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

CD-05

Compliance plan for control equipment

Air Quality Permit Program

Doc Type: Permit Application

Facility information

1a) AQ Facility ID number: 12300088 **1b) Agency Interest ID number:** 3518

2) Facility name: Northern Iron LLC

3) Electrostatic precipitators (includes wet electrostatic precipitators) (control codes 010, 011, 012, 146)

Complete the following information for each electrostatic precipitator not already included in an existing individual permit. For changes to parameters of electrostatic precipitators already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?	Voltage (kVolts)	Secondary current (mA)	Total power (kW)	Minimum fields online	Using conditioning agent?	Conditioning agent flow rate, if applicable	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes					☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes					☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes					☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes					☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes					☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

CAM = Compliance Assurance Monitoring
PSEU = Pollutant specific emission unit

4) Fabric filters (control codes 016, 017, 018)

Complete the following information for each fabric filter not already included in an existing individual permit. For changes to parameters for fabric filters already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on Form GI-05A)	Using control equipment rule?	Minimum pressure drop (in. of water column)	Maximum pressure drop (in. of water column)	Bag leak detector in use?	Subject to CAM?	For a "Large" or "Other" PSEU?
TREA18	Manufacturer/Vendor Data.	☐ No ☒ Yes	0.5	6	☐ Yes ☒ No	☐ Yes ☒ No	☐ Large ☐ Other ☒ NA
TREA45	Manufacturer/Vendor Data	☐ No ☒ Yes	0.5	7	☐ Yes ☒ No	☐ Yes ☒ No	☐ Large ☐ Other ☒ NA
TREA46	Building is total enclosure. Controls uncaptured and controlled emissions released indoors for units in proximity to inlets.	☐ No ☒ Yes	0.5	10	☒ Yes ☐ No	☐ Yes ☒ No	☐ Large ☐ Other ☒ NA
TREA47	Building is total enclosure. Controls uncaptured and controlled emissions released indoors for units in proximity to inlets.	☐ No ☒ Yes	0.5	10	☒ Yes ☐ No	☐ Yes ☒ No	☐ Large ☐ Other ☒ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

5) Panel/Wall filters (including high efficiency particulate air [HEPA] filters) (control codes 058, 101), Mechanically aided separators (control codes 056, 113)

Complete the following information for each wall or panel filter not already included in an existing individual permit. For changes to parameters for filters already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

6) Cyclones/Multiclones (control codes 007, 008, 009, 075, 076, 077)

Complete the following information for each cyclone or multiclone not already included in an existing individual permit. For changes to parameters for cyclones or multiclones already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?*	Minimum pressure drop (inches of water column)	Maximum pressure drop (inches of water column)	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

* Control equipment rule can only be used for control codes 007, 008, 009, and 076.

7) Wet cyclone separator (control codes 057, 085)

Complete the following information for each wet cyclone separator not already included in an existing individual permit. For changes to parameters for wet cyclone separators already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?	Minimum pressure drop (inches of water column)	Maximum pressure drop (inches of water column)	Water pressure (psi)	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

8) Wet scrubber (control codes 001, 002, 003), Spray tower (control code 052), Venturi scrubber (control code 053), or Impingement plate scrubber (control code 055)

Complete the following information for each wet scrubber not already included in an existing individual permit. For changes to parameters for wet scrubbers already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?*	Minimum pressure drop (inches of water column)	Maximum pressure drop (inches of water column)	Minimum liquid flow rate (gal/min)	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

* Control equipment rule can only be used for control codes 052, 053, and 055.

9) Injection systems (control codes 028, 031, 032, 041, 042, 067, 068, 069, 070, 071, 206, 207)

Complete the following information for each injection system not already included in an existing individual permit. For changes to parameters for injection systems already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Minimum injection rate	Min. rate units (gal./hr or lbs/hr)	Maximum injection rate	Max. rate units (gal./hr or lbs/hr)	Material injected**	Subject to CAM?	For a "Large" or "Other" PSEU?
							☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
							☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
							☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
							☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
							☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

******Use one of the following for material injected: air; ammonia (anhydrous); calcium bromide; carbon; chlorine flux; limestone, dry; limestone, wet; mercury additive; mercury reagent; molten sulfur; other; perlite; reactive flux; reagent; sorbent, dry; steam or water; trona

10) Thermal oxidation (control codes 021, 022, 131, 133)

Complete the following information for each thermal oxidizer not already included in an existing individual permit. For changes to parameters for thermal oxidizers already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?	Combustion temperature (degrees F)	Inlet and Outlet temperatures (degrees F)	Residence time (seconds)	Burner capacity (MMBtu/hr)	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes		Inlet: _____ Outlet: _____			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____			☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

11) Catalytic oxidation (control codes 019, 020, 039, 109)

Complete the following information for each catalytic oxidizer not already included in an existing individual permit. For changes to parameters for catalytic oxidizers already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?*	Catalyst bed reactivity (kat)	Inlet and Outlet temperatures (degrees F)	Burner capacity (MMBtu/hr)	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes		Inlet: _____ Outlet: _____		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		Inlet: _____ Outlet: _____		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

* Control equipment rule can only be used for control codes 019, 020, and 109.

12) Vapor recovery systems (including condensers) (control codes 047, 072, 073, 074)

Complete the following information for each vapor recovery system not already included in an existing individual permit. For changes to parameters for vapor recovery systems already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Temperature range (degrees F)	Condenser pressure drop range (inches of water column)	Filter pressure drop range (inches of water column)	Subject to CAM?	For a "Large" or "Other" PSEU?
					☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
					☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
					☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
					☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
					☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

13) Oxidation catalyst (control codes 203, 312)

Complete the following information for each oxidation catalyst not already included in an existing individual permit. For changes to parameters for oxidation catalyst already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Inlet temperature (degrees F)	Outlet temperature (degrees F)	Subject to CAM?	For a "Large" or "Other" PSEU?
				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
				☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

14) Other controls (control codes 004, 005, 006, 013, 014, 015, 023, 024, 025, 026, 027, 029, 030, 033, 034, 035, 036, 037, 038, 040, 043, 044, 045, 046, 048, 049, 050, 051, 054, 059, 060, 061, 062, 063, 064, 065, 066, 078, 080, 081, 082, 083, 084, 086, 099, 106, 107, 139, 159, 201, 204, 205, 302, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910)

Complete the following information for each control device not described above and not already included in an existing individual permit. For changes to parameters for any other control devices that are already included in an existing permit, attach a copy of the relevant permit page with proposed changes clearly marked.

CE number:	Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*)	Using control equipment rule?*	Operating parameters (describe)	Subject to CAM?	For a "Large" or "Other" PSEU?
		☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA
		☐ No ☐ Yes		☐ Yes ☐ No	☐ Large ☐ Other ☐ NA

* Control equipment rule can be used only for control codes 023 and 086.

Instructions for form CD-05

If you are applying for a new individual operating permit, you must fill out the appropriate table for each control device. If you are adding new control equipment to an existing permit, you must fill out the appropriate table for the control device(s) you are adding.

If you are amending the operating parameters listed in an existing operating permit for an existing control device, you have two options.

1. Complete the *CD-05* form for the existing control device; or
2. If you can show all necessary operating parameter(s) revisions on relevant marked-up permit page(s) for the existing control device, you may elect to submit only the marked-up permit page(s). If you use this option, you do not have to submit the *CD-05* form to show the existing control device changes.

If the control equipment is subject to CAM (Reference form *GI-09H*), and the permit action for which you are applying requires CAM to be implemented, a pollutant specific CAM plan must be attached.

Control efficiency basis (for control and capture efficiencies listed on form *GI-05A*) – For every table on this CD-05 form, the control efficiency basis must be one of the following: control equipment rule (Minn. R. 7011.0060 – 7011.0080), manufacturer/vendor data, other (provide details), test data (include performance test report with application).

The following tables are provided as guidance for parameter monitoring and for operation and maintenance.

Table CD-05.1 Recordkeeping and monitoring guidelines

This table shows generally acceptable recordkeeping and monitoring practices for certain types of air pollution control equipment. These guidelines represent a minimum standard; additional requirements will apply when 40 CFR pt. 64 (CAM) applies.

Pollution control equipment type	Monitoring requirement	Recordkeeping requirement
Centrifugal Collector (Cyclone)	Pressure drop	Record pressure drop Every 24 Hours if in Operation
Electrostatic Precipitator	Number of fields on-line	Record each parameter every 24 hours if in operation
Fabric Filter (Bag House) – high temperature or medium temperature	Pressure drop	Record pressure drop every 24 hours if in operation
Fabric Filter (Bag House) – low temperature	Visible Emissions and/or Pressure Drop	Record Existence of Visible Emissions Every 24 Hours if in Operation; Record Pressure Drop if Conditions Don't Allow Visible Emissions Observation
Spray Tower	Liquid flow rate and pressure drop	Record each parameter every 24 hours if in operation
Venturi Scrubber, Impingement Plate Scrubber	Pressure drop and liquid flow rate	Record each parameter every 24 hours if in operation
HEPA and Other Wall Filters	Condition of the filters including, but not limited to, alignment; saturation; and tears and holes	Record of filter(s) condition every 24 hours if in operation
Dust Suppression by water Spray	Test moisture content daily	Record moisture content daily
Wet Cyclone Separator	Pressure drop and water pressure	Record each parameter every 24 hours if in operation
Thermal Incinerator	Combustion temperature or inlet and outlet temperatures	Continuous hard copy readout of temperatures or manual readings every 15 minutes
Catalytic Incinerator	Inlet and Outlet temperatures; and catalyst bed reactivity as per manufacturer's specifications	Continuous hard copy readout of temperatures or manual readings every 15 minutes; and results of catalyst bed reactivity
Flaring	Temperature indicating presence of a Flame	Continuous hard copy readout of temperatures or manual readings every 15 minutes
Modified Furnace or Burner Design (low nitrogen oxides [NO_X] Burner)	Continuous monitoring of the air to fuel ratio at each fuel and or air port	Hard copy records of continuous monitoring
Staged Combustion - Over-Fire Air or Reburning	Continuous monitoring of the air to fuel ratio at each fuel and or air port	Hard copy records of continuous monitoring
Flue Gas Recirculation	Continuous monitoring of the amount of flue gas recirculated to the burner windbox	Hard copy records of continuous monitoring
Steam or Water Injection	Continuous monitoring of the fuel consumption and the ratio of water to fuel being fired	Hard copy records of continuous monitoring
Low Excess Air Firing	Continuous monitoring of the percent of excess air introduced into the boiler	Hard copy records of continuous monitoring

Table CD-05.2 Operation and maintenance plan guidelines

At a minimum, operation and maintenance (O&M) plans should include the following components. If you need additional guidance on O&M plans, the MPCA has a guidance document commissioned by the U. S. Environmental Protection Agency regarding this subject available for your use. Do not submit your O&M plan with your application. You should, however, maintain your O&M plan on site at your facility, available for review.

Pollution control equipment Type	O&M plans
All types	1. Maintain an adequate inventory of spare parts. 2. Ensure staff training on operation and monitoring of pollution control equipment as well as troubleshooting. 3. Conduct a thorough annual inspection of control equipment. This may require shutting down operations temporarily. 4. Conduct monthly inspections of control equipment mechanical operations (moving parts) including bearings, belts, fans, etc. as well as checking nozzles for plugging. 5. Conduct quarterly inspections of control equipment structure (non-moving parts) including housings, ductwork, hoses, etc. 6. Do daily checks on monitoring equipment (pressure gauges, chart recorders, temperature meters, etc.) to ensure that they are operational. 7. Calibrate monitoring equipment annually. 8. Respond to alarms, abnormal temperatures, noise, and odors which are all signs of a malfunctioning system and record in a log the corrective action taken. 9. Address additional operation and maintenance items recommended by the manufacturer if they are not covered by items 1-8.
Baghouse (Fabric Filter)	1. Check hopper/dust removal system with a frequency appropriate to the system. The permittee must specify this frequency in the permit application. 2. Adjust the bag cleaning frequency if the pressure drop indicates there is a problem. 3. Replace bags when the monitoring system indicates decreasing particulate removal. 4. Yearly pressure gauge calibration. 5. Items 1-9 listed for "All Types" above.
Cyclone/Rotoclone	1. Yearly pressure gauge calibration. 2. Certify annually that the level indicator works. 3. Items 1-9 listed for "All Types" above.
Catalytic Oxidizer	1. Sample the catalyst bed every 3 months for reactivity. You must report what reactivity level necessitates changing the bed with the first report you submit after permit issuance. Add to the catalyst or replace the bed as needed. 2. Annual Calibration of temperature meters. 3. Items 1-9 listed for "All Types" above.
Adsorber	1. Test adsorbability and retentivity once per quarter by opening up bed and extracting samples from all layers as needed. 2. Annual calibration of temperature meter. 3. Annual calibration of the Volatile Organic Compounds (VOCs) monitor. 4. Items 1-9 listed for “All Types” above.