

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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Mike Johanns
Governor

CONSTRUCTION PERMIT

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT TO MODIFY AN AIR CONTAMINANT SOURCE IS HEREBY ISSUED TO:

Agrium US, Inc.
Homestead Nitrogen Operations
22292 SW 89th Road
Beatrice, Nebraska 68310-6872

FOR THE SPECIFIC MODIFICATION OF:

Addition of Selective Catalytic Reduction (SCR) System and Bleaching Tower
to the Existing Nitric Acid Plant

TO BE LOCATED AT:

22292 SW 89th Road
Beatrice, Gage County, Nebraska

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of this proposed modification of an air contaminant source and the thirty (30) day period allowed for comments has elapsed. This Construction Permit approves the 1995 modification of the nitric acid plant by the addition of a selective catalytic reduction (SCR) emission control system and bleaching tower.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard.

This permit is issued with the following conditions:

General Conditions

- I. This permit is not transferable to another source or location. (Title 129, Chapter 17)
- II. Holding of this permit does not relieve the owner/operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. (Title 129, Chapter 41)
- III. Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. If the source wishes to

make changes at the facility that will result in change(s) to values, specifications, and/or locations of emission points that were indicated in the permit application (or other supplemental information provided by the applicant and reviewed by the Department in issuance of this permit), the source must receive approval from the Department before the change(s) can be made. In addition, any modification which may result in an adverse change to the air quality impacts predicted by atmospheric dispersion modeling (such as changes in stack parameters or increases in emission rates, potential emissions, or actual emissions) shall have prior approval from the Department. The source shall provide all necessary information to verify that there are no substantive changes affecting the basis upon which this permit was issued. Information may include, but not be limited to, additional engineering, modeling and ambient air quality studies. (Title 129, Chapter 17, Section 006, 007, & 008)

- IV. Approval to construct, reconstruct and/or modify the source will become invalid if a continuous program of construction is not commenced within 18 months after the date of issuance of the construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. (Title 129, Chapter 17, Section 012)
- V. The owner/operator of the source shall provide a notification to the Department of the date of construction, reconstruction or modification commenced, postmarked no later than 30 days after such date, and of the actual date of initial startup of operation, postmarked within 15 days after such date. (Title 129, Chapter 17, Section 012 & Chapter 7, Section 002.03)
- VI. The permittee shall allow the Department, EPA or an authorized representative, upon presentation of credentials to (Title 129, Chapter 8, Section 012.02):
- (A) Enter upon the permittee's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (B) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (C) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (D) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.
- VII. Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended February 7, 2004.
- VIII. This permit may contain abbreviations and symbols of units of measure which are defined in 40 CFR Part 60.3. Other abbreviations may include, but are not limited to, the following: Best Available Control Technology (BACT), Code of Federal Regulations (CFR), Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources (AP-42), Carbon Monoxide (CO), Continuous Emissions Monitoring System (CEMS), Hazardous Air Pollutant (HAP), Maximum Achievable Control Technology (MACT), National Ambient Air Quality Standards (NAAQS), New Source Performance Standards (NSPS), Nitrogen Oxides (NO_x),

Particulate Matter (PM), Particulate Matter less than or equal to 10 micrometers (PM₁₀), Parts Per Million (ppm), Prevention of Significant Deterioration (PSD), Relative Accuracy Test Audit (RATA), Sulfur Dioxide (SO₂), Volatile Organic Compounds (VOC).

- IX. Open fires are prohibited except as allowed by Title 129, Chapter 30.
- X. The source shall not cause or permit fugitive particulate matter to become airborne in such quantities and concentrations that it remains visible in the ambient air beyond the property line. (Title 129, Chapter 32)
- XI. Application for review of plans or advice furnished by the Director will not relieve the source of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. (Title 129, Chapter 37)
- XII. If and when the Director declares an air pollution episode as defined in Title 129, Chapter 38, Sections 003.01B, 003.01C, or 003.01D, the source shall immediately take all required actions listed in Title 129, App. I until the Director declares the air pollution episode terminated.

Specific Conditions

- XIII. Specific terms and conditions of this permit:
 - (A) The permittee shall not cause the discharge of NO_x into the atmosphere from the nitric acid plant (Emission Unit 2) in excess of the following:
 - (1) 1.1 pounds per ton of 100 percent nitric acid produced during any period of twelve (12) consecutive calendar months the nitric acid plant is in operation (12 month rolling average). {Title 129, Chapter 4 and 19}
 - (2) 210 ppm by volume of exhaust gas (3-hour rolling average). {Title 129, Chapter 19}
 - (3) **Startup and Shutdown Requirements:** Any excess emissions resulting from startup, shutdown, or malfunction type conditions shall be addressed in accordance with Nebraska Title 129, Chapter 35. Records shall be kept of such startup, shutdown, and malfunction periods as specified under Condition XIII.(I)(6).
 - (B) The permittee shall calibrate, maintain, and operate a CEMS for measuring NO_x emissions from the nitric acid plant. The monitoring system shall be used for measuring and demonstrating compliance with the NO_x emission limitations in Condition XIII.(A). {Title 129, Chapter 25}
 - (1) The CEMS shall be installed, certified and operated according to manufacturer's specifications and in accordance with the General Provisions of 40 CFR 60, Subpart A, the Performance Specification 2 in 40 CFR 60, Appendix B, and the Quality Assurance/Quality Control (QA/QC) procedures in 40 CFR 60, Appendix F, with exceptions as allowed in Conditions XIII.(B)(1)(a) and (B)(1)(b)

- (a) A RATA must be conducted at least once every five calendar quarters instead of every four quarters as listed in Appendix F, section 5.1.1.
 - (b) Audits required under Appendix F, sections 5.1.2 through 5.1.4 may be used for four of five calendar quarters.
- (2) 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period. Data recorded during periods of continuous system breakdown, repair, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph. (40 CFR 60.13(h))
- (C) The boilers, identified as Emission Units 4 and 5, shall combust only natural gas or distillate fuel oil. {Title 129, Chapters 19, 20 and 24}
 - (1) Distillate fuel oil usage for Emission Units 4 and 5 shall not exceed 600,000 gallons combined during any period of twelve (12) consecutive calendar months, or at any time during the first eleven (11) calendar months after permit issuance. The sulfur content of the fuel oil shall not exceed 0.5% by weight.
 - (2) A non-resettable flow meter for diesel fuel shall be installed on the fuel supply line for each boiler. The meters shall be properly installed, calibrated, and maintained in accordance with the manufacturer's instructions. The flow meters shall be read and recorded at the end of each calendar month in which diesel fuel was combusted.
- (D) Operating hours for the generator and fire pump (Emission Units 9 and 10) shall each be limited to 500 hours per any period of twelve (12) consecutive calendar months. At no time during the first 11 calendar months after the date of permit issuance shall the sum of all the previous months' operating hours exceed 500 hours for either unit. (Title 129, Chapter 4)
- (E) Operation of the six (6) wet scrubbers with chevron mist eliminator inserts controlling the evaporation, granulation and cooling processes (Emission Units 1-1 through 1-6) shall be in accordance with the following requirements: {Title 129, Chapters 19 and 20}
 - (1) The wet scrubbers and chevron mist eliminators shall be operated at all times the granulation plant is in operation.
 - (2) The wet scrubbers shall be properly installed, maintained, and operated. Manufacturer's instructions or equivalent operating instructions shall be kept on site and readily available to Department representatives.
 - (3) Each wet scrubber shall be equipped with an operational ampere meter. The ampere meter readings shall be recorded at least hourly.
 - (4) Each scrubber liquid supply shall be equipped with an operational scrubber liquid flow meter. The scrubber liquid flow readings shall be recorded at least once during each shift manually, or recorded continuously on a chart or data acquisition system.

- (5) Routine observations, at least once each day of scrubber operation shall be conducted to determine whether there are visible emissions from the stack, leaks or noise, atypical ampere or liquid flow readings, or other indications which may necessitate corrective action. Corrective action shall be taken immediately if necessary.
- (F) Operation of the baghouse attached to the soda ash silo (Emission Unit 22) shall be in accordance with the following requirements: {Title 129, Chapters 19 and 20}
 - (1) The baghouse shall be operated and monitored at all times the soda ash tank is being filled.
 - (2) The baghouse shall be properly installed, operated, and maintained. Manufacturer's instructions or equivalent operating instructions shall be kept on site and readily available to Department representatives.
 - (3) Observations shall be conducted whenever the baghouse is in operation to determine whether there are visible emissions from the stack, leaks or noise, or other indications which may necessitate corrective action. Corrective action shall be taken immediately if necessary.
 - (4) Collected waste material from the baghouse shall be handled, transported, and stored in a manner that ensures compliance with Condition X.
 - (5) The source shall maintain on-site an inventory of spare fabric filter bags equal to at least 5% of the total of each type required.
- (G) Stack Parameters: Final stack parameters shall meet the following dimensions as listed in Table 1. Within 90 days after issuance of this permit the permittee shall determine the actual stack exit point dimensions and shall certify in writing to the Department that the exit point dimensions comply with Table 1. A copy of this certification shall be retained on site and be made available for inspection by the Department upon request. {Title 129, Chapters 4 and 17}

Table 1

Emission Point	Emission Unit / Equipment	Minimum Stack Height (ft)	Stack Exit Point Maximum Inside Diameter (ft)
2	Nitric Acid Plant	55	3.0
4	Boiler 1	60	3.0
5	Boiler 2	60	3.0
9	Diesel Generator	29	0.5
10	Fire Pump	6.8	0.4

- (H) Opacity of visible emissions shall not equal or exceed 20%, as evaluated by an EPA-approved method in accordance with Title 129, Chapter 20, Section 004.
- (I) Records shall be maintained on-site for a minimum period of five (5) years. These records shall be updated to be current through the end of the previous month no later

than the 15th day of each calendar month. These records shall be clear and readily accessible to Department representatives and shall include the following:

- (1) Records of data, calculations, total emissions (computed at least monthly), etc, should be kept, as necessary, to ensure compliance with each specific permit condition. This shall include, but is not limited by the following: CEMS emissions data, calibrations and testing results, hourly nitric acid production rate, calculations of lb/ton emission rates.
- (2) To demonstrate compliance with Condition XIII.(C):
 - (a) The grade or type, quantity, and the sulfur content in weight percent, of the distillate fuel oil delivered for combustion in the boilers, as provided by the fuel supplier.
 - (b) Distillate fuel consumption measured and recorded in gallons per calendar month for both boilers, and a running total for the preceding period of twelve (12) consecutive calendar months.
- (3) Record of the operating hours for the generator and fire pump for the previous period of twelve (12) consecutive calendar months to show compliance with Condition XIII.(D). Total hours shall include both operating hours for testing and for supplying emergency power.
- (4) Inspection and maintenance records for each fabric dust collector and scrubber, to show compliance with Conditions XIII.(E) and (F), shall include the following:
 - (a) Records documenting when routine observations were performed with a description including scrubber ampere, scrubber liquid flow, and any atypical observations.
 - (b) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed.
 - (c) Filter replacement records including filter position, type, and date of filter installation.
 - (d) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.
- (5) Stack Certification: A copy of the stack certification as required by Condition XIII.(F) to verify the stack information of Table 1.
- (6) Startups, Shutdowns, and Malfunctions: Records of the startup, shutdown, and malfunction periods as defined by Condition XIII.(A)(3) including date and duration of each period.

Pursuant to a Delegation Memorandum dated May 3, 2000, and signed by the Director, the undersigned hereby executes this document on behalf of the Director.

06/08/2004

Date

Shelley Kaderly, Air Administrator
Air Quality Division

FACT SHEET

Agrium U.S. Inc.
Homestead Nitrogen Operations
22292 SW 89th Road
Beatrice, Nebraska 68310-6872

June 8, 2004

DESCRIPTION OF THE FACILITY OR ACTIVITY:

Agrium U.S. Inc. operates a nitrogenous fertilizers production facility (SIC Code 2873) described as Homestead Nitrogen Operations (HNO) in Beatrice. HNO is located in the SW ¼ of Section 14, Township 4N, Range 5E of Gage County. Primary operations at HNO consist of a nitric acid plant, an ammonium nitrate solutions plant, and a granulated ammonium nitrate plant. Utility boilers, an emergency generator, and a cooling tower support the operations of the primary processes.

HNO holds an August 16, 1995 Construction Permit for surface coating operations and a July 14, 2003 Class I Operating Permit for the entire facility. Condition XXXI.(M) in the Operating Permit required HNO to submit a Prevention of Significant Deterioration (PSD) application for the 1995 installation of a selective catalytic reduction (SCR) emission control system and bleaching tower which increased potential nitric acid production by approximately 20 tons/day (7,300 tons/yr). The Department received this PSD application on August 13, 2003.

The current maximum production rate of the nitric acid plant is approximately 175,200 tons/yr (20 tons/hr) of 100% nitric acid. The previous (pre-1995) production rate was approximately 167,900 tons/yr (19.2 tons/hr). Production of nitric acid is dependent on the amount of air (oxygen) that can be used in the process. Factors such as low ambient temperature and humidity (such as winter conditions) allow the compressor to produce a greater quantity of compressed air for nitric acid production.

Adding the SCR system and bleaching tower allowed the source to reduce the amount of compressed air used as “bleaching” air, and instead allowed them to use this compressed air to make more nitric acid. Bleaching air is used to assist in removal of nitrogen oxides (NO_x) from the tail gas. Prior to 1995, relatively large amounts of bleaching air was used to decrease NO_x emissions from the absorber tail gas to meet Title 129, Chapter 25 regulations (400 parts per million, ppm). When the SCR system was installed in 1995 to reduce NO_x emissions from the tail gas, the amount of bleaching air needed decreased and this extra air was used to produce more nitric acid.

The installation of the SCR and bleaching tower was a physical change and/or a change in the method of operation. The increased production rate at the nitric acid plant translated into the potential for increased NO_x emissions in the tail gas (since the source did not have a permit to require a lower limit than Title 129, Chapter 25). Although the SCR system was installed to reduce ‘actual’ NO_x emissions, the project had the ‘potential’ to increase NO_x emissions. The increased production potential resulted in a significant potential emissions increase based on the potential-to-actual calculation. The SCR and bleaching tower project also triggered PSD review for particulate matter (PM) emissions as a result of “debottlenecking” (and increased utilization) of the granulator and other PM emissions sources. However, since these units were not physically modified, they are not required to apply Best Available Control Technology (BACT) for PM control. Because the source did not obtain a minor modification Construction Permit to restrict potential-to-emit in 1995, the source is required to go through PSD review at the present time.

Table 1 summarizes the PSD analysis and the net emissions increase versus the PSD significant emissions increase threshold. The table shows that only NO_x and PM triggered review under the PSD program. Facility-wide potential emissions of other PSD regulated pollutants (such as SO_x, CO, VOC) are below their respective significant increase levels, so a potential-to-actual test is not required.

TABLE 1 – PSD Pollutant Analysis

PSD Regulated Pollutant	PM	PM ₁₀	NO _x
1995 Allowable Emissions	71.6	31.6	368.9
1993-94 Past Actual Emissions	44.9	20.1	323.3
Net Emissions Increase	26.7	11.5	45.6
PSD Significant Increase Threshold	25	15	40
Trigger PSD Review?	Yes	No	Yes
BACT Required?	No ^[1]	N/a	Yes

^[1] BACT is not required because there was no physical change to any PM emitting units.

TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

The installation of the SCR system has the potential to affect primarily emissions of NO_x and ammonia (a non-regulated air pollutant). In addition, NO_x, PM, particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM₁₀), Carbon monoxide (CO), sulfur oxide (SO_x), volatile organic compounds (VOC), and hazardous air pollutants (HAP) will be released from other emission units at the site (such as ammonium nitrate production equipment, 1-1 through 1-7) due to the potential for increased nitric acid and ammonium nitrate production.

Potential emissions are based on permit conditions and a maximum nitric acid production rate of 20 ton/hr of 100% nitric acid (or 35.1 ton/hr of 57% nitric acid) and a granulated ammonium nitrate production rate of 34 ton/hr. Table 2 shows a summary of the facility-wide Potential-to-Emit (PTE). Refer to Attachments A1 and A2 for detailed emission calculations. Facility-wide calculations are shown instead of the net change in emissions since the effect of this permitting action will REDUCE the overall PTE of the nitric acid plant.

TABLE 2 – Facility-wide PTE Summary

Pollutant	Potential To Emit
Particulate Matter (PM)	89.0
Fine Particulate Matter (PM ₁₀)	27.2
Nitrogen Oxides (NO _x)	156.5
Sulfur Oxides (SO _x)	22.1
Carbon Monoxide (CO)	47.3
Volatile Organic Compounds (VOC)	5.78
Hazardous Air Pollutants (HAP)	3.6

The primary purpose of this permit is to establish BACT for NO_x emissions from the SCR system (absorber tail gas).

APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

Title 129, Chapter 19 – Prevention of Significant Deterioration (PSD):

Agrium is an existing major PSD source because the potential emissions of NO_x and PM are greater than the PSD major source threshold of 100 tpy. As shown in Table 1, a PSD review should have been done for the 1995 SCR pollution control system installation for NO_x and PM because the previous net emissions increases were above PSD significance levels. This permit is being issued to correct this oversight.

In accordance with Chapter 19 and 40 CFR 52.21, a full PSD review consists of the following:

1. Determination of Best Available Control Technology (BACT)
2. Determination of air quality monitoring requirements
3. Analysis of compliance with National Ambient Air Quality Standards (NAAQS)
4. Evaluation of PSD increment consumption
5. Evaluation of source related impacts on growth, soils, vegetation, and visibility
6. Evaluation of Class I area impacts.

1. PSD - Best Available Control Technology (BACT):

Modification of the nitric acid plant consisted of adding a SCR system and bleaching tower. No other components within the plant underwent any physical or operation change. Although PSD was triggered for PM, it was triggered through debottlenecking; no triggering modifications were made directly to sources of PM, thus no control technology analysis is required for sources of PM. However, because a PSD triggering modification was made to the nitric acid plant (a source of NO_x), a BACT analysis for NO_x emissions from the nitric acid plant is required.

A “top-down” BACT analysis was submitted to the Department as part of the PSD application. The five basic steps of a top-down BACT analysis are listed below:

1. Identify potential control technologies
2. Determine technical feasibility of each option
3. Rank remaining control technologies by control effectiveness
4. Evaluate economic, energy, and environmental impacts
5. Select BACT and establish an emission limitation

A complete BACT analysis was contained in the PSD application. A summary of the analysis is provided in this Fact Sheet. The control technologies considered feasible for use at a nitric acid plant are presented in Table 3. This corresponds to step 3 of the top-down process.

TABLE 3

Feasible Control Technologies	Estimated Control Efficiency
Selective Catalytic Reduction (SCR) with Extended Absorption	90% – 95%; already in place
Selective Catalytic Reduction (SCR)	75 – 90%; already in place
Non-Selective Catalytic Reduction (NSCR)	75 – 90%
Extended Absorption	50 – 75%; already in place
Selective Non-Catalytic Reduction (SNCR)	Less than 20%

Pursuant to the top-down approach, the applicant does not need to evaluate alternative controls if the most effective control option is selected as BACT. In this case, Agrium has already installed a SCR system (with extended absorption) therefore the other options were not evaluated further.

SCR in combination with extended absorption to achieve a NO_x emission rate of 1.1 lb/ton (approximately 100 ppm) is considered the primary BACT limit for the nitric acid plant. The existing SCR system, with some upgrades and improved operations, is expected to achieve an overall NO_x reduction of approximately 75% from the current baseline emission rate of 400 ppm. It is worth noting that the proposed 1.1 lb/ton emission rate represents a removal efficiency of 95% when compared to uncontrolled nitric acid plant emissions (without SCR or extended absorption). 100 ppm equates to approximately 1.1 lb/ton of 100% nitric acid produced. A 12-month rolling average was chosen for the primary BACT averaging period to allow for seasonal variations in emission rates that are expected from nitric acid plants in Nebraska while still requiring a high level of control over the long-term. The 12-month rolling average includes only those months when the nitric acid plant actually operates (non-operating months are skipped). A secondary BACT limit of 210 ppm (3-hour rolling average) is also included in the permit for seasonal flexibility on a short-term basis. The secondary BACT limit is approximately equivalent to the NSPS limit for nitric acid plants (3.0 lb/ton), however the source is not subject the requirements of the NSPS. Since the source continuously monitors NO_x emissions using a CEMS to obtain ppm values, but only quantifies nitric acid production on a daily basis, the secondary BACT limit was specified as a ppm value to facilitate calculating compliance with the 3-hour limit.

A review of EPA's RACT/BACT/LAER Clearinghouse (RBLC) database, which contains information on BACT decisions for other nitric acid plants shows that the proposed limit of 1.1 lb/ton is lower than any of the emission rates obtained in the RBLC database search, which ranged from 1.44 to 3.0 lb/ton. Averaging periods ranged from 3-hour averages to annual averages. The lowest identified BACT limit based on concentration was 210 ppm over a 3-hour average.

The increase in PM emissions from the facility (that triggered PSD review for PM) was a result of debottlenecking other sources of PM emissions not related to the change, therefore BACT is not required to be applied to these sources of PM emissions (the nitric acid plant itself does not emit PM).

2. PSD - Air Quality Monitoring:

The requirements for air quality monitoring as outlined in 40 CFR 52.21(m) are not applicable to this permit action. This project, and source, meet the "exemption" requirements as listed in 40 CFR 52.21(i)(7) since it was originally constructed prior to 1978, has an allowable net emissions increase of less than 50 tons/yr for all regulated PSD pollutants, and has applied BACT. (Note: The Department enforces the July 1, 1997 edition of the PSD regulations as adopted in Title 129, Chapter 19)

3. PSD - National Ambient Air Quality Standards (NAAQS) Compliance:

The requirement for an air quality impact analysis as outlined in 40 CFR 52.21(k)(1) is not applicable to this permit action. This project, and source, meet the "exemption" requirements as listed in 40 CFR 52.21(i)(7) since it was originally constructed prior to 1978, has an allowable net emissions increase of less than 50 tons/yr for all regulated PSD pollutants, and has applied BACT.

4. PSD - Increment Consumption:

The requirement for an air quality impact analysis as outlined in 40 CFR 52.21(k)(2) is not applicable to this permit action. This project, and source, meet the "exemption" requirements as listed in 40 CFR 52.21(i)(7) since it was originally constructed prior to 1978, has an allowable net emissions increase of less than 50 tons/yr for all regulated PSD pollutants, and has applied BACT.

5. PSD - Impacts on Growth, Soils, Vegetation, and Visibility:

The requirements for an additional impacts analysis as outlined in 40 CFR 52.21(o) are not applicable to this permit action. This project, and source, meet the “exemption” requirements as listed in 40 CFR 52.21(i)(7) since it was originally constructed prior to 1978, has an allowable net emissions increase of less than 50 tons/yr for all regulated PSD pollutants, and has applied BACT.

6. PSD - Evaluation of Class I Area Impacts:

This source is not located within 100 kilometer of any Class I Area, thus an evaluation of adverse impacts is not required.

Title 129, Chapter 4 – Ambient Air Quality Standards:

The source conducted air quality dispersion modeling of their entire facility to demonstrate compliance with the NAAQS for NO₂. The results of this modeling indicate that Agrium will not cause or contribute to any violations of the 100 ug/m³ NO₂ standard under the terms of this permit. Consistent with actual operating practices, the modeling assumed the generator (Unit 9) and fire pump (Unit 10) are operated no more than 500 hours per year, and this operating limit was included in the permit. The modeling protocol and results were reviewed and approved by the Department. Table 4 presents the results of the modeling demonstration.

TABLE 4 - Nebraska and National Ambient Air Quality Standards

Pollutant & Averaging Period	Modeled Value (ug/m³)	Background (ug/m³)	Total (ug/m³)	Ambient Air Quality Standard (ug/m³)
NO ₂ , Annual	6.62	15.0	21.62	100

Title 129, Chapter 18 - New Source Performance Standards (NSPS):

Federal NSPS found in 40 CFR 60 have been adopted by reference within Title 129, Chapter 18. Based on the emission units at the facility, the two potential Subparts (not including Subpart A) that may be applicable to Agrium are:

--Subpart G, Standards of Performance for Nitric Acid Plants

This standard does not apply to the source. The nitric acid plant was originally constructed in 1965, prior to the applicability date of this subpart. Even though the installation of the SCR system and bleaching tower in 1995 allowed the source to increase nitric acid production (by less than 5%), it did not increase actual emissions, and it qualifies for a pollution control device exemption of 40 CFR 60.14(e)(5). Note that the proposed BACT emission limits of 1.1 lb/ton 100% acid (12-month rolling average) and 3.0 lb/ton (3-hr rolling average) are more stringent than the single NSPS limit of 3.0 lb/ton (3-hour average).

---Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generator Units

This standard does not apply to the source. The two existing boilers were installed prior to the applicability date of this NSPS, and no modifications have been made to trigger NSPS applicability.

Title 129, Chapter 20 – Particulate Matter:

PM emissions are not expected from the nitric acid plant. Other sources of PM emission did, however, experience a slight increase in potential emissions. Emission points 1-1 through 1-7 (granulation plant) are now capable of processing 34 tons/hr of ammonium nitrate. This equates to an allowable PM emission rate of 41 lb/hr according to Chapter 20, Section 001. As shown in Attachment A, the potential emission rate of PM from these sources is less than 10 lb/hr.

Title 129, Chapter 23 – Hazardous Air Pollutant Emission Standards (old NESHAPs):

This source is not subject to any requirements within this chapter.

Title 129, Chapter 24 – Sulfur Compound Emissions:

The SCR system and bleaching tower do not have the potential to emit sulfur compounds, therefore this chapter is not applicable to the SCR system and bleaching tower.

Title 129, Chapter 25 – Nitrogen Oxide Emission Standards:

This source, a nitric acid plant, is subject to this chapter and conditions are placed in the permit to ensure compliance with all relevant requirements of this chapter.

Title 129, Chapter 27 – Hazardous Air Pollutants:

This source is not subject to any requirements within this chapter because the potential increase in HAP emissions is less than 2.5 tpy for any single HAP, or 10 tpy for all HAPs combined.

Title 129, Chapter 28 – Hazardous Air Pollutant Emission Standards (MACT):

This source is not subject to any requirements within this chapter because it is not a major source of HAPs.

Permit conditions specific to the proposed permit are discussed as follows:

- (A) This condition limits the nitric acid plant emissions by requiring the source to comply with BACT requirements. Condition (A)(1) is the primary BACT limit and is based on a 12-month rolling average to provide long term emission reductions and providing flexibility to the source for seasonal variations in emission rates. Condition (A)(2) is the secondary BACT limit to restrict the source during a shorter averaging period. This shorter averaging period also conforms to the requirements of Title 129, Chapter 25. Condition (A)(3) outlines the requirements of Title 129, Chapter 35 regarding startups, shutdowns, and malfunctions.
- (B) This condition requires the source to operate a CEMS to demonstrate compliance with the emission limits in (A). The source currently operates a NO_x CEMS. The normal requirements 40 CFR 60, Appendix F are being modified using Conditions (B)(1)(a) and (B)(1)(b) in order to offer flexibility to the source and to ensure that Relative Accuracy Test Audit (RATA) testing is done during all seasons within a five year period (the Operating Permit term). Outside of this permit, there is no regulatory requirement that the source has to comply with Appendix F.

- (C) Establishes requirements for fuel usage and monitoring in the boilers in order to demonstrate compliance with Title 129, Chapters 19, 20 and 24. The source requested the limit of 600,000 gallons per year of distillate oil combustion.
- (D) Limits are placed on the generator and fire pump operating hours in a manner consistent with the assumptions used in dispersion modeling for these two emission units. The 500-hour limit corresponds to the default cutoff for emergency equipment in the operating permit program as was specifically requested by the source.
- (E) This condition requires that pollution control devices be installed and operated properly on the ammonium nitrate granulation process. Without these requirements, the source would be subject to PSD review for PM₁₀ and have the potential to violate the emission limitations in Title 129, Chapter 20.
- (F) This condition requires that a baghouse be installed and operated properly on the soda ash silo. Without this requirement, the source would be subject to PSD review for PM₁₀ and have the potential to violate the emission limitations in Title 129, Chapter 20.
- (G) Stack Dimensions: This condition specifies the stack height and stack cross-section dimensions, upon which the NO_x dispersion modeling analysis is based. If any stack exit point dimensions differ, the permittee shall provide a discussion of the discrepancy with respect to modeling issues and submit justification as to why the modeling analysis remains valid with supporting conclusions, or submit revised modeling based on the actual stack parameters.
- (H) Outlines the statewide opacity emissions limit (less than 20% opacity) provided under Title 129, Chapter 20, Section 004. The source is not expected to have difficulty meeting this requirement based on the high level of control for PM and NO_x emissions.
- (I) This condition requires the source to maintain records for demonstrating compliance with the permit conditions.

STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended February 7, 2004.

PROCEDURES FOR FINAL DETERMINATION WITH RESPECT TO THE PROPOSED CONSTRUCTION PERMIT:

The public notice, as required under NAQR Chapter 14, shall be published on May 4, 2004. Persons or groups shall have 30 days from that issuance of public notice (June 3, 2004) to provide the NDEQ with any written comments concerning the proposed permit action and/or to request a public hearing, in accordance with NAQR Chapter 14. If a public hearing is granted by the Director, there will be a notice of that meeting published at least 30 days prior to the hearing. Persons having comments or requesting a public hearing may contact:

W. Clark Smith-Permitting Section Supervisor
Air Quality Division
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

If no public hearing is requested, the permit may be granted at the close of the 30-day comment period. If a public hearing is requested, the Director of the NDEQ may choose to extend the date on which the permit is to be granted until after that public hearing has been held. During the 30-day comment period, persons requiring further information should contact:

Bradley W. Reid, P.E.
Air Quality Division-Permitting Section
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

Telephone inquiries may be made at:

(402) 471-2189

TDD users please call 711 and ask the relay operator to call us at (402) 471-2186.

Emissions Summary

Pollutant	Potential To Emit
Particulate Matter (PM)	89.0
Fine Particulate Matter (PM ₁₀)	27.2
Nitrogen Oxides (NO _x)	156.5
Sulfur Oxides (SO _x)	22.1
Carbon Monoxide (CO)	47.3
Volatile Organic Compounds (VOC)	5.78
Hazardous Air Pollutants (HAP)	3.6

Particulate Matter (PM) - Maximum Potential To Emit (PTE)

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
1-1 & 1-2	Evaporator/Concentrators	34.0	297,840	1.1	99%	0.374	1.64	Midwest Lab Stack Test (1996) & AP-42 Table 8.3-2 (7/93)
1-3 & 1-4	Granulators	34.0	297,840	17.25	99%	5.87	25.7	
1-5 & 1-6	Granulator Coolers	34.0	297,840	6.3	99%	2.14	9.4	
1-7	Granular Coating	34.0	297,840	4.0	99%	1.36	6.0	AP-42 Table 8.3-2 (7/93)
3	Process Cooling Tower	22.8 Mgal/hr		6.80E-3 lb/Mgal		0.155	0.68	AP-42 Table 13.4-1 (1/95) & TDS < 4,000 ppm
4-1	Boiler 1 (gas-fired)	0.063 MMscf/hr		7.6 lb/MMscf		0.48	1.94	AP-42 Tables 1.4-2 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscf/hr				0.48	1.94	
4-2 ^a	Boiler 1 (diesel-fired)	0.44 Mgal/hr		3.3 lb/Mgal		1.45	0.50	AP-42 Tables 1.3-1 & 1.3-2 (9/98)
5-2 ^a	Boiler 2 (diesel-fired)	0.44 Mgal/hr				1.45	0.50	
6	Low Pressure Flare	0.046 MMBtu/hr		0.008 lb/MMBtu		insignificant		AP-42 Tables 1.4-2 (7/98)
7	High Pressure Flare	0.138 MMBtu/hr						
9 ^b	200kW diesel generator	275 hp		0.0022 lb/hp-hr		0.61	0.15	AP-42 Table 3.3-1 (10/96)
10 ^b	1,000-gpm diesel fire pump	100 hp				0.22	0.06	
11-1	Truck Bulk Loading	81.0	297,840	0.02	0%	1.62	2.98	AP-42 Table 8.3-2 (7/93)
11-2	Truck Bulk Loading	27.0				0.54		
11-3	Rail Bulk Loading	120.0				2.4		
11-4	Loading Off Spec. Product	15.0	4,000	0.02	0%	0.3	0.04	AP-42 Table 8.3-2 (7/93)
22	Soda Ash Silo	1.25	10,950	5.2	99%	0.07	0.28	AP-42 Table 8.12-3 (7/93)
23	Unpaved Haul Roads	11,631 VMT		6.41 lb/VMT			37.29	AP-42 Chap. 13.2.2 (12/03)
Total PM Emissions =						89.0		

^a Boilers are permitted to burn a maximum of 600,000 gallons of diesel combined (=682 hr/yr each), additional fuel limited to natural gas.

^b Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

Attachment A1

Fine Particulate Matter (PM₁₀) - Maximum PTE

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
1-1 & 1-2	Evaporator/Concentrators	34.0	297,840	1.1	99%	0.374	1.64	Midwest Lab Stack Test (1996) & AP-42 Table 8.3-2 (7/93)
1-3 & 1-4	Granulators	34.0	297,840	0.345	99%	0.12	0.51	
1-5 & 1-6	Granulator Coolers	34.0	297,840	0.189	99%	0.06	0.28	
1-7	Granular Coating	34.0	297,840	4.0	99%	1.36	6.0	AP-42 Table 8.3-2 (7/93)
3	Process Cooling Tower	22.8 Mgal/hr		6.80E-3 lb/Mgal		0.16	0.68	AP-42 Table 13.4-1 (1/95) & TDS < 4,000 ppm
4-1	Boiler 1 (gas-fired)	0.063 MMscf/hr		7.6 lb/MMscf		0.48	1.94	AP-42 Tables 1.4-2 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscf/hr				0.48	1.94	
4-2 ^a	Boiler 1 (diesel-fired)	0.44 Mgal/hr		2.38 lb/Mgal		1.05	0.36	AP-42 Tables 1.3-1, 1.3-2, & 1.3-7 (9/98)
5-2 ^a	Boiler 2 (diesel-fired)	0.44 Mgal/hr				1.05	0.36	
6	Low Pressure Flare	0.046 MMBtu/hr		0.008 lb/MMBtu		insignificant		AP-42 Tables 1.4-2 (7/98)
7	High Pressure Flare	0.138 MMBtu/hr						
9 ^b	200kW diesel generator	275 hp		0.0022 lb/hp-hr		0.61	0.15	AP-42 Table 3.3-1 (10/96)
10 ^b	1,000-gpm diesel fire pump	100 hp				0.22	0.06	
11-1	Truck Bulk Loading	81.0	297,840	0.02	0%	1.62	2.98	AP-42 Table 8.3-2 (7/93)
11-2	Truck Bulk Loading	27.0				0.54		
11-3	Rail Bulk Loading	120.0				2.4		
11-4	Loading Off Spec. Product	15.0	4,000	0.02	0%	0.3	0.04	AP-42 Table 8.3-2 (7/93)
22	Soda Ash Silo	1.25	10,950	5.2	99%	0.07	0.28	AP-42 Table 8.12-3 (7/93)
23	Unpaved Haul Roads	11,631 VMT		1.73 lb/VMT		13.11	10.07	AP-42 Chap. 13.2.2(12/03)
Total PM₁₀ Emissions =						27.2		

^a Boilers are permitted to burn a maximum of 600,000 gallons of diesel combined (=682 hr/yr each), additional fuel limited to natural gas.

^b Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

Nitrogen Oxides (NO_x) - PTE

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
2 ^a	Nitric Acid Plant	20.0	175,200	1.1		60.0	96.36	PSD-BACT
4-1	Boiler 1 (gas-fired)	0.063 MMscf/hr		100 lb/MMscf		6.33	25.58	AP-42 Table 1.4-1 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscf/hr				6.33	25.58	
4-2 ^b	Boiler 1 (diesel-fired)	0.44 Mgal/hr		20 lb/Mgal		8.80	3.00	AP-42 Table 1.3-1 (9/98)
5-2 ^b	Boiler 2 (diesel-fired)	0.44 Mgal/hr				8.80	3.00	
6	Low Pressure Flare	0.046 MMBtu/hr		0.138 lb/MMBtu		0.006	0.03	TCEQ RG-109 (Draft, Oct. 2000)
7	High Pressure Flare	0.138 MMBtu/hr				0.019	0.08	
9 ^c	200kW diesel generator	275 hp		0.031 lb/hp-hr		8.53	2.1	AP-42 Table 3.3-1 (10/96)
10 ^c	1,000-gpm diesel fire pump	100 hp				3.10	0.8	
Total NO_x Emissions =						156.5		

^a Based on a rolling 12-month average of 1.1 lb/ton and a one-hour average of 3.0 lb/ton (PSD-BACT)

^b Boilers are permitted to burn a maximum of 600,000 gallons of diesel combined (=682 hr/yr each), additional fuel limited to natural gas.

^c Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

Attachment A1

Sulfur Oxides (SO_x) - PTE

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
4-1	Boiler 1 (gas-fired)	0.063 MMscf/hr		0.6 lb/MMscf		0.04	0.15	AP-42 Tables 1.4-2 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscf/hr				0.04	0.15	
4-2 ^a	Boiler 1 (diesel-fired)	0.44 Mgal/hr		72.0 lb/Mgal		31.68	10.80	AP-42 Tables 1.3-1 (9/98) S = 0.5%
5-2 ^a	Boiler 2 (diesel-fired)	0.44 Mgal/hr				31.68	10.80	
6	Low Pressure Flare	0.046 MMBtu/hr		0.001 lb/MMBtu		insignificant		AP-42 Table 1.4-2 (7/98)
7	High Pressure Flare	0.138 MMBtu/hr						
9 ^b	200kW diesel generator	275 hp		0.0021 lb/hp-hr		0.56	0.14	AP-42 Table 3.3-1 (10/96)
10 ^b	1,000-gpm diesel fire pump	100 hp				0.21	0.05	
Total SO_x Emissions =						22.1		

^a Boilers are permitted to burn a maximum of 600,000 gallons of diesel combined (=682 hr/yr each), additional fuel limited to natural gas.

^b Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

Carbon Monoxide (CO) - PTE

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
4-1	Boiler 1 (gas-fired)	0.063 MMscf/hr		84 lb/MMscf		5.32	23.30	AP-42 Table 1.4-1 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscf/hr				5.32	23.30	
4-2 ^a	Boiler 1 (diesel-fired)	0.44 Mgal/hr		5 lb/Mgal		2.20	-	AP-42 Tables 1.3-1 (9/98)
5-2 ^a	Boiler 2 (diesel-fired)	0.44 Mgal/hr				2.20	-	
6	Low Pressure Flare	0.046 MMBtu/hr		0.084 lb/MMBtu		0.004	0.02	AP-42 Table 1.4-1 (7/98)
7	High Pressure Flare	0.138 MMBtu/hr				0.012	0.05	
9 ^b	200kW diesel generator	275 hp		0.0067 lb/hp-hr		1.84	0.5	AP-42 Table 3.3-1 (10/96)
10 ^b	1,000-gpm diesel fire pump	100 hp				0.67	0.2	
Total CO Emissions =						47.3		

^a Worst-case boiler emissions are from burning natural gas.

^b Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

Volatile Organic Compounds (VOC) - PTE

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
4-1	Boiler 1 (gas-fired)	0.063 MMscf/hr		5.5 lb/MMscf		0.35	1.53	AP-42 Table 1.4-2 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscf/hr				0.35	1.53	
4-2 ^a	Boiler 1 (diesel-fired)	0.44 Mgal/hr		0.34 lb/Mgal		0.15	-	AP-42 Tables 1.3-3 (9/98)
5-2 ^a	Boiler 2 (diesel-fired)	0.44 Mgal/hr				0.15	-	
6	Low Pressure Flare	0.046 MMBtu/hr		0.006 lb/MMBtu		insignificant		AP-42 Table 1.4-2 (7/98)
7	High Pressure Flare	0.138 MMBtu/hr						
9 ^b	200kW diesel generator	275 hp		0.0025 lb/hp-hr		0.68	0.17	AP-42 Table 3.3-1 (10/96)
10 ^b	1,000-gpm diesel fire pump	100 hp				0.25	0.06	
15	Diesel Day Tank	1 @ 16,500 gal				insignificant		EPA Tanks 4.0 program
17-1,2,3	Diesel Storage Tanks	3 @ 30,000 gal						
18	Ethanol Storage Tank	1 @ 8,000 gal						
24	Paint Booth						2.5	1995 Const Permit limit
Total VOC Emissions =						5.8		

^a Worst-case boiler emissions are from burning natural gas.

^b Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

Total Hazardous Air Pollutants (HAP) - PTE

Emission Unit	Operation	Process Rate		Emission Factor (lb/ton)	Control Efficiency	Pollutant Emissions		Emission Factor Source
		(tph)	(tpy)			(lb/hr)	(tpy)	
4-1	Boiler 1 (gas-fired)	0.063 MMscfm/hr		1.89 lb/MMscf		0.12	0.52	AP-42 Table 1.4-2, 1.4-3 & 1.4-4 (7/98)
5-1	Boiler 2 (gas-fired)	0.063 MMscfm/hr				0.12	0.52	
4-2 ^a	Boiler 1 (diesel-fired)	0.44 Mgal/hr		0.077 lb/Mgal		0.03	-	AP-42 Tables 1.3-8, 1.3-9 & 1.3-10 (9/98)
5-2 ^a	Boiler 2 (diesel-fired)	0.44 Mgal/hr				0.03	-	
6	Low Pressure Flare	0.046 MMBtu/hr		0.002 lb/MMBtu		insignificant		AP-42 Table 1.4-2, 1.4-3 & 1.4-4 (7/98)
7	High Pressure Flare	0.138 MMBtu/hr						
9 ^b	200kW diesel generator	275 hp		2.65E-5 lb/hp-hr		0.007	0.002	AP-42 Table 3.3-2 (10/96)
10 ^b	1,000-gpm diesel fire pump	100 hp				0.003	0.001	
24	Paint Booth						2.5	1995 Const Permit limit
Total HAP Emissions =						3.6		

^a Worst-case boiler emissions are from burning natural gas.

^b Emergency equipment (Units 9 & 10) are permitted to operate a maximum of 500 hours each.

