

**Ag Processing Inc., Aberdeen, South Dakota Prevention of Significant Deterioration
Permit – Statement of Basis Comments**

1) EPA Comment:

We recommend that DENR clarify the basis for conclusion that 423 tons per year of permitted volatile organic compounds (VOC) emissions will not cause or contribute to a violation of the ozone national ambient air quality standard (NAAQS).

1) DENR Response:

South Dakota has three larger sources of volatile organic compound (VOC) emissions in Brookings County, that combined actually emit more emissions of volatile organic compounds (VOC) than 432 tons per year. DENR has an ozone monitoring station operating in Brookings County. This monitoring station shows the area meeting the national ambient air quality standard (NAAQS). Brookings County has similar terrain, weather patterns, etc. as Brown County. Therefore, DENR does not expect there to be a violation of the ozone national ambient air quality standard (NAAQS).

As noted in the statement of basis (page 46), at the time the application was submitted, 40 CFR Part 51, Appendix W (Guideline on Air Quality Models) did not contain a modeling procedure for an individual source for ozone. EPA promulgated changes to Appendix W. Some of those changes included an ozone modeling procedure. However, on March 14, 2017, EPA signed a final rule stating the modeling changes in Appendix W that would require ozone modeling will not become effective until May 2017. Based on the application submittal date and EPA's current final rule, Ag Processing Inc. (AGP) is grandfathered in and will not be required to conduct ozone modeling.

Instead of conducting some form of ozone modeling, DENR has required post construction ambient monitoring for those prevention of significant deterioration (PSD) sources with potential volatile organic compound emissions greater than 100 tons per year.

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2) EPA Comment:

There appears to be an inconsistency in the particulate matter (PM) performance test requirements that are used to show compliance with the best available control technology (BACT) in the draft permit....Please clarify or confirm which units will be tested. If the permit will not require PM testing of all units, please provide an explanation on how compliance with the PM BACT limits will be verified for the units. Please clarify if the boilers will be tested for condensable PM.

2) DENR Response:

Permit condition 4.1 identifies the particulate matter limit is either for filterable material or for filterable and condensable material. This permit condition specifies what type particulate matter must be tested to demonstrate compliance.

Permit condition 9.7 specifies the units that DENR recommended to be initially tested. EPA is correct that not all units are required to be initially tested.

One unit out of Units #3 through #5 and one unit out of Units #7 through #9 will be tested. These units are storage silos and storage bins that are similar in nature. DENR recommended testing one out of the three units (i.e. storage silo or bin) and using that test result to initially show compliance with the other two similar units.

Units #15 through #23 are not being tested because of the technical feasibility to conduct the performance test and the low emission rates (statement of basis page 42). These units sporadically operate, have small diameter stacks and low airflow rates that may not be readily tested by EPA approved test methods and emit less than one ton per year. DENR did not recommend testing these units.

Unit #26 was intended to be tested. DENR inadvertently did not include this unit in the list of equipment to be tested for particulate matter. DENR will update the list identifying that Unit #26 will be tested.

Unit #28 is a cooling tower. The cooling tower does not have a stack that may be readily tested. The particulate matter emission limit is a manufacturer design criteria as noted in permit condition 4.5.

If any of the testing indicates compliance issue, permit condition 9.1 allows DENR to require additional testing.

Permit condition 9.4 requires AGP to submit a test protocol at least 30 days prior to conducting a stack emissions test. DENR will review the protocol to verify that applicable EPA test methods will be used. DENR will require testing of both boilers for condensable and filterable particulate matter.

3) EPA Comment:

It is unclear how AGP Aberdeen will demonstrate compliance with what appears to be a plant-wide VOC BACT limit for Unit #27 and the Hexane Recovery Process. EPA suggests that DENR add additional language to Section 5.9 of the permit stating AGP needs to record and report to DENR the volume of n-hexane used (replacement volume) on a monthly basis.

3) DENR Response:

As stated in the statement of basis and in the permit, the facility is subject to all applicable requirements of 40 CFR Part 63, Subpart GGGG. Subpart GGGG requires AGP to determine and record solvent loss (63.2853) and record the tons of soybeans processed (63.2855). Section 63.2840 requires AGP to determine and record the actual solvent loss, weighted average volume fraction of hazardous air pollutants, oilseed processed and compliance ratio for each 12 operating month period by the end of the following calendar month.

DENR will correct the footnote reference in Table 4-3 from Unit #29 to Unit #27, the Hexane Recovery Process.

4) EPA Comment:

Sections 5.8 Monthly Records, and 5.9 Reporting Requirements, of the draft permit appear to be inconsistent with the recordkeeping and reporting of requirements of 40 CFR 63.2861 and 40 CFR 63.2862. If DENR is using the maximum achievable control technology (MACT) compliance requirements for BACT, we recommend that DENR include the following requirements into the permit:

§63.2840 What emission requirements must I meet?

§63.2851 What is a plan for demonstrating compliance?

§63.2853 How do I determine the actual solvent loss?

§63.2854 How do I determine the weighted average volume fraction of HAP in the actual solvent loss?

§63.2855 How do I determine the quantity of oilseed processed?

§63.2862 What reports must I submit and when?

§63.2862 What records must I keep?

§63.2872 What definitions apply to this subpart?

4) DENR Response:

As stated in the statement of basis and the permit, the facility is subject to all applicable requirements of 40 CFR Part 63, Subpart GGGG. Permit condition 7.1 requires AGP to comply with all applicable limits, compliance, monitoring, reporting, and testing requirements for emissions during vegetable oil production in Subpart GGGG. Therefore, the permit requires AGP to meet all of those requirements. DENR recommended the same recordkeeping and reporting requirements to demonstrate compliance with the volatile organic compound Best Available Control Technology (BACT) limit for the Hexane Recovery Process. This is also identified in permit condition 4.3.

Permit conditions 5.8 and 5.9 develop recordkeeping and reporting requirements for the operational limits established in Chapter 5.0. These recordkeeping and reporting

requirements were not developed to meet either 40 CFR Part 63, Subpart GGGG requirements or compliance with the Best Available Control Technology (BACT) limits. DENR does not recommend any changes to the draft PSD air quality permit as a result of this comment.

AGP Aberdeen PSD Permit – BACT Comments

5) EPA Comment:

We want to verify that the Startup, Shutdown and Malfunction (SSM) plan is a best practice plan, in addition to, not in lieu of, the requirement that the facility meet the numerical BACT limits.

5) DENR Response:

As identified in permit condition 4.3, DENR recommended 40 CFR Part 63, Subpart GGGG would be used as the compliance method for the volatile organic compound Best Available Control Technology (BACT) limit for the Hexane Recovery Process. Normal operation of the facility requires the facility to record solvent loss. Solvent loss during periods of startup and shutdown must also be recorded and used in the compliance ratio determination.

40 CFR Part 63, Subpart GGG § 63.2840(b)(5) states: If your source is subject to a malfunction period as defined in § 63.2872, exclude from the compliance ratio determination any solvent and oilseed information recorded for the malfunction period.

The startup, shutdown, and malfunction (SSM) plan included in Subpart GGGG is a work practice standard that is considered Best Available Control Technology (BACT) for malfunction events.

DENR will update the permit to clarify the volatile organic compound Best Available Control Technology (BACT) limit for the Hexane Recovery Process includes startup and shutdown.

6) EPA Comment:

DENR's SOB lists lower emissions at other facilities than it proposes for the AGP Aberdeen facility. These include emission limits at the Archer Daniels Midland facility in Des Moines, Iowa permit limits for VOC BACT allowable solvent loss ratio of 0.14 gallons/ton, (SOB at 26), the American Energy Producers Inc. Facility (MO-0081) permit limits for particulate matter, particulate matter less than 10 microns in diameter, (PM/PM10) BACT of 0.003 gr/dscf for its dry material handling, (SOB at 33-34), and permit limits at multiple facilities for VOC BACT and particulate matter, particulate matter less than 10 microns in diameter, and particulate matter less than 2.5 microns in

diameter (PM/PM10/PM2.5) BACT for boilers (SOB at 27-28). Please explain why the proposed BACT limits for AGP Aberdeen appear to be higher than the limits established for other similar facilities.

6) DENR Response:

The Best Available Control Technology (BACT) emission limits for volatile organic compounds (VOC) in the last 10 years for the Hexane Recovery Process has varied from 0.14 to 0.178 gallon per ton. The Best Available Control Technology (BACT) limit recommended for AGP is on the lower end of this range, if not the lowest. If one considers the significant digits and how compliance may be determined, the Best Available Control Technology (BACT) limits of 0.14 and 0.145 are, for the most part, the same limit. DENR would round an emission rate of 0.1449 down to 0.14, which would comply with the emission limit of 0.14 gallons per ton. Whereas, DENR would round the emission rate of 0.14549 down to 0.145, which would comply with the recommended Best Available Control Technology (BACT) limit of 0.145 gallons per ton. Therefore, DENR considers the limit of 0.14 gallons per ton similar to the recommended limit of 0.145 gallons per ton.

The EPA's Reasonably Available Control Technology/Best Available Control Technology (RACT/BACT) Clearinghouse shows baghouse Best Available Control Technology (BACT) emission limits for particulate matter emissions from similar sources as high as 0.005 grains per dry standard cubic foot. The AGP proposed Best Available Control Technology (BACT) limit of 0.004 grains per dry standard cubic foot falls within the range of previously determined Best Available Control Technology (BACT) limits. DENR looked into some of those emission limits, the emission limits noted 0.003 grains per dry standard cubic foot were either not a Best Available Control Technology (BACT) emission limit or were a limit based on air dispersion modeling. Achievability of this emission limit through stack testing had not been completed. For example, the American Energy Producers facility, MO-0081, was never constructed. Therefore, DENR does not agree the emission limit of 0.003 grains per dry standard cubic foot is achievable.

The EPA's Reasonably Available Control Technology/Best Available Control Technology (RACT/BACT) Clearinghouse shows particulate matter emissions from similarly sized boilers firing natural gas as a primary fuel to be as high as 0.008 pounds per million Btus and volatile organic compound emissions as very similar to AGP's proposed Best Available Control Technology (BACT) limit. The AGP proposed particulate matter Best Available Control Technology (BACT) limit of 0.0075 pounds per million Btus and volatile organic compound limit of 0.0054 pounds per million Btus falls within the range of previously determined Best Available Control Technology (BACT) limits.

DENR does not recommend any changes to the draft PSD air quality permit as a result of this comment.

7) EPA Comment:

Discuss whether requiring the monitors to be set at the 500 parts per million (ppm) level is based upon the level achievable in an existing New Source Performance Standard (NSPS) or MACT standard or if it is from some other regulatory requirement.

7) DENR Response:

DENR has adopted by reference New Source Performance Standard Subpart (NSPS) VVa, which is applicable to affected facilities in the synthetic organic chemical manufacturing industry that commence construction, reconstruction, or modification after November 7, 2006 and have a production capacity of more than 1,000 megagrams per year.

As stated in the statement of basis, Subpart VVa is not applicable to AGP's facility. However, DENR has placed leak detection and repair requirements into the PSD permit that is as strict, if not more restrictive than VVa. Subpart VVa defines a piece of equipment as being in volatile organic compound service if it contains or contacts a process fluid that is at least 10 percent volatile organic compound by weight. Permit Condition 12.1 requires AGP to monitor any piece of equipment that is in contact with a fluid that is 5 percent volatile organic compound or greater by weight.

Subpart VVa defines a leak as exceeding 500 parts per million when monitoring compressors, pressure relief valves, valves in volatile organic compound service. Pumps are designated as leaking if they exceed 2,000 parts per million. Subpart VVa requires the monitoring of the pumps on a weekly basis and valves are monitored on a monthly basis. The proposed leak detection and repair (LDAR) plan requires these units to be monitored on a daily basis. In addition, the proposed leak detection and repair (LDAR) plan requires the installation and continuous monitoring of four flammable gas monitors in the solvent extraction area. The monitors shall be set to audibly and visually alarm at a reading of 500 parts per million of hexane. This permit requirement is similar to the 500 parts per million leak detection limit specified in Subpart VVa.

In addition to the federal standard for leak detection and repair (LDAR) programs, the recommended leak detection and repair (LDAR) program in Chapter 12.0 is similar to the leak detection and repair (LDAR) programs required by PSD permits issued to American Energy Producers in 2009 and Ag Processing Inc. in 2007. Both permits were issued by the State of Missouri.

DENR does not recommend any changes to the draft PSD air quality permit as a result of this comment.

8) EPA comment:

What preventative maintenance measures are included in the LDAR program (e.g. certified low-leaking valves, covered equipment and process units, certified low-leaking valve packing material, welding rather than flanging valves, closed-loop sampling)

8) DENR Response:

The leak detection and repair (LDAR) program as proposed by AGP includes leak detection and repair if leaks result in volatile organic compound readings above a certain threshold. AGP has every incentive to maintain the equipment to avoid any leaks that would be detected by the monitors. Solvent leaks from equipment are included in the solvent loss equation, which is part of the volatile organic compound Best Available Control Technology (BACT) limit for the Hexane Recovery Process.

9) EPA comment:

Whether DENR evaluated using EPA's reference test methods for measuring VOCs associated with leaking equipment in VOC service. These test methods have been used across multiple source categories (e.g. 40 CFR Part 60, Subpart VVa; 40 CFR Part 63, Subpart H; and 40 CFR Part 60, EPA Reference Test Method 21.)

9) DENR Response:

As stated in the statement of basis, Subpart VVa and Subpart H are not applicable to AGP's facility. However, DENR has placed leak detection and repair requirements into the PSD permit that is as strict, if not more restrictive than Subparts VVa and H.

10) EPA comment:

Whether the state considered providing an alternative work practice option (as defined in 40 Part CFR 60.18(g), that could involve use of Optical Gas imaging) for any equipment that is found difficult to monitor (e.g. 40 CFR 60.482-7a(h)(1) criteria for sources that are difficult to monitor.

10) DENR Response:

Permit condition 12.3 identifies the inspection technique as based on sight, sound, or smell and not a specific piece of monitoring equipment such as an optical gas imaging system or a flame ionization detector as discussed in 40 CFR Subpart VVa. It is highly unlikely that a piece of equipment would be difficult to monitor with an inspection technique of sight, sound, or smell. However, if there was difficult to monitor equipment, the four fixed monitors should identify any potential leaks not identified using sight, sound, or smell techniques.

DENR does not recommend any changes to the draft PSD air quality permit as a result of this comment.

11) EPA comment:

Is the basis for providing up to 15 days to initially attempt repair of leaking equipment based on the level achievable in an existing NSPS or MACT standard or if it is from some other regulatory requirement? Further, what steps should the facility take should the initial attempt to repair not be successful?

11) DENR Response:

Permit Condition 12.4 is based upon 40 CFR Part §60.482-9a Standards: Delay of repair. Delay of repair of equipment for which leaks have been detected will be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown. Monitoring to verify repair must occur within 15 days after startup of the process unit.

Although AGP is not subject to 40 CFR 60, Subpart VVa and 40 CFR Part 63, Subpart H, it is important to note that both Subparts allow the delay of repair to exceed 15 days if a process shutdown is required. Subpart H allows delay of repair beyond a process unit shutdown for a valve if the valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the second process unit shutdown will not be allowed, unless the third process unit shutdown occurs sooner than six months after the first process unit shutdown.

In addition to the federal standard for leak, detection and repair programs, the recommended leak and detection and repair program in Chapter 12.0 is similar to the leak, detection, and repair programs required by PSD permits issued to both American Energy Producers in 2009 and Ag Processing Inc. in 2007. Both permits were issued by the State of Missouri.

DENR does not recommend any changes to the draft PSD air quality permit as a result of this comment.

12) EPA comment:

How will AGP track and report the process unit shutdown dates (as the permit provides for leaking equipment to forego repairs until the next process unit shutdown) and if the facility is required to maintain records of when leaks are detected and the date corrective action is taken.

12) DENR Response:

Permit Condition 12.2 requires that the owner or operator to implement the following record keeping requirements:

1. Maintain a log of each pump, valve, flange, and compressor in volatile organic compound service;
2. Record once per day each inspection of the equipment in volatile organic compound service;
3. Record once per day a reading of each flammable gas monitor required in permit condition 12.3(2); and
4. If leaks are detected, record the nature and extent of the leak along with documentation regarding corrective action.

The recommended leak and detection and repair program in Chapter 12.0 is similar to the leak, detection, and repair programs required by PSD permits issued to American Energy Producers in 2009 and Ag Processing Inc. in 2007. Both permits were issued by the State of Missouri.

DENR does not recommend any changes to the draft PSD air quality permit as a result of this comment.

AGP Aberdeen PSD Permit – Modeling Comments

13) EPA Comment:

DENR’s SOB explains that although “[t]here is a disparity on how South Dakota handles its baseline areas for tracking increments and how EPA established those areas for South Dakota[,]” the state’s increment consumption analysis used the areas designated by EPA. SOB 50-51. We appreciate DENR following EPA’s tracking methodology and were unaware of these differences. We welcome the opportunity to discuss these issues with DENR.

13) DENR Response:

DENR looks forward to working with EPA in the future on establishing baseline areas in South Dakota.

AGP Aberdeen PSD Permit – Soil and Vegetation Analysis

14) EPA Comment:

The soils and vegetation analysis appears incomplete. (SOB Section 9.5.3). South Dakota’s PSD rules adopt the federal rules by reference and require an analysis of the

soils and vegetation at the site and in the area potentially affected by the facility in determining the effects of the emissions. ARSD 74:36:09:02 adopts 40 CFR 52.21 (o)(1)(2012) by reference; and they are based on CAA §§ 165(e)(3)(B), (C). DENR explains that a “soil and vegetation analysis was not fully conducted by AGP Aberdeen[,]” SOB at 53, and provides some additional information. The SOB indicates that compliance with NAAQS would ensure there would not be any adverse impacts to the types of soil and vegetation in the vicinity of the source. SOB at 53-54. Can the state explain what NAAQS information is referenced here?

14) DENR Response:

The Clean Air Act requires the National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) be established for specific criteria pollutants. The Clean Air Act (CAA) identifies two types of National Ambient Air Quality Standards (NAAQS). **Primary standards** provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. **Secondary standards** provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

AGP triggered a PSD review for particulate matter, volatile organic compounds (i.e. ozone) and greenhouse gases. As noted in the statement of basis (SOB) (page 46), there is not a National Ambient Air Quality Standard (NAAQS) for greenhouse gases. The National Ambient Air Quality Standard (NAAQS) reference is to the standard for particulate matter and volatile organic compounds (i.e. ozone). As demonstrated in the modeling data presented in Table 9-5 - *National Ambient Air Quality Standards Comparison* in the statement of basis (SOB) (page 51), the particulate matter will not exceed the National Ambient Air Quality Standard (NAAQS) for particulate matter. Therefore, particulate matter compliance with the National Ambient Air Quality Standard (NAAQS) demonstrates that there would not be adverse effects to the soil and vegetation in this proposed area. DENR also discusses in the statement of basis (SOB) (page 46) that DENR proposes to use post-construction monitoring to demonstrate compliance with the ozone National Ambient Air Quality Standard (NAAQS) (permit chapter 11.0).

15) EPA Comment:

Please clarify, and, as necessary, supplement DENR’s conclusions in the soil and vegetation analysis with the following (as explained above, required by ARSD 74:36:09:02): (1) an inventory of the soils in the area potentially impacted; (2) an inventory of the vegetation having significant commercial or recreational value at the site and in the area perennially impacted; (3) documentation of all sources of information, underlying assumptions, and any agreements made as part of the analysis; and (4) an analysis of whether the VOC permitted emissions of 432 tons per year from the source may impair the soils and vegetation at the site or in the area.

15) DENR Response:

40 CFR 52.21 (o) identifies that “the owner or operator shall provide an analysis of the impairment to the visibility, soils and vegetation that would occur as a result of the source or modification and general commercial, residential, industrial and other growth associated with the source or modification. The owner or operator does not need to provide an analysis of the impact on vegetation having no significant commercial or recreational value.” The three items EPA lists in their comments are not directly specified in the PSD regulation. However, DENR did conduct a similar review of the soil and vegetation around the proposed site.

1. The proposed property is currently an agricultural field with flat topography and pothole depressions that formed in glaciolacustrine deposits and eolian sand. The area consists of primarily sandy loam and loam soil types.
2. Vegetation in eastern South Dakota was historically dominated by tall prairie grass. Nearly all of the area has been converted to cropland, pasture, or zoned for commercial use. Currently, crop production in the area is dominated by corn and soybeans.
3. Based on United States Geologic Survey (USGS) data, the land coverage in the area within 3 kilometers of the proposed facility consists primarily of cultivated crops or shrub land.
4. Sources of information include DENR’s knowledge of the area, EPA’s National Ambient Air Quality Standard (NAAQS) Table (<https://www.epa.gov/criteria-air-pollutants/naaqs-table>), United States Geologic Survey (USGS) (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm> and <https://landcover.usgs.gov/>), information submitted by the facility in the application, AERMOD data results, DENR’s ambient air quality data (<http://denr.sd.gov/des/aq/monitoring/state-mo.aspx>), and information submitted by other PSD sources in South Dakota (i.e. Novita, Broin Enterprises, Hyperion, 3M, and Pete Lien and Sons). This information allows DENR to conclude that the proposed facility would not be detrimental to the soils and vegetation in the area or region.

Short-term and long-term sulfur dioxide exposure can harm plant species. Injury threshold concentrations vary by species and dose. Sulfur dioxide emissions from this project result from the natural gas and distillate oil combustion. The sulfur dioxide emissions from this project are not likely to contribute significantly to the levels in the ambient air.

During fuel combustion, the atmospheric nitrogen will photochemically oxidize to nitrogen oxide which can impact vegetation. Nitrogen oxide emissions from this project result from the natural gas and distillate oil combustion. Based on the

potential nitrogen oxide emissions from this project, nitrogen oxide is not likely to contribute significantly to the levels in the ambient air.

Nitrate and sulfate deposition onto soil can exceed the uptake capacity or the acid buffering capacity of the soils, leading to cation leaching, nutrient runoff, or soil acidification depending on deposition rates and soil composition. However, based on the low emission rates for both sulfur dioxide and nitrogen, there should be no significant effect on the soils in the region or in the immediate vicinity of the plant.

Particulate matter may contain trace elements and heavy metals such as arsenic, boron, beryllium, copper, fluoride, nickel, lead, mercury, manganese, and cobalt. These compounds have been shown to cause detrimental effects to vegetation usually within the immediate vicinity of the source. The most obvious effect of particulate deposition on vegetation is a physical smothering of the leaf surface. This reduces light transmission to the plant which decreases photosynthesis.

Based on the projected potential emissions that are only expected to slightly increase particulate matter in the area is estimated to be lower than the level required causing damage to vegetation; therefore, smothering of vegetation is unlikely to occur. There will be a temporary disruption of soil during construction; however, once construction is completed, disrupted soils will be smoothed. AGP indicated that the disruption will be localized, temporary, and primarily consist of physical changes due to moving soil with large equipment.

Carbon monoxide is not known to injure plants; therefore, no adverse impacts to vegetation at or near the proposed site are expected from carbon monoxide emissions.

The facility triggers PSD requirements by potential volatile organic compound (VOC) emissions. Volatile organic compound (VOC) emissions are volatile in nature which results in very low concentrations at ground level. Volatile organic compounds (VOC) are already continuously present in soil and released by vegetation at the proposed site. As a precursor to ozone, there are no expected adverse effects to soils or vegetation as a result of the increased volatile organic compound (VOC) emissions from this proposed project.

DENR maintains ambient air monitors throughout South Dakota. Those monitors identify that South Dakota is meeting all of the National Ambient Air Quality Standards.

Secondary National Ambient Air Quality Standard (NAAQS) and state ambient air quality standards were established to protect vegetation, soil, buildings, and wildlife from adverse effects of ambient pollutant concentrations for criteria pollutants. Therefore, demonstration of compliance with the primary and secondary National Ambient Air Quality Standard (NAAQS) and state ambient

air quality standards as outlined in the statement of basis (SOB) demonstrate that there will not be detrimental effects on the soils and vegetation in the area.