mercury emission limit if the arithmetic average of each of the removal efficiencies is greater than or equal to 85 percent.
			If the Permittee chooses to conduct testing for mercury emissions every 12 months, Minn. R. 7011.1265, subp.3(D)(3) applies: - EQUI 2 is in compliance with the 12-month mercury emission concentration limit if the arithmetic average of three or more samples is less than the 12-month test interval mercury emission concentration limit. - If the average computed in Minn. R. 7011.1265, subp. 3(D)(3)(a) exceeds the 12-month mercury emission concentration limit, the removal efficiency for each run must be computed by the equation in Minn. R. 7011.1265, subp. 3(D)(1)(b). EQUI 2 is in compliance with the 12-month mercury emission limit if the arithmetic average of the removal efficiencies is greater than 85 percent. [Minn. R. 7011.1265, subp. 3(D)]

SI Id	Sequence	ID	Requirement
EQUI 2	29	1531134	Particulate Matter: The Permittee must conduct a performance test due annually. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Methods 5 and 202, or other method approved by MPCA in the performance test plan approval. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 5 test run for particulate matter. Particulate matter emissions, expressed in gr/dscf, must be corrected to seven percent oxygen by using the formula in Minn. R. 7011.1265, subp. 2(A). The sum of filterable and organic condensable particulate matter is the concentration of particulate matter as described in part 7017.2060, subpart 3, item B. For each sample run employing Method 5 as provided in Appendix A-3 of Code of Federal Regulations, title 40, part 60, as amended, the emission rate must be determined using: (a) oxygen or carbon dioxide measurements; (b) dry basis F factor; and (c) dry basis emission rate calculation procedures in Code of Federal Regulations, title 40, part 60, Appendix A-7, Method 19, as amended. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a Notice of Compliance letter.
			Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [Minn. R. 7011.1265, subp. 2(A), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 2	30	1531135	Opacity: The Permittee shall conduct a performance test due annually to measure opacity. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 9, as amended, must be used to determine compliance with opacity limits. The first test is due by the date specified above and all subsequent tests shall be completed every 60 months thereafter by the due date (month and day) and as described below. The performance test shall be conducted at worst-case conditions defined at Minn. R. 7017.2005, subp. 8 or at the operating conditions described at Minn. R. 7017.2025, subp. 2, using EPA Reference Methods 9, or other method approved by MPCA in the performance test plan approval. Testing conducted during the 60 days prior to the performance test due date will not reset the test due date for future testing as required by this permit or within a Notice of Compliance letter. Testing conducted more than 60 days prior to the performance test due date satisfies this test due date requirement but will reset future performance test due dates based on the performance test date. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 2(B), Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	ID	Requirement
EQUI 2	31	1531136	Mercury: The Permittee must conduct a performance test due annually to measure mercury emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. If a test shows that an emission limit for mercury from EQUI 2 combusting RDF is exceeded, testing must be conducted every three months thereafter until compliance with the standard is demonstrated. 40 CFR pt. 60, Appendix A, Method 29, as amended, must be used for measuring mercury emissions. To determine the mercury concentration, the arithmetic average of three or more samples at the outlet of the air pollution control device must be used. The minimum sample volume is 1.7 dscm. The maximum sample run time is two hours. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run for mercury. To determine the percent reduction of mercury, concurrent sampling for mercury at the inlet and outlet of the air pollution control system must be performed at each occurrence of mercury emissions performance testing. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(D), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 2	32	1531137	Muni Waste Combust Organics: The Permittee must conduct a performance test due annually to measure Muni Waste Combust Organics (dioxins/furans or PCDD/PCDF) emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 19, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 23, as amended, must be used to determine compliance with the PCDD/PCDF emission limits. The minimum sample time is four hours per test run. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 23 test run for PCDD/PCDF. The average of the PCDD/PCDF test runs is used to determine compliance. The maximum demonstrated capacity of EQUI 2 must be determined during each subsequent performance test during which compliance with the PCDD/PCDF emission limit in Minn. R. 7011.1225 is achieved. The Permittee must determine and record the four-hour arithmetic average gas stream temperature as measured at the inlet to TREA 6 during each subsequent performance test for PCDD/PCDFs demonstrating compliance with the PCDD/PCDF emission limit in Minn. R. 7011.1225. If all PCDD/PCDF performance tests for all units for a two-year period indicate that PCDD/PCDF emissions are less than or equal to 15 ng/dscm corrected to seven percent oxygen from each unit, then the Permittee may choose to test one unit for PCDD/PCDF once annually, but not more than 12 months following the previous performance test. Thereafter, the Permittee may continue to test a different unit for PCDD/PCDF each year, in sequence (e.g. unit 1, unit 2, etc.). If any annual performance test demonstrates a PCDD/PCDF concentration greater than 15 ng/dscm corrected to seven percent oxygen performance tests thereafter shall be conducted annually on all units until all annual performance tests for all units for a two-year period indicate a PCDD/PCDF emission concentration less than or equal to 15 ng/dscm.
			The Permittee will specify what the PCDD/PCDF performance testing schedule is each time a pretest notification is given under the conditions of Minn. R. 7017.2030. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(B), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1265, subp. 7, Minn. R. 7011.1265, subp. 8, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 2	33	1531138	Cadmium: The Permittee must conduct a performance test due annually to measure cadmium emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 29, as amended, must be used for measuring cadmium emissions. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run. The average of the cadmium emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(C), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	ID	Requirement
EQUI 2	34	1531139	Lead: The Permittee must conduct a performance test due annually to measure lead emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. 40 CFR pt. 60, Appendix A, Method 29, as amended, must be used for measuring lead emissions. The minimum sample volume is 1.7 dscm. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 29 test run. The average of the lead emission concentrations from three test runs or more must be used to determine compliance. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(C), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 2	35	1531140	Hydrogen Chloride: The Permittee must conduct a performance test due annually to measure hydrogen chloride (HCl) emissions. The Permittee must conduct a performance test due before August 31, 2024. Subsequently, the Permittee must conduct a performance test no later than 12 months after April 3, 2024, and must conduct each following annual stack test no later than 12 months after the previous stack test. The percentage reduction in the potential hydrogen chloride emissions is computed using the formula in Minn. R. 7011.1265, subp. 3(A). 40 CFR pt. 60, Appendix A, Method 26 or 26A, or 40 CFR pt. 63, Appendix A, Method 320, as amended, must be used for determining the hydrogen chloride emission rate. The minimum sampling time is one hour. An oxygen or carbon dioxide measurement must be obtained simultaneously with each Method 26 test run for hydrogen chloride. The average of the hydrogen chloride emission concentration or percent reduction is used to determine compliance. To determine the percent reduction of HCl, concurrent sampling for HCl at the inlet and outlet of the air pollution control system must be performed at each occurrence of HCl emissions performance testing. [Minn. R. 7011.1265, subp. 1, Minn. R. 7011.1265, subp. 3(A), Minn. R. 7011.1265, subp. 5, Minn. R. 7011.1270(A), Minn. R. 7017.2020, subp. 1]
EQUI 21	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 21	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 21	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 21	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 22	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 22	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 22	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 22	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 27	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 27	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 27	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 27	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 28	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 28	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]

SI Id	Sequence	ID	Requirement
EQUI 28	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 28	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 29	2850	1370553	The Permittee must conduct quarterly COMS performance audits: Due once per QA operating quarter (calendar quarter in which the unit operates at least 168 hours) after COMS certification test. Quarterly performance audits will include: optical alignment, calibration error, and zero compensation according to Procedure 3 of 40 CFR Pt. 60, Appendix F, section 10.0(2). Sources that achieve quality assured data for four consecutive quarters may reduce their auditing frequency to semi-annual. If a performance audit is failed, the source must resume quarterly testing for that audit requirement until it again demonstrates successful performance over four consecutive quarters. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
EQUI 29	2860	1370554	The Permittee must perform annual zero alignment as described in Procedure 3, section 10.3 of 40 CFR Pt. 60, Appendix F. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
EQUI 36	3	1343437	Opacity <= 20 percent opacity. [Minn. R. 7011.0715, subp. 1(B)]
EQUI 36	3680	1343441	Particulate Matter <= 0.30 grains per dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. [Minn. R. 7011.0715, subp. 1(A)]
EQUI 36	3690	1531079	Visible Emissions: The Permittee must check for visible emissions during daylight hours at least once each day of operation when the silo is being filled with lime. In the event that the silo is filled during non-daylight hours, lighting will be utilized during the inspection. If visible emissions are observed, the Permittee shall determine the cause and take corrective actions as soon as possible. The Permittee must record each visible emission check containing the following information: 1) Printed name of observer; 2) Signature of observer; 3) Date and time of observation; 4) State if visible emissions were observed or were not observed; 5) Description of investigation into the cause of visible emissions and corrective actions completed for each observation that visible emissions were observed; 6) Weather conditions (temperature, cloud cover, wind, precipitation); 7) Indicate if the plume was limited by visible moisture within the plume; and 8) Emission unit (EQUI 36), control equipment (TREA 7) and Stack/Vent (STRU 12) ID number(s). [Minn. R. 7007.0800, subp. 2(A)]
EQUI 37	3	1343437	Opacity <= 20 percent opacity. [Minn. R. 7011.0715, subp. 1(B)]
EQUI 37	3680	1343441	Particulate Matter <= 0.30 grains per dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. [Minn. R. 7011.0715, subp. 1(A)]
EQUI 37	3690	1531081	Visible Emissions: The Permittee must check for visible emissions during daylight hours at least once each day of operation when the silo is being filled with lime. In the event that the silo is filled during non-daylight hours, lighting will be utilized during the inspection. If visible emissions are observed, the Permittee shall determine the cause and take corrective actions as soon as possible. The Permittee must record each visible emission check containing the following information: 1) Printed name of observer; 2) Signature of observer; 3) Date and time of observation; 4) State if visible emissions were observed or were not observed; 5) Description of investigation into the cause of visible emissions and corrective actions completed for each observation that visible emissions were observed; 6) Weather conditions (temperature, cloud cover, wind, precipitation); 7) Indicate if the plume was limited by visible moisture within the plume; and 8) Emission unit (EQUI 37), control equipment (TREA 8) and Stack/Vent (STRU 13) ID number(s). [Minn. R. 7007.0800, subp. 2(A)]
EQUI 39	1	1536305	Filterable Particulate Matter <= 0.6 pounds per million Btu heat input. The potential to emit from the unit is 0.00745 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.0510, subp. 1]
EQUI 39	2	1030841	Opacity <= 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. [Minn. R. 7011.0510, subp. 2]
EQUI 39	3	1343434	Fuel type: Natural gas only, by design. [Minn. R. 7005.0100, subp. 35a]
EQUI 39	4	1343435	The Permittee shall keep records of fuel purchases showing fuel types. [Minn. R. 7007.0800, subp. 5]

SI Id	Sequence	ID	Requirement
EQUI 39	5	1536291	The Permittee must meet the notification requirements in 40 CFR 63.7545 according to the schedule in 40 CFR 63.7545 and in 40 CFR pt. DDDDD, subp. A. Some of the notifications must be submitted before the Permittee is required to comply with the emission limits and work practice standards in 40 CFR pt. 63, subp. DDDDD. [40 CFR 63.7495(d), Minn. R. 7011.7050]
EQUI 39	6	1536292	The Permittee must meet each work practice standard in 40 CFR pt. 63, subp. DDDDD, Table 3 that applies, for each boiler or process heater at the source, except as provided under 40 CFR 63.7522. The Permittee must meet these requirements at all times the affected unit is operating. [40 CFR 63.7500(a), 40 CFR 63.7500(a)(1), 40 CFR 63.7505(a), Minn. R. 7011.7050]
EQUI 39	7	1536293	At all times, the Permittee must operate and maintain any affected source (as defined in 40 CFR 63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.7500(a)(3), Minn. R. 7011.7050]
EQUI 39	8	1536294	The Permittee must conduct a biennial tune-up of the boiler or process heater as specified in 40 CFR 63.7540(a)(10)(i) through (vi) (listed below) to demonstrate continuous compliance. (i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (the Permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment; (ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available; (iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the Permittee may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection; (iv) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any nitrogen oxide requirement to which the unit is subject; (v) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer; and
			(vi) Maintain on-site and submit, if requested by the Administrator, a report containing the information in 40 CFR 63.7540(a)(10)(vi)(A) through (C), (A) The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater; (B) A description of any corrective actions taken as a part of the tune-up; and (C) The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit. [40 CFR 63.7500(e), 40 CFR 63.7540(a)(10)(i)-(vi), 40 CFR 63.7540(a)(11), 40 CFR pt. 63, subp. DDDDD, Table 3, Minn. R. 7011.7050]
EQUI 39	9	1536295	The Permittee must conduct a biennial performance tune-up according to 40 CFR 63.7540(a)(11). Each biennial tune-up specified in 40 CFR 63.7540(a)(11) must be conducted no more than 25 months after the previous tune-up. [40 CFR 63.7515(d), Minn. R. 7011.7050]
EQUI 39	10	1536296	If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup. [40 CFR 63.7540(a)(13), Minn. R. 7011.7050]
EQUI 39	11	1536297	The Permittee must submit to the Administrator all of the notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply by the dates specified. [40 CFR 63.7545(a), Minn. R. 7011.7050]

SI Id	Sequence	ID	Requirement
EQUI 39	12	1536298	If the Permittee intends to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of 40 CFR pt. 63, 40 CFR pt. 60, 40 CFR pt. 61, or 40 CFR pt.65, or another gas 1 fuel to fire EQUI 41 during a period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575, the Permittee must submit a notification of alternative fuel use within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575. The notification must include the information specified in 40 CFR 63.7545(f)(1) through (5) (listed below). (1) Company name and address. (2) Identification of the affected unit. (3) Reason the Permittee is unable to use natural gas or equivalent fuel, including the date when the natural gas curtailment was declared or the natural gas supply interruption began. (4) Type of alternative fuel that the Permittee intends to use. (5) Dates when the alternative fuel use is expected to begin and end. [40 CFR 63.7545(f), Minn. R. 7011.7050]
EQUI 39	13	1536299	If the Permittee switched fuels or made a physical change to the boiler or process heater and the fuel switch or physical change resulted in the applicability of a different subcategory, the Permittee must provide notice of the date upon which the Permittee switched fuels or made the physical change within 30 days of the switch/change. The notification must identify: (1) The name of the owner or operator of the affected source, as defined in 40 CFR 63.7490, the location of the source, the boiler(s) and process heater(s) that have switched fuels, were physically changed, and the date of the notice. (2) The currently applicable subcategory under 40 CFR pt. 63, subp. DDDDD. (3) The date upon which the fuel switch or physical change occurred. [40 CFR 63.7545(h), Minn. R. 7011.7050]
EQUI 39	3610	1536955	The Permittee must submit each report, according to 40 CFR 63.7550(h), by the date in 40 CFR pt. 63, subp. DDDDD, Table 9 and according to the requirements in 40 CFR 63.7550(b)(1) through (4). The Permittee may submit only a biennial compliance report as specified in 40 CFR 63.7550(b)(1) through (4), instead of a semi-annual compliance report. (1) The first semi-annual compliance report must cover the period beginning on January 31, 2016 and ending on December 31. If submitting a biennial compliance report, the first compliance report must cover the period beginning on January 31, 2016 and ending on December 31 within 2 years, as applicable, after January 31, 2016. (2) The first semi-annual compliance report must be postmarked or submitted no later than July 31. The first biennial compliance report must be postmarked or submitted no later than January 31. (3) Each subsequent semi-annual compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. Biennial compliance reports must cover the applicable 2-year periods from January 1 to December 31. (4) Each subsequent semi-annual compliance report must be postmarked or submitted no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period. Biennial compliance reports must be postmarked or submitted no later than January 31. [40 CFR 63.7550(a), 40 CFR 63.7550(b), Minn. R. 7011.7050]

SI Id	Sequence	ID	Requirement
EQUI 39	3620	1536956	The Permittee must submit a compliance report according to the requirements in 40 CFR 63.7550(b). The report must contain: a. Information required in 40 CFR 63.7550(c)(1) through (c)(5)(i)-(iii), (xiv) and (xvii) (listed below) (i) Company and Facility name and address. (ii) Process unit information, emissions limitations, and operating parameter limitations. (iii) Date of report and beginning and ending dates of the reporting period. (xiv) Include the date of the most recent tune-up for each unit subject to only the requirement to conduct a biennial tune-up according to 40 CFR 63.7540(a)(11). Include the date of the most recent burner inspection if it was not done biennially and was delayed until the next scheduled or unscheduled unit shutdown. (xvii) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. b. If there are no deviations from the requirements for work practice standards for periods of startup and shutdown in 40 CFR pt. 63, subp. DDDDD, Table 3 that apply, a statement that there were no deviations from the work practice standards during the reporting period; c. If you have a deviation from a work practice standard for periods of startup and shutdown, during the reporting period, the report must contain the information in 40 CFR 63.7550(d); [40 CFR 63.7550(c), 40 CFR 63.7550(c)(1), 40 CFR 63.7550(c)(5)(i)-(iii), (xiv), and (xvii), 40 CFR 63.subp. DDDDD, Table 9, Minn. R. 7011.7050]
EQUI 39	3632	1536300	The Permittee must submit all reports required by 40 CFR pt. 63, subp. DDDDD, Table 9 electronically to the EPA via the CEDRI. (CEDRI can be accessed through the EPA's CDX.) The Permittee must use the appropriate electronic report in CEDRI for 40 CFR pt. 63, subp. DDDDD. Instead of using the electronic report in CEDRI for 40 CFR pt. 63, subp. DDDDD, the Permittee may submit an alternate electronic file consistent with the XML schema listed on the CEDRI Web site (http://www.epa.gov/ttn/chief/cedri/index.html), once the XML schema is available. If the reporting form specific to 40 CFR pt. 63, subp. DDDDD is not available in CEDRI at the time that the report is due, the Permittee must submit the report to the Administrator at the appropriate address listed in 40 CFR 63.13. The Permittee must begin submitting reports via CEDRI no later than 90 days after the form becomes available in CEDRI. [40 CFR 63.7550(h)(3), Minn. R. 7011.7050]
EQUI 39	3637	1536301	The Permittee must keep records of copies of each notification and report that the Permittee submitted to comply with 40 CFR pt. 63, subp. DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that the Permittee submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv). [40 CFR 63.7555(a)(1), Minn. R. 7011.7050]
EQUI 39	12250	1536302	If the Permittee uses an alternative fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart under 40 CFR pt. 63, other gas 1 fuel, or gaseous fuel subject to another subpart of 40 CFR pt. 63 or 40 CFR pt. 60, 61, or 65, the Permittee must keep records of the total hours per calendar year that alternative fuel is burned and the total hours per calendar year that the unit operated during periods of gas curtailment or gas supply emergencies. [40 CFR 63.7555(h), Minn. R. 7011.7050]
EQUI 39	12251	1536303	The Permittee must keep records in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1). As specified in 40 CFR 63.10(b)(1), the Permittee must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The Permittee must keep each record on site, or they must be accessible from on site (for example, through a computer network), for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR 63.10(b)(1). The Permittee can keep the records off site for the remaining 3 years. [40 CFR 63.7560, Minn. R. 7011.7050]

SI Id	Sequence	ID	Requirement
EQUI 39	12252	1536313	The Permittee must comply with all applicable requirements of 40 CFR pt. 63, subp. A as follows: 40 CFR 63.1; 40 CFR 63.2; 40 CFR 63.3; 40 CFR 63.4; 40 CFR 63.5; 40 CFR 63.6(a); 40 CFR 63.6(b)(1); 40 CFR 63.6(b)(2); 40 CFR 63.6(b)(3); 40 CFR 63.6(b)(4); 40 CFR 63.6(b)(5); 40 CFR 63.6(b)(7); 40 CFR 63.6(c); 40 CFR 63.6(f)(2); 40 CFR 63.6(f)(3); 40 CFR 63.6(g) (except 40 CFR 63.7555(d)(3) specifies the procedure for application and approval of an alternative timeframe with the PM controls requirement in the startup work practice); 40 CFR 63.6(i); 40 CFR 63.6(j); 40 CFR 63.7(a); 40 CFR 63.7(b); 40 CFR 63.7(c); 40 CFR 63.7(d); 40 CFR 63.7(e)(2)-(e)(9); 40 CFR 63.7(f);
			40 CFR 63.7(g); 40 CFR 63.7(h); 40 CFR 63.8(a); 40 CFR 63.8(b); 40 CFR 63.8(c)(1); 40 CFR 63.8(c)(1)(ii); 40 CFR 63.8(c)(2)-(c)(9); 40 CFR 63.8(d)(1); 40 CFR 63.8(d)(2); 40 CFR 63.8(d)(3) (except for the last sentence, which refers to a startup, shutdown, and malfunction plan; startup, shutdown, and malfunction plans are not required); 40 CFR 63.8(e); 40 CFR 63.8(f); 40 CFR 63.8(g); 40 CFR 63.9; 40 CFR 63.10(a); 40 CFR 63.10(b)(1); 40 CFR 63.10(b)(2)(i); 40 CFR 63.10(b)(2)(iii); 40 CFR 63.10(b)(2)(vi); 40 CFR 63.10(b)(2)(vii)-(xiv); 40 CFR 63.10(c)(1)-(c)(9); 40 CFR 63.10(c)(12)-(c)(13); 40 CFR 63.10(d)(1); 40 CFR 63.10(d)(2); 40 CFR 63.10(d)(4);

SI Id	Sequence	ID	Requirement
			40 CFR 63.10(e); 40 CFR 63.10(f); 40 CFR 63.12; 40 CFR 63.13; 40 CFR 63.14; 40 CFR 63.15; and 40 CFR 63.16. A copy of 40 CFR pt. 63, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR 63.7565, 40 CFR pt. 63, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(B), Minn. R. 7011.7050, Minn. R. 7017.1010 & 7017.2025, Minn. R. 7019.0100]
EQUI 40	1	1536314	The Permittee must limit combustion ash from an ash conveying system, or buildings or enclosures of ash conveying systems, including conveyor transfer points, Visible Emissions <= 5 percent of the observation period (i.e. 9 minutes per three-hour period) (hourly observation period using three 1-hour observation periods), as determined by 40 CFR pt. 60, Appendix A, Method 22, as amended. This limit does not apply to visible emissions discharged inside buildings or enclosures of ash conveying systems. [Minn. R. 7011.1225, subp. 1(B)]
EQUI 41	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 41	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 41	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 41	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 42	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 42	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 42	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 42	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 43	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 43	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 43	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 43	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 44	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 44	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 44	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 44	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 45	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 45	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]

SI Id	Sequence	ID	Requirement
EQUI 45	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 45	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 46	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 46	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 46	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 46	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 47	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 47	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 47	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 47	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 48	2200	1265213	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
EQUI 48	2220	1265215	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
EQUI 48	2460	1370550	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
EQUI 48	2470	1370551	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 49	2850	1370553	The Permittee must conduct quarterly COMS performance audits: Due once per QA operating quarter (calendar quarter in which the unit operates at least 168 hours) after COMS certification test. Quarterly performance audits will include: optical alignment, calibration error, and zero compensation according to Procedure 3 of 40 CFR Pt. 60, Appendix F, section 10.0(2). Sources that achieve quality assured data for four consecutive quarters may reduce their auditing frequency to semi-annual. If a performance audit is failed, the source must resume quarterly testing for that audit requirement until it again demonstrates successful performance over four consecutive quarters. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
EQUI 49	2860	1370554	The Permittee must perform annual zero alignment as described in Procedure 3, section 10.3 of 40 CFR Pt. 60, Appendix F. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
TREA 1	2	1531082	The Permittee must maintain the lime feed rate at >=14.9 percent, 8-hour block average (as determined during the 04/12/2023 hydrogen chloride (HCl) performance test). The Permittee must keep records of the 8-hour block average feed rate at all times EQUI 1 is in operation. The Permittee must use the same or similar reagent as used during the most recent compliant HCl performance test. Notwithstanding the previous sentence, upon the Commissioner's written notification that EQUI 1 has demonstrated compliance under the conditions of a HCl performance test, the Permittee must maintain the lime feed rate determined during the most recent compliant HCl performance test. [Minn. R. 7007.0800, subp. 2(A)]
TREA 1	3	1531084	The Permittee shall vent emissions from EQUI 1 to TREA 1 whenever EQUI 1 operates, and operate and maintain TREA 1 at all times that any emissions are vented to TREA 1. The Permittee shall document periods of non-operation of the control equipment TREA 1 whenever EQUI 1 is operating. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	ID	Requirement
TREA 1	4	1531085	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the lime feed rate, averaged over an 8-hour block, is less than the average feed rate as determined during the most recent compliant HCl performance test. - the scrubber or any of its components are found during the inspections to need repair. Corrective actions shall include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the Operation and Maintenance (O & M) Plan for the scrubber. The Permittee shall keep a record of the type and date of any corrective action taken for each scrubber. [40 CFR 64.7(d), Minn. R. 7017.0200]
TREA 1	5	1531089	The Permittee shall maintain each piece of control equipment according to the control equipment manufacturer's specifications, and shall: A. maintain an inventory of spare parts that are subject to frequent replacement, as required by the manufacturing specification or documented in records under items H and I; B. train staff on the operation and monitoring of control equipment and troubleshooting, and train and require staff to respond to indications of malfunctioning equipment; C. thoroughly inspect all control equipment at least annually, or as required by the manufacturing specification; D. inspect monthly, or as required by the manufacturing specification, components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts; E. inspect quarterly, or as required by the manufacturing specification, components that are not subject to wear including structural components, housings, ducts, and hoods; F. check daily, or as required by the manufacturing specification, monitoring equipment, for example: pressure gauges, chart recorders, temperature indicators, and recorders; G. calibrate (or replace) annually, or as required by the manufacturing specification, all monitoring equipment; H. maintain a record of activities conducted in items A to G consisting of the activity completed, the date the activity was completed, and any corrective action taken; and I. maintain a record of parts replaced, repaired, or modified for the previous five years. [40 CFR 64.3, Minn. R. 7007.0800, subp. 14, Minn. R. 7017.0200]
TREA 1	6	1531090	If the Permittee replaces TREA 1, the replacement control must comply with all requirements of TREA 1. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee shall submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
TREA 1	7	1531091	Documentation of Need for Improved Monitoring: If the Permittee fails to achieve compliance with an emission limitation or standard for which the monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing lime feed rate range, the Permittee shall promptly notify the MPCA and, if necessary, submit a permit amendment application to address the necessary monitoring change. [40 CFR 64.7(e), Minn. R. 7017.0200]
TREA 1	8	1531092	As required by 40 CFR 64.9(a)(2), for the Semi-Annual Deviations Report required by this permit and/or the Notification of Deviations Endangering Human Health and the Environment required by this permit, as applicable, the Permittee shall include the following related to the monitoring identified as required by 40 CFR pt. 64: 1) Summary information on the number, duration, and cause of excursions or exceedances, as applicable, and the corrective action taken; and 2) Summary information on the number, duration, and cause for monitor downtime incidents. [40 CFR 64.9(a)(2), Minn. R. 7017.0200]
TREA 1	9	1531093	The Permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, and other supporting information required to be maintained. The Permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b), Minn. R. 7017.0200]
TREA 1	10	1531094	Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording lime feed rate as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored gas scrubber is in operation. [40 CFR 64.7(b), Minn. R. 7017.0200]

SI Id	Sequence	ID	Requirement
TREA 2	1	1531095	The Permittee must maintain the lime feed rate as >= 14.9 percent, 8-hour block average (as determined during the 04/12/2023 hydrogen chloride (HCl) performance test). The Permittee must keep records of the 8-hour block average feed rate at all times EQUI 2 is in operation. The Permittee must use the same or similar reagent as used during the most recent compliant HCl performance test. Notwithstanding the previous sentence, upon the Commissioner's written notification that EQUI 2 has demonstrated compliance under the conditions of a HCl performance test, the Permittee must maintain the lime feed rate determined during the most recent compliant HCl performance test. [Minn. R. 7007.0800, subp. 2(A)]
TREA 2	2	1531096	The Permittee shall vent emissions from EQUI 2 to TREA 2 whenever EQUI 2 operates, and operate and maintain TREA 2 at all times that any emissions are vented to TREA 2. The Permittee shall document periods of non-operation of the control equipment TREA 2 whenever EQUI 2 is operating. [Minn. R. 7007.0800, subp. 2(A)]
TREA 2	3	1531097	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - the lime feed rate, averaged over an 8-hour block, is less than the average feed rate as determined during the most recent compliant HCl performance test. - the scrubber or any of its components are found during the inspections to need repair. Corrective actions shall include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the Operation and Maintenance (O & M) Plan for the scrubber. The Permittee shall keep a record of the type and date of any corrective action taken for each scrubber. [40 CFR 64.7(d), Minn. R. 7017.0200]
TREA 2	4	1531098	The Permittee shall maintain each piece of control equipment according to the control equipment manufacturer's specifications, and shall: A. maintain an inventory of spare parts that are subject to frequent replacement, as required by the manufacturing specification or documented in records under items H and I; B. train staff on the operation and monitoring of control equipment and troubleshooting, and train and require staff to respond to indications of malfunctioning equipment; C. thoroughly inspect all control equipment at least annually, or as required by the manufacturing specification; D. inspect monthly, or as required by the manufacturing specification, components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts; E. inspect quarterly, or as required by the manufacturing specification, components that are not subject to wear including structural components, housings, ducts, and hoods; F. check daily, or as required by the manufacturing specification, monitoring equipment, for example: pressure gauges, chart recorders, temperature indicators, and recorders; G. calibrate (or replace) annually, or as required by the manufacturing specification, all monitoring equipment; H. maintain a record of activities conducted in items A to G consisting of the activity completed, the date the activity was completed, and any corrective action taken; and I. maintain a record of parts replaced, repaired, or modified for the previous five years. [40 CFR 64.3, Minn. R. 7007.0800, subp. 14, Minn. R. 7017.0200]
TREA 2	5	1531099	If the Permittee replaces TREA 2, the replacement control must comply with all requirements of TREA 2. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee shall submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
TREA 2	6	1531100	Documentation of Need for Improved Monitoring: If the Permittee fails to achieve compliance with an emission limitation or standard for which the monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing lime feed rate range, the Permittee shall promptly notify the MPCA and, if necessary, submit a permit amendment application to address the necessary monitoring change. [40 CFR 64.7(e), Minn. R. 7017.0200]

SI Id	Sequence	ID	Requirement
TREA 2	7	1531101	As required by 40 CFR 64.9(a)(2), for the Semi-Annual Deviations Report required by this permit and/or the Notification of Deviations Endangering Human Health and the Environment required by this permit, as applicable, the Permittee shall include the following related to the monitoring identified as required by 40 CFR pt. 64: 1) Summary information on the number, duration, and cause of excursions or exceedances, as applicable, and the corrective action taken; and 2) Summary information on the number, duration, and cause for monitor downtime incidents. [40 CFR 64.9(a)(2), Minn. R. 7017.0200]
TREA 2	8	1531102	The Permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, and other supporting information required to be maintained. The Permittee may maintain records on alternative media, such as microfilm, computer files, magnetic tape disks, or microfiche, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b), Minn. R. 7017.0200]
TREA 2	9	1531103	Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording lime feed rate as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored gas scrubber is in operation. [40 CFR 64.7(b), Minn. R. 7017.0200]
TREA 5	1	1531104	The Permittee must limit the inlet gas stream Temperature <= 312 degrees Fahrenheit (as determined during the April 05-06, 2023 polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF) performance test). Notwithstanding the previous sentence, upon the Commissioner's written notification that EQUI 1 has demonstrated compliance under the conditions of a PCDD/PCDF performance test, the Permittee must maintain the lime feed rate determined during the most recent compliant PCDD/PCDF performance test. The inlet gas stream to TREA 5 on EQUI 1 as measured by Minn. R. 7011.1260, subp. 4(A) must have a temperature of no greater than 30 degrees Fahrenheit above the maximum demonstrated temperature of the particulate matter control device (4-hour block average) at the inlet of the particulate matter control device. The maximum demonstrated temperature of the particulate matter control device means the highest 4-hour block arithmetic average flue gas temperature measured at the inlet of the particulate matter control device during 4 consecutive hours in the course of the most recent performance test for dioxins/furans emissions (PCDD/PCDF) that demonstrates compliance except as allowed in following items: A. During the annual PCDD/PCDF performance test and the two weeks preceding the annual PCDD/PCDF performance test, no particulate matter control device temperature limitations are applicable.
			B. The Permittee must submit written notification to the Commissioner 30 days prior to evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions to waive the particulate matter control device temperature limits. The notification must include the following information: 1) a description of the proposed project, and the outcome the project is designed to evaluate; 2) how the project conforms with the activities described in Minn. R. 7011.1265 for which the temperature limit can be waived; and 3) the length of time the project will take to complete; the project must be accomplished within 14 days. [Minn. R. 7011.1240, subp. 2]
TREA 5	2	1531105	The Permittee must calibrate, maintain, and operate temperature monitors that continuously read and record the temperatures of the flue gas at the inlet of TREA 5. [Minn. R. 7011.1260, subp. 2]
TREA 5	16440	1525324	The Permittee shall vent emissions from EQUI 1 to TREA 5 whenever EQUI 1 operates, and operate and maintain TREA 5 at all times that any emissions are vented to TREA 5. The Permittee shall document periods of non-operation of the control equipment TREA 5 whenever EQUI 1 is operating. [Minn. R. 7007.0800, subp. 2(A)]
TREA 5	16445	1525326	If the Permittee replaces TREA 5, the replacement control must meet or exceed the control efficiency requirements of TREA 5 as well as comply with all other requirements of TREA 5. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee shall submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	ID	Requirement
TREA 5	17140	1531108	Pressure Drop >= 2.0 and <= 15.5 inches of water, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall continuously monitor the pressure drop. If the pressure drop is below or above the limit, this shall be reported as a deviation. This limit does not apply to periods of EQUI 1 startup, shutdown, or malfunction and does not apply during combustion of only natural gas. [Minn. R. 7007.0800, subp. 2(A)]
TREA 5	17145	1531109	Opacity < 5.0 percent opacity 3-hour average. Opacity in excess of this limit shall be considered an excursion under 40 CFR 64.6(c)(2), for purposes of the PM limit for EQUI 1. This applies for all types of fuel burned in EQUI 1. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 5	17150	1032193	The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]
TREA 5	17160	1531111	Daily Inspections: The Permittee must read and record the opacity once every 24 hours. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 5	17161	1531112	Continuous Monitoring: The Permittee shall continuously, or at a minimum once every 15 minutes, monitor the opacity of the fabric filter exhaust. See COMG 3 for specific COMS operating requirements. [40 CFR 64.3(b)(4)(ii), Minn. R. 7017.0200]
TREA 5	17162	1531116	Recordkeeping of Opacity: The Permittee shall record the time and date of each opacity reading, and whether or not the observed opacity was below the limit specified in this permit. Recorded values above the limit specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [40 CFR 64.9(b), Minn. R. 7017.0200]
TREA 5	17170	1531113	The Permittee must maintain an audible alarm that is triggered whenever the pressure drop is greater than 15.5 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated, then the alarm must be triggered by the maximum range provided in the Notice of Compliance. When the alarm is triggered, the Permittee must take corrective actions. [Minn. R. 7007.0800, subp. 2(A)]
TREA 5	17180	1536943	Pressure Drop: The Permittee must install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation. The Permittee must read and record the pressure drop across the fabric filter. The Permittee must record the time and date of each pressure drop reading, and whether or not the observed pressure drop was within the range specified in this permit. Recorded values outside the range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [Minn. R. 7007.0800, subp. 2(A)]
TREA 5	17190	1536944	The Permittee shall calibrate the pressure gauge at least once every 12 months and shall maintain a written record of any action resulting from the calibration. [Minn. R. 7007.0800, subp. 2(A)]
TREA 5	17200	1032198	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 5	17270	1124730	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed; or - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter. [40 CFR 64.7(d), Minn. R. 7017.0200]
TREA 5	35750	1539463	Documentation of Need for Improved Monitoring: If the Permittee fails to achieve compliance with an emission limitation or standard for which the monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing pressure drop range, the Permittee shall promptly notify the MPCA and, if necessary, submit a permit amendment application to address the necessary monitoring change. [40 CFR 64.7(e), Minn. R. 7017.0200]

SI Id	Sequence	ID	Requirement
TREA 5	35760	1493557	As required by 40 CFR 64.9(a)(2), for the Semi-Annual Deviations Report required by this permit and/or the Notification of Deviations Endangering Human Health and the Environment required by this permit, as applicable, the Permittee shall include the following related to the monitoring identified as required by 40 CFR pt. 64: 1) Summary information on the number, duration, and cause of excursions or exceedances, as applicable, and the corrective action taken; and 2) Summary information on the number, duration, and cause for monitor downtime incidents. [40 CFR 64.9(a)(2), Minn. R. 7017.0200]
TREA 5	35770	1536945	The Permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, and other supporting information required to be maintained. The Permittee may maintain records on alternative media or computer files, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b), Minn. R. 7017.0200]
TREA 6	1	1531106	The Permittee must limit the inlet gas stream Temperature <= 305 degrees Fahrenheit (as determined during the April 21-22, 2022 polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/PCDF) performance test). Notwithstanding the previous sentence, upon the Commissioner's written notification that EQUI 2 has demonstrated compliance under the conditions of a PCDD/PCDF performance test, the Permittee must maintain the lime feed rate determined during the most recent compliant PCDD/PCDF performance test. The inlet gas stream to TREA 6 on EQUI 2 as measured by Minn. R. 7011.1260, subp. 4(A) must have a temperature of no greater than 30 degrees Fahrenheit above the maximum demonstrated temperature of the particulate matter control device (4-hour block average) at the inlet of the particulate matter control device. The maximum demonstrated temperature of the particulate matter control device means the highest 4-hour block arithmetic average flue gas temperature measured at the inlet of the particulate matter control device during 4 consecutive hours in the course of the most recent performance test for dioxins/furans emissions (PCDD/PCDF) that demonstrates compliance except as allowed in following items: A. During the annual PCDD/PCDF performance test and the two weeks preceding the annual PCDD/PCDF performance test, no particulate matter control device temperature limitations are applicable.
			B. The Permittee must submit written notification to the Commissioner 30 days prior to evaluating system performance, testing new technology or control technologies, diagnostic testing, or related activities for the purpose of improving facility performance or advancing the state-of-the-art for controlling facility emissions to waive the particulate matter control device temperature limits. The notification must include the following information: 1) a description of the proposed project, and the outcome the project is designed to evaluate; 2) how the project conforms with the activities described in Minn. R. 7011.1265 for which the temperature limit can be waived; and 3) the length of time the project will take to complete; the project must be accomplished within 14 days. [Minn. R. 7011.1240, subp. 2]
TREA 6	2	1531107	The Permittee must calibrate, maintain, and operate temperature monitors that continuously read and record the temperatures of the flue gas at the inlet of TREA 6. [Minn. R. 7011.1260, subp. 2]
TREA 6	16440	1525331	The Permittee shall vent emissions from EQUI 2 to TREA 6 whenever EQUI 2 operates, and operate and maintain TREA 6 at all times that any emissions are vented to TREA 6. The Permittee shall document periods of non-operation of the control equipment TREA 6 whenever EQUI 2 is operating. [Minn. R. 7007.0800, subp. 2(A)]
TREA 6	16445	1525332	If the Permittee replaces TREA 6, the replacement control must meet or exceed the control efficiency requirements of TREA 6 as well as comply with all other requirements of TREA 6. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee shall submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
TREA 6	17140	1531117	Pressure Drop >= 2.0 and <= 15.5 inches of water, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall continuously monitor the pressure drop. If the pressure drop is below or above the limit, this shall be reported as a deviation. This limit does not apply to periods of EQUI 2 startup, shutdown, or malfunction and does not apply during combustion of only natural gas. [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	ID	Requirement
TREA 6	17145	1531110	Opacity < 5.0 percent opacity 3-hour average. Opacity in excess of this limit shall be considered an excursion under 40 CFR 64.6(c)(2), for purposes of the PM limit for EQUI 2. This applies for all types of fuel burned in EQUI 2. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 6	17150	1032193	The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff. [Minn. R. 7007.0800, subp. 14]
TREA 6	17160	1531118	Daily Inspections: The Permittee must read and record the opacity once every 24 hours. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 6	17161	1531114	Continuous Monitoring: The Permittee shall continuously, or at a minimum once every 15 minutes, monitor the opacity of the fabric filter exhaust. See COMG 3 for specific COMS operating requirements. [40 CFR 64.3(b)(4)(ii), Minn. R. 7017.0200]
TREA 6	17162	1531119	Recordkeeping of Opacity: The Permittee shall record the time and date of each opacity reading, and whether or not the observed opacity was below the specified limit in this permit. Recorded values above the limit specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [40 CFR 64.9(b), Minn. R. 7017.0200]
TREA 6	17170	1531115	The Permittee must maintain an audible alarm that is triggered whenever the pressure drop is greater than 15.5 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated, then the alarm must be triggered by the maximum range provided in the Notice of Compliance. When the alarm is triggered, the Permittee must take corrective actions. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 6	17180	1536951	Pressure Drop: The Permittee must install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation. The Permittee must read and record the pressure drop across the fabric filter. The Permittee must record the time and date of each pressure drop reading, and whether or not the observed pressure drop was within the range specified in this permit. Recorded values outside the range specified in this permit are considered Deviations as defined by Minn. R. 7007.0100, subp. 8a. [Minn. R. 7007.0800, subp. 2(A)]
TREA 6	17190	1536952	The Permittee shall calibrate the pressure gauge at least once every 12 months and shall maintain a written record of any action resulting from the calibration. [Minn. R. 7007.0800, subp. 2(A)]
TREA 6	17200	1032198	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections. [40 CFR 64.3, Minn. R. 7017.0200]
TREA 6	17270	1124730	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed; or - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter. [40 CFR 64.7(d), Minn. R. 7017.0200]
TREA 6	35750	1539464	Documentation of Need for Improved Monitoring: If the Permittee fails to achieve compliance with an emission limitation or standard for which the monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing pressure drop range, the Permittee shall promptly notify the MPCA and, if necessary, submit a permit amendment application to address the necessary monitoring change. [40 CFR 64.7(e), Minn. R. 7017.0200]
TREA 6	35760	1493557	As required by 40 CFR 64.9(a)(2), for the Semi-Annual Deviations Report required by this permit and/or the Notification of Deviations Endangering Human Health and the Environment required by this permit, as applicable, the Permittee shall include the following related to the monitoring identified as required by 40 CFR pt. 64: 1) Summary information on the number, duration, and cause of excursions or exceedances, as applicable, and the corrective action taken; and 2) Summary information on the number, duration, and cause for monitor downtime incidents. [40 CFR 64.9(a)(2), Minn. R. 7017.0200]

SI Id	Sequence	ID	Requirement
TREA 6	35770	1536954	The Permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, and other supporting information required to be maintained. The Permittee may maintain records on alternative media or computer files, provided that the use of such alternative media allows for expeditious inspection and review, and does not conflict with other applicable recordkeeping requirements. [40 CFR 64.9(b), Minn. R. 7017.0200]
TREA 7	17615	1536812	The control equipment is listed control equipment under Minn. R. 7011.0060 to 7011.0080. The Permittee shall vent emissions from EQUI 36 to TREA 7 whenever EQUI 36 operates, and operate and maintain TREA 7 at all times that any emissions are vented to TREA 7. The Permittee shall document periods of non-operation of the control equipment TREA 7 whenever EQUI 36 is operating. [Minn. R. 7011.0075, subp. 1]
TREA 7	18310	1536806	If the Permittee replaces TREA 7, the replacement control must meet or exceed the control efficiency requirements of TREA 7 as well as comply with all other requirements of TREA 7. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee shall submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
TREA 7	18320	1536807	The Permittee shall operate and maintain control equipment such that it achieves a control efficiency for Particulate Matter >= 99 percent control efficiency. [Minn. R. 7011.0070, subp. 1(A)]
TREA 7	18330	1536808	The Permittee shall operate and maintain control equipment such that it achieves a control efficiency for PM < 10 micron >= 93 percent control efficiency. [Minn. R. 7011.0070, subp. 1(A)]
TREA 7	18340	1536809	The Permittee shall operate and maintain control equipment such that it achieves a control efficiency for PM < 2.5 micron >= 93 percent control efficiency. [Minn. R. 7007.0800, subp. 2(A)]
TREA 7	18360	1536810	Visible Emissions: The Permittee shall check the fabric filter stack STRU 12 for any visible emissions once each day of operation during daylight hours. If there are visible emissions, the emissions shall be considered uncontrolled until there are no longer visible emissions. The period of time for which there are visible emissions shall be reported as a deviation. During inclement weather, the Permittee shall read and record the pressure drop across the fabric filter, once each day of operation. [Minn. R. 7011.0080]
TREA 7	18370	1536811	Recordkeeping of Visible Emissions. The Permittee shall record the time and date of each visible emission inspection, and whether or not any visible emissions were observed. [Minn. R. 7011.0080]
TREA 7	18380	1267767	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 5]
TREA 7	18390	1032318	Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation. [Minn. R. 7011.0075, subp. 3]

SI Id	Sequence	ID	Requirement
TREA 7	18400	1536814	The Permittee shall maintain each piece of control equipment according to the control equipment manufacturer's specifications, and shall: A. maintain an inventory of spare parts that are subject to frequent replacement, as required by the manufacturing specification or documented in records under items H and I; B. train staff on the operation and monitoring of control equipment and troubleshooting, and train and require staff to respond to indications of malfunctioning equipment; C. thoroughly inspect all control equipment at least annually, or as required by the manufacturing specification; D. inspect monthly, or as required by the manufacturing specification, components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts; E. inspect quarterly, or as required by the manufacturing specification, components that are not subject to wear including structural components, housings, ducts, and hoods; F. check daily, or as required by the manufacturing specification, monitoring equipment, for example: pressure gauges, chart recorders, temperature indicators, and recorders; G. calibrate (or replace) annually, or as required by the manufacturing specification, all monitoring equipment; H. maintain a record of activities conducted in items A to G consisting of the activity completed, the date the activity was completed, and any corrective action taken; and I. maintain a record of parts replaced, repaired, or modified for the previous five years. [Minn. R. 7011.0075, subp. 2]
TREA 8	17615	1536821	The control equipment is listed control equipment under Minn. R. 7011.0060 to 7011.0080. The Permittee shall vent emissions from EQUI 37 to TREA 8 whenever EQUI 37 operates, and operate and maintain TREA 8 at all times that any emissions are vented to TREA 8. The Permittee shall document periods of non-operation of the control equipment TREA 8 whenever EQUI 37 is operating. [Minn. R. 7011.0075, subp. 1]
TREA 8	18310	1536815	If the Permittee replaces TREA 8, the replacement control must meet or exceed the control efficiency requirements of TREA 8 as well as comply with all other requirements of TREA 8. Prior to making such a change, the Permittee shall apply for and obtain the appropriate permit amendment, as applicable. If no amendment is needed for the replacement, the Permittee shall submit an electronic notice to the Agency using Form CR-05. The notice must be received by the Agency seven working days prior to the commencement/start of replacement. [Minn. R. 7007.0800, subp. 2(A)]
TREA 8	18320	1536816	The Permittee shall operate and maintain control equipment such that it achieves a control efficiency for Particulate Matter >= 99 percent control efficiency. [Minn. R. 7011.0070, subp. 1(A)]
TREA 8	18330	1536817	The Permittee shall operate and maintain control equipment such that it achieves a control efficiency for PM < 10 micron >= 93 percent control efficiency. [Minn. R. 7011.0070, subp. 1(A)]
TREA 8	18340	1536818	The Permittee shall operate and maintain control equipment such that it achieves a control efficiency for PM < 2.5 micron >= 93 percent control efficiency. [Minn. R. 7007.0800, subp. 2(A)]
TREA 8	18360	1536819	Visible Emissions: The Permittee shall check the fabric filter stack STRU 13 for any visible emissions once each day of operation during daylight hours. If there are visible emissions, the emissions shall be considered uncontrolled until there are no longer visible emissions. The period of time for which there are visible emissions shall be reported as a deviation. During inclement weather, the Permittee shall read and record the pressure drop across the fabric filter, once each day of operation. [Minn. R. 7011.0080]
TREA 8	18370	1536820	Recordkeeping of Visible Emissions. The Permittee shall record the time and date of each visible emission inspection and whether or not any visible emissions were observed. [Minn. R. 7011.0080]
TREA 8	18380	1267767	Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 5]
TREA 8	18390	1032318	Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation. [Minn. R. 7011.0075, subp. 3]

SI Id	Sequence	ID	Requirement
TREA 8	18400	1536822	The Permittee shall maintain each piece of control equipment according to the control equipment manufacturer's specifications, and shall: A. maintain an inventory of spare parts that are subject to frequent replacement, as required by the manufacturing specification or documented in records under items H and I; B. train staff on the operation and monitoring of control equipment and troubleshooting, and train and require staff to respond to indications of malfunctioning equipment; C. thoroughly inspect all control equipment at least annually, or as required by the manufacturing specification; D. inspect monthly, or as required by the manufacturing specification, components that are subject to wear or plugging, for example: bearings, belts, hoses, fans, nozzles, orifices, and ducts; E. inspect quarterly, or as required by the manufacturing specification, components that are not subject to wear including structural components, housings, ducts, and hoods; F. check daily, or as required by the manufacturing specification, monitoring equipment, for example: pressure gauges, chart recorders, temperature indicators, and recorders; G. calibrate (or replace) annually, or as required by the manufacturing specification, all monitoring equipment; H. maintain a record of activities conducted in items A to G consisting of the activity completed, the date the activity was completed, and any corrective action taken; and I. maintain a record of parts replaced, repaired, or modified for the previous five years. [Minn. R. 7011.0075, subp. 2]

Attachment 3 – CAM Plan

Compliance Assurance Monitoring Plan
Red Wing Generating Plant

Company:	Xcel Energy
Facility Address:	Red Wing Generating Plant 801 5th St. E. Red Wing, MN 55066
AQ Facility ID:	04900005
Date:	March 2024

TABLE OF CONTENTS

CAM PLAN INTRODUCTION

The compliance assurance monitoring (CAM) Plan provides assurance that the limits of the pollutants outlined below are met at all times when combusting refuse-derived fuel (RDF) and RDF, along with other permitted fuels, except natural gas. The limits and corresponding compliance assurance methods outlined in this Plan do not apply when combusting only natural gas.

Boiler #1 Dry Limestone Injection (Sulfur Dioxide Control)

I. **Background**

a. Emissions Unit

Description:	Electric Utility Boiler
AQ Facility ID:	04900005
Facility:	Red Wing Generating Plant, Red Wing, MN
Applicable Emission Unit:	EQUI 1/EU001 Boiler #1
	TREA 1/CE007 Dry Limestone Injection

b. Applicable Regulation, Emission Limit and Monitoring Requirements

Emission Limits: Sulfur Dioxide (SO2)

Limit/Basis	Pollutant	Regulatory Citation
≤29 ppm by volume corrected to 7% O2 on a 24-hour block geometric average or ≥75% reduction, whichever is less stringent	Sulfur Dioxide	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1260, subp. 4(D)

Monitoring Requirements: SO2 Continuous Emissions Monitoring System (CEMS)

c. Control Technology

Dry Limestone Injection

II. **Monitoring Approach**

I. Indicator	**Sulfur Dioxide (SO2)**
Measurement Approach	SO2 is measured continuously using a continuous emissions monitoring system (CEMS) per the requirements of 40 CFR Part 60.
II. Indicator Range	Boiler #1 stack has an SO2 limit of ≤29 ppm (corrected to 7% O2) or ≥75% reduction, 24-hour average. Sustained changes in SO2 emissions or removal efficiency beyond the applicable emission limits may indicate a problem with the operation of the dry limestone injection system.
III. Performance Criteria	
A. Data Representativeness	SO2 is measured at two locations, prior to scrubber and in the stack. The CEMS meets the requirements of 40 CFR Part 60 and Minn. R. 7011.1260.
B. Verification of Operational Status	The CEMS was installed and certified following the requirements of 40 CFR Part 60, Appendix B.
C. QA/QC Practices and Criteria	The CEMS operates in conjunction with a quality assurance plan according to 40 CFR Part 60 and follows all calibration requirements outlined in that part.
D. Monitoring Frequency	SO2 is monitored continuously, recorded at one-minute intervals and reduced to the appropriate averages for reporting.
E. Data Collection Procedures	Data is recorded digitally in the CEMS DAHS.
F. Averaging Period	Per the appropriate limit (24-hour basis).

III. **Monitoring Approach Justification**

a. Background

The Red Wing Generating Plant consists of two refuse-derived fuel (RDF)-fired electric utility boilers. The boilers also have the ability to combust natural gas as well as the limited ability to combust wood and waste oil. Boiler #1 and Boiler #2 are each equipped with dry limestone injection into a scrubber to control emissions of SO2. The flue gas from Boiler #1 emits through STRU 11 (SV001) and the flue gas from Boiler #2 emits through STRU 8 (SV002). An SO2 CEMS is installed prior to each scrubber and on each stack, which is where emissions are monitored.

b. Rationale for Selecting Performance Indicators and Indicator Ranges

Direct measurement of SO2 concentrations in the flue gas stream is the most direct single indicator of dry limestone injection performance.

Per 40 CFR 64.3(d)(2)(ii), a CEMS that satisfies the requirements of 40 CFR Part 60 is deemed to satisfy the general design and performance criteria for CAM.

Per the *Technical Guidance Document: Compliance Assurance Monitoring, MRI Project No. 4701-05, Appendix B, January 2005*, further justification for CEMS use is not required. Also, indicator ranges do not need to be specified for CEMS that provide data in units of the applicable emission standard because the level of the standard is the level at which an excess emission occurs. The use of CEMS that provide results in units of the standard for the pollutant of interest and meet criteria presented in 40 CFR 64.3(d)(2) is presumptively acceptable CAM.

Boiler #1 Dry Limestone Injection (Hydrochloric Acid Control)

I. **Background**

a. Emissions Unit

Description:	Electric Utility Boiler
AQ Facility ID:	04900005
Facility:	Red Wing Generating Plant, Red Wing, MN
Applicable Emission Unit:	EQUI 1/EU001 Boiler #1
	TREA 1/CE007 Dry Limestone Injection

b. Applicable Regulation, Emission Limit and Monitoring Requirements

Emission Limits: Hydrochloric Acid (HCl)

Limit/Basis	Pollutant	Regulatory Citation
≤29 ppm by volume corrected to 7% O2 or ≥95% control, whichever is less stringent	Hydrochloric Acid	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1265, subp. 3(A)

Monitoring Requirements: Lime Feed Rate

c. Control Technology

Dry Limestone Injection

II. **Monitoring Approach**

I. Indicator	**Lime Feed Rate**
Measurement Approach	Lime feed rate to the scrubber is monitored and recorded on a continuous basis.
II. Indicator Range	An excursion is defined as lime feed rate that is less than the minimum feed rate, averaged over an 8-hour period. The minimum feed rate is determined by selecting the lowest one-minute lime feed rate during the most recent HCl performance test. This value will be updated on an annual basis.
III. Performance Criteria	
A. Data Representativeness	Measurements are taken from a flow measuring instrument.
B. Verification of Operational Status	NA
C. QA/QC Practices and Criteria	The lime feed rate instrument is calibrated at least annually.
D. Monitoring Frequency	The lime feed rate is monitored on a one-minute basis and averaged over 8-hours.
E. Data Collection Procedures	Data is recorded digitally in the CEMS DAHS.
F. Averaging Period	8-Hour Average

III. **Monitoring Approach Justification**

a. Background

The Red Wing Generating Plant consists of two refuse-derived fuel (RDF)-fired electric utility boilers. The boilers also have the ability to combust natural gas as well as the limited ability to combust wood and waste oil. Boiler #1 and Boiler #2 are each equipped with dry limestone injection into a scrubber to control emissions of HCl. The flue gas from Boiler #1 emits through STRU 11 (SV001) and the flue gas from Boiler #2 emits through STRU 8 (SV002).

b. Rationale for Selecting Performance Indicators and Indicator Ranges

Lime feed rate was selected as the performance indicator because it is indicative of good operation of the dry limestone injection system. When the dry limestone injection system is operating properly, lime feed rate will be greater than the minimum rate as determined by the most recent HCl performance test, averaged over an 8-hour period. Any decrease in lime feed rate below this level can potentially indicate reduced performance of the dry limestone injection system; therefore, lime feed rate can be used as a performance indicator.

c. Rationale for Selection of Indicator Ranges

The selected indicator range is lime feed rate within the normal operating range. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and reported to the MPCA. The minimum lime feed rate is determined from the most recent performance test and averaged over an 8-hour period. A reading below this level is indicative of potential dry limestone injection system issues.

Boiler #2 Dry Limestone Injection (Sulfur Dioxide Control)

I. **Background**

a. Emissions Unit

Description:	Electric Utility Boiler
AQ Facility ID:	04900005
Facility:	Red Wing Generating Plant, Red Wing, MN
Applicable Emission Unit:	EQUI 2/EU002 Boiler #2
	TREA 2/CE008 Dry Limestone Injection

b. Applicable Regulation, Emission Limit and Monitoring Requirements

Emission Limits: Sulfur Dioxide (SO2)

Limit/Basis	Pollutant	Regulatory Citation
≤29 ppm by volume corrected to 7% O2 on a 24-hour block geometric average or ≥75% reduction, whichever is less stringent	Sulfur Dioxide	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1260, subp. 4(D)

Monitoring Requirements: SO2 Continuous Emissions Monitoring System (CEMS)

c. Control Technology

Dry Limestone Injection

II. **Monitoring Approach**

I. Indicator	**Sulfur Dioxide (SO2)**
Measurement Approach	SO2 is measured continuously using a continuous emissions monitoring system (CEMS) per the requirements of 40 CFR Part 60.
II. Indicator Range	Boiler #2 stack has an SO2 limit of ≤29 ppm (corrected to 7% O2) or ≥75% reduction, 24-hour average. Sustained changes in SO2 emissions or removal efficiency beyond the applicable emission limits may indicate a problem with the operation of the dry limestone injection system.
III. Performance Criteria	
A. Data Representativeness	SO2 is measured at two locations, prior to scrubber and in the stack. The CEMS meets the requirements of 40 CFR Part 60 and Minn. R. 7011.1260.
B. Verification of Operational Status	The CEMS was installed and certified following the requirements of 40 CFR Part 60, Appendix B.
C. QA/QC Practices and Criteria	The CEMS operates in conjunction with a quality assurance plan according to 40 CFR Part 60 and follows all calibration requirements outlined in that part.
D. Monitoring Frequency	SO2 is monitored continuously, recorded at one-minute intervals and reduced to the appropriate averages for reporting.
E. Data Collection Procedures	Data is recorded digitally in the CEMS DAHS.
F. Averaging Period	Per the appropriate limit (24-hour basis).

III. **Monitoring Approach Justification**

a. Background

The Red Wing Generating Plant consists of two refuse-derived fuel (RDF)-fired electric utility boilers. The boilers also have the ability to combust natural gas as well as the limited ability to combust wood and waste oil. Boiler #1 and Boiler #2 are each equipped with dry limestone injection into a scrubber to control emissions of SO2. The flue gas from Boiler #1 emits through STRU 11 (SV001) and the flue gas from Boiler #2 emits through STRU 8 (SV002). An SO2 CEMS is installed prior to each scrubber and on each stack, which is where emissions are monitored.

b. Rationale for Selecting Performance Indicators and Indicator Ranges

Direct measurement of SO2 concentrations in the flue gas stream is the most direct single indicator of dry limestone injection system performance.

Per 40 CFR 64.3(d)(2)(ii), a CEMS that satisfies the requirements of 40 CFR Part 60 is deemed to satisfy the general design and performance criteria for CAM.

Per the *Technical Guidance Document: Compliance Assurance Monitoring, MRI Project No. 4701-05, Appendix B, January 2005*, further justification for CEMS use is not required. Also, indicator ranges do not need to be specified for CEMS that provide data in units of the applicable emission standard because the level of the standard is the level at which an excess emission occurs. The use of CEMS that provide results in units of the standard for the pollutant of interest and meet criteria presented in 40 CFR 64.3(d)(2) is presumptively acceptable CAM.

Boiler #2 Dry Limestone Injection (Hydrogen Chloride Control)

I. **Background**

a. Emissions Unit

Description:	Electric Utility Boiler
AQ Facility ID:	04900005
Facility:	Red Wing Generating Plant, Red Wing, MN
Applicable Emission Unit:	EQUI 2/EU002 Boiler #2
	TREA 2/CE008 Dry Limestone Injection

b. Applicable Regulation, Emission Limit and Monitoring Requirements

Emission Limits: Hydrochloric Acid (HCl)

Limit/Basis	Pollutant	Regulatory Citation
≤29 ppm by volume corrected to 7% O2 or ≥95% control, whichever is less stringent	Hydrochloric Acid	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1265, subp. 3(A)

Monitoring Requirements: Lime Feed Rate

c. Control Technology

Dry Limestone Injection

II. **Monitoring Approach**

I. Indicator	**Lime Slurry Feed Rate**
Measurement Approach	Lime feed rate to the scrubber is monitored and recorded on a continuous basis.
II. Indicator Range	An excursion is defined as lime feed rate that is less than the minimum feed rate, averaged over an 8-hour period. The minimum feed rate is determined by selecting the lowest one-minute lime feed rate during the most recent HCl performance test. This value will be updated on an annual basis.
III. Performance Criteria	
A. Data Representativeness	Measurements are taken from a flow measuring instrument.
B. Verification of Operational Status	NA
C. QA/QC Practices and Criteria	The lime feed rate instrument is calibrated at least annually.
D. Monitoring Frequency	The lime feed rate is monitored on a one-minute basis and averaged over 8-hours.
E. Data Collection Procedures	Data is recorded digitally in the CEMS DAHS.
F. Averaging Period	8-Hour Average

III. **Monitoring Approach Justification**

a. Background

The Red Wing Generating Plant consists of two refuse-derived fuel (RDF)-fired electric utility boilers. The boilers also have the ability to combust natural gas as well as the limited ability to combust wood and waste oil. Boiler #1 and Boiler #2 are each equipped with dry limestone injection into a scrubber to control emissions of HCl. The flue gas from Boiler #1 emits through STRU 11 (SV001) and the flue gas from Boiler #2 emits through STRU 8 (SV002).

b. Rationale for Selecting Performance Indicators and Indicator Ranges

Lime feed rate was selected as the performance indicator because it is indicative of good operation of the dry limestone injection system. When the dry limestone injection system is operating properly, lime feed rate will be greater than the minimum rate as determined by the most recent HCl performance test, averaged over an 8-hour period. Any decrease in lime feed rate below this level can potentially indicate reduced performance of the dry limestone injection system; therefore, lime feed rate can be used as a performance indicator.

c. Rationale for Selection of Indicator Ranges

The selected indicator range is lime feed rate within the normal operating range. When an excursion occurs, corrective action will be initiated, beginning with an evaluation of the occurrence to determine the action required to correct the situation. All excursions will be documented and reported to the MPCA. The minimum lime feed rate is determined from the most recent performance test and averaged over an 8-hour period. A reading below this level is indicative of potential dry limestone injection system issues.

Boiler #1 Fabric Filter (Particulate Control)

I. **Background**

a. Emissions Unit

Description:	Electric Utility Boiler
AQ Facility ID:	04900005
Facility:	Red Wing Generating Plant, Red Wing, MN
Applicable Emission Unit:	EQUI 1/EU001 Boiler #1
	TREA 5/CE005 Fabric Filter

b. Applicable Regulation, Emission Limit and Monitoring Requirements

Emission Limits: Particulate Matter (PM), PM10, PM2.5

Limit/Basis	Pollutant	Regulatory Citation
≤ 0.012 grains/dscf, corrected to 7% O2	Front-half PM	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1225, subp. 1; Minn. R. 7011.1265
≤ 0.020 grains/dscf, corrected to 7% O2	Total PM	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1225, subp. 1; Minn. R. 7011.1265
≤ 10% (6-minute average)	Opacity	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1260, subp. 4(F);

Monitoring Requirements: Continuous Opacity Monitoring System (COMS)

c. Control Technology

Fabric Filter – High Temperature >250 Degrees F

II. Monitoring Approach

I. Indicator	**Opacity**
Measurement Approach	Opacity is measured continuously using a continuous opacity monitoring system (COMS).
II. Indicator Range	Boiler #1 has an opacity limit of ≤10 percent (6-minute average). At an opacity of >5%, inspection and corrective action are initiated. Sudden changes in opacity can indicate a problem with the operation of the fabric filter.
III. Performance Criteria	
A. Data Representativeness	Opacity is measured in the stack. The COMS meets the requirements of Minn. R. 7017 and Minn. R. 7011.1260, as applicable.
B. Verification of Operational Status	The COMS was installed and certified following the requirements of Minn. R. 7011.1260, as applicable.
C. QA/QC Practices and Criteria	The COMS operates in conjunction with a quality assurance plan according to Minn. R. 7017.1260 and follows all calibration requirements outlined in the rule.
D. Monitoring Frequency	Opacity is monitored continuously and reduced to 6-minute averages, utilizing at least 36 data points for reporting.
E. Data Collection Procedures	Data is recorded digitally in COMS DAHS.
F. Averaging Period	6-minute average.

III. Monitoring Approach Justification

a. Background

The Red Wing Generating Plant consists of two refuse-derived fuel (RDF)-fired electric utility boilers. The boilers also have the ability to combust natural gas as well as the limited ability to combust wood and waste oil. Boiler #1 and Boiler #2 are each equipped with fabric filters to control emissions of PM, PM10 and PM2.5. The flue gas from Boiler #1 emits through STRU 11 (SV001) and the flue gas from Boiler #2 emits through STRU 8 (SV002). A COMS is installed on each stack, which is where opacity is monitored.

b. Rational for Selecting Performance Indicators

Opacity was selected as a performance indicator because it is indicative of good operation and maintenance of the fabric filter. When the fabric filter is operating optimally, there is little opacity from the exhaust. In general, an increase in opacity indicates reduced performance of the fabric filters and elevated particulate matter emissions.

c. Rationale for Selection of Indicator Ranges

The indicator range for opacity is a 6-minute average opacity of less than or equal to 5 percent. This indicator range was selected based on the facility's permit requirements and historical operating data. Sudden changes in opacity are a good indicator of problems with the fabric filter operation. Typically, the unit operates with opacity less than 1 percent.

Boiler #2 Fabric Filter (Particulate Control)

I. **Background**

a. Emissions Unit

Description:	Electric Utility Boiler
AQ Facility ID:	04900005
Facility:	Red Wing Generating Plant, Red Wing, MN
Applicable Emission Unit:	EQUI 2/EU002 Boiler #2
	TREA 6/CE006 Fabric Filter

b. Applicable Regulation, Emission Limit and Monitoring Requirements

Emission Limits: Particulate Matter (PM), PM10, PM2.5

Limit/Basis	Pollutant	Regulatory Citation
≤ 0.012 grains/dscf, corrected to 7% O2	Front-half PM	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1225, subp. 1; Minn. R. 7011.1265
≤ 0.020 grains/dscf, corrected to 7% O2	Total PM	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1225, subp. 1; Minn. R. 7011.1265
≤ 10% (6-minute average)	Opacity	Minn. R. 7011.1227, Table 1; Minn. R. 7011.1260, subp. 4(F);

Monitoring Requirements: Continuous Opacity Monitoring System (COMS)

c. Control Technology

Fabric Filter – High Temperature >250 Degrees F

II. **Monitoring Approach**

I. Indicator	**Opacity**
Measurement Approach	Opacity is measured continuously using a continuous opacity monitoring system (COMS).
II. Indicator Range	Boiler #2 has an opacity limit of ≤10 percent (6-minute average). At an opacity of >5%, inspection and corrective action are initiated. Sudden changes in opacity can indicate a problem with the operation of the fabric filter.
III. Performance Criteria	
A. Data Representativeness	Opacity is measured in the stack. The COMS meets the requirements of Minn. R. 7017 and Minn. R. 7011.1260, as applicable.
B. Verification of Operational Status	The COMS was installed and certified following the requirements of Minn. R. 7011.1260, as applicable.
C. QA/QC Practices and Criteria	The COMS operates in conjunction with a quality assurance plan according to Minn. R. 7017.1260 and follows all calibration requirements outlined in the rule.
D. Monitoring Frequency	Opacity is monitored continuously and reduced to 6-minute averages, utilizing at least 36 data points for reporting.
E. Data Collection Procedures	Data is recorded digitally in COMS DAHS.
F. Averaging Period	6-minute average.

III. **Monitoring Approach Justification**

a. Background

The Red Wing Generating Plant consists of two refuse-derived fuel (RDF)-fired electric utility boilers. The boilers also have the ability to combust natural gas as well as the limited ability to combust wood and waste oil. Boiler #1 and Boiler #2 are each equipped with fabric filters to control emissions of PM, PM10 and PM2.5. The flue gas from Boiler #1 emits through STRU 11 (SV001) and the flue gas from Boiler #2 emits through STRU 8 (SV002). A COMS is installed on each stack, which is where opacity is monitored.

b. Rational for Selecting Performance Indicators

Opacity was selected as a performance indicator because it is indicative of good operation and maintenance of the fabric filter. When the fabric filter is operating optimally, there is little opacity from the exhaust. In general, an increase in opacity indicates reduced performance of the fabric filters.

c. Rationale for Selection of Indicator Ranges

The indicator range for opacity is a 6-minute average opacity of less than or equal to 5 percent. This indicator range was selected based on the facility's permit requirements and historical operating data. Sudden changes in opacity are a good indicator of problems with the fabric filter operation. Typically, the unit operates with opacity less than 1 percent.