

**Air Quality Effects Analysis (AQEA)
for
North American Iron LLC
Minot Merchant Pig Iron Plant**

**Lat. 48.2816 Long. -101.2383
Minot, ND 58701**

Associated with Permit No.:

ACP-18334 v1.0



North Dakota Department of Environmental Quality
Division of Air Quality

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1. Executive Summary

North American Iron LLC (NAI) submitted a Permit to Construct (PTC) application to the North Dakota Department of Environmental Quality – Division of Air Quality (Department) on February 13, 2026. The application was for the construction of the Minot Merchant Pig Iron Plant (facility or Project) which will process and refine iron ore into merchant pig iron in Ward County, North Dakota. The proposed Project was classified as a Prevention of Significant Deterioration (PSD) major source, a major source of hazardous air pollutants (HAP), and is a future Title V major source.

After a complete review of the proposed Project (see Section 2) indicating that the facility is expected to comply with applicable federal and state air pollution rules and regulations, the Department will make a recommendation on PTC issuance for the Minot Pig Iron Plant following the completion of a 30-day public comment period.

A. Update Post Comment Period:

[Reserved]

2. Project Description

The Project will process approximately 4.5 million metric tons of partially beneficiated iron ore (pre-concentrate) per year and is expected to produce approximately 2 million metric tons of merchant pig iron per year. Following rail transport from northern Minnesota, the pre-concentrate will be roasted, concentrated, pelletized converted into pig iron using a direct reduced iron (DRI) reactor, and melted in an open slag bath furnaces (OSBF). The molten pig iron from the OSBFs will be transported via torpedo car to casting units to produce pig iron ingots, which will be shipped off-site to customers via railcar. Slag from the OSBFs will be granulated and shipped off site to customers via trucks. Tailings generated by the Project will be processed and managed on-site. The Project will also operate a power plant to produce electricity for on-site use and a water treatment plant.

ACP-18334 v1.0 Table 1-1 lists the emissions units associated with the Project.

A. Permit Description:

The Project requires New Source Review (NSR, often referred to as PSD review) for the following pollutants based on calculated potential to emit (PTE):

- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Particulate matter (PM)
- Particulate matter less than 2.5 microns (PM_{2.5})
- Particulate matter less than 10 microns (PM₁₀), which includes PM_{2.5}
- Volatile organic compounds (VOC)¹
- Sulfur dioxide (SO₂)
- Greenhouse gases (GHG or CO₂e)²

The facility-wide PTE of all other regulated NSR pollutants is less than the respective significant emission rates (SER) and they are not subject to the PSD program's pollutant-specific control technology (BACT) and ambient impacts analysis requirements.

Project PTE for HAP is greater than the thresholds, making the facility a major HAP source. The facility will also be a future Title V source.

B. Process Description:

The facility will process pre-concentrate into merchant pig iron, increasing the iron content from 45% to near 100% elemental iron as a sellable product. The plant will include the following operations:

¹ Ozone (O₃) is the regulated NSR pollutant for which VOC is a precursor.

² GHG stands for greenhouse gases and CO₂e refers to carbon dioxide equivalent, where the latter represents the effect of total GHG including non-CO₂.

1) Raw Material Receipt and Storage

Partially beneficiated iron ore (referred to as pre-concentrate, which has an enriched iron content compared to raw ore) will be delivered to the site by rail, unloaded, and stockpiled on-site. Particle size will be similar to sand or fine gravel. PM emissions will be generated from material transfer and will be mitigated by best management practices including wet spraying (see Section 2.B.10).

2) Roasting

Pre-concentrate will be roasted in two parallel rotary kilns to react goethite ($\text{FeO}(\text{OH})$) present in the pre-concentrate into hematite (Fe_2O_3), and forming water as a byproduct. Each kiln will be natural-gas fired and allow the material to “flow-through” continuously. Then, the product will be sent to parallel air-swept rotary coolers, quenched, and sent to the concentrator as a water-based slurry.

Emissions will be generated from natural gas combustion, dust picked up from the pre-concentrate in the kiln and cooler (PM), and volatilization of mercury in the pre-concentrate. To mitigate emissions, each kiln will be equipped with a low NO_x burner (LNB) and emissions from both kilns will be collected to a common control equipment train consisting of an electrostatic precipitator (ESP) and/or abaghouse (pending vendor feedback) to control PM, and selective catalytic reduction (SCR) unit. Activated carbon will be injected into the kiln exhaust stream prior to entering the baghouse to reduce mercury emissions. Each rotary cooler will be controlled with its own ESP to reduce PM emissions.

3) Concentrating

Through multiple stages of magnetic separation and grinding, the pre-concentrate slurry will be separated into three streams: magnetite (Fe_3O_4), hematite, and tailings (silica, non-magnetic iron oxides, & impurities). The two iron streams will be dewatered using thickeners, which will use gravity to precipitate the concentrated iron ore from the slurry. Disc filters will be used to further dewater the concentrate as a “filter-cake” containing approximately 70% iron by weight and be conveyed to mixing and balling. Water removed from the slurry will be recycled.

Insignificant emissions are expected from this process as the iron will be in a water-based slurry and will have a high enough moisture content to prevent PM emissions.

4) Mixing and Balling

Concentrate will be combined with a binder (bentonite) and flux (limestone & dolomite), mixed for homogeneity, sprayed with water to promote cohesion, and balled into approximately ½ inch spheres referred to as “greenballs”. Greenballs will be screened for size and sent to the straight grate indurating furnace to be fired.

PM emissions will be generated from material handling of the binder and flux before they are combined with the concentrate. No other emissions are expected since all the materials used will have a high enough moisture content to prevent PM emissions.

5) Straight Grate Indurating Furnace

A straight grate indurating furnace (typical in iron ore processing facilities) will be used to fire the greenballs into hardened iron ore pellets for further processing. Recycled fired pellets first be placed on the traveling grate to form a thin “hearth layer” to protect the grate and promote even heating and airflow. A layer of greenballs will be laid on top of the hearth layer for firing. The traveling grate and pellet bed will move continuously through a series of heating and cooling zones designed to evenly dry, heat, and cool the greenballs into hardened iron ore pellets without cracking. Natural-gas burners will heat the pellets just below the melting point, causing them to fuse (i.e., sintering), making them strong enough to be loaded into the DRI reactor without breaking. The high temperature will also initiate the exothermic oxidation of magnetite to hematite, contributing useful heat back to the sintering process. Cooled, hardened pellets will be screened for size and conveyed to the DRI process, recycled for use as the hearth layer, or a stockpiled.

Emissions will be generated from natural gas combustion, dust picked up from the pellet bed (PM), and the oxidation, evaporation, or other release of trace compounds (e.g., SO₂, CO₂, acid gases, Hg) that remain in the greenballs. Emissions will exit the indurating furnace from a single stack which will be connected to two indurating furnace ducts: the hood exhaust, which will draw air from the updraft drying zone (still relatively cool), and the windbox exhaust, which will draw air from the downdraft drying and preheating zones (where most emissions are expected). To mitigate emissions, the furnace will be equipped with LNB, each exhaust stream will be controlled with a dry ESP, and the windbox exhaust will have an upstream circulating dry scrubber (CDS) to reduce SO₂ and acid gas emissions.

6) Direct Reduced Iron (DRI) Process

a) DRI Reactor

The DRI process will be used to convert the iron oxide in the fired pellets into elemental iron by removing chemically-bound oxygen. The fired pellets will first be coated with a slurry of Portland cement to prevent sticking in the DRI reactor, and conveyed to reactor feed bins, which will be pressurized with nitrogen to keep all atmospheric oxygen out of the reactor. The coated pellets will be fed into the top of the DRI reactor, where the pellets will pass continuously downward through the reactor. Reducing gas will continuously flow upward through the DRI reactor (i.e., injected at the bottom and leaving at the top). The reducing gas (CO and H₂) reacts with the iron oxides in the pellets, removing oxygen to form elemental iron. The spent reducing gas containing the reacted oxygen (primarily in the form of CO₂ and H₂O also called “DRI tail gas”) will exit at the top of the reactor. The DRI pellets will discharge from the bottom of the reactor and will be transported or stored for further processing.

There are no expected direct emissions from the DRI reactor; however, the DRI process generates pollutants entrained in the reducing gas which will be emitted and controlled as described below.

b) Quench Cooling Water (QCW) and Cooling Tower

DRI tail gas (primarily composed of CO_2 and H_2O but also CO , H_2 , CH_4 , N_2 , PM, and trace amounts of H_2S) will be cooled and cleaned using a venturi, a dedicated water cooling system, and filtering. Due to the high temperature and pressure of the DRI tail gas, some of it will dissolve into the QCW.

Dissolved gaseous emissions will be released to the flare via a QCW pressure let-down vessel. The QCW will then pass through a cooling tower to be cooled by atmospheric air before being further treated and recycled. PM from dissolved solids in the water will be emitted by the cooling tower and controlled with high-efficiency drift eliminators. No emissions are expected from water treatment processes (i.e., flocculation, clarification, thickening, & wet filtering).

c) CO_2 Absorption System

CO_2 and trace amounts of H_2S will be removed from the quenched and filtered DRI tail gas so it can be regenerated into reducing gas for the DRI reactor. The gas will be washed with an amine solution in an absorption tower, producing a saturated CO_2 solution and a CO_2 -free gas stream; the amine solution is then heated in the regenerator enough to off-gas the CO_2 without boiling the amine, recycling the amine to be used in the absorber tower. This closed-loop cycle also captures H_2S . CO_2 will either be emitted or sequestered depending on contractual and regulatory approval. If the CO_2 is emitted, it would first be routed through a thermal oxidizer to convert H_2S to SO_2 . The thermal oxidizer exhausts to a sulfur scrubbing system to remove the SO_2 before venting to the atmosphere.

Emissions will be generated from natural gas combustion in the thermal oxidizer and residual CO_2 and SO_2 not captured by the amine absorber or sulfur scrubber.

d) Process Gas Heater (PGH)

With the CO_2 removed, DRI tail gas will be heated by the PGH and mixed with natural gas and trace amounts of oxygen for reuse in the DRI reactor as reducing gas. A trace amount of dimethyl disulfide will be added to form a thin sulfide layer on the PGH metallurgy to protect it from carbon infiltration and failure. The natural gas and oxygen added to the reducing gas will catalytically react with the elemental iron in the bottom of the DRI reactor to form CO and H_2 , balancing the reducing gas that subsequently reacts in the DRI reactor. The PGH will be fueled from up to four sources: natural gas, cooled and filtered DRI tail gas that bypasses the CO_2 absorption system, tail gas from the OSBF, and a small slipstream of preheated reducing gas generated by the PGH.

Emissions will be generated from combustion of the above fuels. To mitigate this, the PGH will be designed with LNB and SCR. Good combustion practices (GCP) will manage other pollutant emissions.

e) Reduced Pellet Transport

Reduced iron pellets leaving the DRI reactor will either be transported to the OSBF surge and interface bins as hot DRI (HDRI) pellets or will be cooled and conveyed to a storage silo as cold DRI (CDRI) pellets. HDRI will be transported using a pneumatic transport system (PTS) that will

use nitrogen gas to transport HDRI pellets to the OSBF feed bins and keep the pellets warm without exposure to oxygen. The PTS will be heated by a natural gas-fired process heater (the PTS Heater). The CDRI pellet transport and storage silo similarly uses pressurized nitrogen to prevent oxygen exposure. Prior to arriving at either the OSBF feed bins or CDRI storage silos, they will enter depressurization bins where the high-pressure nitrogen in the pellet transport section is vented.

Emissions will be generated from natural gas combustion; to mitigate this, the PTS heater will be equipped with LNB and operated in accordance with GCP. PM emissions will be generated when handling HDRI and CDRI pellets, and both the PTS and CDRI storage silos will employ wet scrubbers and depressurization vents.

f) Flare

The DRI plant will operate a steam-assisted flare to control gaseous waste from normal operations, startup, shutdown, and upsets for the DRI and OSBF processes. It will control excess PTS gas, reducing gas, and OSBF tail gas that isn't used as a fuel source for the PGH. It will also control gaseous emissions from the QCW pressure let-down.

Emissions will be generated from combustion of various process gases and natural gas combustion from the pilot and. NAI will employ flare minimization procedures and good operating practices to minimize emissions from the flare.

g) Package Boiler

The DRI reactor will have a waste heat boiler at the outlet that generates steam using residual heat from the reactor (without combusting any fuel). When this isn't operational, a natural gas-fired package boiler will generate the necessary steam.

Emissions will be generated from natural gas combustion; to mitigate this, the package boiler will be equipped with either an ultra-low NO_x burner (ULNB) or LNB with flue gas recirculation (FGR) and will be operated in accordance with GCP.

7) Open Slag Bath Furnace (OSBF)

HDRI or CDRI pellets will be fed, along with additives, to two OSBFs which use large electrodes and electricity to melt the DRI pellets into molten pig iron (elemental iron). The coke additive will react with residual iron oxides to remove all remaining oxygen (maximum purity) and generate CO as a byproduct. The lime, dolomite, and bauxite additives will promote the separation of impurities from the molten iron, forming a distinct layer of "slag" floating on the surface. Periodically, the basin will be tapped to transfer the molten iron into torpedo cars for transport, and the slag will be tapped and sent to a granulator.

PM generated from material handling of the additives will be controlled with a feed extraction hood that will enclose the OSBF additive feed. CO, SO₂, and other gaseous byproducts from the smelting process will be collected with a closed vent system inside the OSBF and routed to a tail gas cleaning system. This cleaning will involve dust filtering and dry acid gas scrubbing, which will use sodium bicarbonate to neutralize SO₂, HCl, and HF. PM, CO, and SO₂ generated from

the tapping process will be controlled with a fume extraction hood positioned above the tapping launders. This treated OSBF tail gas will be used as fuel for the PGH. Each OSBF will route both the feed and fume extraction hoods will be vented to common baghouse systems. Each OSBF will have a dedicated feed hood, fume hood, baghouse, and tail gas cleaning system.

8) Pig Iron Casting

Molten pig iron from the torpedo cars will be transported to one of four casting lines where it will be poured into ingot casting molds on a moving conveyor. Water will be sprayed on the ingots to cool before the ingots fall out of the molds. The ingots will be stockpiled and loaded into rail cars as saleable product. As molds travel along the underside of the belt, they will be sprayed with a release agent to prevent ingots from sticking; this coating will be dried using a small natural gas-fired burner before being filled again with molten pig iron.

Metal fumes (PM) will be generated from the pouring process, which will be controlled by extraction hoods positioned above each casting area, each with their own baghouse. The small burner will generate emissions from natural gas combustion.

9) Slag Granulation

Slag tapped from the OSBFs will be injected into slag granulation tanks containing water, which will solidify the slag into coarse, glassy pieces about one inch in diameter. Slag slurry from each granulator will be combined into a single stream and sent to dewatering silos. Dewatered slag will be conveyed to a storage pile where it will be sold for other industrial applications (e.g., concrete & asphalt production); the separated water will be sent through a clarifier and settling pond to remove residual solids before being cooled by a cooling tower and recycled into the granulation tanks. Two backup slag pits will be used when the granulation tanks are not operational; molten slag will be dumped directly into the pit where it will eventually solidify. Solidified slag must be periodically removed from the pits using excavators or other earth moving equipment.

PM will be emitted from the molten slag transfer along with minor quantities of CO and SO₂ that may have dissolved into the slag when in the OSBF.

10) Material Handling, Stockpiles, and Tailings

The Project will have numerous material handling operations capable of emitting PM. To mitigate this, transfers into storage bins and silos will have bin vents or baghouses; all conveyors will be enclosed and transfer points will be controlled using baghouses.

The Project will include various stockpiles and the occasional use of loaders, trucks, or other heavy machinery to move materials at the facility; NAI will develop and implement a fugitive dust control plan to minimize vehicle traffic on haul roads and PM emissions from drop points and wind erosion.

11) Power Plant

The Project will include an on-site power plant comprised of 42 natural gas-fired reciprocating internal combustion engines (RICE) to supply electricity to the facility for normal operations (420 MW total). The construction of infrastructure to supply power to the grid is not planned.

Emissions will be generated from natural gas combustion; to mitigate this, each engine will have SCR with an oxidation catalyst (OC) to reduce NO_x, CO, and VOC emissions and will be operated in accordance with GCP.

12) Other Support Services

To recover as much thermal energy as possible, heat recovery steam generators will be fitted to various processes; however, to operate at practical temperatures, processes will need to be cooled by indirect contact with cooling water in closed-loop heat exchangers. In addition to the DRI QCW cooling tower, other processes will use five cooling towers: pelletizing, slag granulation (1 for each), slag granulation condensation, and water treatment. PM from dissolved solids in the water will be controlled with high-efficiency drift eliminators in the cooling tower.

The Project will have an on-site wastewater treatment plant (WWTP). No emissions are expected from wastewater processing operations. The WWTP cooling tower will have a small amount of PM emissions from cooling tower drift.

3. Facility Emission Profile

For all emission units associated with the Project, Table 1 lists the potential to emit (PTE) for all criteria air pollutants and selected HAP. Table 1 abbreviations are as follows: filterable and condensable particulate matter (PM), PM with an aerodynamic diameter less than or equal to 10 microns (PM₁₀), PM with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}), sulfur dioxide (SO₂), oxides of nitrogen (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and hazardous air pollutants (HAP) as defined in Section 112(b) of the Clean Air Act. Approximately 70% (~108 tons) of the total HAP come from methanol (31.5 tons), hexane (47.3 tons) and formaldehyde (29.6 tons).

Table 1 – Project PTE Summary. All units are in tons per year (tpy).

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	NO _x	CO	SO ₂	VOC	PM	PM ₁₀	PM _{2.5}	Total HAP
Forty-two (42) natural-gas fired generator engines (NSPS JJJJ, MACT ZZZZ)	RICE-1 through RICE-42	RICE-1 through RICE-42	345.8	347.3	7.4	345.0	125.8	125.8	125.8	104.77
Four pre-concentrate stockpiles	PC-SP-01 through PC-SP-04	PC-SP-01 through PC-SP-04	-	-	-	-	4.9	2.5	0.4	0.00
Rotary kiln #1, natural gas-fired	RK-01	RK-01	88.7	131.4	1.0	8.9	33.7	33.7	33.7	3.28
Rotary kiln #2, natural gas-fired	RK-02	RK-02	88.7	131.4	1.0	8.9	33.7	33.7	33.7	3.28
Rotary cooler #1	RC-01	RC-01	-	-	-	-	19.3	19.3	19.3	0.01
Rotary cooler #2	RC-02	RC-02	-	-	-	-	19.3	19.3	19.3	0.01
Tailings stockpile	T-SP-01	T-SP-01	-	-	-	-	63.5	31.8	4.8	-
Straight Grate Indurating Furnace	INF-01	INF-01	1226.7	73.1	116.4	46.2	197.3	197.3	172.6	7.96
Hearth Layer Separator & Product Screening	PP-MH-06	PP-BV-06	-	-	-	-	3.0	3.0	3.0	0.00
Indurating Furnace Dedusting	PP-MH-07	PP-BH-07	-	-	-	-	5.6	5.6	5.6	0.00
Pellet Plant Cooling Tower	CT-PP	CT-PP	-	-	-	0.0	5.0	4.4	0.0	-
Process Gas Heater (PGH)	PGH-01	PGH-01	62.9	220.1	31.4	33.9	53.1	53.1	53.1	24.00

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	NO_x	CO	SO₂	VOC	PM	PM₁₀	PM_{2.5}	Total HAP
Pneumatic Transport System (PTS) Heater	PTS-01	PTS-01	4.5	3.4	0.1	0.5	0.7	0.7	0.7	0.17
Cold Product Depressurization	CPD-01	CPD-01	-	-	-	-	5.2	5.2	5.2	0.35
Carbon Dioxide Capture Vent	CO2-01	CO2-01	5.9	10.0	1.3	0.7	0.9	0.9	0.9	0.45
Flare	FL-01	FL-01	8.6	251.4	1.7	4.8	1.0	1.0	1.0	0.49
Package Boiler	BOIL-01	BOIL-01	11.6	21.4	0.3	3.1	4.3	4.3	4.3	1.07
DRI Quench Cooling Water	QCW-01	QCW-01	-	-	-	-	11.0	9.6	0.0	-
OSBF #1 Material Feed & Tapping	OSBF-01	OSBF-BF-01	-	48.3	35.1	-	11.2	10.7	9.9	0.57
OSBF #2 Material Feed & Tapping	OSBF-02	OSBF-BF-02	-	48.3	35.1	-	11.2	10.7	9.9	0.57
Casting Unit #1	FE-01	FE-BH-01	3.4	2.9	0.0	0.2	21.5	20.1	17.8	1.51
Casting Unit #2	FE-02	FE-BH-02	3.4	2.9	0.0	0.2	21.5	20.1	17.8	1.51
Casting Unit #3	FE-03	FE-BH-03	3.4	2.9	0.0	0.2	21.5	20.1	17.8	1.51
Casting Unit #4	FE-04	FE-BH-04	3.4	2.9	0.0	0.2	21.5	20.1	17.8	1.51
Slag Granulator #1	SG-01	SG-01	-	-	-	-	7.7	5.3	0.5	0.08
Slag Granulator #2	SG-02	SG-02	-	-	-	-	7.7	5.3	0.5	0.08
Slag Pit #1	SG-PIT-01	SG-PIT-01	-	13.3	17.8	-	18.2	12.4	3.6	0.18
Slag Pit #2	SG-PIT-02	SG-PIT-02	-	13.3	17.8	-	18.2	12.4	3.6	0.18
Water Treatment Plant Cooling Tower	CT-WTP	CT-WTP	-	-	-	0.0	5.0	4.4	0.0	-
Fugitive Piping Components	FUG-01	FUG-01	-	9.3	-	2.8	-	-	-	-
Fugitive Haul Roads	FUG-02	FUG-02	-	-	-	-	19.9	4.2	0.9	-
Insignificant Activities Total ^A	IA	IA	1.8	1.6	0.1	2.8	30.4	26.3	19.6	1.4
Total (without Fugitives):			1858.8	1325.7	266.6	455.4	783.2	719.2	602.5	155.0
Total (with Fugitives):			1858.8	1335.1	266.6	458.3	803.1	723.4	603.4	155.0

^A Sum off all emissions units with PTE below 2 tpy for any single CAP.

Table 2 details how the facility total PTE triggers PSD program requirements for all listed New Source Review (NSR) pollutants³ which surpass either the PSD major source thresholds or Significant Emissions Rate (SER) thresholds. See Section 4.O for a discussion on PSD applicability.

Table 2 – PSD and BACT Applicability. All units are in tpy.

	NO_x	CO	SO₂	VOC	PM	PM₁₀	PM_{2.5}	CO_{2e}
Project PTE	1,858.8	1,335.1	266.6	458.3	803.1	723.4	603.4	3,794,955.0
PSD Major Source Thresholds	100	100	100	100	100	100	100	75000
PSD Major Source Triggered?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PSD SER	100	40	40	40	25	15	10	-
Project PSD Pollutant (BACT)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

³ See Title 40 Code of Federal Regulations, Part 52.21(b)(50) [abbreviated as 40 CFR 52.21(b)(50)]. All CFR air pollution regulations are available at <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C>.

4. Rules Analysis

This section details the potential applicability and expected compliance status of each rule under the North Dakota Administrative Code (NDAC) 33.1-15—Air Pollution Control Rules.

A. NDAC 33.1-15-01 – General Provisions:

This chapter covers the following topics: entry onto premises - authority, variances, circumvention, severability, land use plans and zoning regulations (only to provide air quality information), measurement of air contaminants, shutdown and malfunction of an installation - requirements for notification, time schedule for compliance, prohibition of air pollution, confidentiality of records, enforcement, and compliance certifications.

Applicability and Expected Compliance

Based on the review of the information provided, the facility will comply with all applicable sections of this rule.

B. NDAC 33.1-15-02 – Ambient Air Quality Standards:

This chapter requires that the facility complies with the North Dakota and National Ambient Air Quality Standards, which are equivalent and referred to as the NAAQS.

Applicability and Expected Compliance

Facility PTE triggers the PSD program—shown in Table 2. Therefore, preconstruction air quality modeling for this facility was required and completed. See Section 4.O for discussion on PSD. Preconstruction air quality modeling was completed for PM₁₀, PM_{2.5}, CO, NO₂, and SO₂ to demonstrate compliance with Class II NAAQS and PSD increment standards.

In addition, due to the project's proximity to Class I areas in North Dakota (Theodore Roosevelt National Park and Lostwood Wilderness Area) and Montana (Medicine Lake Wilderness Area and Fort Peck Reservation), modeling was conducted to demonstrate compliance with Class I impact thresholds. The analysis evaluated four key impacts for each Class I area: ambient air quality, visibility, ozone, and deposition of nitrogen and sulfur. The Department engaged with the affected Federal Land Managers (FLMs), which included the National Park Service (NPS) and US Fish and Wildlife Service (USFWS), as required by Section 4.S and 40 CFR 52.21(p), to perform a visibility analysis to determine any expected adverse impacts on visibility in the Federal Class I areas.

The results of preconstruction modeling demonstrate that facility potential emissions are not expected to cause or contribute to an exceedance of Class I and Class II AAQS. Details regarding the preconstruction permit modeling analysis and results are discussed in the Air Quality Impacts Analysis (AQIA) associated with this permit. See ACP-18334 v1.0_AQIA for details.

C. NDAC 33.1-15-03 – Restriction of Emission of Visible Air Contaminants:

This chapter requires all non-flare emission sources at new facilities to comply with an opacity limit of 20% except for one six-minute period per hour when 40% opacity is permissible. For all flare emission sources, the limits are 20% and 60% respectively. Fugitive emissions must not exceed 40% for more than one six-minute period per hour. The chapter establishes exceptions to opacity requirements and that compliance shall be determined using EPA Reference Method 9 or 22.

Applicability and Expected Compliance

Based on Department experience with similar source units and the implementation of BACT on all emission units, visible air contaminants from the facility are expected to be minimal and will comply with the opacity limits described above.

D. NDAC 33.1-15-04 – Open Burning:

No person may cause, conduct, or permit open burning of refuse, trade waste, or other combustible material—as part of a salvage operation or otherwise—except as provided under NDAC 33.1-15-04-02 or 33.1-15-10-02.

Applicability and Expected Compliance

No open burning operations are permitted unless approved in advance by the Department.

E. NDAC 33.1-15-05 – Emissions of Particulate Matter Restricted:

This chapter establishes particulate matter emission limits, restrictions, and measurement methods for industrial processes, fuel burning equipment used for indirect heating (where emissions do not interact with process materials), waste incinerators, and crematoriums.

Applicability and Expected Compliance

Many of the Project emissions units (see Table 3-1 of ACP-18334 v1.0 for units with PM BACT limits) are considered industrial process equipment and are subject to this chapter's process-weight-based emission limitations. These units also triggered a BACT analysis for PM resulting in a requirement to install BACT that are more stringent than this chapter's requirements. Based on the implementation of BACT, the Department expects that the Project will comply with the allowable emission rates set forth in this chapter.

The package boiler (EU BOIL-1) will be used for indirect heating but will be fired on natural gas and is therefore not subject to the requirements of this chapter.

F. NDAC 33.1-15-06 – Emissions of Sulfur Compounds Restricted:

This chapter applies to any installation in which sulfur oxide emissions are substantially present due to the sulfur content of burned fuel or from industrial processes. This chapter establishes requirements for measurement methods, continuous emission monitoring, reporting, and recordkeeping. This chapter is not applicable to installations which are

subject to an SO₂ emission limit under NDAC 33.1-15-12 (NSPS, see Section 4.L) or which burn pipeline quality natural gas.

Applicability and Expected Compliance

Many of the Project emissions units (see Table 3-1 of ACP-18334 v1.0 for units with SO₂ BACT limits) have SO₂ emissions from fuel combustion or from industrial processes and are subject to this chapter's limit of 3.0 lb SO₂/MMBtu limit requirement. Application of SO₂ BACT and emissions limits on all emissions units are more stringent than this chapter's requirements. Additionally, SO₂ air dispersion modeling was completed for all units and showed expected compliance with the NAAQS established in NDAC 33.1-15-02. Based on implementation of BACT and modeling, the Department expects that the Project will comply with this chapter's requirements.

The power plant RICE (EU RICE1 through RICE42), rotary kilns (EU RK-01 & RK-02), straight grate indurating furnace (EU INF-01) emissions from natural gas combustion, pneumatic transport heater (EU PTS-01), carbon dioxide capture vent thermal oxidizer (EU CO2-01), package boiler (EU BOIL-1), casting units (EU FE-01 through FE-04) and emergency engines (EU EG-01 & FP-01) are exempt from this chapter's requirements via NDAC 33.1-15-06-01-1.c or 33.1-15-06-01-1.e.

G. NDAC 33.1-15-07 – Control of Organic Compounds Emissions:

This chapter establishes requirements for the construction of organic compound facilities related to closed-vent systems, control devices, and seals. This chapter requires organic compound vapors to be controlled by a continuously burning pilot flare or other equally effective control device. This chapter also requires hydrogen sulfide (H₂S) to be controlled effectively.

Applicability and Expected Compliance

The Project will contain equipment subject to the design and operational requirements of this chapter. Pumps and compressors that contain VOCs will comply with this chapter by installing and maintaining appropriate seals for their service and operating conditions.

The Project wastewater treatment operations and cooling towers are not expected to contain organic compounds or generate VOC emissions.

H. NDAC 33.1-15-08 – Control of Air Pollution from Vehicles and Other Internal Combustion Engines:

This chapter restricts the operation of internal combustion engines which emit, from any source, unreasonable and excessive smoke, obnoxious or noxious gas, fumes or vapor. This chapter also prohibits the removal or disabling of motor vehicle pollution control devices.

Applicability and Expected Compliance

The facility engines (EUs RICE1 through RICE42, EG-01 & FP-01) are subject to opacity requirements under NDAC 33.1-15-03-02 and subject to the requirements of NSPS Subpart JJJJ or NSPS Subpart IIII and NESHAP Subpart ZZZZ. The facility will also have an on-site fleet of motor vehicles and heavy equipment subject to the requirements of this chapter, which will be maintained as designed by the manufacture. As a result of expected compliance with these provisions, all onsite engines are not expected to emit any unreasonable and excessive smoke, obnoxious or noxious gases, fumes, or vapor.

I. NDAC 33.1-15-09 – [repealed]

J. NDAC 33.1-15-10 – Control of Pesticides:

This chapter provides restrictions on pesticide use, disposal, and the proper handling of empty pesticide containers.

Applicability and Expected Compliance

The facility is subject to this chapter and is expected to comply with all applicable requirements should pesticides be used.

K. NDAC 33.1-15-11 – Prevention of Air Pollution Emergency Episodes:

This chapter requires facilities to develop abatement strategy plans for use during an air pollution episode—as determined by the Department—to prevent emergencies and adverse effects to human health.

Applicability and Expected Compliance

The facility will prepare an abatement strategies plan to reduce the emission of air contaminants during periods of an air pollution alert, air pollution warning, and air pollution emergency following NDAC 33.15-15-11 Table 7 for mineral processing industries. The facility shall submit this plan to the Department upon request within 30 days of receipt of such request for review.

L. NDAC 33.1-15-12 – Standards of Performance for New Stationary Sources (40 CFR 60):

This chapter adopts most of the New Source Performance Standards (NSPS) and appendices under 40 CFR 60 as of July 1, 2019, to which the facility is subject:

1) Subpart A – General Provisions

This subpart is applicable to any facility in which an NSPS applies and contains general requirements for control devices and work practices, notification, performance tests, monitoring, reporting and recordkeeping.

Applicability and Expected Compliance

The facility will comply with all requirements of this subpart. In addition, any physical or operational changes to the facility after it is built will be evaluated with respect to this subpart and others.

2) Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

This subpart details information on the applicability, definitions, standards, compliance, performance test methods, emission monitoring, and reporting and recordkeeping requirements for steam generating units. The subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 19, 1984, and that has a maximum design heat input capacity of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)).

Applicability and Expected Compliance

The package boiler (EU BOIL-1) is a natural gas low heat release rate boiler subject to this subpart. The boiler is subject to a NO_x emission limit of 0.10 lb/MMBtu on a 30-day rolling average under Subpart Db. The facility will demonstrate compliance with this requirement by complying with the BACT limit of 0.02 lb/MMBtu on a 30-day rolling average basis. BOIL-1 will be equipped with a NO_x continuous emission monitoring system (CEMS) or a monitoring plan for predicting NO_x emission rates will be developed and submitted a demonstrate compliance.

The SO₂ and PM emission limits in 40 CFR §60.42b and 40 CFR §60.43b, respectively, do not apply because the package boiler will only burn gaseous fuel.

3) Subpart LL – Standards of Performance for Metallic Mineral Processing Plants

This subpart details information on the applicability, definitions, standards, monitoring, test methods, and reporting and recordkeeping requirements for sources at metallic mineral processing plants. This subpart applies to each affected facility that commenced construction or modification after August 24, 1982.

Applicability and Expected Compliance

The following 1) through 4) list the EUs which are considered affected facilities under this subpart. 1) through 3) list EUs which emit through a stack and are subject to a PM limit of 0.05 g/dscm (~0.22 gr/dscf) and a 7% opacity limit. 4) lists the EUs which are subject to a fugitive emissions opacity standard of 10%.

- 1) EUs PC-MH-01 through PC-MH-08, PC-MH-11 through PC-MH-13, PP-MH-03 through PP-MH-11, DRI-MH-04 through DRI-MH-07, and DRI-MH-09 through DRI-MH-14 will demonstrate compliance with the PM requirement and opacity limit through utilization of a fabric filter to comply with the BACT limit of 0.002 gr/dscf.
- 2) EUs RK-01, RK-02, RC-01, and RC-02 will demonstrate compliance with the PM requirement and opacity limit through utilization of a dry electrostatic precipitator (ESP) or fabric filter to comply with the BACT

limit of 0.004 gr/dscf. *EUs RK-01 and RK-02 will also operate an electrostatic precipitator.*

- 3) EUs DPS-01 and CPD-01 will demonstrate compliance with the PM requirement and opacity limit through utilization of a wet scrubber to comply with the BACT limit of 0.0075 gr/dscf.
- 4) EUs PC-MH-9, PC-MH-10, R-MH-01, R-MH-02, C-SP-01, C-SP-02, C-MH-01, C-MH-02, PP-MH-12, DRI-MH-01, and DRI-MH-08 will demonstrate compliance with the fugitive emissions limit of 10% opacity through implementation of a fugitive dust control plan (FDCP).

See Table 4-1 in ACP-18334 v1.0 for compliance testing requirements associated with these units.

4) Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants

This subpart details information on the applicability, definitions, standards, monitoring, test methods, and reporting and recordkeeping requirements for sources at nonmetallic mineral processing plants. This subpart applies to each affected facility that commenced construction or modification after August 31, 1983.

Applicability and Expected Compliance

The following 1) and 2) list the EUs which are considered affected facilities under this subpart. 1) lists EUs which emit through a stack and are subject to a PM limit of subject to a PM limit of 0.032 g/dscm (~0.014 gr/dscf) and a 7% opacity limit. 2) lists the EUs which are subject to a fugitive emissions opacity standard of 7%.

- 1) EUs PP-MH-01, PP-MH-02, OSBF-MH-01, OSBF-MH-02, OSBF-MH-04 through OSBF-MH-06, OSBF-MH-11, and OSBF-MH-12 will demonstrate compliance with the PM requirement and opacity limit through utilization of a fabric filter to comply with the BACT limit of 0.002 gr/dscf.
- 2) EU OSBF-MH-03 will demonstrate compliance with the fugitive emissions limit of 7% opacity through implementation of a FDCP.

See Table 4-1 in ACP-18334 v1.0 for compliance testing requirements associated with these units.

5) Subpart IIII – Standards of Performance for Stationary Compressor Ignition Internal Combustion Engines

This subpart applies to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines. It covers provisions and requirements related to emission standards, certification, labeling and

recordkeeping, performance tests, monitoring requirements, and compliance with standards and maintenance requirements. The subpart also includes definitions and general provisions that apply to the regulations.

Applicability and Expected Compliance

The emergency diesel generator (EUs EG-01) and fire water pump (EU FP-01) have maximum ratings of 755 and 327 horsepower respectively and are subject to this subpart. The facility will use a Tier II emergency generator and pump engine which will comply with the applicable emission standards from this subpart. Under 40 CFR 60.4207, the engines will burn ULSD to meet fuel requirements. An hour meter will be installed on each engine to track hours of operation. The facility will operate and maintain the engines per manufacturer specifications and comply with the applicable notification, reporting, and recordkeeping requirements under 40 CFR 60.4214.

6) Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion

This subpart applies to stationary spark ignition internal combustion engines that commence construction after July 1, 2007. Engines are categorized based on usage, size, and fuel type. This chapter establishes emission standards and requirements for compliance, testing, monitoring, reporting, and recordkeeping.

Applicability and Expected Compliance

The natural gas generator engines (EUs RICE-1 through RICE-42) are subject to the requirements of this subpart. The facility engines are rated at 12,481 horsepower capable of producing 9,065 kilowatts of electrical power, will be constructed in 2025 or later, and will be equipped with selective catalytic reduction (SCR) and oxidation catalyst (OC) controls. Subpart JJJJ requires each engine to comply with the following emissions standards:

- NO_x of 1.0 g/hp-hr or 82 ppmvd @ 15% O₂
- CO of 2.0 g/hp-hr or 270 ppmvd @ 15% O₂
- VOC of 0.7 g/hp-hr or 60 ppmvd @ 15% O₂

Beyond the Subpart JJJJ limits, the facility is restricted to lower engine emissions limits resulting from BACT. As a result, Table 3-1 of ACP-18334 v1.0 established the following limits:

- NO_x of 0.07 g/hp-hr
- CO of 0.07 g/hp-hr
- VOC of 0.07 g/hp-hr

All engines will either be manufacturer certified under 40 CFR §60.4231(e) to meet the applicable NO_x, CO, and VOC emission limits listed in Subpart JJJJ, or will be

required to complete performance testing to demonstrate compliance. To demonstrate compliance with the above BACT limits, the Department is requiring initial compliance testing for NO_x, CO, and VOC emissions for at least eight of the engines (EUs RICE-1 through RICE-42). The results of this testing will be considered representative of all like-kind engines at the facility.

The facility shall comply with this subpart by properly maintaining and operating an air-to-fuel ratio controller, keeping a maintenance plan, maintenance records, and to the extent practicable, maintain and operate the engines in a manner consistent with good air pollution control for minimizing emissions.

M. NDAC 33.1-15-13 – Emission Standards for Hazardous Air Pollutants (40 CFR 61):

This chapter adopts most of the National Emission Standards for Hazardous Air Pollutants (NESHAP) and appendices under 40 CFR 61 as of July 2, 2010.

Applicability and Expected Compliance

The facility does not appear to have any applicable requirements under this chapter.

A potentially applicable NESHAP is Subpart M, which applies to many activities that manufacture, utilize, and demolish asbestos containing materials. The purpose of Subpart M is to minimize emissions of asbestos, which these activities could generate. There will be no construction or process operations with intentional asbestos use or generation as part of the Project. If that changes and any activities involving asbestos are required, the facility is expected to comply with the requirements of NESHAP Subpart M.

N. NDAC 33.1-15-14 – Designated Air Contaminant Sources, Permit to Construct, Minor Source Permit to Operate, Title V Permit to Operate:

This chapter designates air contaminant sources that are required to obtain a PTC and a Permit to Operate (PTO) and the requirements for permits of various types, including public comment.

Applicability and Expected Compliance

The facility has submitted an application for a permit to construct and has met all requirements necessary to obtain a permit to construct. The facility will be considered a major source under PSD (see Section 4.O) and a major source of HAPs under 40 CFR 63 (see Section 4.V).

The permit must undergo public comment per NDAC 33.1-15-14-02.6.c, and the public participation procedures under NDAC 33.1-15-15-01.2 shall be followed.

A facility inspection will be performed by the Department once the facility completes construction.

This source will also be a future major source under the Title V program and must submit an initial Title V permit application within one year of start-up (Condition 6.D of ACP-18334 v1.0).

Pending a satisfactory facility inspection and timely Title V permit application, the facility will be issued a Title V permit by the Department.

O. NDAC 33.1-15-15 – Prevention of Significant Deterioration of Air Quality (40 CFR 52.21):

This chapter adopts the federal provisions of the PSD program (40 CFR 52.21) as of January 1, 2019. A facility is subject to PSD review if it is classified as a “major stationary source” or undergoes a “major modification” as defined by 40 CFR 52.21(b)(1-2). Major stationary sources are either: (1) facilities which fall under one of the specified source categories and the PTE exceeds 100 tpy of any NSR pollutant or, (2) facilities that do not fall under a specified category and the PTE exceeds 250 tpy of any NSR pollutant.

Applicability and Expected Compliance

This facility is classified as a “major stationary source” under 40 CFR 52.21(b)(1)(i)(a) because it is an “iron and steel mill”.⁴ It is therefore subject to PSD review since emissions of an NSR pollutant⁵ exceed the threshold of 100 tpy (including fugitive emissions). The PTE for facility emissions units is shown in Table 1. The facility PTE is above the applicable PSD threshold for all pollutants shown in Table 2. Lead, sulfuric acid mist, and hydrogen sulfide are below the major source thresholds and are also below the SER and are therefore not subject to PSD review. PSD requires the installation of BACT, air quality analysis (i.e., air dispersion modeling), additional impacts analysis, and public involvement. Additionally, based on the location of the facility and proximity to Federal Class I areas, requirements specific to “sources impacting Federal Class I areas” apply.

1) BACT Review

The facility submitted a BACT analysis supporting the control equipment proposed for the facility on the emission sources listed in Table 3. The Department completed a detailed review of the proposed BACT limits and agrees with the information provided.⁶ A summary of the information relevant to BACT is provided below.

⁴ The facilities North American Industry Classification System Number (NAICS) is 331110 and Standard Industrial Classification Number (SIC) is 3399.

⁵ See 40 CFR 52.21(b)(50). Available at: [https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21#p-52.21\(b\)\(50\)](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21#p-52.21(b)(50)).

⁶ See Application for a PSD Permit to Construct North American Iron - Minot Project from February 2026, Appendix E Best Achievable Control Technology (BACT) Analysis, (PDF Page 858-1456).

A BACT analysis was completed for the species of NO_x, SO₂, CO, particulate matter (PM/PM₁₀/PM_{2.5}), VOC, and greenhouse gases (GHGs). As shown in Table 2, each of these pollutants is above the PSD major source thresholds.

Table 3 lists all the equipment and NSR pollutants which were included in the BACT analysis.

Table 3 – Summary of Equipment and Pollutants Subject to BACT

Equipment Description	NSR Pollutants Affected
Natural gas generator engines	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
Rotary kilns	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
Rotary coolers	PM/PM ₁₀ /PM _{2.5}
Straight grate indurating furnace	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
PGH	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
PTS heater	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
PTS depressurization	PM/PM ₁₀ /PM _{2.5}
Cold product depressurization	PM/PM ₁₀ /PM _{2.5}
CO ₂ capture vent	CO
Flare	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
Package boiler	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
OSBF material feed & tapping	SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO
Casting units	PM/PM ₁₀ /PM _{2.5}
Casting unit drying burners	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
Slag granulators	PM/PM ₁₀ /PM _{2.5}
Slag pits	PM/PM ₁₀ /PM _{2.5}
Emergency generator and fire pump	NO _x , SO ₂ , PM/PM ₁₀ /PM _{2.5} , CO, VOC, GHG
Material handling	PM/PM ₁₀ /PM _{2.5}
Water treatment plant cooling tower	PM/PM ₁₀ /PM _{2.5}
Fugitive piping components	CO, GHG
fugitive dust	PM/PM ₁₀ /PM _{2.5}

The submitted BACT analysis for the above units was reviewed and approved by the Department. BACT emissions limits are listed in Table 3-1 of ACP-18334 v1.0.

2) Ambient Air Analysis

An ambient air quality analysis was completed to demonstrate that the facility's potential emissions will not cause or contribute to a violation of any applicable NAAQS or PSD increment.⁷ The Department has reviewed the air quality analysis submitted with the permit application and completed an independent analysis to verify the results. See Section 4.B and "ACP-18334v1.0_AQIA" for details.

⁷ See Application for a PSD Permit to Construct North American Iron - Minot Project from February 2026, Appendix H Class II Air Quality Modeling, (PDF Page 1510-1566).

3) Additional Impacts Analysis

An additional impacts analysis was completed to assess the impacts of air, ground, and water pollution on soils, vegetation, and visibility caused by any increase in emissions of any regulated pollutant from the facility, and from associated growth. Associated growth refers to industrial, commercial, and residential growth that will occur in the area due to the source. The Department has reviewed the additional impacts analysis included in the application and believes it accurately assesses that there are no unacceptable expected impacts associated with the facility.⁸

4) Sources Impacting Federal Class I Areas and Additional Requirements

See Section 4.B for explanation on applicability of modeling requirements. The Class I areas included in the analysis are: Lostwood Wilderness Area which is approximately 92 km from the facility; Theodore Roosevelt National Park North Unit which is approximately 165 km from the facility; Medicine Lake National Wildlife Refuge which is approximately 220 km from the facility; and Fort Peck Indian Reservation which is approximately 240 km from the facility.

Expected impacts on ambient air quality, visibility, and deposition of nitrogen and sulfur were determined using CALPUFF, since it is the preferred model for sources greater than 50 km away. The modeling confirmed the facility is not expected to cause or contribute to a violation of the Class I ambient standards and will not exceed any applicable air quality related value (AQRV) screening thresholds.⁹ A summary is presented in Section 7 of ACP-18334 v1.0_AQIA.

5) Public Participation

The permit must undergo public comment per NDAC 33.1-15-14-02.6.c and NDAC 33.1-15-15. See the “Title Page” section for details on the public comment period.

P. NDAC 33.1-15-16 – Restriction of Odorous Air Contaminants:

This chapter restricts the discharge of objectionable odorous air contaminants which measure seven odor concentration units or greater outside the property boundary. This chapter addresses emissions of H₂S. This chapter also establishes the method of measurement using certified inspectors, scentometers, and other approved instruments.

Applicability and Expected Compliance

Based on Department experience with sources having similar emission units, processes, low H₂S concentrations and application of BACT, the facility is expected to comply with

⁸ See Application for a PSD Permit to Construct North American Iron - Minot Project from February 2026, Appendix G Additional Impacts Analysis, (PDF Page 1492-1509).

⁹ See Application for a PSD Permit to Construct North American Iron - Minot Project from February 2026, Appendix I Class I Air Quality & Visibility Modeling, (PDF Page 1567-1599).

this chapter. Any odor-related complaints received by the Department will be investigated and resolved in accordance with this chapter.

Q. NDAC 33.1-15-17 – Restriction of Fugitive Emissions:

This chapter restricts PM and gaseous fugitive emissions that would violate Chapters 2 (AAQS), Chapter 3 (visible emissions), Chapter 15 (PSD), Chapter 16 (odor), or Chapter 19 (visibility), providing suggested abatement measures.

Applicability and Expected Compliance

The Project will have fugitive emissions from material drop points, material stockpiles, and haul roads that will be subject to the applicable requirements of this chapter. Application of BACT and implementation of reasonable precautions to abate and prevent fugitive particulate emissions will result in expected compliance with this chapter's requirements.

R. NDAC 33.1-15-18 – Stack Heights:

This chapter restricts the use of stack heights above good engineering practices (GEP) and dispersion techniques to affect pollutant concentrations in the ambient air as defined by 40 CFR 51.100(hh-kk). Stack heights in exceedance of GEP are permissible if they undergo a demonstration study which is made available for review by the Department and the public.

Applicability and Expected Compliance

The proposed stacks at the facility do not exceed GEP and will not use dispersion techniques to negatively affect the pollutant concentration in the ambient air.

The required stack heights at the facility are listed in Table 5-1 of ACP-18334 v1.0.

S. NDAC 33.1-15-19 – Visibility Protection:

This chapter requires new major stationary sources or major modifications¹⁰ to demonstrate the emissions will not cause or contribute to adverse impact on visibility in federal Class I areas. This chapter establishes requirements for visibility impact analysis, visibility models, notification, review by federal land managers, public participation, and visibility monitoring.

Applicability and Expected Compliance

The facility is a new major stationary source and is therefore subject to the requirements of this chapter. The Class I areas included in the analysis are detailed in Section 4.O.4) and the visibility modeling results are detailed in ACP-18334 v1.0_AQIA. The visibility

¹⁰ Chapter 19 applies to a “new major stationary source” or “major modification” as defined in NDAC 33.1-15-15-01.

modeling results demonstrated that expected impacts to each Class I area were below FLM thresholds, meaning there is no expected adverse impact to visibility due to this facility. Representatives from the National Park Service and US Fish and Wildlife Service did not request additional analysis or review.¹¹

T. NDAC 33.1-15-20 – Control of Emissions from Oil and Gas Well Production Facilities:

This chapter regulates emissions from oil and gas well production facilities, requiring operators to register new wells and report gas composition changes. It establishes PSD applicability for major sources and mandates compliance with air quality standards for pollutants like sulfur dioxide and hydrogen sulfide.

Applicability and Expected Compliance

The facility is not an oil or gas well facility and is therefore not subject to the requirements of this chapter.

U. NDAC 33.1-15-21 – Acid Rain Program:

This chapter adopts the acid rain provisions under 40 CFR 72, 75, & 76 and appendices as of January 1, 2012.

Applicability and Expected Compliance

The facility is not subject to the acid rain provision since it is not an electric utility.

V. NDAC 33.1-15-22 – Emissions Standards for Hazardous Air Pollutants for Source Categories [40 CFR 63 a.k.a. MACT (Maximum Achievable Control Technology)]:

This chapter adopts most of the MACT standards and appendices under 40 CFR 63 as of July 1, 2019.

1) MACT A – General Provisions

This subpart is applicable to any facility to which a MACT standard applies and contains general requirements for control devices and work practices, notification, performance tests, monitoring, reporting and recordkeeping.

Applicability and Expected Compliance

The facility will comply with the general provisions of MACT A through submission of timely notifications, performance testing, monitoring, recordkeeping, reporting, and following the control device work practice requirements.

2) MACT B – Requirements for Control Technology Determinations for Major Sources in Accordance With Clean Air Act Sections, Sections 112(g) and 112(j)

¹¹ See Appendix A for pre-public comment FLM communications.

Under the Clean Air Act Amendments of 1990, EPA is required to regulate large or "major" industrial facilities that emit one or more of the listed HAPs. Air toxics are those pollutants that are known or suspected of causing cancer or other serious health effects, such as developmental effects or birth defects. On July 16, 1992, EPA published a list of industrial source categories that emit one or more of these hazardous air pollutants. EPA is required to develop standards for listed industrial categories of "major" sources (those that have the potential to emit 10 tons/year or more of a listed pollutant or 25 tons/year or more of a combination of pollutants) that will require the application of stringent controls, known as maximum achievable control technology (MACT).

The section 112(g) provision is designed to ensure that emissions of toxic air pollutants do not increase if a facility is constructed or reconstructed before EPA issues a MACT or air toxics regulation for that particular category of sources or facilities.

In effect, the 112(g) provision is a transitional measure to ensure that facilities adequately protect the public from toxic air pollutants until EPA issues a MACT standard that applies to the facility in question.

Newly constructed facilities or reconstructed units or sources at existing facilities would be subject to 112(g) requirements if they have the potential to emit hazardous air pollutants (air toxics) in "major" amounts (10 tons or more of an individual pollutant or 25 tons or more of a combination of pollutants).

Sources or facilities subject to 112(g) would be subject to stringent air pollution control requirements, referred to as "new source MACT." Under the Clean Air Act, new source MACT control is required to be no less stringent than the best controlled similar source or facility.

EPA anticipates that the new source MACT requirements will be equally or more stringent than the requirements in the air toxics or MACT standard that EPA will later issue for the industrial source category in question. However, should the new source MACT requirements prove to be less stringent than the air toxics regulation that EPA later issues, the source or facility would be provided additional time to comply with the air toxics or MACT standard.

Applicability and Expected Compliance

The Project's potential HAP emissions are greater than 10 tons/year of any single HAP and are greater than 25 tons/year of any combination of HAPs. EPA has not established MACT standards for many of the Project's source categories; therefore, Table 4 lists the sources units subject to Case-by-Case MACT and the respective pollutants.

Table 4 – Summary of Equipment and Pollutants Subject to Case-by-Case MACT

Equipment Description	Case-By-Case MACT	Pollutant
Natural gas generator engines	MACT ZZZZ	N/A
Rotary kilns	Yes	Metal HAP, Organic HAP, Hg
Rotary coolers	Yes	Metal HAP
Straight grate indurating furnace	MACT RRRRR	N/A
PGH	MACT DDDDD	N/A
PTS heater	MACT DDDDD	N/A
PTS depressurization	Yes	Metal HAP
Cold product depressurization	Yes	Metal HAP
CO ₂ capture vent	No HAP	N/A
Flare	Yes	Organic HAP
Package boiler	MACT DDDDD	N/A
OSBF material feed & tapping	Yes	Metal HAP
Casting units	Yes	Metal HAP
Casting unit drying burners	Yes	Organic HAP
Slag granulators	Yes	Metal HAP
Slag pits	Yes	Metal HAP
Emergency units	MACT ZZZZ	N/A
Material handling	Partially to MACT RRRRR, Otherwise No HAP	Metal HAP
Cooling towers	No HAP	N/A
Fugitive piping components	No HAP	N/A
fugitive dust	Partially to MACT RRRRR, Otherwise No HAP	Metal HAP

The facility's permit to construct application included a detailed analysis of potentially available controls to reduce the above listed HAP emissions.¹² The Department reviewed the analysis and agrees with the conclusions reached in the selection of MACT each of the sources listed in Table 4. Case-by-Case MACT emissions limits and compliance requirements are listed in Condition 3 and Condition 4 of ACP-18334 v1.0.

3) Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

¹² See Application for a PSD Permit to Construct North American Iron - Minot Project from February 2026, Appendix F Case-by-Case MACT, (PDF Page 1459-1491).

MACT ZZZZ establishes national emission and operating limitations for HAP emissions from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission and operating limitations.

Applicability and Expected Compliance

The natural gas generator engines (EUs RICE-1 through RICE-42) are subject to the major source requirements of MACT ZZZZ. MACT ZZZZ requires each engine to comply with the following emissions standards:

- Reduce CO emissions by 93% or more; or
- Limit concentration of formaldehyde in the stationary RICE exhaust to 14 ppmvd or less at 15 percent O₂

As a major source of HAPs, the facility is required to test all engines for CO or formaldehyde in accordance with the requirements of NSPS Subpart ZZZZ §63.6600(b). In order to demonstrate compliance with the above NSPS ZZZZ limits, the facility must test all engines for CO or formaldehyde.

The emergency units (EUs EG-01 & FP-01) will demonstrate compliance with MACT ZZZZ through compliance with emergency unit provision of NSPS IIII.

- 4) MACT DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

MACT DDDDD applies to major sources of HAPs and establishes emission limitations, work practice standards, and requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards for boilers and process heaters.

Applicability and Expected Compliance

EUs PGH-01, PTS-01, and BOIL-01 are subject to MACT DDDDD. These emission units are subject to the work practice standards, tune-ups, and burner inspection requirements of 40 CFR 63.7500. Since the boilers and heaters subject to this subpart are units designed to burn gas 1 subcategory¹³ fuel, they are not subject to any pollutant-specific emission limits.

- 5) MACT RRRRR – National Emission Standards for Hazardous Air Pollutants for Taconite Ore Processing

MACT RRRRR applies to affected sources at a taconite iron ore processing plant that is, or is part of, a major source of HAP and covers emissions from each ore

¹³ 40 CFR 63.7575 “Units designed to burn other gas 1” subcategory.

crushing and handling operation, ore dryer, indurating furnace, and finished pellet handling operation, as well as fugitive dust emissions.

Applicability and Expected Compliance

EUs PC-MH-01 through PC-MH-13, PC-SP-01 through PC-SP-04, PP-MH-03 through PP-MH-12, PP-SB-01, PP-SP-01, and DRI-MH-01 through DRI-MH-14 are considered affected sources under this subpart and subject to PM limit of 0.005 gr/dscf. EU INF-01 is also an affected source and is subject to a PM limit of 0.006 gr/dscf, a mercury (Hg) limit of 2.6×10^{-6} lb/long ton pellets (1.2×10^{-9} lb/lb pellets), a hydrogen chloride (HCl) limit of 4.4×10^{-4} lb/long ton pellets (2.0×10^{-7} lb/lb pellets), and a hydrogen fluoride (HF) limit of 3.3×10^{-4} lb/long ton pellets (1.5×10^{-7} lb/lb pellets).

- EUs PC-MH-01 through PC-MH-08, PC-MH-11 through PC-MH-13, PP-MH-03 through PP-MH-11, PP-SB-01, DRI-MH-03 through DRI-MH-07, and DRI-MH-09 through DRI-MH-14 will demonstrate compliance with the PM requirement by complying with the BACT limit of 0.002 gr/dscf.
- EU INF-01 will demonstrate compliance with the PM requirement by complying with the BACT limit of 0.004 gr/dscf.
- EU INF-01 will demonstrate compliance with the HCl and HF limits through testing and operation of circulating dry scrubber (CDS). Compliance with Hg will be demonstrated through testing and no add-on controls are not expected to be required to meet the limit.

See Table 4-1 in ACP-18334 v1.0 for compliance testing requirements associated with these units.

W. NDAC 33.1-15-23 – Fees:

This chapter establishes a filing fee of \$325 for PTC applications, plus any additional fees based on actual processing costs assessed upon issuance of the draft PTC. This chapter also requires an annual PTO fee for Title V major and minor sources and well registrations.

Applicability and Expected Compliance

This chapter requires a filing fee of \$325 for a permit to construct applications, plus any additional fees based on actual processing costs. The additional fees based on processing costs will be assessed upon issuance of the draft permit to construct. The annual operating Title V permit fees will also become applicable upon receipt of a Title V permit.

The applicant has paid the \$325 filing fee and will be required to pay the additional fees associated with the permit to construct processing.

X. NDAC 33.1-15-24 – Standards for Lead-Based Paint Activities:

This chapter establishes standards and requirements for the accreditation, notification, and fees of procedures, training programs, certification, and licensing for individuals and firms engaged in lead-based paint activities.

Applicability and Expected Compliance

The facility will not perform any lead-based paint activities and is therefore not subject to this chapter.

Y. NDAC 33.1-15-25 – Regional Haze Requirements (40 CFR 51.308):

This chapter establishes requirements for stationary sources (which were in existence between 1962 and 1977) which have the potential to “contribute to visibility impairment” in Class I Federal areas, as defined by 40 CFR 51.301, to implement best available retrofit technology. In addition, existing stationary sources or groups of sources are required to implement emission reduction measures to make reasonable progress toward North Dakota’s reasonable progress goals established in accordance with 40 CFR 51.308 at the discretion of the Department.

Applicability and Expected Compliance

The facility is a new major stationary source and is therefore not applicable to this chapter. See Section 4.S for visibility discussion, this ensures emissions from the proposed facility will have impacts below levels of concern to the Class I areas' visibility and will not expect to interfere with North Dakota’s reasonable progress goals.

Appendix A – Pre-public Comment FLM Communications

From: [Allen, Tim](#)
To: [Thorton, Rhannon T.](#); [Salazer, Holly](#); [Barna, Michael](#); [Shepherd, Don](#); [He, Li-Ming](#)
Cc: [Stroh, David E.](#); [Beau Thurman](#); r8airpermitting@epa.gov
Subject: Re: [EXTERNAL] Notification of Proposed Major Source - North Dakota
Date: Monday, March 30, 2026 1:51:21 PM
Attachments: [image001.png](#)

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Hi Rhannon,

Thank you for the opportunity to review the North American Iron - Minot Merchant Pig Iron plant application (email 2/25/26). The application presents full Calpuff AQRV based analysis within screening limitations as described in FLAG 2010. The U.S. Fish & Wildlife is not planning to request additional Class I AQRV information.

If the project makes significant changes as previously described, please resubmit for further review.

Thank you,
Tim Allen

From: Thorton, Rhannon T. <rThorton@nd.gov>
Sent: Wednesday, February 25, 2026 1:51 PM
To: Salazer, Holly <Holly_Salazer@nps.gov>; Allen, Tim <tim_allen@fws.gov>; Barna, Michael <Mike_Barna@nps.gov>; Shepherd, Don <Don_Shepherd@nps.gov>; He, Li-Ming <li-ming_he@nps.gov>
Cc: Stroh, David E. <deStroh@nd.gov>; Beau Thurman <bthurman@barr.com>; r8airpermitting@epa.gov <r8airpermitting@epa.gov>
Subject: [EXTERNAL] Notification of Proposed Major Source - North Dakota

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Good afternoon,

In accordance with 40 CFR 51.307(a)(1), NDDEQ is providing notification of a proposed new major stationary source located in Ward County, North Dakota. The permit to construct application for the North American Iron – Minot Merchant Pig Iron Plant is too large to attach, but is available at:

<https://ceris.deq.nd.gov/ext/nsite/DEFAULT/map/results/detail/6223917/455>

Note: The modeling analysis files are too large for our CERIS system but are available upon request.

Please forward this information to all other appropriate individuals within your organizations. If you'd like to schedule a meeting to discuss the proposed project, let us know and we will work to set one up.

Regards,

Rhannon Thorton

Environmental Scientist

701-328-5271 • rthorton@nd.gov



4201 Normandy St. • Bismarck, ND 58503

From: [Shepherd, Don](#)
To: [Thorton, Rhannon T.](#); [Salazer, Holly](#); [Allen, Tim](#); [Barna, Michael](#); [He, Li-Ming](#); [Martin, Danny J](#)
Cc: [Stroh, David E.](#); [Beau Thurman](#); r8airpermitting@epa.gov; [Peters, Melanie](#); [Stacy, Andrea](#); [Miller, Debra C](#)
Subject: Re: [EXTERNAL] RE: Notification of Proposed Major Source - North Dakota - North American Iron
Date: Tuesday, April 14, 2026 12:17:54 PM
Attachments: [image001.png](#)

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Hello Rhannon,

Thank you for your response to our questions about the sulfur contents of materials to be used in the Open Slag Bath Furnaces at the proposed North American Iron facility near Minot, ND.

We suggest permit limits on the sulfur content of the coke and coal tar pitch reflective of the SO₂ emission rates presented in Table 13 of the Appendix B, "Potential to Emit (PTE) Calculations" section of the application.

We have no further comments on the application.

Don Shepherd, Environmental Engineer
National Park Service
Air Resources Division

From: Thorton, Rhannon T. <rThorton@nd.gov>
Sent: Wednesday, April 8, 2026 2:04 PM
To: Shepherd, Don <Don_Shepherd@nps.gov>; Salazer, Holly <Holly_Salazer@nps.gov>; Allen, Tim <tim_allen@fws.gov>; Barna, Michael <Mike_Barna@nps.gov>; He, Li-Ming <li-ming_he@nps.gov>; Martin, Danny J <danny_martin@nps.gov>
Cc: Stroh, David E. <deStroh@nd.gov>; Beau Thurman <bthurman@barr.com>; r8airpermitting@epa.gov <r8airpermitting@epa.gov>; Peters, Melanie <Melanie_Peters@nps.gov>; Stacy, Andrea <Andrea_Stacy@nps.gov>; Miller, Debra C <Debra_Miller@nps.gov>
Subject: [EXTERNAL] RE: Notification of Proposed Major Source - North Dakota - North American Iron

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Don,

Barr has provided responses to your questions below:

Sulfur impurities in the DRI pellets and OSBF additives will also be present in the molten iron and slag. When the molten iron or slag is exposed to air during tapping, a portion of this sulfur may oxidize to form SO₂. The SO₂ emissions estimates in the application are intended to conservatively account for the sulfur that could be present in the molten materials and the potential for sulfur oxidation during tapping and slag handling.

- What is the percent sulfur content of the coke? **RESPONSE: Preliminary design documents indicate coke can contain up to approximately 0.6% sulfur. The coke is an additive to the OSBF with a preliminarily estimated feed rate of 0.9% of the hot DRI feed rate.**
- Is the coke added separately or provided by the Soderberg electrodes? **RESPONSE: Coke and other additives are added to the OSBF separately with feed bins and conveyors. See the next response regarding Soderberg electrodes.**
- Do the Soderberg electrodes contain petroleum coke and/or coal tar pitch? **RESPONSE: Yes, based on publicly available information, most Soderberg electrodes are made of coal tar pitch and other solid fillers such as coke or calcined anthracite. To put this in perspective for the NAI project, the preliminarily estimated feed rate of Soderberg electrodes to the OSBF is 0.3% of the hot DRI feed rate.**
- Do the electrodes contain sulfur? If so, at what percentage(s)? **RESPONSE: Preliminary design documents indicate that electrodes can contain up to approximately 0.04% sulfur.**

Let us know if you have any further questions.

Regards,

Rhannon Thorton

Environmental Scientist

701-328-5271 • rthorton@nd.gov



4201 Normandy St. • Bismarck, ND 58503

From: Shepherd, Don <Don_Shepherd@nps.gov>

Sent: Wednesday, March 18, 2026 8:56 AM

To: Thorton, Rhannon T. <rThorton@nd.gov>; Salazer, Holly <Holly_Salazer@nps.gov>; Allen, Tim <tim_allen@fws.gov>; Barna, Michael <Mike_Barna@nps.gov>; He, Li-Ming <li-ming_he@nps.gov>;

Martin, Danny J <danny_martin@nps.gov>

Cc: Stroh, David E. <deStroh@nd.gov>; Beau Thurman <bthurman@barr.com>;
r8airpermitting@epa.gov; Peters, Melanie <Melanie_Peters@nps.gov>; Stacy, Andrea
<Andrea_Stacy@nps.gov>; Miller, Debra C <Debra_Miller@nps.gov>

Subject: Re: Notification of Proposed Major Source - North Dakota - North American Iron

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Hello Rhannon,

Thanks again for providing access to the application by North American Iron (NAI) for a PSD permit to construct and operate a pig iron manufacturing plant near Minot, ND.

I would appreciate it if you would help me understand the origin of SO₂ emissions from the Open Slag Bath Furnaces (OSBF) and Slag Pits. According to the permit application:

The Project will include two identical OSBFs that use electrical current to convert DRI pellets into molten pig iron. Various additives such as **coke**, lime, dolomite, and bauxite are also added to the furnace to improve the quality of the pig iron...Each OSBF has a large refractory-lined basin into which DRI pellets and additives are fed. Soderberg electrodes in the basin melt the materials.

My questions:

- What is the percent sulfur content of the coke?
- Is the coke added separately or provided by the Soderberg electrodes?
- Do the Soderberg electrodes contain petroleum coke and/or coal tar pitch?
- Do the electrodes contain sulfur? If so, at what percentage(s)?

Thanks again,

Don Shepherd, Environmental Engineer
National Park Service
Air Resources Division

From: Thorton, Rhannon T. <rThorton@nd.gov>

Sent: Wednesday, February 25, 2026 1:51 PM

To: Salazer, Holly <Holly_Salazer@nps.gov>; Allen, Tim <tim_allen@fws.gov>; Barna, Michael
<Mike_Barna@nps.gov>; Shepherd, Don <Don_Shepherd@nps.gov>; He, Li-Ming <li-ming_he@nps.gov>

Cc: Stroh, David E. <deStroh@nd.gov>; Beau Thurman <bthurman@barr.com>;
r8airpermitting@epa.gov <r8airpermitting@epa.gov>

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Regards,

Rhannon Thorton
Environmental Scientist

701-328-5271 • rthorton@nd.gov



4201 Normandy St. • Bismarck, ND 58503