

**Air Quality Impacts Analysis (AQIA)
for
North American Iron LLC
Minot Merchant Pig Iron Plant**

**Lat. 48.2816 Long. -101.2383
Minot, North Dakota**

Associated with Permit No.:

ACP-18334 v1.0



North Dakota Department of Environmental Quality
Division of Air Quality

Date of Draft Analysis: October 16, 2026	Date of Final Analysis: [Reserved]
Update Post Comment Period: [Reserved]	
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1. Executive Summary

North American Iron LLC (NAI) conducted air dispersion modeling for the proposed Minot Merchant Pig Iron Plant (facility or Project) to be located in Minot, North Dakota. The modeling efforts were conducted to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increment consumption regulations. The North Dakota Ambient Air Quality Standards are equivalent to the National Ambient Air Quality Standards.¹

Based on the data provided in the Permit to Construct (PTC) application submitted on February 13, 2026, and the Department's independent review and modeling analysis, it is expected that the proposed Project will comply with the applicable NAAQS and PSD increments. The Department's results of the modeled impacts for the NAAQS and PSD increment consumption are outlined in Table 1 and Table 2, respectively. Table 20 contains information regarding the NAAQS averaging periods. On July 8, 2026, an updated site boundary was submitted for the facility that incorporated the addition of two quarter sections. This expanded the ambient air boundary of the facility. Therefore, the following results are considered conservative, as an updated analysis would result in lower values due to the ambient boundary expansion.

Table 1- National Ambient Air Quality Standards (NAAQS) Results Summary

Pollutant	Averaging Period	Facility Modeled Impact ($\mu\text{g}/\text{m}^3$)	Fixed Background Concentration ($\mu\text{g}/\text{m}^3$)	Total Predicted Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	Passed (Y/N)
NO ₂	1-Hour	58.46	35	93.46	188	Y
	Annual	5.31	5	10.31	100	Y
PM ₁₀	24-Hour	25.18	30	55.18	150	Y
PM _{2.5} ^A	24-Hour	6.60	13.7	20.30	35	Y
	Annual	2.37	4.75	7.12	9	Y

^A Secondary formation of PM_{2.5} included in Facility Modeled Impact (from Table 16)

¹ NDAC 33.1-15-02. Available at: [North Dakota Administrative Code - Title 33.1 Article 15 Chapter 2](#) (Last visited August 21, 2026)

Table 2 - PSD Class II Increment Results Summary

Pollutant	Averaging Period	Facility Modeled Impact ($\mu\text{g}/\text{m}^3$)	Class II PSD Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (%)	Passed (Y/N)
NO ₂	Annual	5.31	25	21%	Y
PM ₁₀	24-Hour	29.71	30	99%	Y
	Annual	6.58	17	39%	Y
PM _{2.5} ^A	24-Hour	8.78	9	98%	Y
	Annual	2.50	4	63%	Y

^A Secondary formation of PM_{2.5} included in Facility Modeled Impact (from Table 16)

2. Introduction

On February 13, 2026, the North Dakota Department of Environmental Quality, Division of Air Quality (Department) received an application for a Permit to Construct from NAI for the construction of the proposed facility to be constructed in Minot, North Dakota, which is located in Ward County. The application included a modeling analysis to demonstrate compliance with the NAAQS and PSD increment standards. Modeling efforts were carried out for CO, NO₂, SO₂, PM₁₀, and PM_{2.5}. This Air Quality Impacts Analysis (AQIA) summarizes the Department's findings based on a thorough review and independent modeling analysis of the Project.

3. Project Background

NAI is proposing to build the facility along the northeastern edge of the city of Minot. The facility will process up to approximately 4,900,000 tons per year of partially beneficiated iron ore (pre-concentrate) into pig iron. Pre-concentrate will be transported by rail to the facility, where it will be roasted, concentrated, pelletized, and converted into pig iron using a direct reduced iron (DRI) reactor and open slag bath furnaces (OSBF). The molten pig iron will then be transported via torpedo car to casting units to make pig iron ingots, which will be shipped from the facility via rail car. Initial construction of the facility will be completed after the PSD baseline date for Region No. 172 (Table 3). Therefore, all the emission units proposed as part of the Project will consume PSD increment.

Table 3 - PSD Minor Source Baseline Dates ²

Pollutant	PSD Baseline Date Region No. 172 (all counties except Cass County)	PSD Baseline Date Region No. 130 (Cass County)	Source Included in Baseline (Y/N)
NO₂	October 31, 1989	September 13, 2007	N
SO₂	December 19, 1977	November 30, 1979	N
PM₁₀	January 13, 1978	November 30, 1979	N
PM_{2.5}	August 23, 2012	April 28, 2022	N

4. Model Requirements

The facility qualifies as a major source according to the PSD rules^{3,4} and consequently falls under the purview of PSD review requirements. Per the Department Memo⁵ dated October 6, 2014, sources that are subject to the PSD rules require dispersion modeling for criteria pollutants prior to the issuance of a PTC if the projected emissions exceed PSD Significant Emission Rates (SERs) (Table 4).

Furthermore, any new source subject to PSD review that is situated within 250 kilometers (km) of a Class I area is required to include a Class I increment analysis. Table 5 provides a list of the Class I areas in closest proximity to the facility. The facility is located approximately 100 km from the nearest Class I area; therefore, a Class I increment analysis was required. The nearest Class I areas were located outside the recommended 50 km range for AERMOD dispersion modeling software, so CALPUFF software was utilized to evaluate the Class I impacts. These modeling details are outlined in Section 7. All other areas within North Dakota are designated Class II areas and Class II increment analysis applies.

² May 13, 2022, Department Memo, North Dakota Prevention of Significant Deterioration (PSD) Minor Source Baseline Dates. Available upon request.

³ NDAC 33.1-15-15. Available at: <https://www.ndlegis.gov/information/acdata/pdf/33.1-15-15.pdf> (Last visited August 21, 2026)

⁴ 40 CFR §52.21. Available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21> (Last visited August 21, 2026)

⁵ Criteria Pollutant Modeling Requirements for a Permit to Construct. Available at: https://deq.nd.gov/publications/AQ/policy/Modeling/Criteria_Modeling_Memo.pdf (Last visited August 21, 2026)

Table 4 - Significant Emission Rates (SERs) in Tons Per Year (TPY)

Pollutant	SER (TPY)	Final Project Emission Increase (TPY)	Modeling Required (Y/N)
PM ₁₀	15	683	Y
PM _{2.5}	10	600	Y
SO ₂	40	267	Y
NO ₂	40	1,859	Y
CO	100	1,335	Y

Table 5 - Class I Areas Near Source

Class I Area	Located in	Distance From Project (km) ^A	Modeling Required (Y/N)
Medicine Lake Wilderness Area	Montana	220	Y
Fort Peck Reservation	Montana	240	Y
Theodore Roosevelt National Park-North Unit	North Dakota	165	Y
Theodore Roosevelt National Park-Elkhorn Ranch Unit	North Dakota	210	Y
Lostwood Wilderness Area	North Dakota	92	Y
Voyageurs National Park	Minnesota	620	N
Boundary Waters Canoe Area	Minnesota	740	N

^A Approximate distances using Google Earth's measuring tool.

The facility is subject to the requirements of NDAC 33.1-15-02⁶ and National Ambient Air Quality Standards. Cumulative modeling was conducted to demonstrate compliance with applicable state and federal standards.

⁶ Available at: <https://www.ndlegis.gov/information/acdata/pdf/33.1-15-02.pdf> (Last visited August 21, 2026)

5. Model Input Values

5.1. Model Version

The U.S. Environmental Protection Agency (EPA) has developed the *Guideline on Air Quality Models*⁷ (40 CFR 51 Appendix W) wherein they list preferred models for pre-construction permitting reviews. EPA's preferred model is AERMOD, which NAI and the Department used for the analysis and review, in accordance with Appendix W. The model versions used in this analysis are summarized in Table 6. CALPUFF was utilized for the Class I analysis, which is detailed in Section 7.

Table 6 - Model Versions Used

Model	Version	Model	Version
AERMOD	24142	BPIP-PRIME	4274
AERMET	24142	AERMINUTE	15272
AERMAP	24142	AERSURFACE	24142

5.2. Meteorological Data (MET)

In the modeling process, both surface and upper-air meteorological (met) data are pre-processed through AERMET. This pre-processing generates the boundary layer parameters required by AERMOD to estimate plume dispersion. AERMET processes hourly meteorological data to determine plume transport and dispersion downwind from a source.

Per Appendix W (2024) 8.4.2.e, the choice of meteorological data should be based on ensuring a sufficiently conservative and representative result, considering hourly and seasonal variations in meteorological conditions throughout the year, which directly influence plume movement due to atmospheric conditions. The options for selecting meteorological data include:

1. One year of site-specific data: This involves using data collected onsite from a monitoring station.
2. Five years of representative National Weather Service (NWS) data: This data source typically provides long-term, historical weather information.
3. At least 3 years of prognostic meteorological data: This type of data involves using predictive meteorological models to estimate future conditions.

⁷ Available at: https://www.epa.gov/system/files/documents/2024-11/appendix_w-2024.pdf (Last visited August 21, 2026)

The analysis used the second option, five years of representative NWS data. The specific MET stations used for input in AERMET for this analysis are listed in Table 7. AERMET processes hourly surface observations, including parameters such as wind speed and direction, ambient temperature, sky cover (opacity), and local air pressure (optionally). It combines these observations with the pre-processed AERSURFACE output values (Table 8) to compile the necessary surface met inputs for AERMOD.

Table 7 - MET Data Used

MET Data	Location	Station No.	Years	Distance From Source ^A	Source of Data
Surface Air	Minot International Airport, ND	24013	2020-2024	4 km E	NDDEQ
Upper Air	Bismarck, ND	24011	2020-2024	172 km SSE	NDDEQ

^A Approximate distances using Google Earth's measuring tool.

5.3. Surface Inputs

AERMET relies on certain key values, including surface roughness length, albedo, and Bowen ratio when pre-processing meteorological data for use in AERMOD.

AERSURFACE allows users to generate these values based on inputs related to seasonal variation in the vegetative landscape (e.g., landcover). To facilitate this process, the Department has compiled a set of recommended inputs specifically designed for various regions within the state. These recommendations are outlined in the document titled “*Recommended AERSURFACE Inputs North Dakota* (March 2017)”.⁸

Table 8 - AERSURFACE Input Values

Parameter	Value Used
Radius of study area used for surface roughness:	1.0 km
Define the surface roughness length for multiple sectors?	Yes
Number of sectors:	12
Temporal resolution of surface characteristics	Monthly
Continuous snow cover for at least one month?	Yes
Reassign the months to different seasons?	Yes
Specify months for each season:	Yes
Late autumn after frost and harvest, or winter with no snow	Mar, Oct, Nov
Winter with continuous snow cover	Jan, Feb, Dec
Transitional spring	Apr, May
Midsummer with lush vegetation	Jun, Jul, Aug
Autumn with unharvested cropland	Sep
Is this site at an airport?	Yes
Is the site in an arid region?	No
Surface moisture condition at the site:	Average

⁸ Available upon request.

5.4. Receptor Grid

Receptors serve as the designated locations where the air quality model calculates ground-level pollutant concentrations. These receptors are strategically placed within a receptor grid, and their distribution is determined by factors such as terrain characteristics and pollutant emission rates. While the exact configuration may vary, it typically forms a rectangular pattern radiating outward from the emission source. The goal is to ensure that the receptor grid effectively captures the dispersion and distribution of pollutants in the vicinity of the facility.

Further specifics on the receptor grid are shown in Table 9.

Table 9 - Receptor Grid Spacing

Distance From Source	Distance Between Receptors
Fence line	25 m
0 to 1,500 m	50 m
1,501 to 3,000 m	100 m
3,001 to 5,000 m	250 m
5,001 to 10,000 m	500 m
TOTAL NUMBER OF RECEPTORS	5793

The receptor points are placed at ground level, and their elevation is determined using the United States Geological Survey (USGS) National Elevation Dataset (NED) terrain and land-use data. The Universal Transverse Mercator (UTM) map projection with the North American Datum of 1983 (NAD83) is used for both the source input locations and the receptor grid location. To ensure accurate placement at ground level, the USGS NED data at a 1/3 arcsecond (10-meter) resolution is processed through the AERMAP pre-processor. This pre-processor adjusts the receptor points' elevations based on terrain data, aligning them with the actual topography of the area.

Receptor points located within the plant boundary are not modeled, as they do not represent ambient air.⁹ Ambient air is defined as air situated outside of a boundary (e.g., a fence), which restricts general public access to a facility or source. The facility will utilize fencing, signage, and other approved techniques around the plant boundary to preclude access to the general public. This exclusion ensures that the modeling analysis focuses on assessing the impact of emissions on the air quality in areas accessible to the public.

⁹ §40 CFR 50.1(e). Available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50/section-50.1> (Last visited August 21, 2026)

5.5. Background

Fixed background concentrations of NO₂, CO, SO₂, PM_{2.5}, and PM₁₀ were utilized with modeling results to predict the total impact on NAAQS. These fixed background concentrations are not included as inputs in the modeling process, and as a result, they are not included in the “Facility Modeled Impact” column (Table 1 and Table 21). The fixed background concentration values (Table 10) are included in the “Maximum Modeled Impact” column (Table 1 and Table 21) to show the cumulative concentrations of each pollutant as compared to the NAAQS limits. Fixed background concentrations (Table 10) are considered reasonably representative of the entire state, and while they are conservative, they play a significant role in ensuring a comprehensive and conservative assessment of the total ambient effect on NAAQS due to emissions from the facility.

Table 10 - Fixed Background Concentrations¹⁰

Pollutant	Averaging Time	Background (µg/m³)
PM₁₀	24-HR	30
PM_{2.5}	Annual	4.75
	24-HR	13.7
SO₂	Annual	3
	24-HR	9
	3-HR	11
	1-HR	13
NO₂	Annual	5
	1-HR	35
CO	8-HR	1,149
	1-HR	1,149

5.5.1. Nearby Sources

The Department reviewed records pertaining to sources that could potentially share a significant concentration gradient with the proposed facility in North Dakota. Of the sources evaluated, no facilities were identified as potentially sharing a significant concentration gradient of any criteria pollutant with the facility. As a result, the modeling analysis for all pollutants includes only those associated with the Project and background concentrations.

¹⁰ Available at: https://deq.nd.gov/publications/AQ/policy/Modeling/ND_Air_Dispersion_Modeling_Guide.pdf
(Last visited August 21, 2026)

5.6. Emission Source Modeling Parameters

AERMOD requires specific source data to model air pollutant dispersion accurately. This data includes:

1. Type and location of each emission point
2. Base elevation of each stack
3. Emission height and rate
4. Gas exit velocity and temperature
5. Other stack/emission parameters depending upon source type

To ensure the accuracy of model input values, a comparison was made between the emission rates and stack parameters provided in the application and the corresponding information for each emission unit.

Table 11 - Point Source Parameters lists the model input parameters including location (UTM X-Y coordinates), stack height (i.e., release height), stack exit diameter, exit velocity, and exit temperature at the facility.

Table 12 - Point Source Emission Rates lists the emission rates for the point sources located at the facility.

Table 13 - Volume Source Parameters and Emission Rates lists the volume source parameters including location (UTM X-Y coordinates), release height, sigma Y, sigma Z, length of side, and emission rates at the Facility.

Table 14 - Area Source Parameters and Emission Rates lists the area source parameters including location (UTM X-Y coordinates), release height, length X, length Y, rotation angle, sigma Z, and emission rates at the Facility.

Table 11 - Point Source Parameters

Modeled Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Stack Height (m)	Stack Dia. (m)	Exit Velocity (m/s)	Exit Temp. (K)
RICE01	Power Plant Engine #1	333969.01	5350643.00	27.43	0.81	25.49	633.15
RICE02	Power Plant Engine #2	333979.15	5350643.00	27.43	0.81	25.49	633.15
RICE03	Power Plant Engine #3	333989.29	5350643.00	27.43	0.81	25.49	633.15
RICE04	Power Plant Engine #4	333999.43	5350643.00	27.43	0.81	25.49	633.15
RICE05	Power Plant Engine #5	334009.57	5350643.00	27.43	0.81	25.49	633.15
RICE06	Power Plant Engine #6	334019.71	5350643.00	27.43	0.81	25.49	633.15
RICE07	Power Plant Engine #7	334077.26	5350641.15	27.43	0.81	25.49	633.15
RICE08	Power Plant Engine #8	334086.93	5350641.15	27.43	0.81	25.49	633.15
RICE09	Power Plant Engine #9	334096.60	5350641.15	27.43	0.81	25.49	633.15
RICE10	Power Plant Engine #10	334106.27	5350641.15	27.43	0.81	25.49	633.15
RICE11	Power Plant Engine #11	334115.94	5350641.15	27.43	0.81	25.49	633.15
RICE12	Power Plant Engine #12	334125.61	5350641.15	27.43	0.81	25.49	633.15
RICE13	Power Plant Engine #13	334181.35	5350639.31	27.43	0.81	25.49	633.15
RICE14	Power Plant Engine #14	334191.03	5350639.31	27.43	0.81	25.49	633.15
RICE15	Power Plant Engine #15	334200.71	5350639.31	27.43	0.81	25.49	633.15
RICE16	Power Plant Engine #16	334210.39	5350639.31	27.43	0.81	25.49	633.15
RICE17	Power Plant Engine #17	334220.07	5350639.31	27.43	0.81	25.49	633.15
RICE18	Power Plant Engine #18	334229.75	5350639.31	27.43	0.81	25.49	633.15
RICE19	Power Plant Engine #19	334284.99	5350637.47	27.43	0.81	25.49	633.15
RICE20	Power Plant Engine #20	334294.66	5350637.47	27.43	0.81	25.49	633.15
RICE21	Power Plant Engine #21	334304.33	5350637.47	27.43	0.81	25.49	633.15
RICE22	Power Plant Engine #22	334314.00	5350637.47	27.43	0.81	25.49	633.15
RICE23	Power Plant Engine #23	334323.67	5350637.47	27.43	0.81	25.49	633.15
RICE24	Power Plant Engine #24	334333.34	5350637.47	27.43	0.81	25.49	633.15

Modeled Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Stack Height (m)	Stack Dia. (m)	Exit Velocity (m/s)	Exit Temp. (K)
RICE25	Power Plant Engine #25	333967.63	5350546.73	27.43	0.81	25.49	633.15
RICE26	Power Plant Engine #26	333976.84	5350546.73	27.43	0.81	25.49	633.15
RICE27	Power Plant Engine #27	333986.05	5350546.73	27.43	0.81	25.49	633.15
RICE28	Power Plant Engine #28	333995.26	5350546.73	27.43	0.81	25.49	633.15
RICE29	Power Plant Engine #29	334004.47	5350546.73	27.43	0.81	25.49	633.15
RICE30	Power Plant Engine #30	334013.68	5350546.73	27.43	0.81	25.49	633.15
RICE31	Power Plant Engine #31	334075.41	5350544.43	27.43	0.81	25.49	633.15
RICE32	Power Plant Engine #32	334085.55	5350544.43	27.43	0.81	25.49	633.15
RICE33	Power Plant Engine #33	334095.69	5350544.43	27.43	0.81	25.49	633.15
RICE34	Power Plant Engine #34	334105.83	5350544.43	27.43	0.81	25.49	633.15
RICE35	Power Plant Engine #35	334115.97	5350544.43	27.43	0.81	25.49	633.15
RICE36	Power Plant Engine #36	334126.11	5350544.43	27.43	0.81	25.49	633.15
RICE37	Power Plant Engine #37	334179.51	5350543.04	27.43	0.81	25.49	633.15
RICE38	Power Plant Engine #38	334189.18	5350543.04	27.43	0.81	25.49	633.15
RICE39	Power Plant Engine #39	334198.85	5350543.04	27.43	0.81	25.49	633.15
RICE40	Power Plant Engine #40	334208.52	5350543.04	27.43	0.81	25.49	633.15
RICE41	Power Plant Engine #41	334218.19	5350544.04	27.43	0.81	25.49	633.15
RICE42	Power Plant Engine #42	334227.86	5350545.04	27.43	0.81	25.49	633.15
PCBH01	Pre-Concentrate Railcar Tipper #1 Material Transfer	333748.00	5348910.00	19.66	1.37	3.19	Ambient
PCBH02	Pre-Concentrate Railcar Tipper #2 Material Transfer	333763.00	5348830.00	19.66	1.37	3.19	Ambient
PCBV03	Pre-Concentrate Bin #1 to Conveyor #1	333739.00	5348860.00	18.29	0.61	3.23	Ambient
PCBV04	Pre-Concentrate Bin #2 to Conveyor #2	333754.00	5348780.00	18.29	0.61	3.23	Ambient
PCBV05	Pre-Concentrate Conveyor #1 to Stacking Conveyor	333818.10	5348817.00	18.29	0.61	3.23	Ambient
PCBV06	Pre-Concentrate Conveyor #2 to Stacking Conveyor	333817.30	5348743.00	18.29	0.61	3.23	Ambient
PCBV07	Pre-Concentrate Stacker Conveyor to Stack/Reclaim Conveyor #1	333807.00	5349030.00	18.29	0.61	3.23	Ambient
PCBV08	Pre-Concentrate Stacker Conveyor to Stack/Reclaim Conveyor #2	333805.00	5348920.00	18.29	0.61	3.23	Ambient

Modeled Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Stack Height (m)	Stack Dia. (m)	Exit Velocity (m/s)	Exit Temp. (K)
PCBV11	Pre-Concentrate Stack/Reclaim Conveyor #1 to Conveyor	334795.00	5349010.00	18.29	0.61	3.23	Ambient
PCBV12	Pre-Concentrate Stack/Reclaim Conveyor #2 to Conveyor	334793.00	5348900.00	18.29	0.61	3.23	Ambient
PCBV13	Pre-Concentrate Conveyor to Rotary Kiln Feed Conveyor	334874.00	5349010.00	18.29	0.61	3.23	Ambient
RKCE01	Rotary Kiln #1 and #2	334889.53	5349108.00	60.96	4.32	8.47	499.80
RC01	Rotary Cooler #1	334888.00	5349226.00	60.96	3.12	9.14	619.30
RC02	Rotary Cooler #2	334903.00	5349226.00	60.96	3.12	9.14	619.30
PPBV01	Limestone Storage Bin	334638.00	5349490.00	11.28	0.36	4.75	308.20
PPBV02	Bentonite Storage Bin	334644.00	5349490.00	11.28	0.36	4.75	308.20
PPBV03	Recycle Dust Storage Bin	334650.00	5349490.00	11.28	0.36	4.75	308.20
PPBV04	Concentrate Feed Storage Bin	334623.00	5349490.00	18.29	0.43	3.30	308.20
PPBH05	Pellet Plant Mixer Feed Conveyor	334673.00	5349490.00	22.86	0.46	68.99	308.20
INF01	Straight Gate Indurating Furnace	334620.10	5349475.00	65.00	6.10	13.13	366.50
PPBV06	Hearth Layer Separator & Product Screening	334442.79	5349369.37	22.86	1.83	8.09	328.20
PPBH07	Indurating Furnace Dedusting	334534.60	5349444.00	30.48	3.66	3.73	328.20
PPBV08	Conveyor Transfer #1 from Diverter to Emergency Pellet Storage Building	334429.90	5349360.48	18.29	0.43	3.30	15.0 Above Ambient
PPBV09	Conveyor Transfer #2 from Diverter to Emergency Pellet Storage Building	334429.86	5349349.49	18.29	0.43	3.30	15.0 Above Ambient
PPBV10	Conveyor Transfer from Emergency Pellet Storage Building to DRI Feed Conveyor	334237.45	5349292.04	18.29	0.43	3.30	Ambient
PPBV11	Conveyor Transfers to DRI Feed Conveyor from Furnace & Emergency Pellet Storage Building	334238.00	5349371.93	18.29	0.43	3.30	Ambient
PPSB01	Emergency Pellet Storage Building	334569.10	5349304.00	18.29	0.43	3.30	Ambient
DRIBV03	Remet Hopper to DRI Feed Conveyor	334243.60	5349411.00	18.29	0.43	3.30	Ambient
DRIBH04	Fired Pellet & Remet Return Bins to DRI Feed Conveyor	334238.00	5349470.00	18.29	0.91	12.94	Ambient
DRIBH05	DRI Feed Conveyor Transfers & Fines Screening	334235.00	5349590.00	18.29	0.43	3.30	Ambient

Modeled Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Stack Height (m)	Stack Dia. (m)	Exit Velocity (m/s)	Exit Temp. (K)
DRIBH06	Fines Conveyor to Bin	334261.60	5349591.00	18.29	0.43	3.30	Ambient
DRIBH07	Pellet Fines Bin	334228.20	5349586.00	18.29	0.43	3.30	Ambient
DRIBH09	DRI Feed Conveyor Transfers & Cement Coating	334232.00	5349650.00	18.29	0.43	3.30	Ambient
DRIBH10	DRI Feed Conveyor Transfers & Storage/Surge Bins	334253.20	5349788.00	18.29	0.43	3.30	Ambient
DRIBV11	DRI Feed Charging Bin #1	334046.13	5349793.74	18.29	0.43	3.30	303.20
DRIBV12	DRI Feed Charging Bin #2	334036.82	5349793.58	18.29	0.43	3.30	303.20
DRIBV13	DRI Feed Charging Bin #3	334037.16	5349786.45	18.29	0.43	3.30	303.20
DRIBV14	DRI Feed Charging Bin #4	334045.04	5349786.45	18.29	0.43	3.30	303.20
PGH01	Process Gas Heater (PGH)	334033.80	5349694.00	60.96	5.03	9.30	491.50
PTS01	Pneumatic Transport System (PTS) Heater	334023.67	5349810.64	18.29	1.22	3.40	571.60
DPS01	Pneumatic Transport System (PTS) Depressurization	333917.00	5349900.00	18.29	4.27	0.06	369.40
CPD01	Cold Product Depressurization	334056.84	5349779.32	30.48	2.29	2.82	323.70
DRIBH15	CDRI/Remet Conveyor #1 to Conveyor #2	334100.00	5349780.00	18.29	0.91	12.94	Ambient
DRIBH16	CDRI/Remet Conveyor #1 to Conveyor #2	334262.00	5349760.00	18.29	0.91	12.94	Ambient
DRIBH17	Remet Conveyor to Remet Bin	334248.00	5349530.00	18.29	0.91	12.94	Ambient
FL01	Flare	333789.28	5350336.34	65.00	0.86	40.00	1000.00
BOIL01	Package Boiler	333917.75	5349596.99	30.48	0.91	42.58	465.20
QCW01	DRI Quench Cooling Water	334035.29	5349660.45	15.00	7.32	11.00	Ambient
OSBFBH01	OSBF Additive Bins & Conveyor #1 A/B	334375.00	5349510.00	18.29	0.92	12.94	Ambient
OSBFBH02	OSBF Additive Conveyor #1A/B to Conveyor #2	334375.00	5349550.00	18.29	0.92	12.94	Ambient
OSBFBH04	OSBF Additive Conveyor #2 to Conveyor #3	334274.00	5349560.00	18.29	0.92	12.94	Ambient
OSBFBH05	OSBF Additive Conveyor #3 to Briquetting & Conveyors #4A/B	334282.00	5349780.00	18.29	0.92	12.94	Ambient
OSBFBH06	OSBF Additives Conveyor #4A/B to OSBF Feed Conveyor	334258.00	5349900.00	18.29	0.92	12.94	Ambient
OSBFBF01	OSBF #1 and #2 Material Feed & Tapping	333945.10	5350024.80	45.72	3.19	12.31	353.20
OSBFBH07	OSBF #1 Bagfilter System Dust Silo	333930.41	5350009.75	18.29	0.43	3.30	Ambient
OSBFBH08	OSBF #2 Bagfilter System Dust Silo	333985.92	5350008.39	18.29	0.43	3.30	Ambient
OSBFBH13	OSBF #1 Dry Scrubber Dust Silo	333873.16	5349375.09	18.29	0.43	3.30	Ambient

Modeled Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Stack Height (m)	Stack Dia. (m)	Exit Velocity (m/s)	Exit Temp. (K)
OSFBFH14	OSBF #2 Dry Scrubber Dust Silo	333872.63	5349292.81	18.29	0.43	3.30	Ambient
FEBH01	Casting Unit #1	333874.68	5349569.86	65.00	2.03	18.92	338.70
FEBH02	Casting Unit #2	333875.16	5349473.95	65.00	2.03	18.92	338.70
FEBH03	Casting Unit #3	333873.16	5349375.09	65.00	2.03	18.92	338.70
FEBH04	Casting Unit #4	333872.63	5349292.81	65.00	2.03	18.92	338.70
SG01	Slag Granulator #1	333977.26	5349920.47	18.40	1.80	2.78	Ambient
SG02	Slag Granulator #2	333974.72	5349874.99	18.40	1.80	2.78	Ambient
TCRBH01	Torpedo Car/Refractory Repair	333972.29	5349410.15	18.29	0.91	21.70	Ambient
CTPP	Pellet Plant Cooling Tower	334573.20	5349466.00	13.72	7.32	7.76	313.70
CTSG01	Slag Granulator #1 Cooling Tower	334134.90	5349927.00	15.00	5.35	10.00	Ambient
CTSG02	Slag Granulator #2 Cooling Tower	334134.90	5349927.00	15.00	5.35	10.00	Ambient
CTSGC	Slag Granulation Condensate Cooling Tower	334122.60	5349948.00	15.00	5.55	10.00	Ambient
CTWTP	Water Treatment Plant Cooling Tower	334158.50	5349582.00	15.00	5.95	11.00	Ambient

Table 12 - Point Source Emission Rates

Emission Point	Emission Point Description	CO (g/s)	NO ₂ (g/s)	PM ₁₀ (g/s)	PM _{2.5} (g/s)	SO ₂ (g/s)
RICE1 through RICE40^A	Power Plant Engine #1 through #40	0.236	0.236	0.086	0.086	0.005
RICE41 and RICE42^B	Power Plant Engine #41 and #42	5.065	1.688	0.086	0.086	0.005
PCBH01	Pre-Concentrate Railcar Tipper #1 Material Transfer	-	-	0.019	0.019	-
PCBH02	Pre-Concentrate Railcar Tipper #2 Material Transfer	-	-	0.019	0.019	-
PCBV03	Pre-Concentrate Bin #1 to Conveyor #1	-	-	0.0039	0.00389	-
PCBV04	Pre-Concentrate Bin #2 to Conveyor #2	-	-	0.0039	0.00389	-
PCBV05	Pre-Concentrate Conveyor #1 to Stacking Conveyor	-	-	0.0039	0.00389	-
PCBV06	Pre-Concentrate Conveyor #2 to Stacking Conveyor	-	-	0.0039	0.00389	-
PCBV07	Pre-Concentrate Stacker Conveyor to Stack/Reclaim Conveyor #1	-	-	0.0039	0.00389	-
PCBV08	Pre-Concentrate Stacker Conveyor to Stack/Reclaim Conveyor #2	-	-	0.0039	0.00389	-
PCBV11	Pre-Concentrate Stack/Reclaim Conveyor #1 to Conveyor	-	-	0.0039	0.00389	-
PCBV12	Pre-Concentrate Stack/Reclaim Conveyor #2 to Conveyor	-	-	0.0039	0.00389	-
PCBV13	Pre-Concentrate Conveyor to Rotary Kiln Feed Conveyor	-	-	0.0039	0.00389	-
RKCE01	Rotary Kiln #1 and #2	7.56	5.103	1.941	1.941	0.0278
RC01	Rotary Cooler #1	-	-	0.556	0.556	-
RC02	Rotary Cooler #2	-	-	0.556	0.556	-
PPBV01	Limestone Storage Bin	-	-	0.0019	0.00194	-
PPBV02	Bentonite Storage Bin	-	-	0.0019	0.00194	-
PPBV03	Recycle Dust Storage Bin	-	-	0.0019	0.00194	-
PPBV04	Concentrate Feed Storage Bin	-	-	0.0019	0.00194	-
PPBH05	Pellet Plant Mixer Feed Conveyor	-	-	0.0467	0.0467	-
INF01	Straight Gate Indurating Furnace	2.102	35.29	5.675	4.965	3.349
PPBV06	Hearth Layer Separator & Product Screening	-	-	0.0875	0.0875	-
PPBH07	Indurating Furnace Dedusting	-	-	0.161	0.161	-
PPBV08	Conveyor Transfer #1 from Diverter to Emergency Pellet Storage Building	-	-	0.0019	0.00194	-
PPBV09	Conveyor Transfer #2 from Diverter to Emergency Pellet Storage Building	-	-	0.0019	0.00194	-

Emission Point	Emission Point Description	CO (g/s)	NO ₂ (g/s)	PM ₁₀ (g/s)	PM _{2.5} (g/s)	SO ₂ (g/s)
PPBV10	Conveyor Transfer from Emergency Pellet Storage Building to DRI Feed Conveyor	-	-	0.0019	0.00194	-
PPBV11	Conveyor Transfers to DRI Feed Conveyor from Furnace & Emergency Pellet Storage Building	-	-	0.0019	0.00194	-
PPSB01	Emergency Pellet Storage Building	-	-	0.0019	0.00194	-
DRIBV03	Remet Hopper to DRI Feed Conveyor	-	-	0.0019	0.00194	-
DRIBH04	Fired Pellet & Remet Return Bins to DRI Feed Conveyor	-	-	0.035	0.035	-
DRIBH05	DRI Feed Conveyor Transfers & Fines Screening	-	-	0.0019	0.00194	-
DRIBH06	Fines Conveyor to Bin	-	-	0.0019	0.00194	-
DRIBH07	Pellet Fines Bin	-	-	0.0019	0.00194	-
DRIBH09	DRI Feed Conveyor Transfers & Cement Coating	-	-	0.0019	0.00194	-
DRIBH10	DRI Feed Conveyor Transfers & Storage/Surge Bins	-	-	0.0019	0.00194	-
DRIBV11	DRI Feed Charging Bin #1	-	-	0.0019	0.00194	-
DRIBV12	DRI Feed Charging Bin #2	-	-	0.0019	0.00194	-
DRIBV13	DRI Feed Charging Bin #3	-	-	0.0019	0.00194	-
DRIBV14	DRI Feed Charging Bin #4	-	-	0.0019	0.00194	-
PGH01	Process Gas Heater (PGH)	6.332	1.809	1.529	1.529	0.905
PTS01	Pneumatic Transport System (PTS) Heater	0.098	0.129	0.0197	0.0197	0.0016
DPS01	Pneumatic Transport System (PTS) Depressurization	-	-	0.0124	0.0124	-
CPD01	Cold Product Depressurization	-	-	0.151	0.151	-
DRIBH15	CDRI/Remet Conveyor #1 to Conveyor #2	-	-	0.035	0.035	-
DRIBH16	CDRI/Remet Conveyor #1 to Conveyor #2	-	-	0.035	0.035	-
DRIBH17	Remet Conveyor to Remet Bin	-	-	0.035	0.035	-
FL01	Flare	61.025	1.486	0.171	0.171	0.54
BOIL01	Package Boiler	0.616	0.333	0.124	0.124	0.01
QCW01	DRI Quench Cooling Water	-	-	0.278	0.00138	-
OSBFBH01	OSBF Additive Bins & Conveyor #1 A/B	-	-	0.035	0.035	-
OSBFBH02	OSBF Additive Conveyor #1A/B to Conveyor #2	-	-	0.035	0.035	-
OSBFBH04	OSBF Additive Conveyor #2 to Conveyor #3	-	-	0.035	0.035	-
OSBFBH05	OSBF Additive Conveyor #3 to Briquetting & Conveyors #4A/B	-	-	0.035	0.035	-
OSBFBH06	OSBF Additives Conveyor #4A/B to OSBF Feed Conveyor	-	-	0.035	0.035	-
OSBFBF01 ^C	OSBF #1 and #2 Material Feed & Tapping	1.39	-	0.493	0.455	1.011
OSBFBH07	OSBF #1 Bagfilter System Dust Silo	-	-	0.0019	0.00194	-
OSBFBH08	OSBF #2 Bagfilter System Dust Silo	-	-	0.0019	0.00194	-
OSBFBH13	OSBF #1 Dry Scrubber Dust Silo	-	-	0.0019	0.00194	-
OSBFBH14	OSBF #2 Dry Scrubber Dust Silo	-	-	0.0019	0.00194	-

Emission Point	Emission Point Description	CO (g/s)	NO ₂ (g/s)	PM ₁₀ (g/s)	PM _{2.5} (g/s)	SO ₂ (g/s)
FEBH01	Casting Unit #1	0.083	0.099	0.579	0.512	0.0006
FEBH02	Casting Unit #2	0.083	0.099	0.579	0.512	0.0006
FEBH03	Casting Unit #3	0.083	0.099	0.579	0.512	0.0006
FEBH04	Casting Unit #4	0.083	0.099	0.579	0.512	0.0006
SG01	Slag Granulator #1	-	-	0.151	0.0133	-
SG02	Slag Granulator #2	-	-	0.151	0.0133	-
TCRBH01	Torpedo Car/Refractory Repair	-	-	0.0509	0.051	-
CTPP	Pellet Plant Cooling Tower	-	-	0.126	6.3E-05	-
CTSG01	Slag Granulator #1 Cooling Tower	-	-	0.0379	0.00019	-
CTSG02	Slag Granulator #2 Cooling Tower	-	-	0.0379	0.00019	-
CTSGC	Slag Granulation Condensate Cooling Tower	-	-	0.0379	0.00019	-
CTWTP	Water Treatment Plant Cooling Tower	-	-	0.126	0.00063	-

- ^A Emission points RICE1 through RICE 40 are modeled at their normal maximum operating rate. The rate shown in the table is representative of each individual Power Plant Engine #1 through #40.
- ^B The emission rates for emission points RICE 41 and RICE 42 are representative of engine startup and shutdown operations, respectively. The model assumes that up to two power plant engines would be running in startup or shutdown at any given time.
- ^C Emissions from OSBFBF01 are representative of both OSBF #1 and #2, as they both only emit 12 out of 24 hours per day due to batch operations. The location of the stack is modeled at OSBF#1 because it is closer to the Project fenceline.

Table 13 - Volume Source Parameters and Emission Rates

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Rel. Ht. (m)	Sigma Y (m)	Sigma Z (m)	Length of Side (m)	PM ₁₀ (g/s)	PM _{2.5} (g/s)
PCMH09	Pre-Concentrate Stacker/Reclaimer #1	334657.50	5348906.00	4.47	0.698	0.698	3.001	0.137	0.0208
PCMH10	Pre-Concentrate Stacker/Reclaimer #2	334085.30	5349032.00	4.47	0.698	0.698	3.001	0.137	0.0208
RPCMH01	Rotary Kiln #1 & #2 ESP Loadout to Truck	334902.90	5349296.00	4.57	0.698	0.698	3.001	4.70E-03	7.06E-04
RPCMH02	Rotary Kiln #1 & #2 Baghouse Loadout to Truck	334902.90	5349286.00	4.57	0.698	0.698	3.001	4.70E-03	7.06E-04
CONMH01	Concentrate to/from Emergency Stockpile #1	334732.38	5349436.16	4.57	0.7	0.7	3.01	6.87E-03	1.04E-03
CONMH02	Concentrate to/from Emergency Stockpile #2	334788.32	5349437.71	4.57	0.7	0.7	3.01	5.82E-04	8.81E-05
PPMH12	Fired Pellets to Stockpile	334499.40	5349405.00	6.10	0.698	0.698	3.001	1.50E-03	2.29E-04
DRIMH01	Fired Pellet Loader to Hopper	334517.70	5349385.00	2.00	0.698	0.698	3.001	1.50E-03	2.29E-04
DRIMH02	Remet Loader to Hopper	334244.50	5349443.00	2.00	0.698	0.698	3.001	6.80E-03	1.03E-03
DRIMH08	Pellet Fines Bin Loadout to Truck	334227.80	5349617.00	4.60	0.698	0.698	3.001	3.80E-04	5.73E-05
DRIMH18	Remet Overflow Conveyor to Stockpile	334284.00	5349516.00	6.10	0.698	0.698	3.001	6.80E-03	1.03E-03
OSBFMH03	OSBF Emergency Additive Loading to Hopper	334334.80	5349573.00	4.57	0.698	0.698	3.001	8.60E-03	1.30E-03
OSBFMH09	OSBF #1 Bagfilter Dust Silo Loadout to Truck	333930.41	5350009.75	4.57	0.698	0.698	3.001	1.63E-04	2.46E-05
OSBFMH10	OSBF #2 Bagfilter Dust Silo Loadout to Truck	333985.92	5350008.39	4.57	0.698	0.698	3.001	1.63E-04	2.46E-05
OSBFMH15	OSBF #1 Dry Scrubber Dust Silo Loadout to Truck	333874.63	5349373.62	4.57	0.698	0.698	3.001	1.20E-04	1.82E-05
OSBFMH16	OSBF #2 Dry Scrubber Dust Silo Loadout to Truck	333874.11	5349292.81	4.57	0.698	0.698	3.001	1.20E-04	1.82E-05
SGMH01	Slag Dewatering Silo Conveyor to Stockpile/Pit	334521.00	5349902.00	6.60	0.698	0.698	3.001	1.81E-02	2.74E-03

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Rel. Ht. (m)	Sigma Y (m)	Sigma Z (m)	Length of Side (m)	PM ₁₀ (g/s)	PM _{2.5} (g/s)
SGMH02	Slag Dewatering Clarifier Loadout to Stockpile/Pit	334521.00	5349902.00	4.57	0.698	0.698	3.001	3.63E-05	5.49E-06
SPMH03	Slag Stockpile/Pit Loadout to Truck/Rail	333957.70	5349974.00	4.57	0.698	0.698	3.001	4.54E-03	6.88E-04

Table 14 - Area Source Parameters and Emission Rates

Emission Point	Emission Point Description	UTM X (m)	UTM Y (m)	Release Height (m)	Length X (m)	Length Y (m)	Rotation Angle (deg)	Sigma Z (m)	PM ₁₀ (g/s-m ²)	PM _{2.5} (g/s-m ²)
PCSP01	Pre-Concentrate Stockpile #1	333953.09	5349035.35	4.47	800	40	1	0	5.52E-07	8.29E-08
PCSP02	Pre-Concentrate Stockpile #2	333953.14	5348979.55	4.47	800	40	1	0	5.52E-07	8.29E-08
PCSP03	Pre-Concentrate Stockpile #3	333948.57	5348929.02	4.47	800	40	1	0	5.52E-07	8.29E-08
PCSP04	Pre-Concentrate Stockpile #4	333947.27	5348870.76	4.47	800	40	1	0	5.52E-07	8.29E-08
CONSP01	Concentrate Emergency Stockpile #1	334743.94	5349260.72	2.00	199.07	30.43	-88.874	0	5.83E-07	8.76E-08
CONSP02	Concentrate Emergency Stockpile #2	334774.72	5349450.53	2.00	25.65	27.93	88.26	0	5.77E-08	8.65E-09
TALSP01	Tailings Stockpile	334636.68	5348265.00	6.10	843	60	0	0	1.81E-05	2.71E-06
PPSP01	Fired Pellet Stockpile	334476.91	5349382.51	1.00	44.98	44.98	0	0	4.08E-08	6.13E-09
DRISP01	Remet Overflow Stockpile	334261.51	5349493.51	1.00	44.98	44.98	0	0	4.08E-08	6.13E-09
SGSP01	Granulated Slag Stockpile	334489.19	5349870.19	1.00	63.62	63.62	0	0	7.75E-08	1.16E-08
HROUTE1	Haul Road 1	334498.02	5349392.00	3.11	35	9.048	57.633	2.892	2.36E-05	2.36E-05
HROUTE2	Haul Road 2	334255.61	5349430.09	3.11	90	9.048	-46.625	2.892	4.60E-05	4.60E-06
HROUTE3	Haul Road 3	334059.83	5349963.24	3.11	55	9.048	90	2.892	4.51E-06	4.51E-06
HROUTE4	Haul Road 4	334387.83	5349772.43	3.11	180	170	1	2.892	1.84E-06	1.84E-07

6. Model Execution and Results

6.1. Single-Source Impact Analysis (NAAQS & PSD Increments)

A single-source impact analysis (SSIA) may be conducted at a facility on a pollutant-by-pollutant basis to determine if a full cumulative analysis for individual pollutants is required. An SSIA compares the modeled impact of the standalone project against the applicable significant impact level (SIL); see Table 15 for a listing of NAAQS SILs and PSD Class II SILs. If the SSIA is below the NAAQS and Class II PSD increment SILs, the analysis demonstrates the project is not expected to cause or contribute to a NAAQS or PSD increment violation.

NAI conducted an SSIA for CO, NO₂, PM₁₀, PM_{2.5}, and SO₂. The NAAQS and Class II PSD increment SSIA results are shown in Table 15. Several pollutants (CO and SO₂) were all below SIL levels based on the SSIA and thus did not require a cumulative analysis.

Table 15 - Single Source Impacts Analysis Results

Pollutant	Averaging Period	Maximum Modeled Impact	NAAQS SIL (µg/m ³)	PSD Class II SIL (µg/m ³)	NAAQS Modeling Required (Y/N)	PSD Modeling Required (Y/N)
PM ₁₀	24-HR	42.04	5.00	5.00	Y	Y
	Annual	6.59	-	1.00	N	Y
PM _{2.5} ^A	24-HR	7.98	1.20	1.20	Y	Y
	Annual	2.36	0.13	0.13	Y	Y
SO ₂	1-HR	6.31	7.80	-	N	N
	3-HR	6.21	25.00	25.00	N	N
	24-HR	3.01	5.00	5.00	N	N
	Annual	0.26	1.00	1.00	N	N
NO ₂	1-HR	65.26	7.50	-	Y	N
	Annual	5.31	1.00	1.00	Y	Y
CO	1-HR	260.30	2,000.00	-	N	N
	8-HR	121.60	500.00	-	N	N

^A Secondary formation of PM_{2.5} included in Maximum Modeled Impact

6.1.1. PM_{2.5} Secondary Formation

The secondary formation of PM_{2.5} resulting from emissions of precursor pollutants NO₂ and SO₂ was accounted for by utilizing the following equation:

$$\text{Project Impact (}\mu\text{g/m}^3\text{)} = \text{Project Emission Rate (ton/year)} \times \frac{\text{Modeled Impact from Hypothetical Source (}\mu\text{g/m}^3\text{)}}{\text{Modeled Emission Rate from Hypothetical Source (ton/year)}}$$

The facility PTE of 1,859 tons per year of NO_x and 267 tons per year of SO₂ were utilized along with a hypothetical representative source in Mountrail County, North Dakota from the EPA's database of modeled sources.¹¹ Class I secondary formation calculations utilized the hypothetical data at a distance of 100 km. The nearest Class I area to the facility is Lostwood, which is located approximately 100 km away. For a more in-depth examination of the Modeled Emission Rates for Precursors (MERPs) calculations, refer to Appendix H, Section 6.4 of the permit application.

Table 16 – Class II PM_{2.5} MERPs Summary

Class II PM _{2.5}				
Parameter	24-Hour		Annual	
	NO ₂	SO ₂	NO ₂	SO ₂
Project Emissions (tons)	1859	266.62	1859	266.62
Modeled Emissions (tons)	1000	1000	1000	1000
Modeled Stack Height (m)	90	90	90	90
Modeled Impact (µg/m³)	0.081	0.351	0.004	0.009
Calculated Impact (µg/m³)	0.151	0.093	0.007	0.002
Cumulative Impact (µg/m³)	0.24		0.01	

¹¹ Available at: <https://www.epa.gov/scram/merps-view-qlik> (Last visited August 21, 2026)

Table 17 - Class I PM_{2.5} MERPs

Class I PM _{2.5}				
Parameter	24-Hour		Annual	
	NO ₂	SO ₂	NO ₂	SO ₂
Project Emissions (tons)	1859	266.62	1859	266.62
Modeled Emissions (tons)	1000	1000	1000	1000
Modeled Stack Height (m)	90	90	90	90
Distance (km)	100	100	100	100
Modeled Impact (µg/m³)	0.0750	0.1891	0.0022	0.0035
Calculated Impact (µg/m³)	0.1395	0.0504	0.0041	0.0009
Cumulative Impact (µg/m³)	0.1899		0.0050	

6.1.2. Ozone Secondary Formation

The secondary formation of ozone (O₃) resulting from emissions of precursor pollutants NO₂ and volatile organic compounds (VOC) was accounted for by utilizing the same equation used for the PM_{2.5} secondary formation calculation. The facility PTE of 1,859 tons per year and 458 tons per year of NO_x and VOC, respectively, were utilized, along with a hypothetical representative source in Mountrail County, North Dakota from the EPA's database of modeled sources. The final project impacts were determined through a comparison of the calculated MERPs (Table 18) to design concentration monitoring data (Table 19). For a more in-depth examination of MERPs calculations, refer to Appendix H, Section 6.5 of the permit application.

Table 18 - Ozone MERPs Summary

Parameter	Ozone	
	8-Hour	
	NO ₂	VOC
Project Emissions (tons)	1859	458
Modeled Emissions (tons)	1000	500
Modeled Stack Height (m)	90	10
Modeled Impact (µg/m ³)	3.187	0.166
Calculated Impact (µg/m ³)	5.925	0.152
Cumulative Impact (µg/m ³)	6.08	

Table 19 shows a summary of the 4th-high 8-hour O₃ monitoring data for the nearest representative site in North Dakota.¹² The 3-year average O₃ concentration recorded at the Ryder monitoring station in Ward County, North Dakota is 0.061 ppm. Adding the calculated O₃ MERPs of 0.0061 ppm (6.1 ppb) to the monitoring data results in a total O₃ concentration of 0.067 ppm. The total O₃ concentration remains below the design concentration of 0.07 ppm for O₃, demonstrating compliance with the NAAQS.

Table 19 - Ozone Monitoring Data Summary

County	2022 (ppm)	2023 (ppm)	2024 (ppm)	3 Year Average (ppm)
Ward	0.053	0.075	0.054	0.061

¹² *Outdoor Air Quality Data - Monitor Value Report*. Available at: <https://www.epa.gov/outdoor-air-quality-data/monitor-values-report> (Last visited August 21, 2026)

6.2. NAAQS and PSD Increment Analysis

NAAQS¹³ and Class II PSD Increment¹⁴ analyses were modeled with the parameters listed in Section 5. Details regarding the determination of the modeled high values with respect to NAAQS are shown in Table 20. In the PSD Increment Analysis, for any period other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at any one location.¹⁵ The model analysis results are shown in Table 21 and Table 22. CO and SO₂ single source impact analysis results were below SIL levels; thus, these pollutants were not included in the cumulative analysis.

Table 20 - NAAQS Modeled High Determinations

Pollutant	Averaging Time	NAAQs Modeled High
NO ₂	1-Hour	5 year average of the 8 th high day
	Annual	Highest annual average of 5 years
PM ₁₀	24-Hour	6 th highest value of 5 years
PM _{2.5}	24-Hour	5 year average of the 8 th high day
	Annual	5 year average
SO ₂	1-hour	5 year average of 4 th high day
	3-hour	Highest 2 nd high
CO	1-hour	Highest 2 nd high
	8-hour	Highest 2 nd high

¹³ §40 CFR 50. Available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50> (Last visited August 21, 2026)

¹⁴ §40 CFR 52.21. Available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21> (Last visited August 21, 2026)

¹⁵ §40 CFR 52.21 (c). Available at: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21> (Last visited August 21, 2026)

Table 21 - NAAQS Results Summary

Pollutant	Averaging Period	Facility Modeled Impact ($\mu\text{g}/\text{m}^3$)	Fixed Background Concentration ($\mu\text{g}/\text{m}^3$)	Total Predicted Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	Passed (Y/N)
NO ₂	1-Hour	58.46	35	93.46	188	Y
	Annual	5.31	5	10.31	100	Y
PM ₁₀	24-Hour	25.18	30	55.18	150	Y
PM _{2.5} ^A	24-Hour	6.60	13.7	20.30	35	Y
	Annual	2.37	4.75	7.12	9	Y

^A Secondary formation of PM_{2.5} included in Facility Modeled Impact (from Table 16)

Table 22 - PSD Class II Increment Results Summary

Pollutant	Averaging Period	Facility Modeled Impact ($\mu\text{g}/\text{m}^3$)	Class II PSD Increment ($\mu\text{g}/\text{m}^3$)	Increment Consumed (%)	Passed (Y/N)
NO ₂	Annual	5.31	25	21%	Y
PM ₁₀	24-Hour	29.71	30	99%	Y
	Annual	6.58	17	39%	Y
PM _{2.5} ^A	24-Hour	8.78	9	98%	Y
	Annual	2.50	4	63%	Y

^A Secondary formation of PM_{2.5} included in Facility Modeled Impact (from Table 16)

7. Class I Area Modeling

7.1. Background

The proposed facility is in proximity to several Class I areas: Fort Peck Reservation, Medicine Lake Wilderness Area, Theodore Roosevelt National Park, and Lostwood National Wildlife Refuge. The distance of these Class I areas to the facility is shown in Table 5. Due to the 50 km modeling limitation of AERMOD, CALPUFF software was used for the Class I analysis, following the FLAG 2010 guidance document.¹⁶ The National Park Service and U.S. Fish and Wildlife Service reviewed the modeling methodologies and results and requested no further analysis.

The analysis evaluated four key impacts for each Class I area: ambient air quality, visibility, ozone, and deposition of nitrogen and sulfur. The results are summarized below, with more detailed information available in Appendix I of the permit application.

¹⁶ Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2125044> (Last visited August 21, 2026)

7.2. CALPUFF Meteorological Data

The CALPUFF model utilized three years (2021 through 2023) of prognostic mesoscale meteorological data. The MMIF tool was used to extract a computational grid from the 2021 through 2023, 12 km Continental US WRF dataset provided by the USEPA in 2025. The computational grid for the modeling domain consisted of 50 grid cells (east-west) by 33 grid cells (north-south) with a grid spacing of 12 km. The vertical grid included 10 layers with the following heights (ZFACE): 0; 20; 40; 80; 160; 320; 640; 1,200; 2,000; 3,000; and 4,000 m.

7.3. Class I Increment Significant Impact Levels

CALPUFF modeling was conducted to determine if the facility impacts were below Class I SILs. The results of this evaluation are shown in Table 23. Further details of the modeling evaluation are provided in Section 6 of Appendix I in the permit application. The modeled impacts do not exceed the respective Class I SILs at any of the evaluated Class I areas, with the exception of 24-hour PM_{2.5}. There are no nearby sources required for inclusion in a cumulative PM_{2.5} increment analysis. The SIL results for 24-hour PM_{2.5} do not exceed the PSD Class I increment threshold of 2 µg/m³. Therefore, no further evaluation of 24-hour PM_{2.5} is necessary. Annual PM₁₀ was not included in the CALPUFF analysis. Inclusion was not necessary as values dropped below the SIL of 0.2 µg/m³ within the 10 km model boundary of the annual PM₁₀ AERMOD runs.

Table 23 - Significant Impact Level (SIL) Modeling Summary

Pollutant	Averaging Period	Maximum Modeled Level (µg/m ³) ^A	Class I SIL (µg/m ³)
NO ₂	Annual	0.02	0.1
PM ₁₀	24-Hour	0.15	0.3
PM _{2.5} ^B	24-Hour	0.32	0.27
	Annual	0.012	0.03
SO ₂	3-Hour	0.2	1
	24-Hour	0.05	0.2
	Annual	0.002	0.1

^A Each value listed is the maximum modeled level from any of the Class I areas evaluated: Theodore Roosevelt National Park, Lostwood National Wildlife Refuge, Fort Peck, or Medicine Lake.

^B PM_{2.5} concentrations shown are the total of the modeled concentration and secondary formation of PM_{2.5} as determined via MERPS calculation as described in Section 6.1.1.

7.4. Acid Deposition Impacts Analysis

An evaluation of potential impacts on species (flora and fauna) and ecosystems (terrestrial and aquatic) resulting from SO₂ and NO₂ emissions from the facility was conducted per the “Federal Land Managers’ Interagency Guidance for Nitrogen and Sulfur Deposition Analyses.”¹⁷ The results are shown in Table 24, with further analysis details provided in Section 8 of Appendix I in the permit application. The modeled results do not exceed the Deposition Analysis Thresholds (DATs) for any of the evaluated Class I areas.

Table 24 - Screening Analysis Results for Deposition Effects

Pollutant	Estimated Project-Related Deposition (kg/ha/yr) ^A	Deposition Analysis Threshold (kg/ha/yr) ^B
Total Nitrogen	0.003	0.005
Total Sulfur	0.001	0.005

^A Each value listed is the maximum modeled level from any of the Class I areas evaluated: Theodore Roosevelt National Park, Lostwood National Wildlife Refuge, Fort Peck Reservation, or Medicine Lake Wilderness Area.

^B Deposition Analysis Thresholds are based on FLM guidance for the western United States.

7.5. Visibility Impacts Analysis

The visibility impact analysis compared the modeling results to the 20% best pristine days for the Air Quality Related Values (AQRVs) associated with the facility’s emissions. The results are shown in Table 25. The analysis followed FLAG guidance,¹⁸ with further details available in Section 9 of Appendix I in the permit application. Based on current modeling guidance, the 98th percentile day impacts indicate a change in extinction of less than 5% at all modeled Class I areas. These results meet the current Federal Land Managers (FLMs) criteria, demonstrating that the facility will not have adverse visibility impacts on any of the Class I areas.

¹⁷ Federal Land Managers’ Interagency Guidance for Nitrogen and Sulfur Deposition Analyses Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2180652> (Last visited August 21, 2026)

¹⁸ Federal Land Managers’ Air Quality Related Values Work Group (FLAG) Phase I Report Available at: <https://www.nps.gov/subjects/air/permitresources.htm> (Last visited August 21, 2026)

Table 25 - Modeled Visibility Impacts Results Summary

North American Iron Facility	NATURAL BACKGROUND FLAG 2010 METHOD 8 ^A		
	2021	2022	2023
Lostwood National Wildlife Refuge			
Maximum Δb_{ext} (%)	5	7.66	6.82
8th highest Δb_{ext} (%)	2.82	3.91	2.62
Days with $\Delta b_{\text{ext}} \geq 5\%$	1	3	1
98 th percentile days with $\Delta b_{\text{ext}} \geq 5\%$	0	0	0
Theodore Roosevelt National Park			
Maximum Δb_{ext} (%)	4.03	7.2	4.21
8th highest Δb_{ext} (%)	1.27	1.32	2.22
Days with $\Delta b_{\text{ext}} \geq 5\%$	1	2	0
98 th percentile days with $\Delta b_{\text{ext}} \geq 5\%$	0	0	0
Fort Peck Reservation			
Maximum Δb_{ext} (%)	7.3	4.06	3.88
8th highest Δb_{ext} (%)	0.65	0.69	1.38
Days with $\Delta b_{\text{ext}} \geq 5\%$	2	0	0
98 th percentile days with $\Delta b_{\text{ext}} \geq 5\%$	0	0	0
Medicine Lake Wilderness Area			
Maximum Δb_{ext} (%)	4.94	2.33	2.32
8th highest Δb_{ext} (%)	0.73	0.44	1.08
Days with $\Delta b_{\text{ext}} \geq 5\%$	0	0	0
98 th percentile days with $\Delta b_{\text{ext}} \geq 5\%$	0	0	0

^A Monthly RH, 20% best days background

8. Summary & Conclusions

Upon the Department's review and independent analysis of the modeling submitted by North American Iron, the following is concluded:

North American Iron followed all applicable State and Federal guidance in their modeling protocol.

North American Iron's dispersion modeling was conducted to demonstrate that emissions from the Project are expected to comply with the NAAQS. Emissions associated with operating the facility with the proposed emission units and limits are not expected to cause or contribute to a violation of the NAAQS as listed in NDAC 33.1-15-02-04. Results of the modeled impacts for the NAAQS are displayed in Table 1 and Table 21.

North American Iron's modeling was conducted to demonstrate that emissions from the facility are expected to comply with federal PSD Class II and Class I increments. Emissions associated with operating the facility with the proposed emission units and limits are not expected to cause or contribute to a violation of the PSD increments as incorporated by reference in NDAC 33.1-15-15. Results of the modeled impacts for the Class II PSD increments are displayed in Table 2 and Table 22.

North American Iron's CALPUFF modeling analysis demonstrated that the predicted impacts from the new facility will not prevent the attainment or maintenance of any ambient air quality standard and will not exceed any applicable AQRV screening thresholds at a Class I area. The Class I modeling results for SILs, deposition, and visibility impacts are displayed in Table 23, Table 24, and Table 25, respectively.

9. Plots

Model Set-Up

Facility Site	Plot	1
Terrain Contours	Plot	2
Windrose	Plot	3
Receptor Grid	Plot	4

SSIA

SO ₂ 1-HR	Plot	5
SO ₂ 3-HR	Plot	6
SO ₂ 24-HR	Plot	7
SO ₂ Annual	Plot	8
CO 1-HR	Plot	9
CO 8-HR	Plot	10

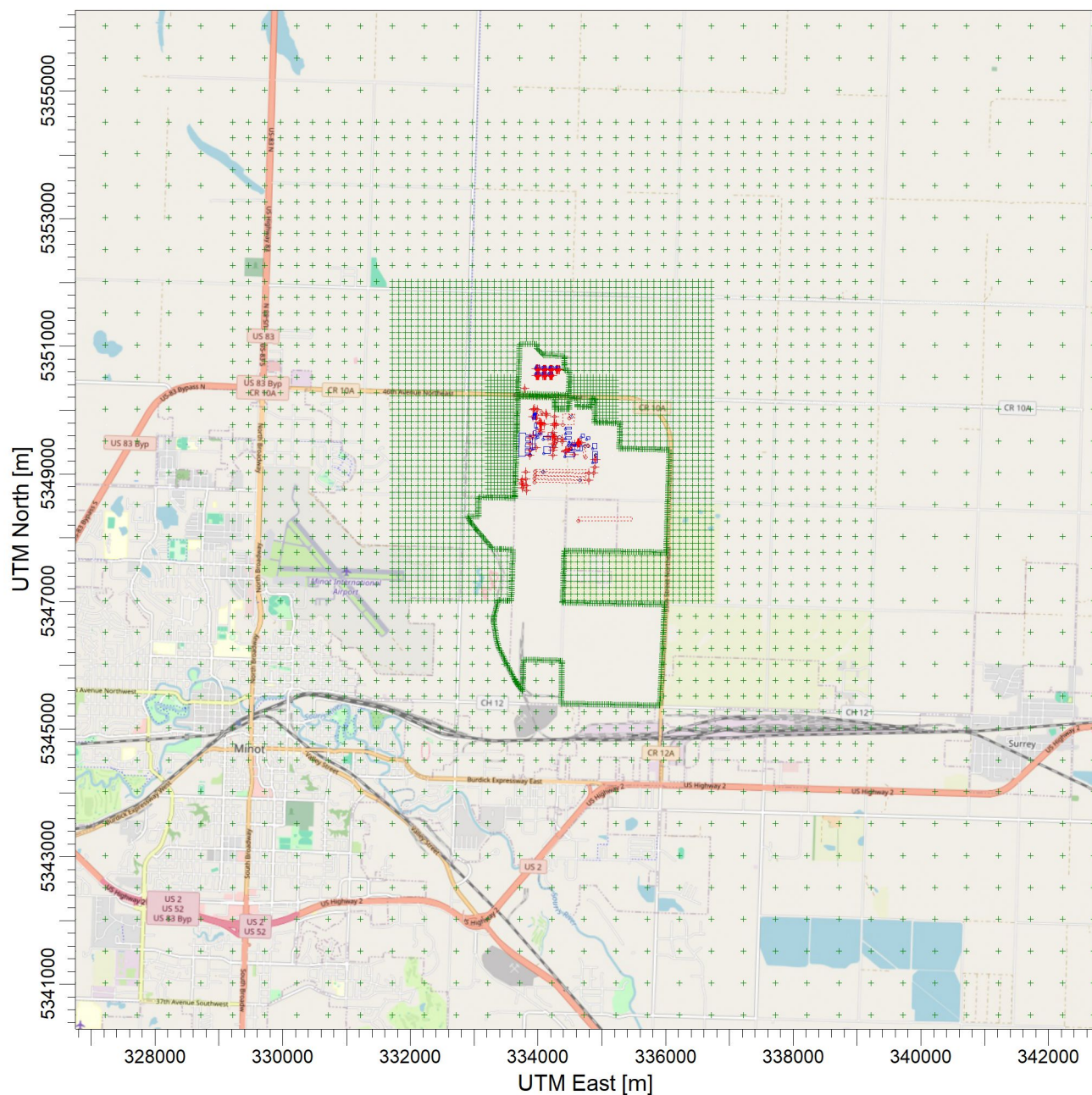
NAAQS Analysis

PM ₁₀ 24-HR	Plot	11
PM _{2.5} 24-HR	Plot	12
PM _{2.5} Annual	Plot	13
NO ₂ 1-HR	Plot	14
NO ₂ Annual	Plot	15

PSD Increment Analysis

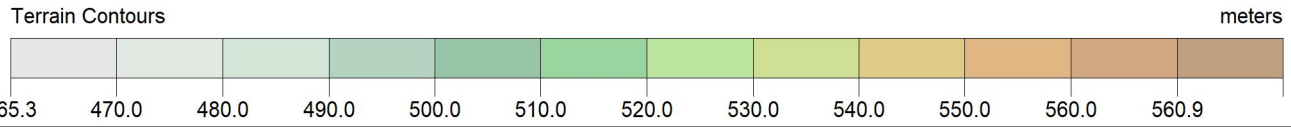
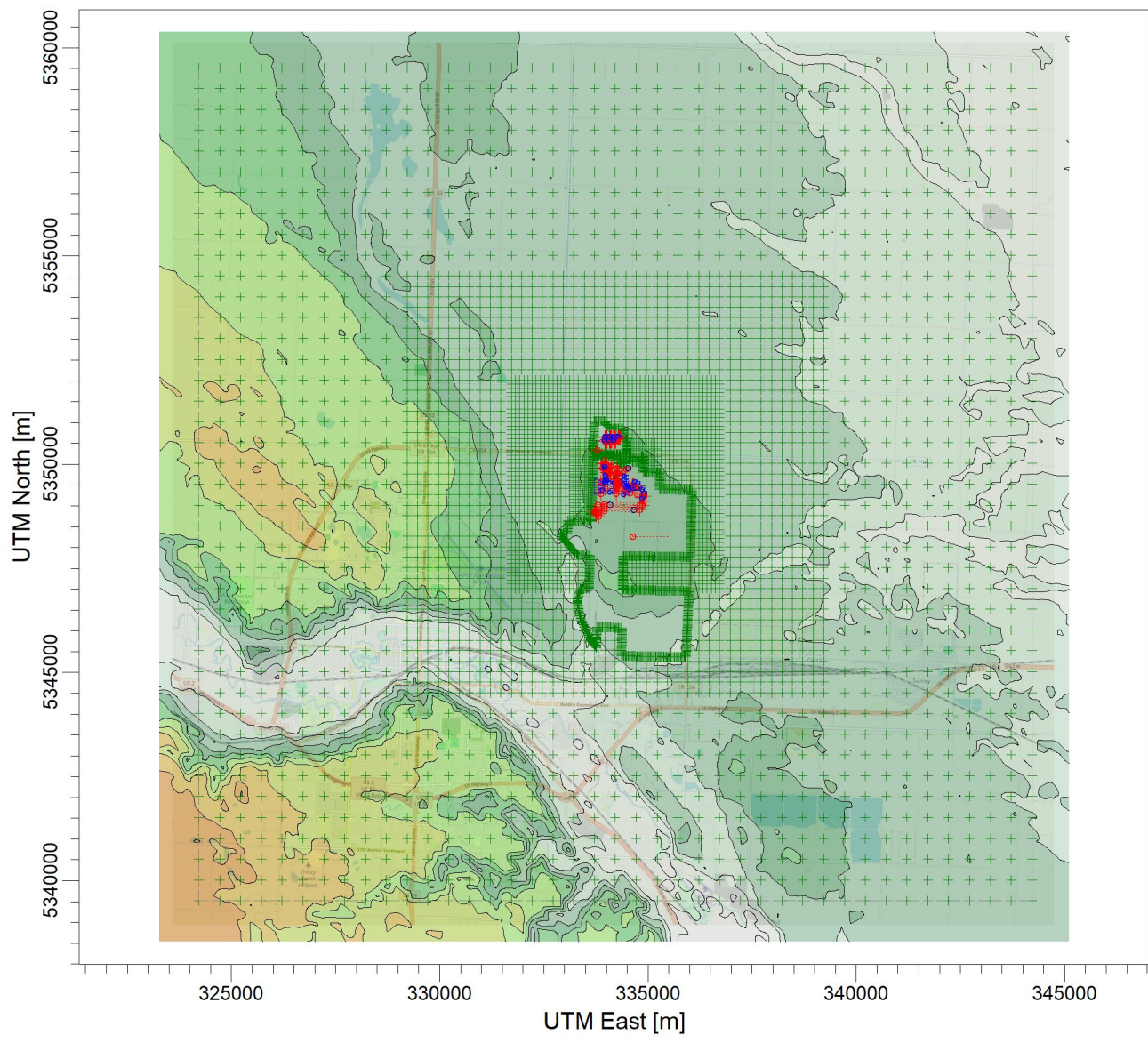
PM ₁₀ 24-HR	Plot	16
PM ₁₀ Annual	Plot	17
PM _{2.5} 24-HR	Plot	18
PM _{2.5} Annual	Plot	19
NO ₂ Annual	Plot	20

Minot Merchant Pig Iron Plant Plot 1 - Site



COMMENTS:	SOURCES:	COMPANY NAME:	
	145	North Dakota Department of Environmental Quality	
	RECEPTORS:	MODELER:	
	5793	Corrianna Anderson	
		SCALE:	1:100,442
			
			PROJECT NO.:
			ACP-18334 v1.0

PROJECT TITLE:
Minot Merchant Pig Iron Plant
Plot 2 - Terrain Contours

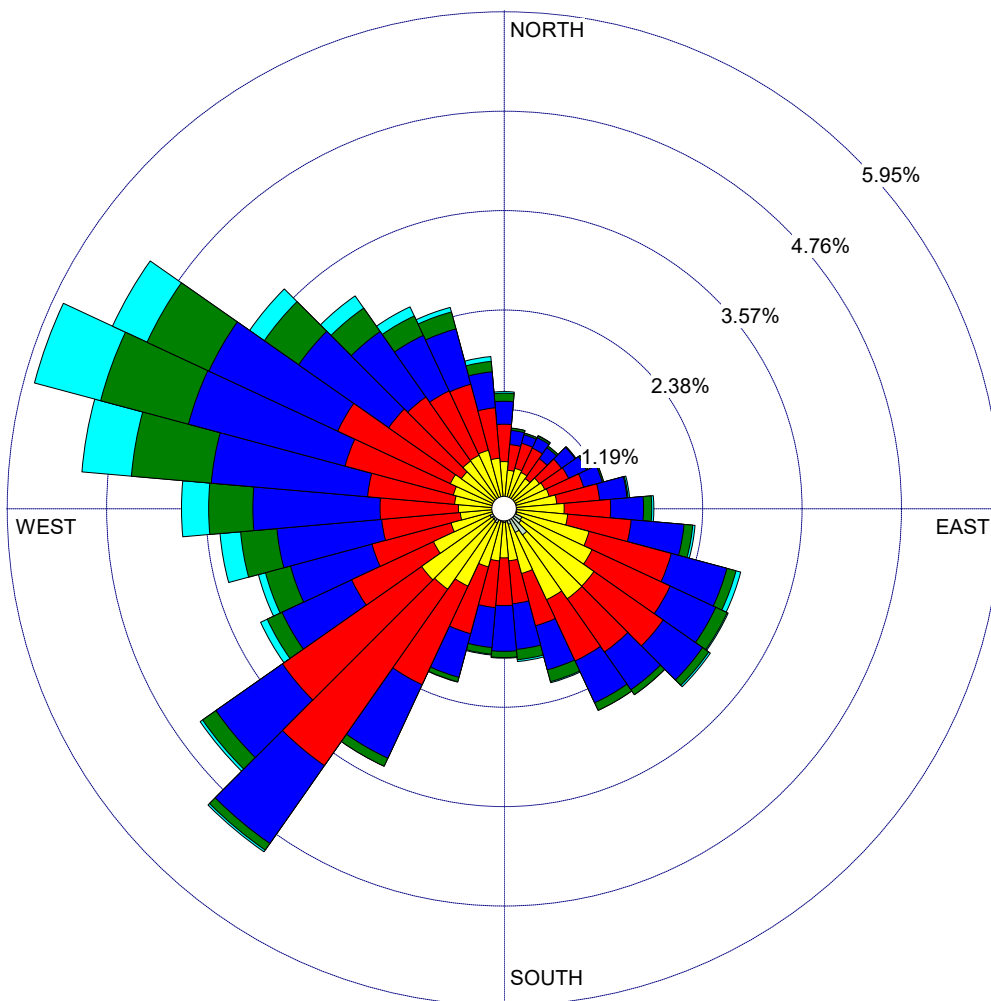


COMMENTS:	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	
		SCALE: 1:161,519 	
			PROJECT NO.: ACP-18334 v1.0

WIND ROSE PLOT:

**Minot Merchant Pig Iron Plant
Plot 3 - Wind Rose**

DISPLAY:

**Wind Speed
Direction (blowing from)**

COMMENTS:

Minot International Airport, ND
Station No. 24013

DATA PERIOD:

**Start Date: 1/1/2020 - 00:00
End Date: 12/31/2024 - 23:59**

CALM WINDS:

4.30%

AVG. WIND SPEED:

10.12 Knots

COMPANY NAME:

North Dakota Department of Environmental Quality

MODELER:

Corrianna Anderson

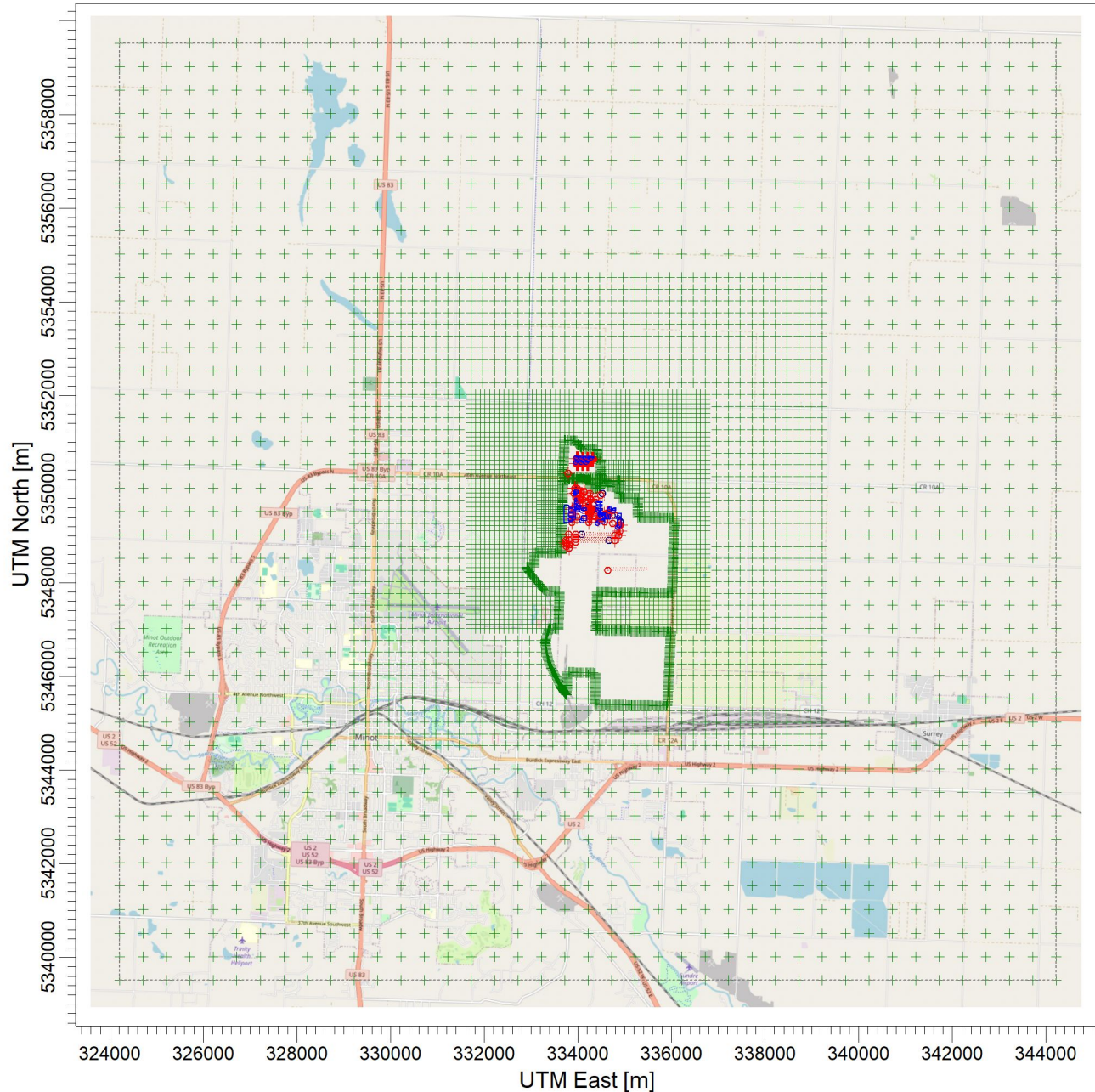
TOTAL COUNT:

43231 hrs.

PROJECT NO.:

ACP-18334 v1.0

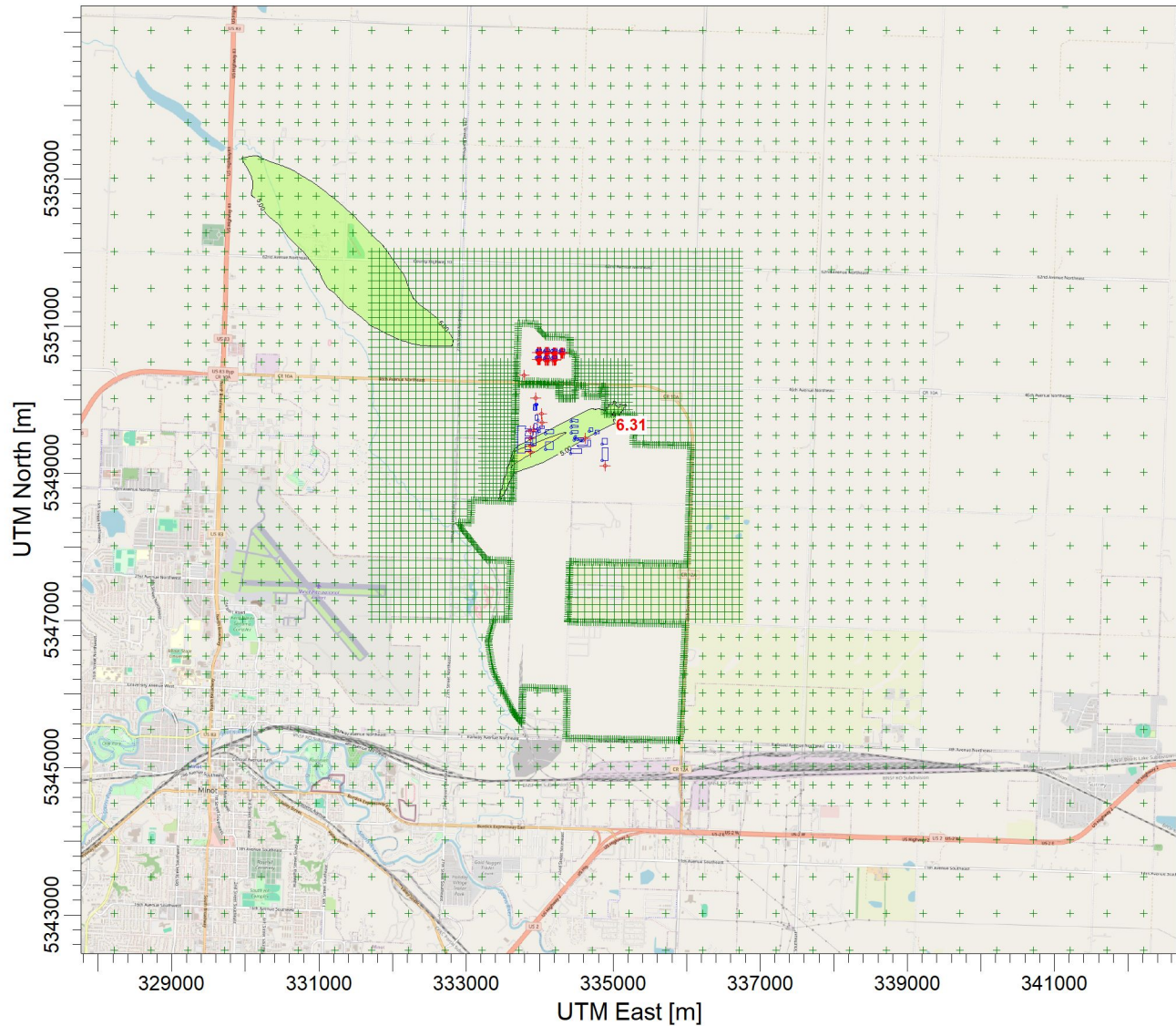
Minot Merchant Pig Iron Plant Plot 4 - Receptor Grid



COMMENTS:	SOURCES:	COMPANY NAME:	
	145	North Dakota Department of Environmental Quality	
	RECEPTORS:	MODELER:	
	5793	Corrianna Anderson	
		SCALE: 1:137,281	
			
			PROJECT NO.: ACP-18334 v1.0

PROJECT TITLE:

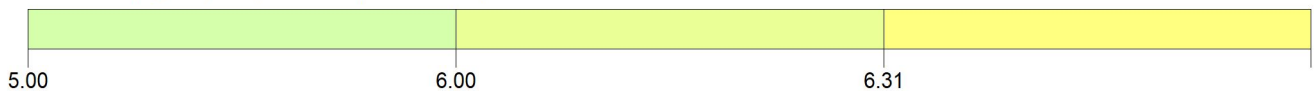
**Minot Merchant Pig Iron Plant
Plot 5 - SO₂ 1HR (SSIA)**



PLOT FILE OF 1ST-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

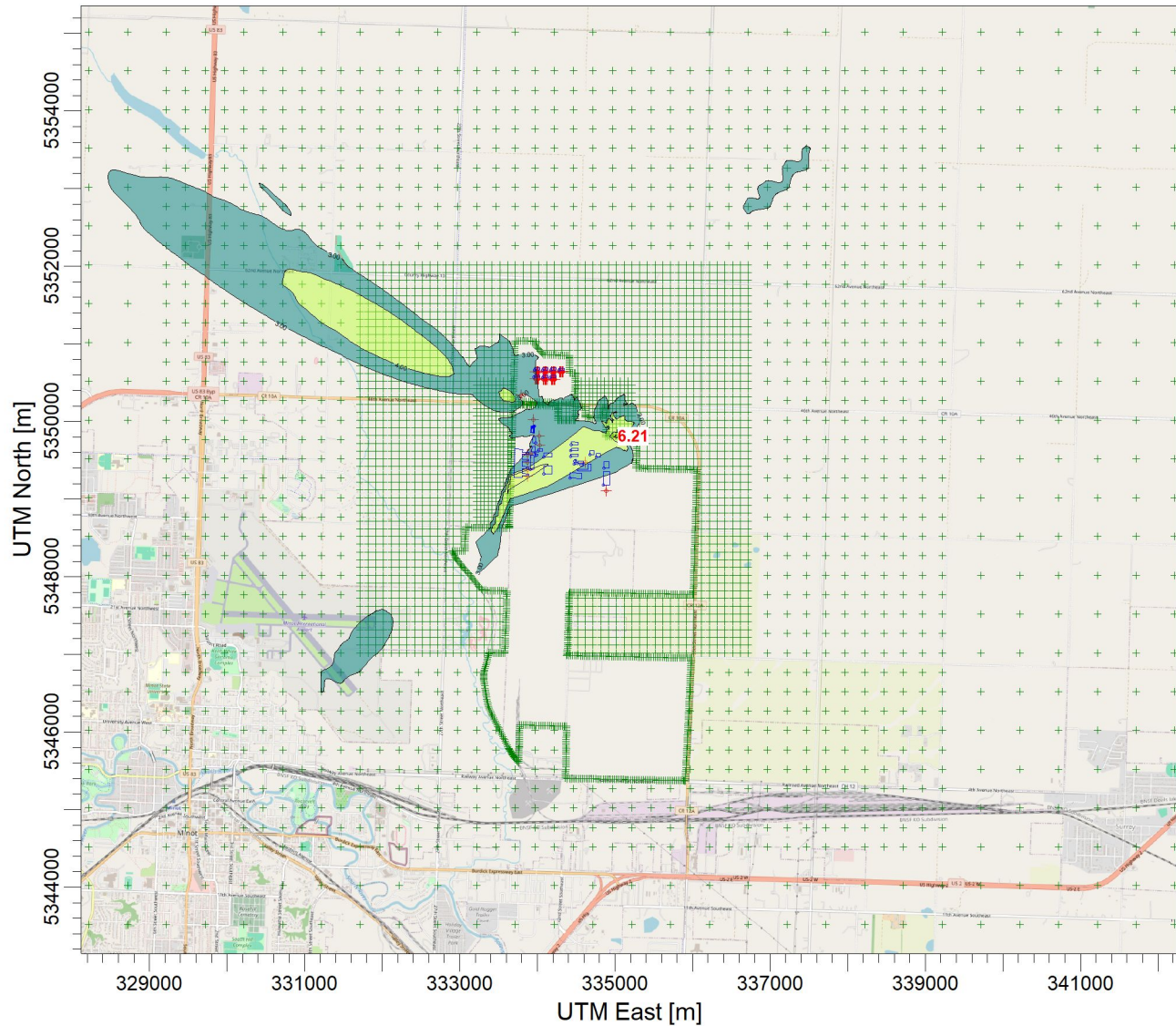
Max: 6.31 [ug/m³] at (335001.30, 5349802.81)



COMMENTS: SIL is 7.80 µg/m3	SOURCES: 53	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:93,699 0 3 km	
	MAX: 6.31 ug/m^3		PROJECT NO.: ACP-18334 v1.0

PROJECT TITLE:

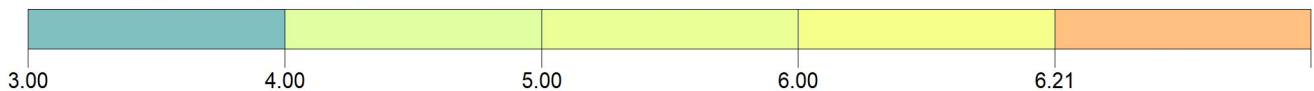
**Minot Merchant Pig Iron Plant
Plot 6 - SO₂ 3 HR (SSIA)**

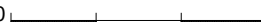


PLOT FILE OF HIGH 1ST HIGH 3-HR VALUES FOR SOURCE GROUP: ALL

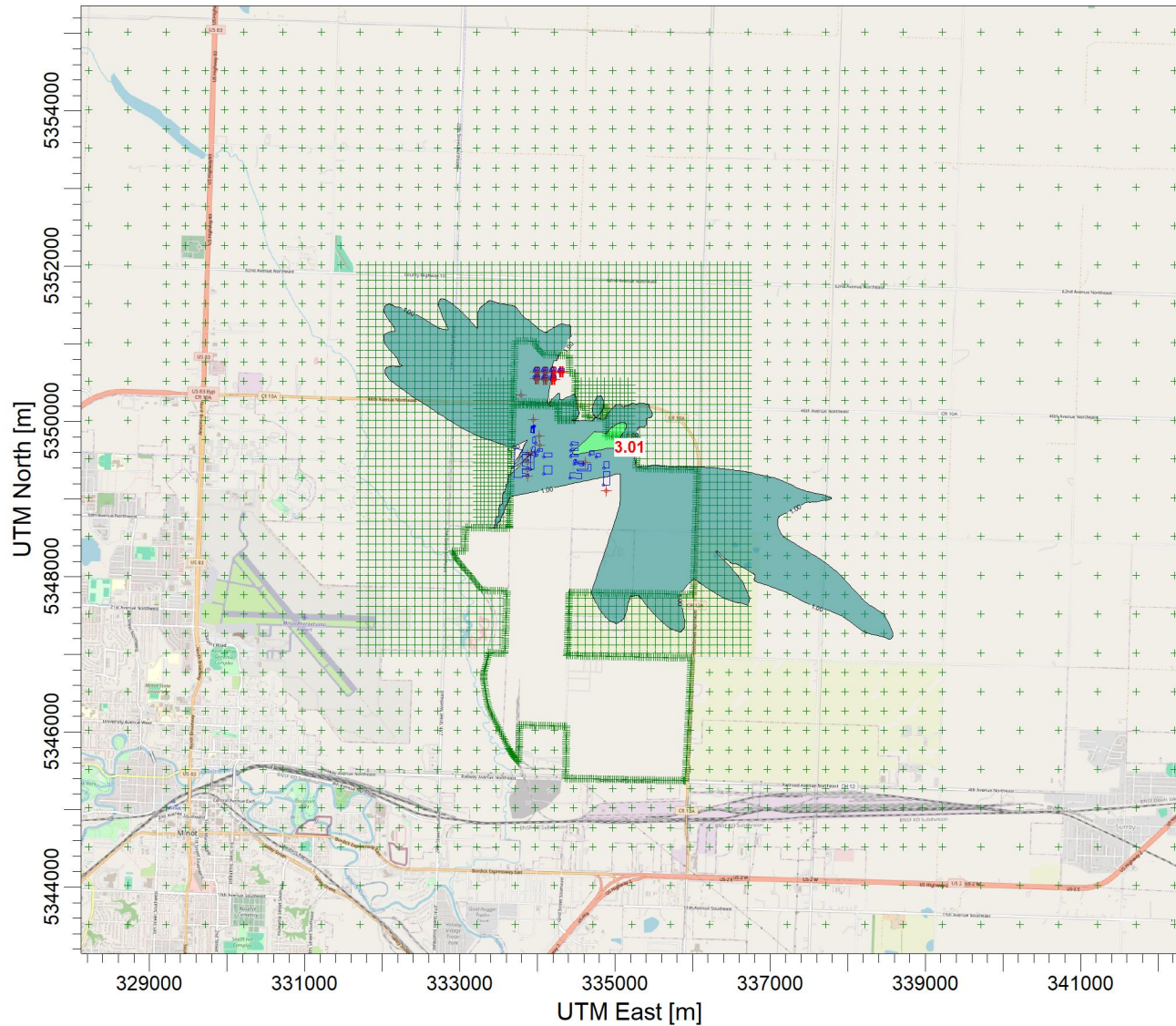
ug/m³

Max: 6.21 [ug/m³] at (335001.30, 5349802.81)



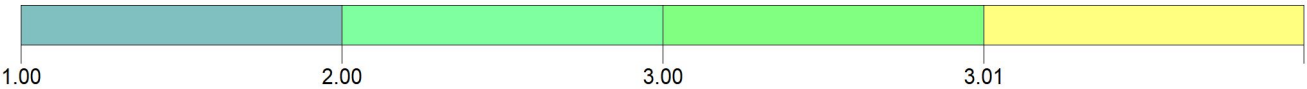
COMMENTS: SIL is 25 µg/m3	SOURCES: 53	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	
	OUTPUT TYPE: Concentration	SCALE: 1:88,834 0  3 km	
	MAX: 6.21 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:
Minot Merchant Pig Iron Plant
Plot 7 - SO2 24 HR (SSIA)



PLOT FILE OF HIGH 1ST HIGH 24-HR VALUES FOR SOURCE GROUP: ALL
Max: 3.01 [ug/m^3] at (334953.94, 5349803.81)

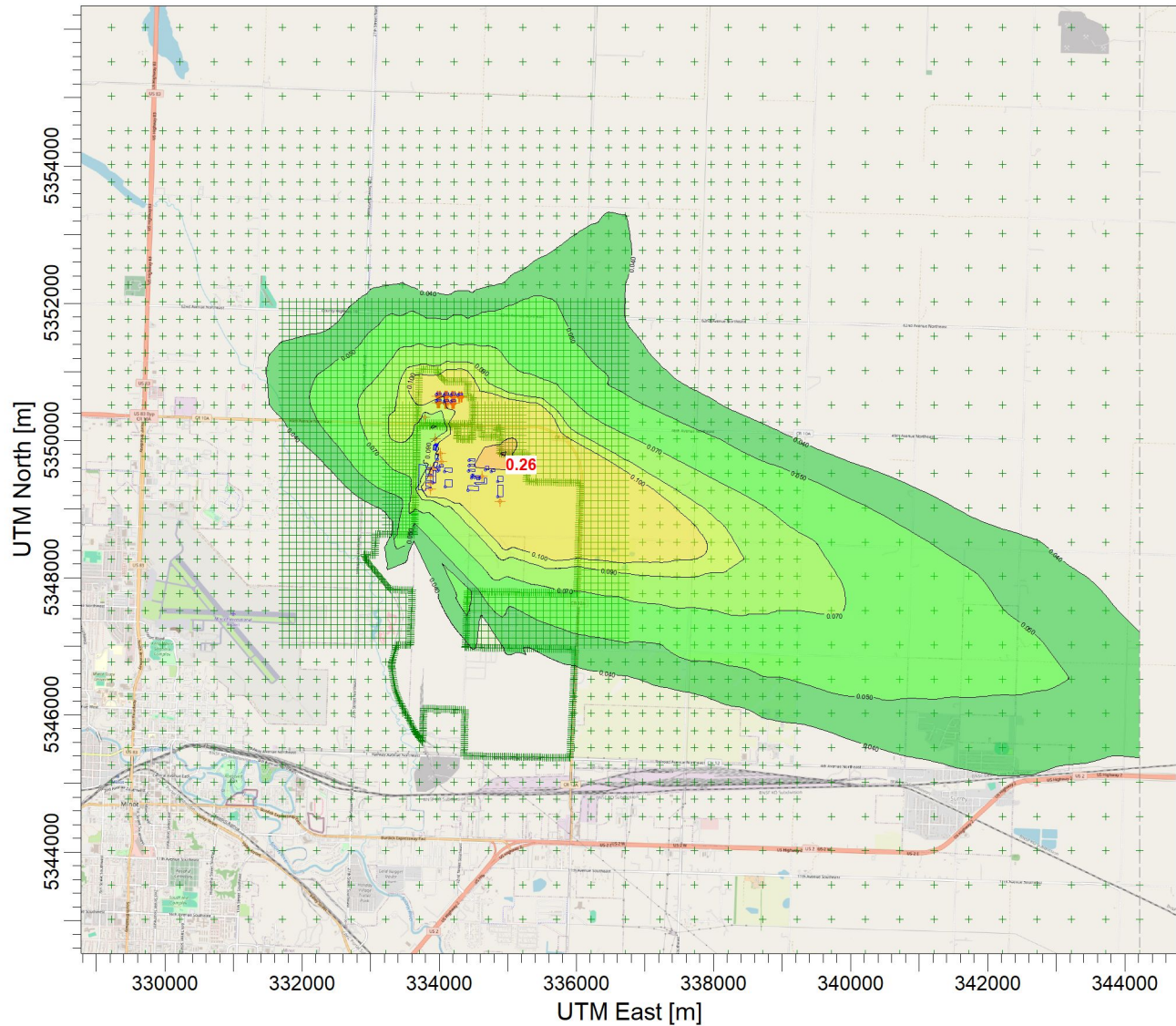
ug/m^3



COMMENTS: SIL is 5 µg/m3	SOURCES: 53	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:88,834 0 3 km	
	MAX: 3.01 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

**Minot Merchant Pig Iron Plant
Plot 8 - SO₂ Annual (SSIA)**



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL

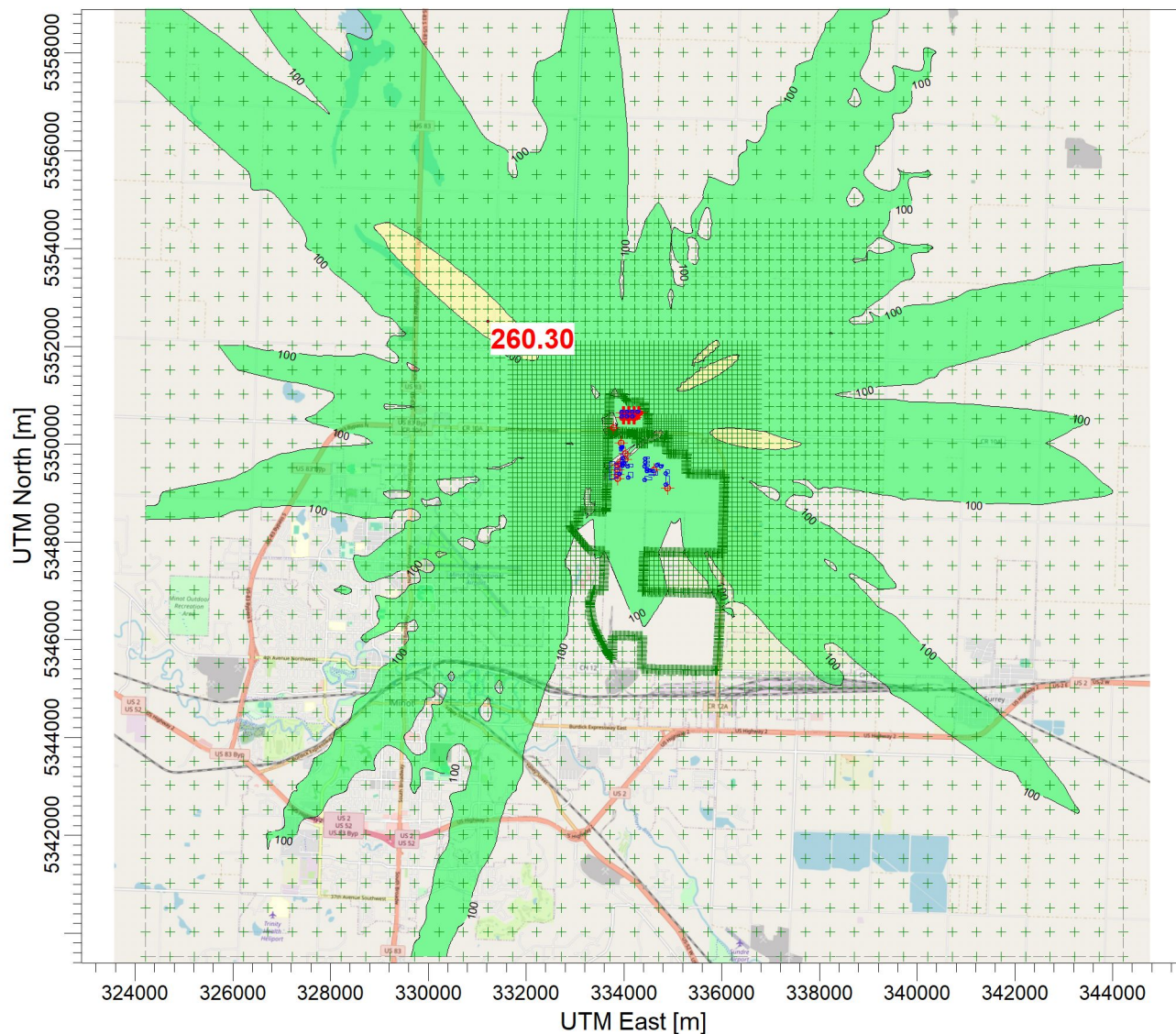
ug/m³

Max: 0.256 [ug/m³] at (334930.26, 5349804.31)

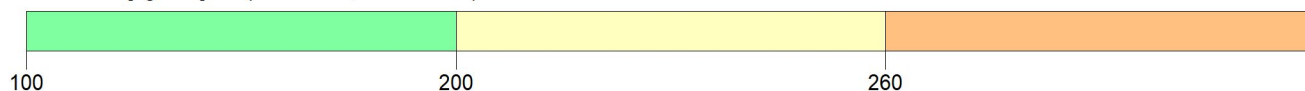


COMMENTS: SIL is 1 µg/m3	SOURCES: 53	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	
	OUTPUT TYPE: Concentration	SCALE: 1:100,509 	
	MAX: 0.256 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

**Minot Merchant Pig Iron Plant
Plot 9 - CO 1 HR (SSIA)**

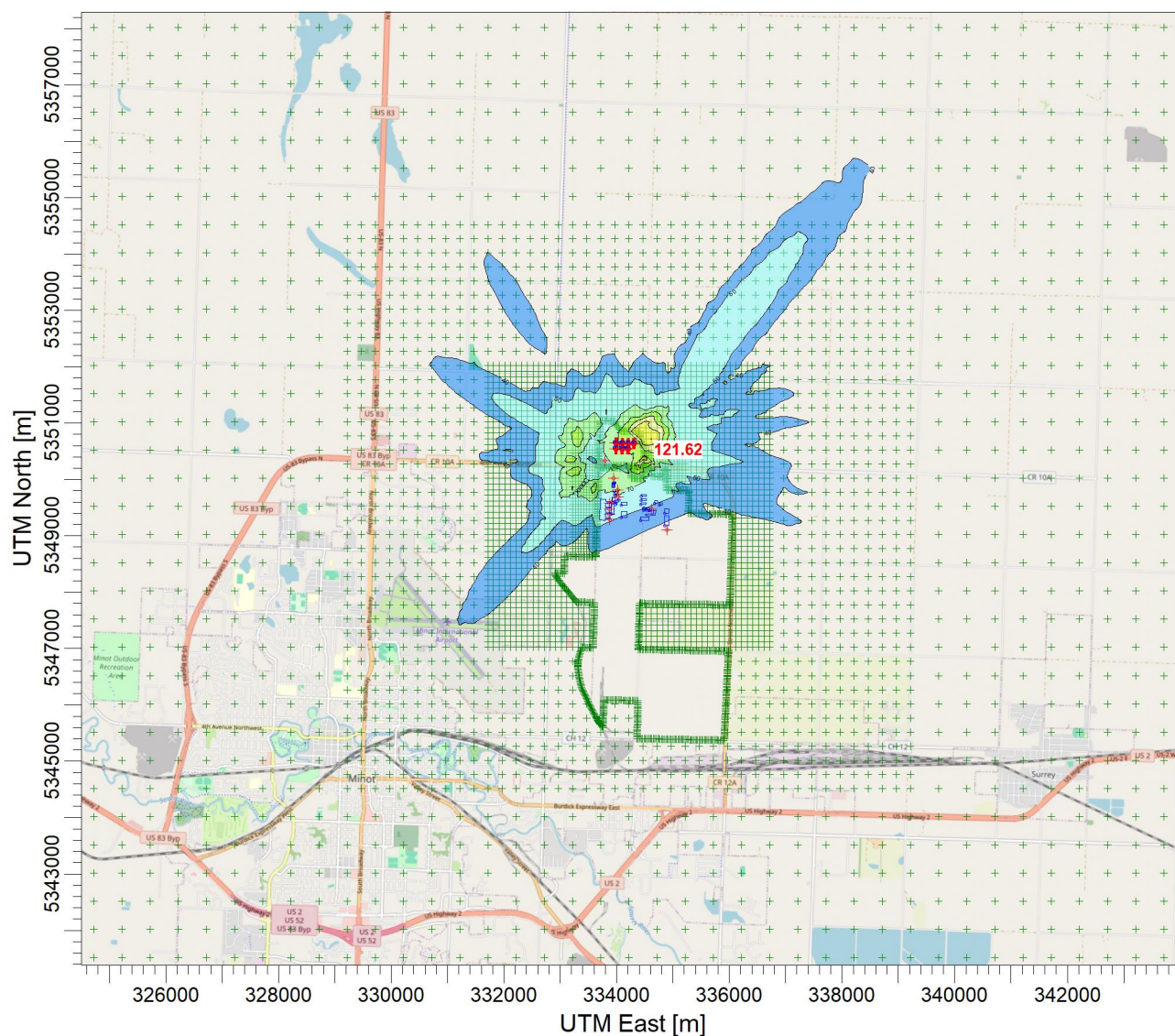
 $\mu\text{g}/\text{m}^3$

Max: 260 [ug/m^3] at (331217.31, 5352519.00)



COMMENTS: SIL is 2,000 µg/m3	SOURCES: 53	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:141,866 0 5 km	
	MAX: 260 ug/m^3		

**Minot Merchant Pig Iron Plant
Plot 10 - CO 8 HR (SSIA)**

 $\mu\text{g}/\text{m}^3$

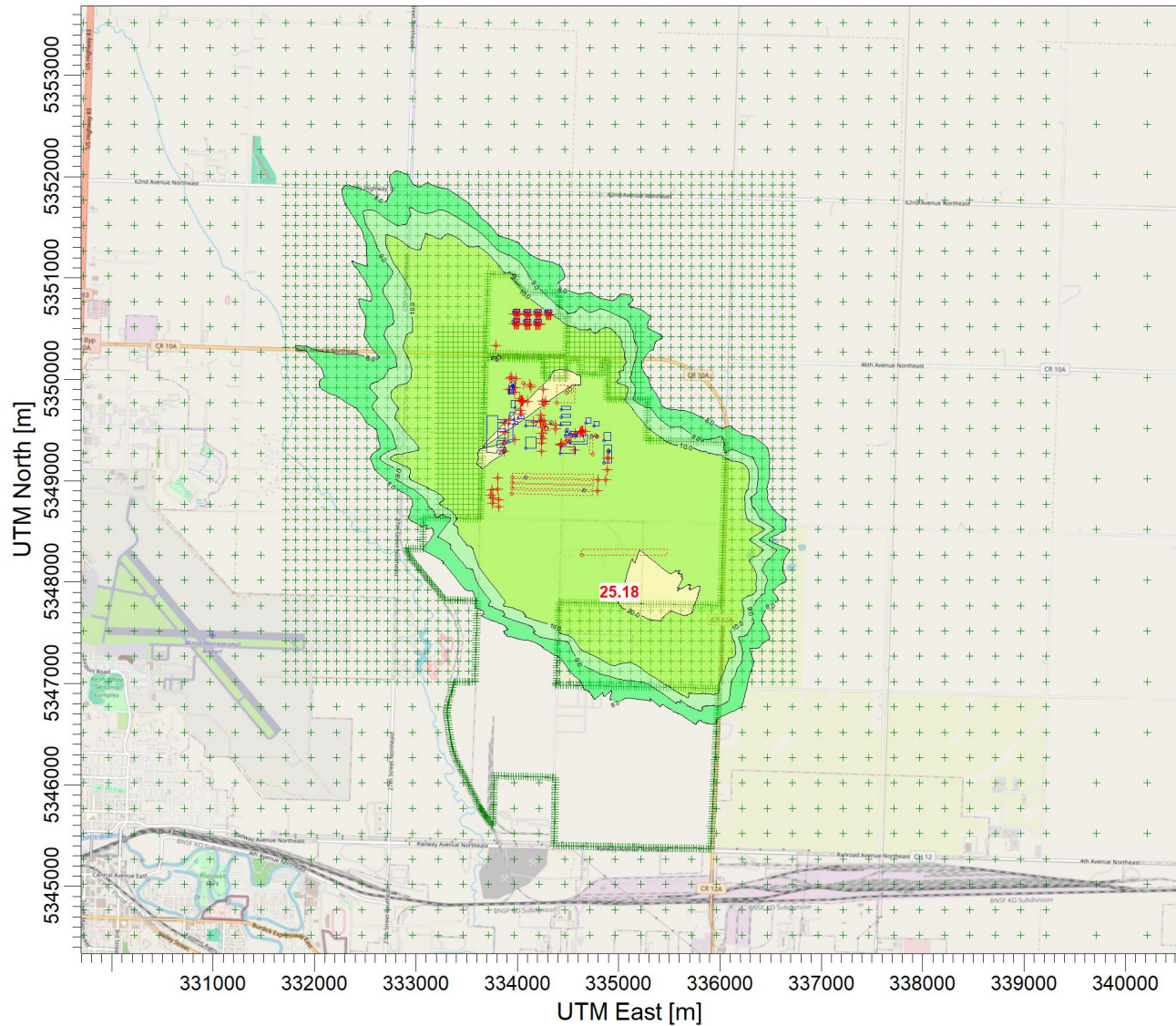
Max: 122 [ug/m^3] at (334617.31, 5350719.00)



COMMENTS: SIL is 500 µg/m3	SOURCES: 53	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	
	OUTPUT TYPE: Concentration	SCALE: 1:122,968 0  4 km	
	MAX: 122 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

**Minot Merchant Pig Iron Plant
Plot 11 - PM10 24 HR (NAAQS)**



PLOT FILE OF HIGH 6TH HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

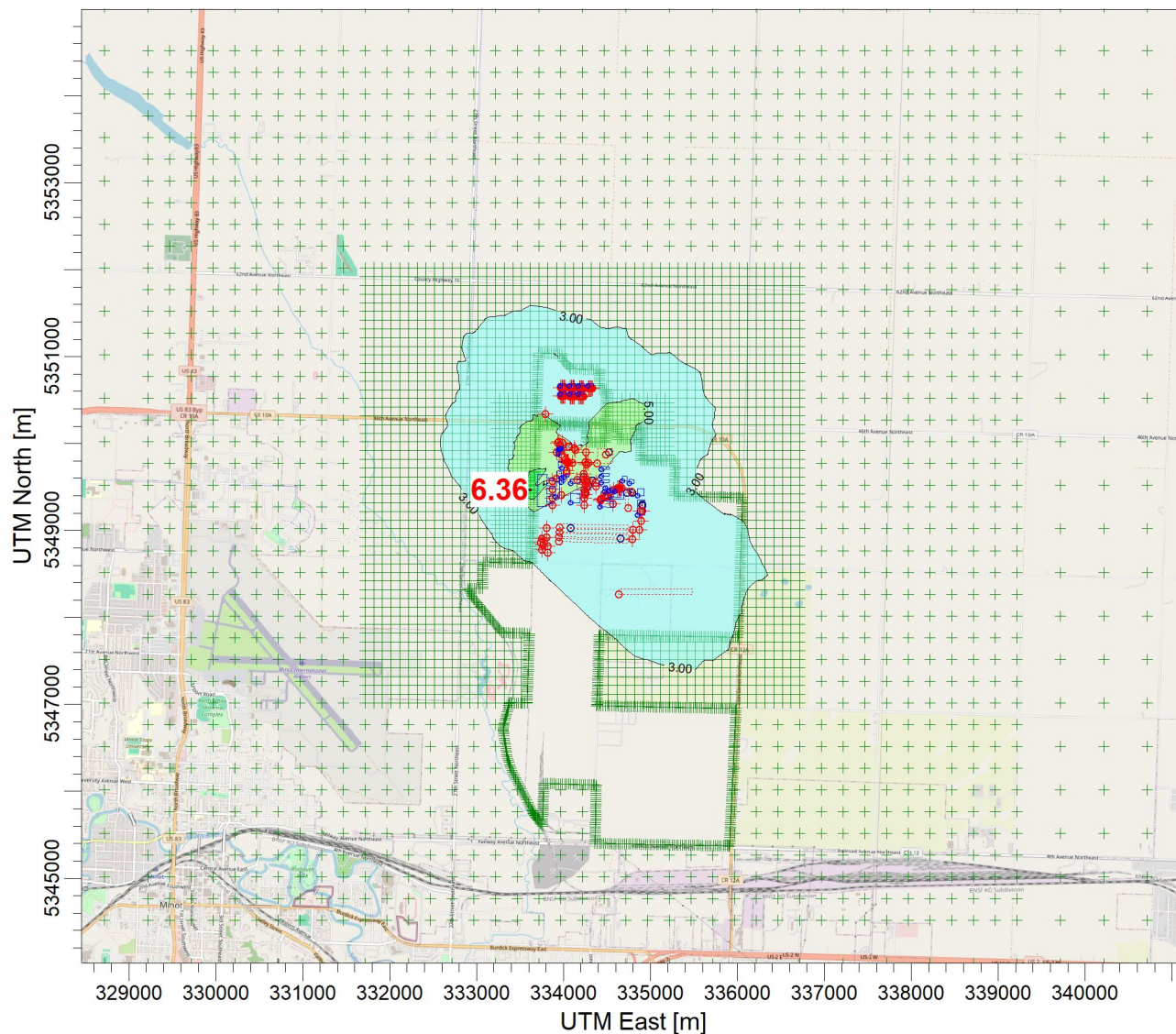
Max: 25.2 [ug/m³] at (335224.90, 5347786.70)



COMMENTS: Facility Modeled Impact is 25.18 $\mu\text{g}/\text{m}^3$ Background is 30 $\mu\text{g}/\text{m}^3$ Total Predicted Impact is 55.18 $\mu\text{g}/\text{m}^3$ NAAQS is 150 $\mu\text{g}/\text{m}^3$	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:68,008 0  2 km	
	MAX: 25.2 $\mu\text{g}/\text{m}^3$	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

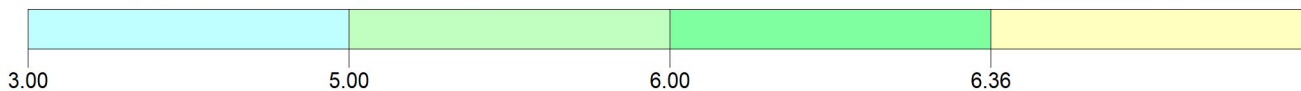
**Minot Merchant Pig Iron Plant
Plot 12 - PM2.5 24 HR (NAAQS)**



PLOT FILE OF 8TH-HIGHEST MAX DAILY 24-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

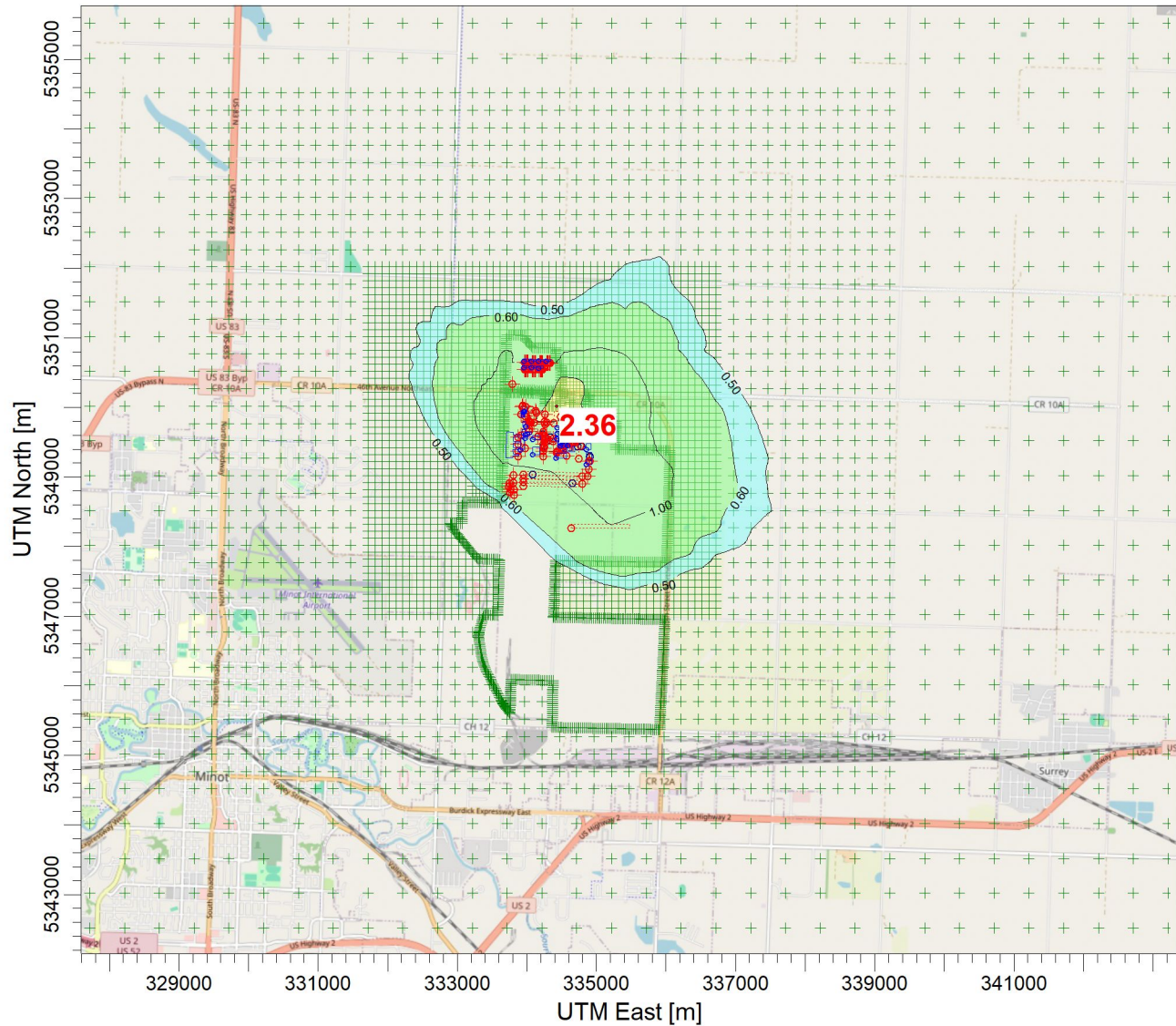
Max: 6.36 [ug/m³] at (333617.31, 5349469.00)



COMMENTS: Facility Modeled Impact is 6.36 $\mu\text{g}/\text{m}^3$ Secondary Formation is 0.24 $\mu\text{g}/\text{m}^3$ Background is 13.7 $\mu\text{g}/\text{m}^3$ Total Predicted Impact is 20.30 $\mu\text{g}/\text{m}^3$ NAAQS is 35 $\mu\text{g}/\text{m}^3$	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:79,770 0  3 km	
	MAX: 6.36 $\mu\text{g}/\text{m}^3$	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

**Minot Merchant Pig Iron Plant
Plot 13 - PM2.5 Annual (NAAQS)**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

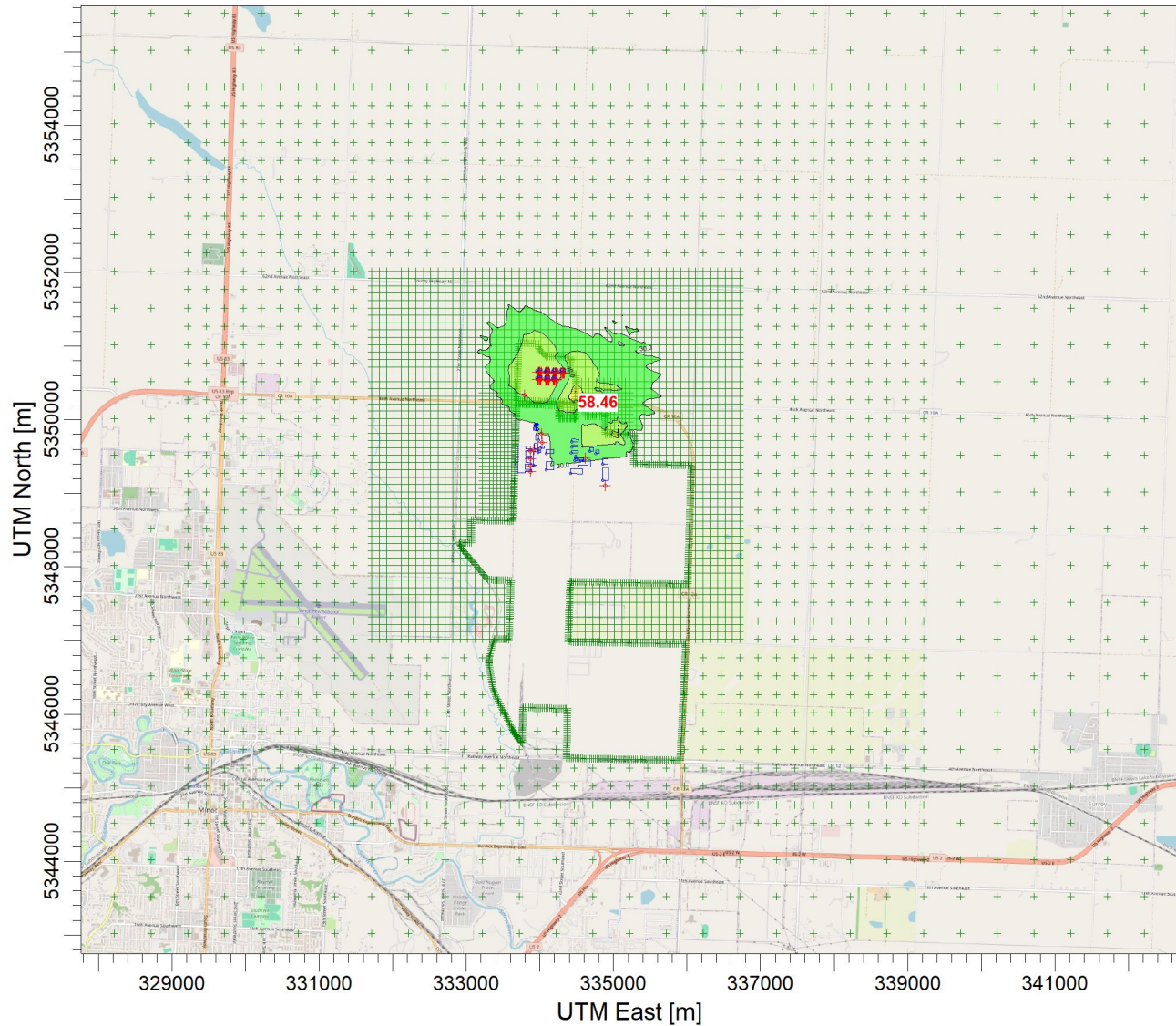
Max: 2.36 [ug/m³] at (334424.24, 5350014.79)



COMMENTS: Facility Modeled Impact is 2.36 µg/m3 Secondary Formation is 0.01 µg/m3 Background is 4.75 µg/m3 Total Predicted Impact is 7.12 µg/m3 NAAQS is 9 µg/m3	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	
	OUTPUT TYPE: Concentration	SCALE: 1:99,068 0  3 km	
	MAX: 2.36 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

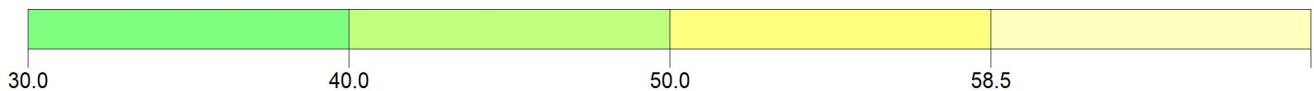
**Minot Merchant Pig Iron Plant
Plot 14 - NO2 1 HR (NAAQS)**

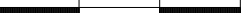


PLOT FILE OF 8TH-HIGHEST MAX DAILY 1-HR VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL

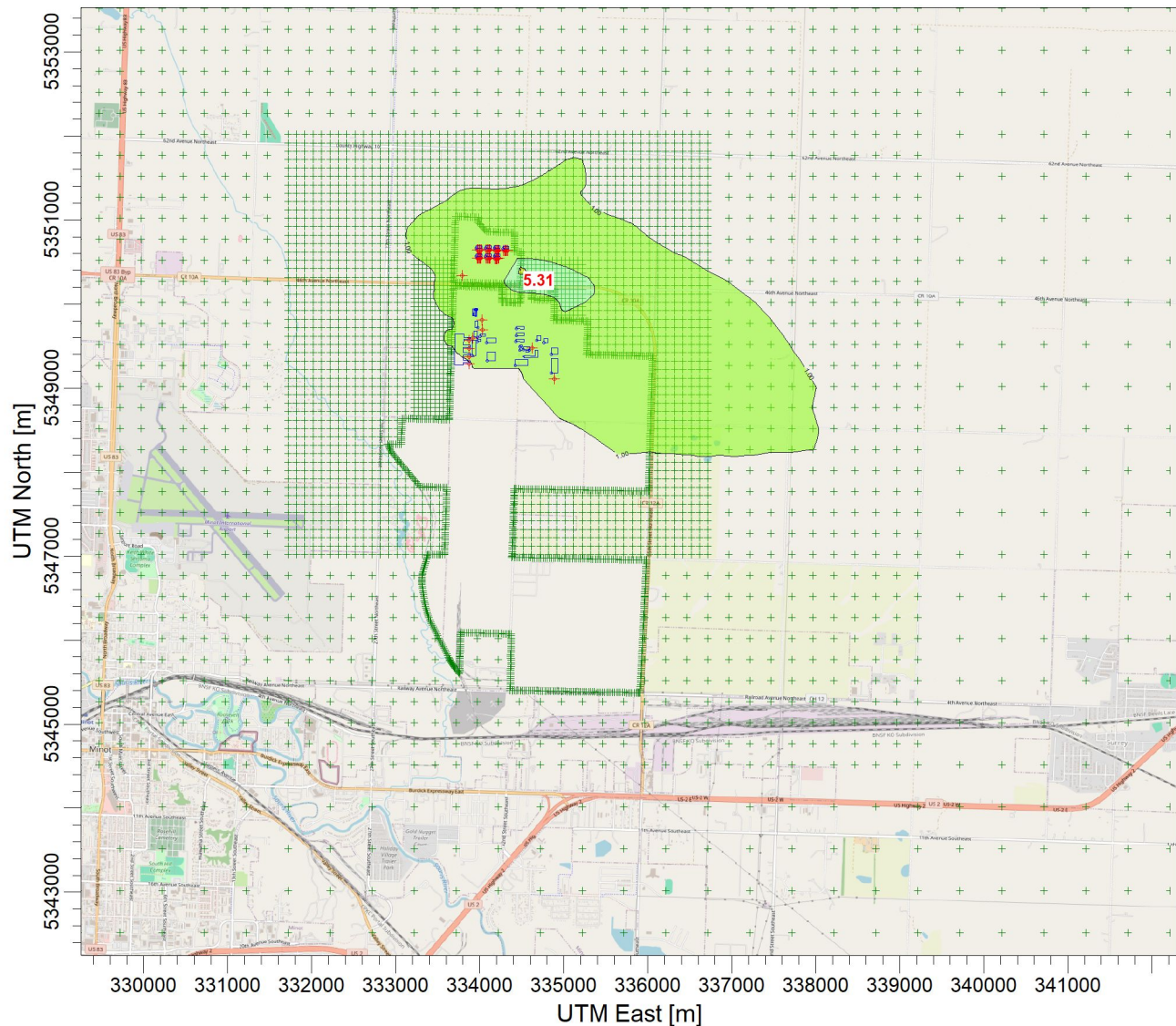
ug/m³

Max: 58.5 [ug/m³] at (334485.13, 5350382.50)



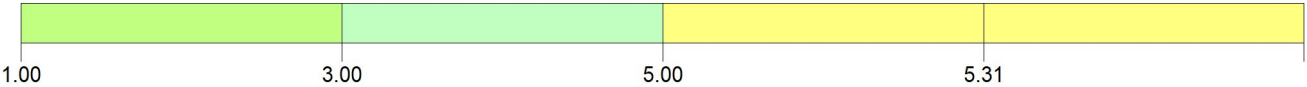
COMMENTS: Facility Modeled Impact is 58.46 $\mu\text{g}/\text{m}^3$ Background is 35 $\mu\text{g}/\text{m}^3$ Total Predicted Impact is 93.46 $\mu\text{g}/\text{m}^3$ NAAQS is 188 $\mu\text{g}/\text{m}^3$	SOURCES: 52	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:93,667 0  3 km	
	MAX: 58.5 $\mu\text{g}/\text{m}^3$	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:
Minot Merchant Pig Iron Plant
Plot 15 - NO2 Annual (NAAQS)



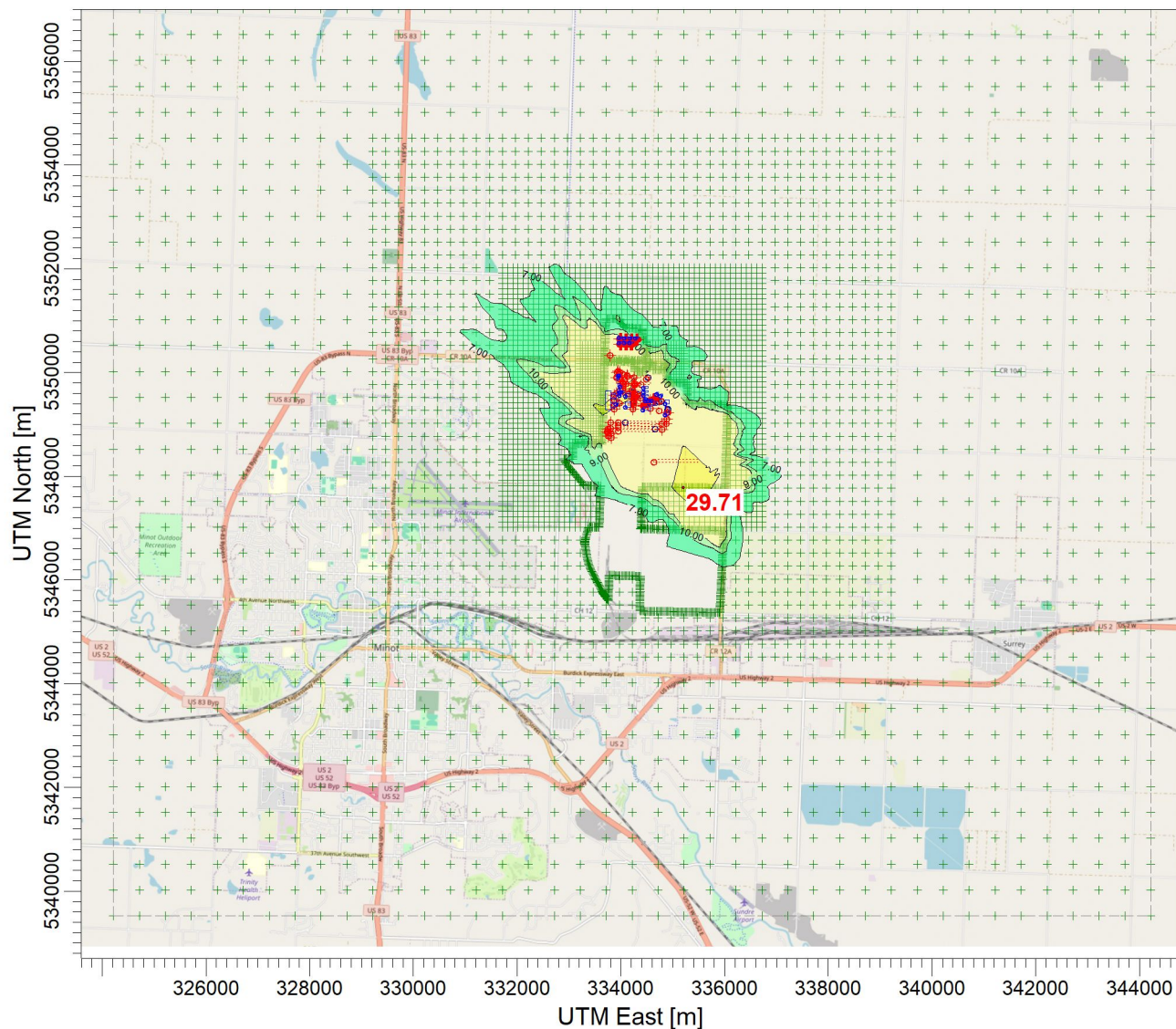
POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL
Max: 5.31 [ug/m^3] at (334485.89, 5350406.51)

ug/m^3

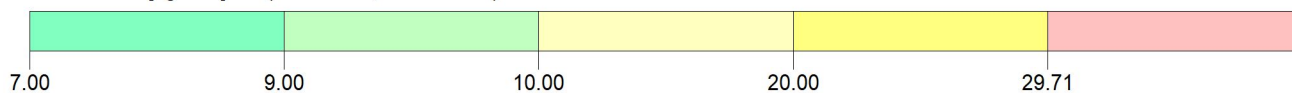


COMMENTS: Facility Modeled Impact is 5.31 $\mu\text{g}/\text{m}^3$ Background is 5 $\mu\text{g}/\text{m}^3$ Total Predicted Impact is 10.31 $\mu\text{g}/\text{m}^3$ NAAQS is 100 $\mu\text{g}/\text{m}^3$ Highest year is 2022	SOURCES: 52	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:82,050 0  3 km	
	MAX: 5.31 $\mu\text{g}/\text{m}^3$	PROJECT NO.: ACP-18334 v1.0	

Minot Merchant Pig Iron Plant Plot 16 - PM10 24 HR (PSD Increment)

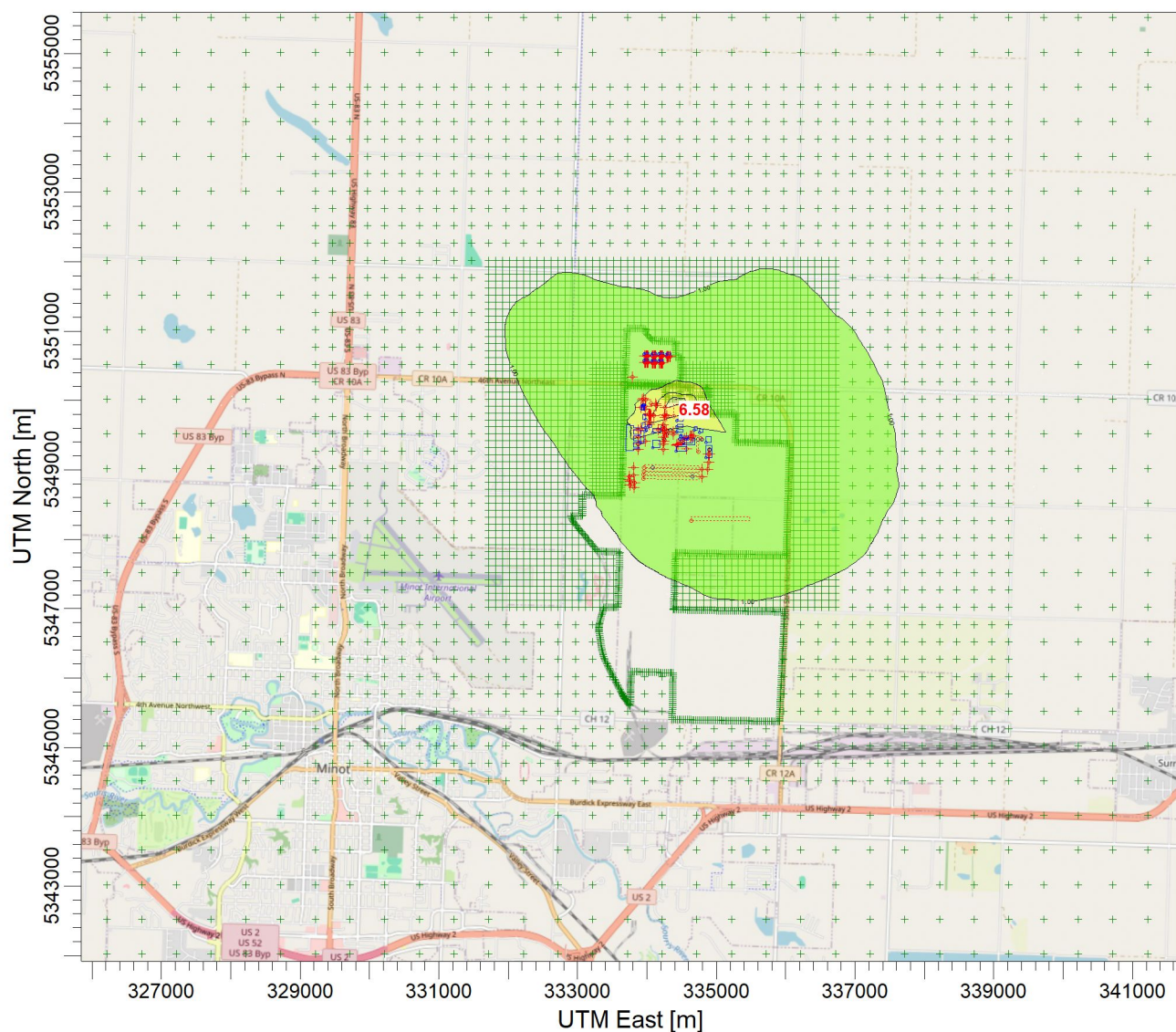
 $\mu\text{g}/\text{m}^3$

Max: 29.71 [ug/m^3] at (335200.23, 5347787.14)

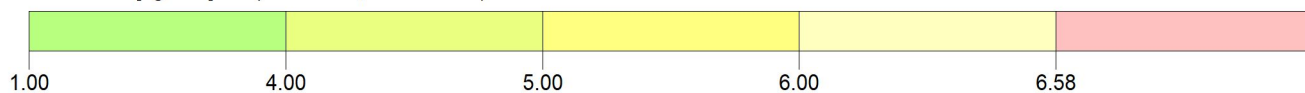


COMMENTS: Facility Modeled Impact is 29.71 µg/m3 Class II PSD Increment is 30 µg/m3 Increment Consumed is 99% Highest second-high year is 2021	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:133,104 0 5 km	
	MAX: 29.71 ug/m^3		
	PROJECT NO.: ACP-18334 v1.0		

Minot Merchant Pig Iron Plant Plot 17 - PM10 Annual (PSD Increment)

 $\mu\text{g}/\text{m}^3$

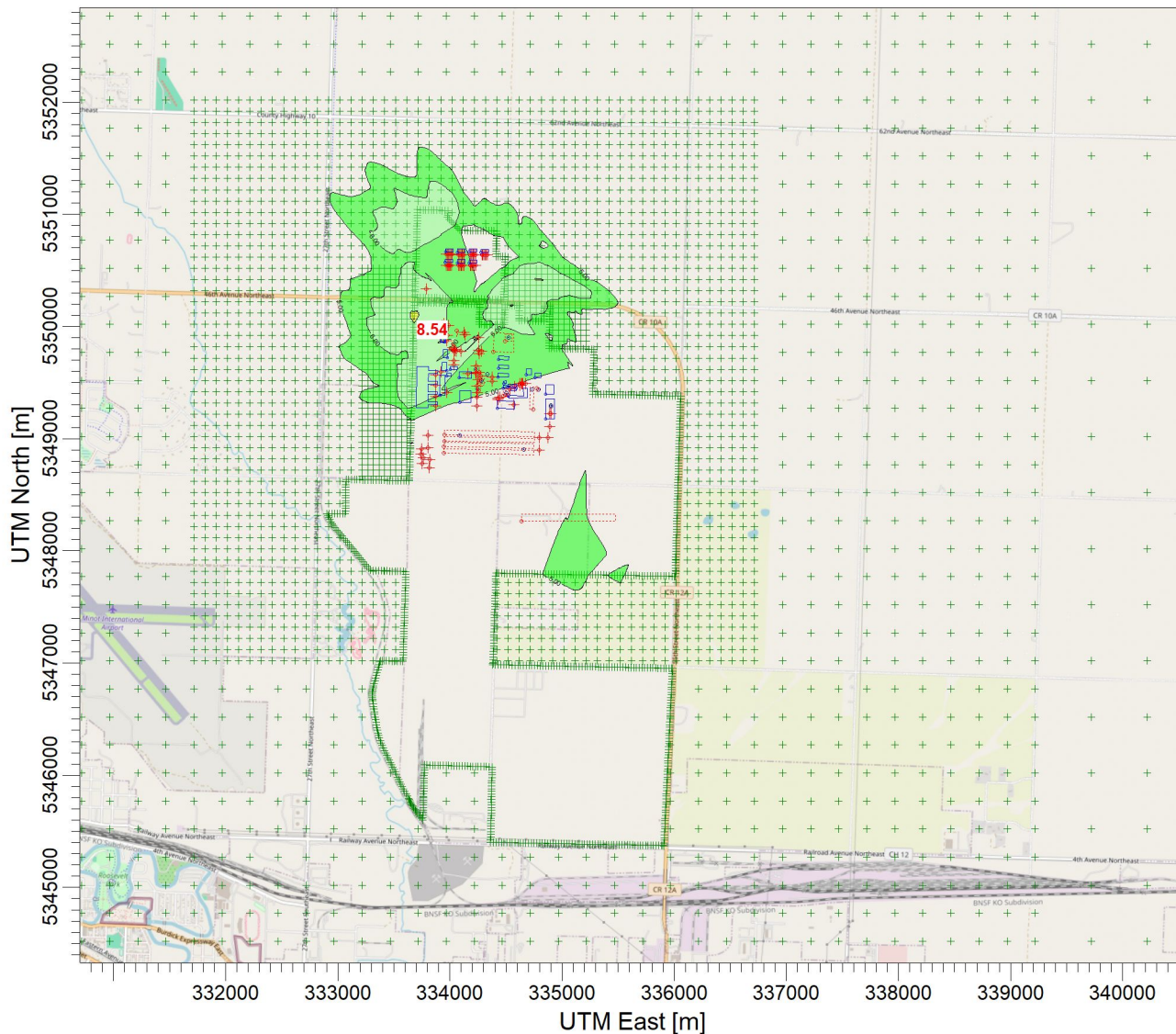
Max: 6.58 [ug/m^3] at (334424.24, 5350014.79)



COMMENTS: Facility Modeled Impact is 6.58 µg/m3 Class II PSD Increment is 17 µg/m3 Increment Consumed is 39% Highest year is 2020	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	
	OUTPUT TYPE: Concentration	SCALE: 1:99,523 	
	MAX: 6.58 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

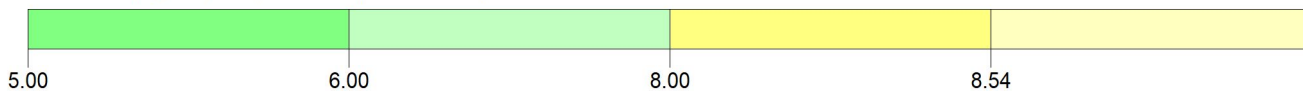
Minot Merchant Pig Iron Plant
Plot 18 - PM2.5 24HR (PSD Increment)



PLOT FILE OF HIGH 2ND HIGH 24-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

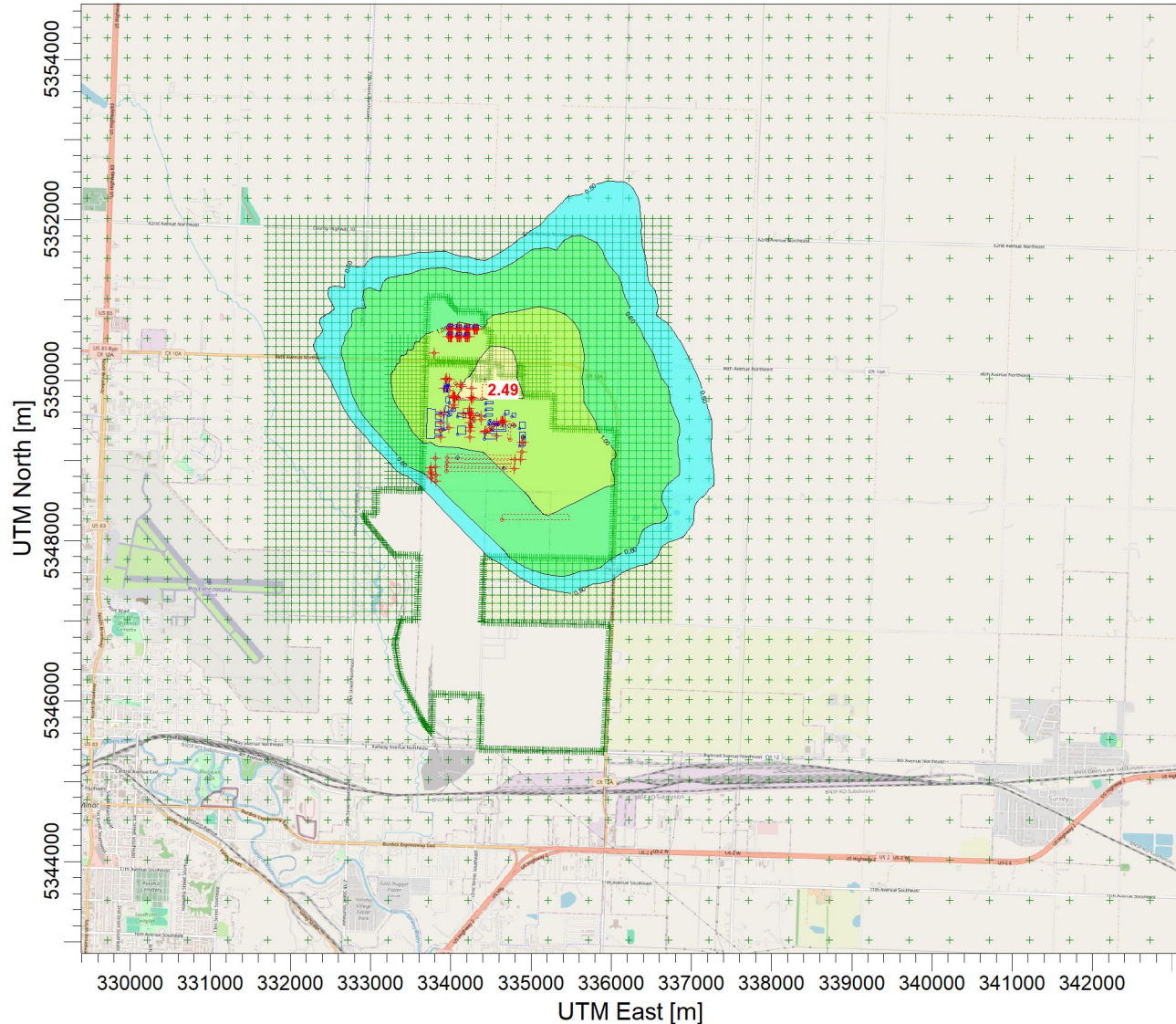
Max: 8.54 [ug/m³] at (333680.82, 5350067.43)



COMMENTS: Facility Modeled Impact is 8.54 μg/m3 Secondary Formation is 0.24 μg/m3 Class II PSD Increment is 9 μg/m3 Increment Consumed is 98% Highest second-high year is 2020	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:61,938 0 2 km	
	MAX: 8.54 ug/m^3	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

Minot Merchant Pig Iron Plant
Plot 19 - PM2.5 Annual (PSD Increment)



POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL

ug/m³

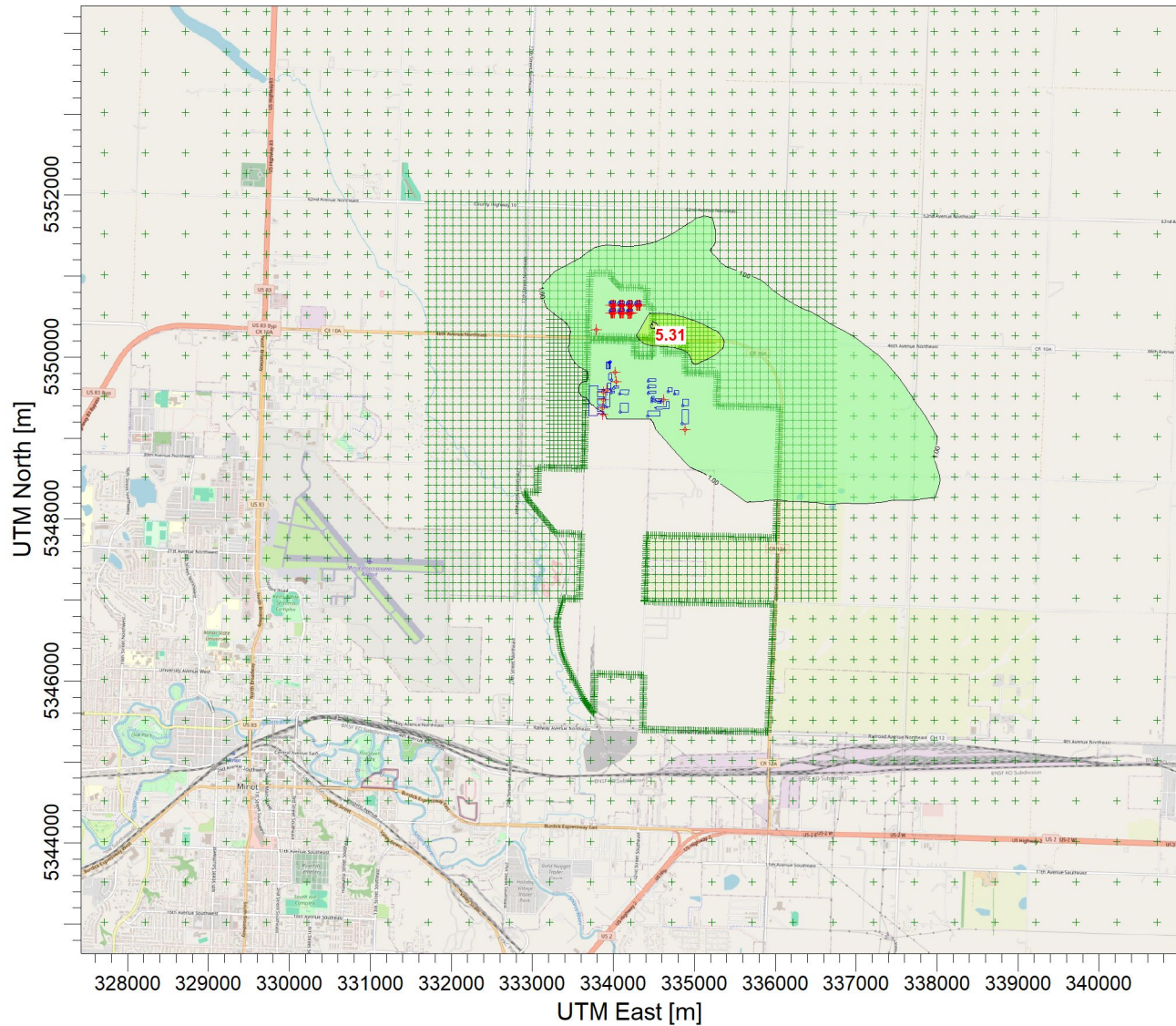
Max: 2.49 [ug/m³] at (334424.24, 5350014.79)



COMMENTS: Facility Modeled Impact is 2.49 $\mu\text{g}/\text{m}^3$ Secondary Formation is 0.01 $\mu\text{g}/\text{m}^3$ Class II PSD Increment is 4 $\mu\text{g}/\text{m}^3$ Increment Consumed is 63% Highest year is 2021	SOURCES: 145	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:86,074 0 3 km	
	MAX: 2.49 $\mu\text{g}/\text{m}^3$	PROJECT NO.: ACP-18334 v1.0	

PROJECT TITLE:

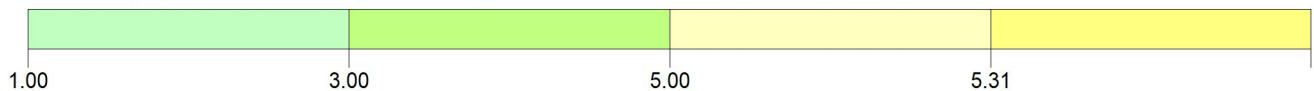
**Minot Merchant Pig Iron Plant
Plot 20 - NO2 Annual (PSD Increment)**

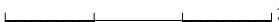


POST/PLOT FILE OF ANNUAL VALUES FOR YEAR 1 FOR SOURCE GROUP: ALL

ug/m³

Max: 5.31 [ug/m³] at (334485.89, 5350406.51)



COMMENTS: Facility Modeled Impact is 5.31 $\mu\text{g}/\text{m}^3$ Class II PSD Increment is 25 $\mu\text{g}/\text{m}^3$ Increment Consumed is 21% Highest year is 2022	SOURCES: 52	COMPANY NAME: North Dakota Department of Environmental Quality	
	RECEPTORS: 5793	MODELER: Corrianna Anderson	NORTH Dakota Be Legendary.™ Environmental Quality
	OUTPUT TYPE: Concentration	SCALE: 1:85,135 0  3 km	
	MAX: 5.31 $\mu\text{g}/\text{m}^3$	PROJECT NO.: ACP-18334 v1.0	