



Statement of Basis

**Title V Air Quality Operating Permit
Renewal**

ABE South Dakota, LLC

Aberdeen, South Dakota

**South Dakota
Department of Environment and Natural Resources**

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1.0 Background

On March 6, 2007, the South Dakota Department of Environment and Natural Resources (DENR) issued a renewed Title V air quality permit #28.0505-03 to Heartland Grain Fuels, LP for the ethanol production facility near Aberdeen, South Dakota. At full capacity, the facility may produce approximately 61 million gallons of undenatured ethanol per year. The facility also produces dried distiller grain and solubles (DDGS) as a saleable byproduct. During the term of this permit, the permit was revised as follows:

1. On November 6, 2007, Heartland Grain Fuels, LP submitted an application to add an indirect fired heater to the facility. DENR determined that the addition of a natural gas fired indirect heater was considered to be an insignificant activity.
2. On September 27, 2009, Heartland Grain Fuels, LP notified DENR that the facility would change from a limited partnership into a limited liability company. The facility is now known as Advanced BioEnergy, LLC (ABE).
3. On December 20, 2010, ABE was issued a Title V permit to include a modification into the existing Title V air quality operating permit to produce additional DDGS from Unit #3 at the facility, revise the potential emission calculations of the facility based on stack test results, and to revise the major source threshold value in the permit from 95 tons per year (per plant) to 238 tons per year for the entire ABE facility.
4. On October 28, 2011, ABE was issued a Title V permit to incorporate a minor amendment into the existing Title V air quality operating permit that replaced an existing hammer mill cyclone at the ethanol plant.
5. On December 2, 2013, ABE was issued a Title V permit to incorporate a minor amendment into the existing Title V air quality operating permit that added a Pneumatic rail spreader to the DDGS Loadout (Unit #25).

Originally, ABE submitted an application to renew the Title V air quality permit on September 9, 2011. As required in permit condition 4.2, the facility is required to submit a renewal application 180 days prior to the expiration (March 26, 2012) of the current air operating permit. ABE's original renewal application fulfilled the requirements of permit condition 4.2. On October 20, 2011, DENR requested additional information from the facility and ABE was advised to submit a revised renewal application.

On August 13, 2013, ABE submitted a revised renewal application to DENR. ABE submitted a "marked up" version of the existing operating permit as to provide DENR with guidance on the facility's proposed changes. ABE proposed the following as reference points for the suggested changes to the Title V permit:

- Permit history and previous application references;
- Plant capacity as a description;
- Emission unit descriptions and nominal operating rates;
- Revise short term emission limits in accordance with a mass and time emission rate basis that more clearly protects ambient air and provides compliance assurance;

- Removal of New Source Performance Standard (NSPS) and National Emission Standards of Hazardous Air Pollutant (NESHAP) language from the permit;
- Incorporation by reference of NSPS and NESHAP requirements, such as:
 - 40 CFR Part 60, NSPS Dc
 - 40 CFR Part 60, NSPS Kb
 - 40 CFR Part 60, NSPS VV/VVa
 - 40 CFR Part 60 NSPS IIII
 - 40 CFR Part 63, NESHAP ZZZZ
- Clarify monitoring, recordkeeping, and reporting requirements;
- Emission limitation for greenhouse gases to ensure minor source status;
- Reference 40 CFR Part 64 and clarify that Compliance Assurance Monitoring (CAM) is satisfied via incorporated permit conditions.

On September 4, 2013, DENR requested additional information to process the application. ABE provided the requested additional information on September 27, 2013 and DENR considered the application complete on October 11, 2013. All suggested changes and explanations by the facility and DENR will be discussed in more detail in the following chapters and sections of the Statement of Basis.

ABE indicated that the facility would accept operational restrictions to maintain actual emissions below the major source threshold under the Prevention of Significant Deterioration (PSD) program in the letter submitted to DENR on September 27, 2013. The proposed changes will be reviewed to ensure the potential emissions are still below the major source threshold.

On May 8, 2014, ABE notified DENR of a responsible official change from Larry Galero to Richard Peterson, CEO.

In September 2014, DENR had finished reviewing and finalized drafts of both the Statement of Basis and the permit. DENR then gave ABE the opportunity to review the drafted documents.

On October 15, 2014, ABE was issued an air quality construction permit #28.0505-03-02C to construct and operate two 500,000 gallon storage tanks with internal floating roofs for denatured ethanol.

On October 14, 2014, ABE submitted comments via email on the drafted Statement of Basis and permit to DENR to include the storage tanks in construction permit #28.0505-03-02C along with several other proposed changes that will be discussed in section 1.2. Hard copies were received on October 23, 2014. DENR determined that more information was required.

On December 12, 15, 19, and 22 2014, ABE submitted the additional requested information via email. The proposed changes will be discussed in section 1.2. Throughout the renewal review process, ABE and DENR have been in correspondence via email, phone, and conference calls to be in agreement with all applicable regulations outlined in the Statement of Basis and those that will be defined in the Title V air quality operating permit.

1.1 Existing Equipment

Table 1-1 provides a list of units presently permitted in the current Title V air quality operating permit issued December 2, 2013.

Table 1-1 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#1	Elevator legs transport the grain from the adjacent elevator a hammer mill.	16 tons per hour.	Not Applicable
	A hammer mill grinds the grain into flour. A 2011 CAMCORP cyclone collects the flour	16 tons per hour.	
	The flour is transported to the fermentation process.	16 tons per hour.	
#2	A 1991 Cleaver Brooks boiler fired with natural gas and distillate oil.	750 horsepower (34 million Btus per hour heat input)	Not Applicable
#3	A 1992 Thompson Dehydration rotary drum dryer fired with natural gas. A cyclone collects the product.	4 tons per hour 25 million Btus per hour heat input	Not Applicable
#4	Fermentation process #1. Ethanol produced in four fermenters and the liquid beer is stored in a beer well.	12,000 gallons of mash per hour	Wet scrubber
	Distillation process #1. The distillation process distills the liquid beer. The distillation process consists of the beer column, rectifier column, condensers, molecular sieve, and evaporator.	12,000 gallons of mash per hour	
	Miscellaneous tanks – vacuum tank, slurry tank, CIP return tank, and two liquefaction tanks.		
#6	Dried distillers grain cooling drum and cyclone.	4 tons per hour	Not Applicable
#8	Industrial cooling tower #1.	600,000 gallons per hour.	Not applicable
#9	Ethanol truck load out	36,000 gallons per hour.	Not applicable
#10	Ethanol rail car load out	60,000 gallons per hour.	Not applicable
#16	Tank #T-804 – Above ground storage tank with an internal floating roof.	76,000 gallons	Not Applicable
#21	Elevator legs transport the grain from the adjacent elevator a hammer mill.	100 tons per hour for each hammer mill	Baghouse
	A surge grain bin		
	Two hammer mills grind the grain into flour. A cyclone collects the flour		
	The flour is transported to the		

Unit	Description	Maximum Operating Rate	Control Device
	fermentation process.		
#22	Fermentation process #2. Ethanol produced in four fermenters and the liquid beer is stored in a beer well.	43,800 gallons of mash per hour	Wet Scrubber
#23	Distillers grain dryer system #2. The system consists of two dryers in series and fired with natural gas. A cyclone collects the product.	23 tons per hour 45 million Btus per hour heat input for each dryer	Thermal oxidizer / heat recovery boiler
	Distillation process #2. The distillation process distills the liquid beer. The distillation process consists of the beer column, rectifier column, condensers, molecular sieve, and evaporator.	43,800 gallons of mash per hour	
	Miscellaneous tanks; process tank, two slurry tanks, yeast tank, flash tank, and CIP screen		
	Five centrifuges		
	Thermal oxidizer / heat recovery boiler fired on the off-gases from the processes and natural gas.	99 million Btus per hour heat input	
#24	Dried distillers grain cooling drum and cyclone.	23 tons per hour.	Baghouse
#25	Dried distillers grain loadout	400 tons per hour	Baghouse
#26	Industrial cooling tower #2.	1,200,000 gallons per hour.	Not Applicable
#27	Ethanol truck load out	36,000 gallons per hour.	Flare
	Flare. The flare is fired with the off gasses from the process and natural gas.	12.4 million Btus per hour heat input	
#28	Ethanol rail car load out	60,000 gallons per hour.	Not applicable
#30	Biomethanator Flare. The flare is fired on the off gasses from the biomethanator system and natural gas.	6.4 million Btus per hour heat input	Not Applicable
#31	Tank #T-61 – Above ground storage tank with an internal floating roof.	500,000 gallons	Not applicable
#32	Tank #T-62 – Above ground storage tank with an internal floating roof.	500,000 gallons	Not applicable
#33	Tank #T-63 – Above ground storage tank with an internal floating roof.	100,000 gallons	Not applicable
#34	Tank #T-64 – Above ground storage tank with an internal floating roof.	100,000 gallons	Not applicable
#35	Tank #T-65 – Above ground storage tank with an internal floating roof.	100,000 gallons	Not applicable

Table 1-2 provides a list of units presently permitted in the current air quality construction permit #28.0505-03-02C issued October 15, 2014.

Table 1-2 – Description of Permitted Units, Operations, and Processes

Unit	Description	Maximum Operating Rate	Control Device
#36	Tank #T-66 – Above ground storage tank with an internal floating roof.	500,000 gallons	Not applicable
#37	Tank #T-67 – Above ground storage tank with an internal floating roof.	500,000 gallons	Not applicable

1.2 Proposed Changes

In the August 2013 application submittal, ABE included suggested marked up version of the permit. The following is a summary of those suggested changes.

1. Revise the contact information for the permit, facility, and responsible official (See discussion in Section 7.7).
2. Revise the “Type of Operation” description (See discussion in Section 7.7).
3. Revise the operational rates in Table 1-1 of the existing permit as follows (See discussion in Section 7.7):
 - a. Unit #1: Decrease maximum operating rate from 16 tons per hour to 13.2 tons per hour for each piece of equipment;
 - b. Unit #4: Decrease maximum operating rate from 12,000 gallons of mash per hour to 7,800 gallons of mash per hour for both Fermentation Process #1 and Distillation Process #1;
 - c. Unit #8: Decrease maximum operating rate from 600,000 gallons per hour to 360,000 gallons per hour;
 - d. Unit #9: Decrease maximum operating rate from 36,000 gallons per hour to 21,000 gallons per hour (removed from facility on July 30, 2013);
 - e. Unit #16: Increase maximum operating rate from 76,000 gallons to 76,010 gallons (disconnected from facility in January 2014 and decommissioned on-site September 2014);
 - f. Unit #21: Decrease maximum operating rate of each hammermill from 100 tons per hour to 33.6 tons per hour;
 - g. Unit #22: Decrease maximum operating rate from 43,800 gallons of mash per hour to 34,500 gallons of mash per hour; Unit #26: Increase maximum operating rate from 1,200,000 gallons per hour to 1,350,000 gallons per hour;
 - i. Unit #31: Decrease maximum operating rate from 500,000 gallons to 472,000 gallons; and
 - j. Unit #32: Decrease maximum operating rate from 500,000 gallons to 472,000 gallons.

4. Revise tank ID's in Table 1-1 for Tank #61, Tank #62, Tank #63, Tank #64, and Tank #65 to Tank #TF-8422, Tank #TF-8433, Tank #TF 8401, Tank #TF-8403, and Tank #TF-8414, respectively (See discussion in Section 7.7).
5. Permit the existing emergency fire pumps as Unit #11 and Unit #29 (See discussion in Section 2.5).
6. Remove the sentence referring to the Secretary forwarding written notice of permit changes to EPA (See discussion in Section 7.7).
7. Remove permit condition 3.7 referring to changing boiler fuel (See discussion in Section 2.7).
8. Revise language referring to the permit effective dates and the permit expiration date in Chapter 4.0 (See discussion in Section 7.7).
9. Revise the type of accepted records for recordkeeping in permit condition 5.1 (See discussion in Section 7.7).
10. Remove daily record requirements and revise to make the requirements monthly in permit condition 5.2 (See discussion in Section 2.7).
11. Remove permit condition referring to air emissions mixed together of permitted sources, remove reference how to calculate emissions from performance tests, and remove the monthly records for ethanol production, grain processed, dried distillers grain produced, and the quantity of denatured ethanol loaded out by truck in permit condition 5.3 (See discussion in Section 4.4).
12. Typographical changes to the monitoring log requirements in permit condition 5.4. In addition, revise the monitoring log requirements to include chemical injection rate and temperature records at certain times, and revise to remove continuous temperature monitoring and daily boiler records. (See discussion in Section 7.4).
13. Remove permit condition 5.5 referring to tank dimension records (See discussion in Section 2.7).
14. Remove permit condition 5.6 referring to records of products stored in tanks (See discussion in Section 2.7).
15. Remove permit condition 5.8 referring to the equipment log (See discussion in Section 2.7).
16. Remove permit condition 5.9 referring to closed vent systems and control device records (See discussion in Section 2.7).

17. Remove permit condition 5.10 referring to the exempt valve log (See discussion in Section 2.7).
18. Remove permit condition 5.11 referring to the design criterion for determining leaks (See discussion in Section 2.7).
19. Remove permit condition 5.12 referring to the labeling of leaky equipment (See discussion in Section 2.7).
20. Remove permit condition 5.13 referring to maintaining a log of equipment leaks (See discussion in Section 2.7).
21. Remove permit condition 5.14 referring to records for closed vents and control devices (See discussion in Section 2.7).
22. Remove permit condition 5.15 referring to the valve log- alternative standards (See discussion in Section 2.7).
23. Remove reference of responsible official notifying Secretary of changes in permit condition 6.2 (See discussion in Section 7.7).
24. Remove the certification statement from permit condition 6.3 (See discussion in Section 7.7).
25. Remove permit condition 6.4 referring to the initial startup notification of the facility (See discussion in Section 7.7).
26. Remove permit condition 6.5 referring to the notification of alternative standards for valves (See discussion in Section 2.7).
27. Remove references to the first quarterly reporting timeline in permit condition 6.6. In addition, remove the following from the quarterly report: amount of undenatured ethanol produced, amount of grain processed, amount of dried distillers grain produced, and amount of denatured ethanol loaded out by truck (See discussion in Section 4.4).
28. Remove requirements to summarize fuel consumption rate for the thermal oxidizer/heat recovery boiler along with the reference to the first semiannual report (See discussion in Section 2.7).
29. Remove permit condition 6.8 referring to the notification of visual tank inspections (See discussion in Section 2.7).
30. Remove permit condition 6.9 referring to the tank defect report (See discussion in Section 2.7).

31. Remove reference to the Secretary forwarding certification letters to EPA in permit condition 6.10 (See discussion in Section 7.7).
32. Revise to change the time reference for reporting permit violations in permit condition 6.11 (See discussion in Section 7.7).
33. Remove reference to visibility limit applicability in permit condition 7.1 (See discussion in Section 7.7).
34. Remove statement that visibility exceedances are a violation of the permit in permit condition 7.2 (See discussion in Section 7.7).
35. Remove permit condition 7.3 that refers to a visibility limit when fueled with distillate oil (See discussion in Section 2.7).
36. Revise the total suspended particulate matter limits for Unit #2 from 0.6 pounds per hour to 18.9 pounds per hour (See discussion in Section 7.1).
37. Remove permit condition 7.5 referring to the facility sulfur dioxide limit (See discussion in Section 7.1).
38. Remove permit condition 7.6 referring to the sulfur dioxide limit for Unit #2 (See discussion in Section 2.7).
39. Remove permit condition 7.7 referring to the restriction on water treatment chemicals for industrial process cooling towers (See discussion in Section 6.2).
40. Remove permit condition 7.8 referring to the internal floating roof specifications for tanks (See discussion in Section 2.7).
41. Revise the short term limit for the plant wide particulate limits in Table 7- 4 of the existing permit as follows (See discussion in Section 4.2):
 - i. Unit #1: Increase short term limit from 0.1 pounds per ton to 1.6 pounds per hour;
 - ii. Unit #2: Increase limit from 0.008 pounds per million Btus to 1.0 pounds per hour;
 - iii. Unit #3: Increase from 2.0 pounds per ton to 8.0 pounds per hour;
and
 - iv. Unit #6: Increase from 0.4 pounds per ton to 1.6 pounds per hour.
42. Increase the sulfur dioxide short term limit in Table 7-5 for Unit #3 from 0.2 pounds per ton to 2.0 pounds to hour (See discussion in Section 4.2).
43. Revise the volatile organic compound short term limit in Table 7-6 as follows (See discussion in Section 4.2):

- i. Unit #2: Increase from 0.006 pounds per million Btus heat input to 1.0 pounds per hour;
 - ii. Unit #3: Increase from 10.0 pounds per ton to 40.0 pounds per hour;
 - iii. Unit #4: Increase from 3900 pounds per million gallons to 40.0 pounds per hour;
 - iv. Unit #6: Increase from 0.1 pounds per ton to 1.0 pounds per hour;
 - v. Unit #22: Decrease from 1600 pounds per million gallons to 40.0 pounds per hour; and
 - vi. Unit #24: Increase from 0.1 pounds per ton to 2.40 pounds per hour.
44. Revise the nitrogen oxide short term limit in Table 7-7 of the existing permit as follows (See discussion in Section 4.2):
- i. Unit #2: Increase from 0.1 pounds per million Btus heat input to 5.0 pounds per hour;
 - ii. Unit #3: Increase from 0.1 pounds per million Btus heat input to 5.0 pounds per hour; and
 - iii. Unit #23: Increase from 18.9 pounds per hour to 30.0 pounds per hour.
45. Revise the carbon monoxide short term limit in Table 7-8 of the existing permit as follows (See discussion in Section 4.2):
- i. Unit #2: Increase limit from 0.08 pounds per million Btus to 5.0 pounds per hour; and
 - ii. Unit #3: Increase from 7.3 pounds per ton to 30.0 pounds per hour.
46. Revise permit to include a section on greenhouse gases (See discussion in Section 4.9).
47. Remove permit condition 7.15 referring to the ethanol production limit for Unit #4 (See discussion in Section 4.4).
48. Remove permit condition 7.16 referring to the ethanol production limit for Unit #22 (See discussion in Section 4.2).
49. Remove permit condition 7.17 referring to the grain process limit for Unit #1 (See discussion in Section 4.2).
50. Remove permit condition 7.18 referring to the grain process limit for Unit #21 (See discussion in Section 4.2).
51. Remove permit condition 7.19 referring to the dried distiller grain and soluble process limit for Unit #3 (See discussion in Section 4.2).

52. Remove permit condition 7.20 referring to the dried distiller grain and soluble for limit for Unit #23 (See discussion in Section 4.2).
53. Remove permit condition 7.21 referring to the denatured ethanol truck load out limit (See discussion in Section 4.2).
54. Remove permit condition 7.22 referring to the paved roads and parking lots (See discussion in Section 4.2).
55. Remove permit condition 7.23 referring to the compliance with stationary compression ignition internal combustion engines standards (See discussion in Section 2.5).
56. Remove permit condition 7.24 referring to the compliance with benzene waste operations (See discussion in Section 5.1).
57. Remove permit condition 7.27 referring to minimizing emissions at the facility (See discussion in Section 7.7).
58. Remove Chapter 8.0 for pumps in light liquid service (See discussion in Section 2.7).
59. Remove Chapter 9.0 for compressors (See discussion in Section 2.7).
60. Remove Chapter 10.0 for pressure relief devices in gas or vapor service (See discussion in Section 2.7).
61. Remove Chapter 11.0 for sampling connection systems (See discussion in Section 2.7).
62. Remove Chapter 12.0 for open-ended valves or lines (See discussion in Section 2.7).
63. Remove Chapter 13.0 for valve in gas or vapor service and light liquid service (See discussion in Section 2.7).
64. Remove Chapter 14.0 for other pumps, valve, pressure relief devices, flanges, and connectors (See discussion in Section 2.7).
65. Remove Chapter 15.0 for delays of repair (See discussion in Section 2.7).
66. Remove Chapter 16.0 for closed vent systems and control devices (See discussion in Section 2.7).
67. Remove permit condition 17.7 referring to initial demonstration of compliance (See discussion in Section 2.7).

68. Remove permit condition 17.8 referring to compliance with pumps, compressors, pressure relief devices, and valves (See discussion in Section 2.7).
69. Remove permit condition 17.9 referring to the compliance with no detectable emission standards (See discussion in Section 2.7).
70. Remove permit condition 17.10 referring to demonstrating a process unit in volatile organic compound service (See discussion in Section 2.7).
71. Remove permit condition 17.11 referring to demonstrating equipment is light liquid service (See discussion in Section 2.7).
72. Remove permit condition 17.12 referring to testing representative samples (See discussion in Section 2.7).
73. Remove permit condition 17.13 referring to the performance test for allowable percentage of valves leaking (See discussion in Section 2.7).
74. Remove permit condition 17.14 referring to visual inspections of the internal floating roofs (See discussion in Section 2.7).
75. Remove Chapter 18.0 referring to equivalent limits and exemptions (See discussion in Section 2.7).
76. Remove monitoring the temperature of exhaust applicability to the regenerative thermal oxidizer in permit condition 19.2 (See discussion in Section 2.7).
77. Remove distillate oil record requirements to certify sulfur content in permit condition 19.6 (See discussion in Section 2.7).
78. Remove permit condition 19.8 referencing the monitoring natural gas consumption in Unit #23 (See discussion in Section 2.7).
79. Include a new Chapter 21.0 that pertains to compliance assurance monitoring language that controls volatile organic compounds and hazardous air pollutants emitted from Unit #4, #22, and #24 (See discussion in Section 7.4).
80. Remove the chapter on operational requirements for flares (See discussion in Section 7.5).
81. The facility also made formatting suggestions throughout the existing permit.

Once DENR finished the preliminary review of the ABE renewal application, DENR allowed ABE to review the drafted documents and provide any comments prior to public notice. On September 29, 2014, ABE held a phone conference regarding additional information to be included in the renewal application. Detailed hard copies and follow-up

conversation via phone as noted were submitted to DENR on October 23, 2014. The proposed changes to the drafted Statement of Basis and Permit are the following:

82. Revise New Source Performance Standard applicability for Unit #23 (See discussion 2.3).
83. Revise “Type of Operation” in permit (See discussion 7.7).
84. Remove hourly operational limits for Unit #3 (See discussion 4.2).
85. Remove the facility ethanol production limit (See discussion 4.6).
86. Include Units #36 and #37 from construction permit #28.0505-03-02C (See discussion 2.2).
87. Revise capacity for Units #31, #32, #36, and #37 from 500,000 gallons to 472,000 gallons (See discussion 2.2).
88. Remove Unit #9 and all corresponding references (See discussion 7.7).
89. Revise Unit #6 equipment description (See discussion 7.7).
90. Remove the miscellaneous process tanks from Unit #4 and list as insignificant activities (See discussion 4.4).
91. Remove Unit #16 and all corresponding requirements (See discussion 7.7).
92. Revise equipment description for Unit #23 (See discussion 7.7).
93. Revise Unit #24 equipment description (See discussion 7.7).
94. Remove short-term VOC limits for all units (See discussion 4.6).
95. Revise permit conditions 10.4 and 10.5 (See discussion 7.7).
96. Remove applicability of a National Emission Standards for Hazardous Air pollutants Subpart JJJJJ for Unit #2 (See discussion 6.5).
97. Add a duly authorized representative for the facility (See discussion 7.7).
98. Specify which units require visible emissions in permit condition 5.2 (See discussion 7.7).
99. Add temporary grain storage piles to the insignificant activities at the facility (See discussion 7.8).

100. Clarify when Method 207 in permit condition 9.7 is required (See discussion 7.7).
101. Revise the control device and maximum operating rate for Unit #30 (See discussion 7.7).
102. Revise Tank ID's for Unit #36 and #37 (via phone October 15, 2014) (See discussion 2.2).

On December 12, 2014, ABE submitted new proposed volatile organic compound, carbon monoxide, and nitrogen oxide short term limits for the facility along with operational limits for each unit to remain below the annual potential emissions threshold of 238 tons per year, as discussed below for changes from the original Title V air quality permit application.

103. Decrease the volatile organic compound short term limit for Unit #2 from 1.0 pounds per hour to 0.5 pounds per hour operating 8,760 hours per year (See discussion 4.6).
104. Decrease the volatile organic compound short term limit for Unit #3 from 40.0 pounds per hour to 30.0 pounds per hour and increase operational time from 3,000 hours per year to 8,760 hours per year (See discussion 4.6).
105. Decrease the volatile organic compound short term limit for Unit #4 from 40.0 pounds per hour to 4.9 pounds per hour and operating 8,760 hours per year (See discussion 4.6).
106. Decrease the volatile organic compound short term limit for Unit #22 from 40.0 pounds per hour to 5.0 pounds per hour operating 8,760 hours per year (See discussion 4.6).
107. Decrease the volatile organic compound short term limit for Unit #23 from 3.7 pounds per hour to 3.0 pounds per hour operating 8,760 hours per year (See discussion 4.6).
108. Increase the nitrogen oxide short term limit from 5.0 pounds per hour to 15.0 pounds per hour operating 8,760 hours per year (See discussion 4.6).
109. Decrease the carbon monoxide short term limit for Unit #3 from 30.0 pounds per hour to 20.0 pounds per hour operating 8,760 hours per year (See discussion 4.6).
110. Increase the carbon monoxide short term limit for Unit #23 from 20.0 pounds per hour to 25.0 pounds per hour operating 8,760 hours per year (See discussion 4.6).

On December 15, 2014, ABE submitted information to revise equipment in operation at the facility and revise operations. On December 19, 2014, ABE submitted calculations for the proposed operational revision requested on December 15, 2014.

111. Remove Unit #10 from permitted equipment (See discussion 7.7).

112. Remove the miscellaneous process tanks from Unit #23 and list as insignificant activities (See discussion 4.4).

On December 22, 2014, ABE submitted information to revise equipment in operation at the facility and revise operations.

113. Use potential emissions calculations for natural gas only for Unit #2 (See discussion 4.5).

114. Decrease short term volatile organic compound limits for Unit #3 from 30.0 pounds per hour to 28.0 pounds per hour (See discussion 4.6).

115. Combine loadouts in unit descriptions (See Table 4-5 notes).

116. Remove Tank – 803 from list of operational equipment (See discussion 7.7).

1.3 Insignificant Activities

ABE submitted list insignificant activities with the application to DENR. ABE considers the following activities to be insignificant:

1. Grain and DDGS Fugitives;
2. AB1 Wet DGS Storage/Loadout;
3. AB2 Wet DGS Storage/Loadout;
4. AB1 Process Tank Vents (Vacuum Tank, Slurry Tank, CIP Return Tank, Liquefaction Tank #1, #2, Yeast Propagator);
5. AB2 Process Tank Vents (Liquefaction Tank, Whole Stillage Tank, Thin Stillage Tank, Syrup Tank, Cook Water Tank);
6. Indirect Gas Fired Heaters; and
7. Temporary grain storage piles.

DENR will consider these activities in its review of the renewal application.

2.0 New Source Performance Standards

DENR reviewed the New Source Performance Standards listed in 40 CFR Part 60 to determine if any of the federal New Source Performance Standards are applicable to this facility. The following may be applicable.

2.1 Standards for Grain Elevators

The provisions under 40 CFR Part 60, Subpart DD is applicable to the following grain elevators:

1. The provisions of this subpart are applicable to any grain terminal elevator, which has a permanent grain storage capacity of 2,500,000 bushels. A grain terminal storage elevator

means any grain elevator except those located at animal food manufacturers, pet food manufacturers, cereal manufacturers, breweries, and livestock feedlots; or

2. The provisions of this subpart are applicable to any grain storage elevator, which has a permanent grain storage capacity of 1,000,000 bushels. A grain storage elevator means any grain elevator located at any wheat flour mill, wet corn mill, dry corn mill (human consumption), rice mill, or soybean oil extraction plant; and
3. Commences construction, modification, or reconstruction after August 3, 1978.

ABE is considered a grain terminal elevator. To be applicable to this subpart, ABE's permanent grain storage capacity has to be greater than or equal to 2,500,000 bushels. ABE receives corn directly from the adjacent grain elevator. Therefore, the grain storage capacity at the facility is one 5,000 bushel grain day storage bin. The current permanent grain storage capacity for this plant is less than 2,500,000 bushels. Therefore, this subpart is not applicable.

2.2 Standards Applicable to Storage Tanks

There are three New Source Performance Standards for storage vessels. The three standards are applicable to the following storage vessels:

1. 40 CFR Part 60, Subpart K: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after June 11, 1973 but prior to May 19, 1978;
2. 40 CFR Part 60, Subpart Ka: applicable to storage vessels for petroleum liquids capable of storing greater than 40,000 gallons and commenced construction after May 18, 1978; and
3. 40 CFR Part 60, Subpart Kb: applicable to storage vessels for volatile organic liquids capable of storing 75 cubic meters (approximately 19,813 gallons) or greater and commenced construction after July 23, 1984.

ABE also requested that Unit #36 and Unit #37 be included in the renewal application so the facility does not have to submit an additional application to incorporate the tanks into the Title V operating permit in the near future. Therefore, DENR agrees with ABE to include Unit #36 and Unit #37 in the renewal and both units will be reviewed in this section for federal standard applicability. DENR also received the correct Tank ID's that will be used at ABE for Unit #36 and Unit #37 via phone on October 15, 2014.

In addition, Unit #16 which was previously applicable to Subpart Kb was disconnected from the operation at the facility in January 2014. The facility has sold the tank and the tank has been removed from the property. Therefore, Unit #16 and corresponding federal standard applicability to Unit #16 has been removed from the renewal application.

On December 22, 2014, ABE stated that Tank – 803 has been removed from the facility; therefore, all corresponding information has been removed from the renewal application.

ABE also proposed to revise the capacities for Units #31, #32, #36, and #37 from 500,000 gallons to 472,000 gallons. The 472,000 gallon description accounts for the actual operations due

to the use of the floating roof. The 500,000 gallon description is the capacity listed on the nameplate. DENR recommends using the nameplate capacity as the description for the tanks.

ABE has fourteen tanks used to store volatile organic liquid. The facility has another storage tank that is used to store corrosion inhibitor which is not considered to be a volatile organic liquid. The first two subparts are not applicable because ABE commenced construction of its storage tanks after July 23, 1984. Subpart Kb does not apply to the following storage tanks:

- Storage tanks with a capacity greater than or equal to 151 cubic meters storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals;
- Storage tanks with a capacity greater than or equal to 75 cubic meters but less than 151 cubic meters storing a liquid less than 15.0 kilopascals; or
- Storage tanks with a capacity less than 75 cubic meters.

Table 2-1 lists tank size and the true vapor pressure of the liquids being stored in the tanks and if Subpart Kb is applicable.

Table 2-1 – Tank and Volatile Organic Liquid Specifications

Unit	Tank	Capacity		Max True Vapor Pressure (Kilopascal)	Subpart Kb Applicable
		Gallons	Cubic Meters		
N/A	T - 801	30,000	114	3.3	No
N/A	T - 802	30,000	114	3.3	No
N/A	T - 805	30,000	114	5.6 ¹	No
N/A	T - 806	30,000	114	5.6 ¹	No
N/A	T - 807	30,000	114	5.6 ¹	No
N/A	T - 808	30,000	114	5.6 ¹	No
#31	TF - 8422	500,000	1,787	4.2 ²	Yes
#32	TF - 8433	500,000	1,787	4.2 ²	Yes
#33	TF - 8401	100,000	379	4.2 ²	Yes
#34	TF - 8403	100,000	379	4.2 ²	Yes
#35	TF - 8414	100,000	379	36.0	Yes
#36	TF-8444	500,000	1,787	4.2 ²	Yes
#37	TF-8455	500,000	1,787	4.2 ²	Yes

1- Highest monthly average for year.

2- Calculated using equation 2-1.

DENR agrees with tank calculations submitted with the application, except for the maximum true vapor pressure for Units #31 - #34, #36, and #37. In a letter dated May 6, 2005 from JoAnn M Heiman, EPA Region 7, it was determined that the Tanks 4.0 Software is not accurate in determining applicability of NSPS Subpart Kb requirements for ethanol tanks. Therefore, DENR determined the maximum true vapor pressure for Units #31 - #34, #36, and #37 using Equation 2-1. Parameter constants for A, B, and C in Equation 2-1 are from EPA, AP-42, Chapter 7.0, Section 7.1 Organic Liquid Storage Tanks, Table 7.1-5, November 2006. The daily average

temperature liquid surface temperature was derived from the Tanks 4.0 data submitted with the application.

Equation 2-1: Antoine Equation for True Vapor Pressure of Organic Liquids

$$\text{Log} (P_{va}) = A - \frac{B}{T_{LA} + C}$$

Where:

- A = constant in vapor pressure, 8.321
- B = constant in vapor pressure, 1718.21
- C = constant in vapor pressure, 237.52
- T_{LA} = daily average liquid surface temperature, 15.13 degrees Celsius (July Average)
- P_{VA} = vapor pressure at average liquid surface temperature, mm Hg

Units #31, #32, #33, #34, #35, #36, and #37 are applicable to Subpart Kb because all have storage capacities greater than 151 cubic meters, maximum true vapor pressures greater than 3.5 kilopascals, and commenced construction after July 23, 1984.

All tanks at ABE are equipped with either an internal floating roof or a vertical fixed roof. The floating roof is required to stay in contact with the liquid surface while in operation to minimize volatile organic compound emissions. Each tank has a set of legs that the floating roof may rest on for safety and maintenance reasons. During this period of time, the floating roof would no longer be in contact with the liquid surface if any additional liquid is removed. To ensure this does not occur, a permit condition will require an alarm system be installed on each tank subject to 40 CFR Part 60, Subpart Kb to notify the operator that the floating roof is resting on the support legs.

All other tanks (liquefaction tanks, vacuum tank, slurry tank, CIP tank, whole stillage tank, thin stillage tank, syrup tank, and cook water tank) at ABE are considered process tanks and are not applicable to Subpart Kb.

2.3 Standards Applicable to Boilers

There are three New Source Performance Standards for fossil fuel-fired steam generators. The three standards are applicable to the following steam generators:

1. 40 CFR Part 60, Subpart D: applicable to a steam generator with a maximum operating rate of 250 million Btus per hour or more and commenced construction after August 17, 1971;
2. 40 CFR Part 60, Subpart Db: applicable to a steam generator with a maximum operating rate of 100 million Btus per hour or more and commenced construction after June 19, 1984; and
3. 40 CFR Part 60, Subpart Dc: applicable to a steam generator with a minimum design heat input capacity equal to or greater than 10 million Btus per hour but less than or equal to 100 million Btus per hour and commenced construction after June 9, 1989.

ABE operates a thermal oxidizer/heat recovery boiler system (Unit #23) and a natural gas fired boiler (Unit #2). The thermal oxidizer/heat recovery boiler system and natural gas fired boiler commenced construction after June 19, 1984. Therefore, the first subpart is not applicable.

ABE's thermal oxidizer/heat recovery boiler system associated with Unit #23 has a maximum heat input of 105 million Btus per hour. Unit #2 has a maximum heat input of 34 million Btus per hour. Both units were constructed after June 19, 1984.

Previously, both Units #2 and #23 have been subject to New Source Performance Standard – Subpart Dc.

Unit #2 has an input rating greater than 10 million Btus per hour but less than 100 million Btus per hour. Therefore, Unit #2 is not applicable to Subpart Db, but is applicable to subpart Dc. Subpart Dc does not have any emission limits for boilers fired with natural gas (Unit #2); however, the federal rule does require ABE to maintain records of the amount of fuel burned in Unit #2. The boiler is classified under the following scenario:

- Boiler greater than 10 Million Btus per hour;
- Natural gas and distillate oil (diesel fuel);
- Use fuel supplier certification; and
- Boilers are mass produced; therefore, initial construction notification is not required.

While the nameplate on Unit #23 indicates that the maximum operating rate of unit is 105 million Btus per hour, the unit cannot physically operate over 99 million Btus per hour. Due to the operational limitation, Unit #23 was previously permitted at a maximum operating rate of 99 million Btus per hour. ABE has indicated that they would like to operate Unit #23 under applicability to Subpart Db as opposed to Subpart Dc and remove the operational limitation. Requirements of NSPS, Subpart Db include the installation of a continuous emission monitoring system of which the facility has already purchased to come into full compliance with this permit condition. ABE also submitted notification to DENR of initial start-up of applicability to New Source Performance Standard – Subpart Db for Unit #23 on October 23, 2014. Therefore, Unit #23 is subject to 40 CFR Part 60, Subpart Db.

2.4 Standards for Synthetic Organic Chemical Manufacturing

There are two New Source Performance Standards for synthetic organic chemical manufacturing industries. The two standards are applicable to the following:

1. 40 CFR Part 60, Subpart VV is applicable to affected facilities in the synthetic organic chemical manufacturing industry, of which ethanol is included; and commence construction, reconstruction or modification after January 5, 1981, but before November 8, 2006 and the capacity of the plant is more than 1,000 megagrams per year of ethanol; and

2. 40 CFR Part 60, Subpart VVa is applicable to affected facilities in the synthetic organic chemical manufacturing industry that commence construction, reconstruction, or modification after November 7, 2006 and the capacity of the plant is more than 1,000 megagrams per year of ethanol.

Any facility with the design capacity to produce less than 1,000 Mg/year is exempt from 40 CFR § 60.482. ABE's facility is able to produce 61 million gallons of ethanol per year as determined by the facility. The specific gravity of ethanol equals 0.789. Equation 2-2 was used to convert from gallons per year to megagrams (Mg) per year:

Equation 2-2 – Converting to Megagrams per year

$$\begin{aligned}\text{Design capacity} &= (61 \times 10^6 \text{ gal/year} \times 8.33 \text{ lbs./gal} \times 0.789) \times 0.00045 \text{ Mg/lb.} \\ &= 180,412 \text{ Mg/year}\end{aligned}$$

The subpart VV new source performance standard is applicable to ABE because its construction started after January 5, 1981, and before November 7, 2006, and the capacity of the plant is more than 1,000 Mg per year of ethanol.

The subpart VVa new source performance standard is applicable to the entire ABE facility because its' facility expansion in 2007, and the capacity of the plant is more than 1,000 Mg per year of ethanol.

2.5 Standards for Stationary Compression Ignition Engines

The provisions of 40 CFR Part 60, Subpart IIII are applicable to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that meet one of the following:

1. Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is 2007 or later for engines that are not fire pump engines or model year 2008 or later for engines that are fire pump engines;
2. Owners or operators of stationary CI ICE that commence construction after July 11, 2005 where the CI ICE is manufactured after April 1, 2006 and is not a fire pump engine or manufactured as a certified National Fire Protection Association fire pump engine after July 1, 2006; or
3. Owners or operators of stationary CI ICE that modified or reconstructed their stationary CI ICE after July 11, 2005.

ABE operates the following emergency fire pumps:

- Unit #11: 1992 Cummins, Model 6BTA5.9-F2, 130 horsepower, diesel fired emergency fire pump; and
- Unit #29: 2007 Patterson Pump Company/John Deere Corporation, Model JW6H-UF40, 294.7 horsepower, diesel fired fire pump with a displacement of 8.1 liters per cylinder.

Unit #11 is an emergency fire pump, has a displacement of less than 30 liters per cylinder, and is a model year 1992; therefore, this subpart is not applicable to Unit #11. Unit #29 is an emergency fire pump, has a displacement of less than 30 liters per cylinder, and is a model year 2007; therefore, this subpart is not applicable to Unit #29.

2.6 Other Applicable New Source Performance Standards

DENR reviewed the other New Source Performance Standards and determined there are no other standards applicable to ABE.

2.7 ABE Requested New Source Performance Standard Changes

As noted in section 1.2 of the statement of basis, ABE requested that the applicable New Source Performance Standard language be removed from the permit and replaced with a general incorporation by reference language. DENR reviewed this request and recommends the applicable New Source Performance Standard language be included in the permit. By including the language into the permit, the owner and operator, the general public and DENR are aware of the requirements ABE must meet to be in compliance. In addition, DENR's experience indicates a higher compliance rate for those owner or operators that have the federal standards outlined in the permit instead of just referencing the federal standard.

Instead of including the federal standards throughout the permit, DENR recommends including the federal standards in their own individual Chapter in the permit. Several of the Standards have been updated since the previous permit was issued and will be updated to correspond to the current federal standard adopted in South Dakota's regulations.

3.0 New Source Review

In accordance with ARSD 74:36:10:01, the new source review regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. This facility is located near Aberdeen, South Dakota, which is in attainment or unclassifiable for all the criteria air pollutants regulated under the Clean Air Act. Therefore, ABE is not subject to new source review.

4.0 Prevention of Significant Deterioration

A prevention of significant deterioration (PSD) review applies to new major stationary sources and major modifications to existing major stationary sources in areas designated as attainment under Section 107 of the Clean Air Act for any regulated air pollutant. The following is a list of regulated air pollutants under the PSD program:

1. Total suspended particulate (PM);
2. Particulate with a diameter less than or equal to 10 microns (PM10);
3. Particulate with a diameter less than or equal to 2.5 microns (PM2.5);

4. Sulfur dioxide (SO₂);
5. Nitrogen oxides (NO_x);
6. Carbon monoxide (CO);
7. Ozone – measured as volatile organic compounds (VOCs);
8. Lead;
9. Fluorides
10. Sulfuric acid mist;
11. Hydrogen sulfide;
12. Reduced sulfur compounds;
13. Total reduced sulfur; and
14. Greenhouse gases (carbon dioxide, methane, nitrous oxide, etc.).

If the source is considered one of the 28 named PSD source categories listed in Section 169 of the federal Clean Air Act, the major source threshold is 100 tons per year of any regulated air pollutant, except for greenhouse gases. The major source threshold for all other sources is 250 tons per year of any regulated air pollutant, except for greenhouse gases.

The Environmental Protection Agency (EPA) published and implemented a final rule that no longer lists ethanol plants as a chemical manufacturing plant. Therefore, ABE is not classified as a chemical manufacturing plant or one of the 28 listed source categories for PSD regulations and the major source threshold is 250 tons per year, except for greenhouse gases.

According to the Clean Air Act, once a pollutant is regulated under any part of the Act, (as was the case with greenhouse gas emissions after the motor vehicle regulations were finalized in March 2010) major new sources or major modifications are subject to the PSD program and Title V air quality operating permit program. Under the Clean Air Act, PSD and Title V air quality operating permits are required for all sources that emit a regulated air pollutant above 100 or 250 tons per year, depending on the source. This threshold, if applied to greenhouse gases, would greatly increase the number of facilities requiring a PSD review or Title V air quality operating permit. Based on administrative necessity, EPA increased these thresholds through the “Tailoring Rule.”

On May 13, 2010, EPA issued the final version of the “Tailoring Rule” for greenhouse gas emissions. The major source threshold for greenhouse gases is listed below:

1. New PSD source because of a criteria air pollutant, the major source threshold for greenhouse gases is 75,000 tons per year of carbon dioxide equivalent or more;
2. New PSD source if greenhouse gas emissions are 100,000 tons per year of carbon dioxide equivalent or more;
3. For an existing PSD source because of a criteria air pollutant, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more;
4. For an existing non-PSD source that has the potential to emit 100,000 tons per year of carbon dioxide equivalent emissions or more, a major modification for greenhouse gases is an increase of 75,000 tons per year of carbon dioxide equivalent or more; and

5. In addition to subsection (2) and (4), a specific greenhouse gas, without calculating the carbon dioxide equivalent, also needs to emit greater than 100 or 250 tons per year, whichever is applicable, to be regulated.

The US Supreme Court heard challenges to EPA’s “Tailoring Rule”. On June 24, 2014, the Supreme Court decided greenhouse gases may not be regulated under the PSD program unless the facility requires a PSD permit for the other regulated air pollutants.

4.1 Current Short Term Limits

The current permit contains enforceable permit conditions to ensure actual emissions from the ethanol plant do not exceed the major source threshold under the PSD program. ABE currently has short term emission limits that restrict the facility’s potential emissions to less than 250 tons per year for the criteria air pollutants identified in Table 4-1. The short term emission limits for ABE are based on a three-hour rolling average, which is the arithmetic average of three contiguous one-hour periods and can be observed in Table 4-1.

Table 4-1: ABE Existing Short Term Limits

Unit	Description	TSP	PM ₁₀	SO ₂	NO _x	VOC	CO
#1	Hammer milling #1	0.1 ¹	0.1 ¹				
#2	Boiler	0.008 ²	0.008 ²		0.1 ²	0.006 ²	0.084 ²
#3	Distillers grain dryer	2.0 ¹	2.0 ¹	0.5 ¹	0.1 ²	10.0 ¹	7.3 ¹
#4	Fermentation/distillation					3900 ³	
#6	Grain Cooling	0.4 ¹	0.4 ¹			0.1 ¹	
#21	Hammer milling #2	0.8 ⁴	0.8 ⁴				
#22	Fermentation					1600 ³	
#23	Distillers grain dryer	1.9 ⁴	1.9 ⁴	8.5 ⁴	18.9 ⁴	3.7 ⁴	20.4 ⁴
#24	Grain Cooling	0.9 ⁴	0.9 ⁴			0.1 ¹	
#25	Dried distillers grain shipping	0.2 ⁴	0.2 ⁴				

¹ – The emission limit is in pounds per ton;

² – The emission limit is in pounds per million Btus;

³ – The emission limit is in pounds per million gallons; and

⁴ – The emission limit is in pounds per hour.

4.2 Requested Changes to Short Term Limits

As noted in section 1.2 of the statement of basis, ABE requested in the August 2013 application to change the short-term limits from the existing permit as follows:

- Revise the particulate limit for Unit #1 from 0.1 pounds per ton to 1.6 pounds per hour;
- Revise the particulate limit for Unit #2 from 0.008 pounds per million Btus to 1.0 pounds per hour;
- Revise the particulate limit for Unit #3 from 2.0 pounds per ton to 8.0 pounds per hour;
- Revise the particulate limit for Unit #6 from 0.4 pounds per ton to 1.6 pounds per hour;
- Revise the sulfur dioxide limit for Unit #3 from 0.2 pounds per ton to 2.0 pounds to hour;

- Revise the volatile organic compound limit for Unit #2 from 0.006 pounds per million Btus heat input to 1.0 pound per hour;
- Revise the volatile organic compound limit for Unit #3 from 10.0 pounds per ton to 40.0 pounds per hour;
- Revise the volatile organic compound limit for Unit #4 from 3900 pounds per million gallons to 40.0 pounds per hour;
- Revise the volatile organic compound limit for Unit #6 from 0.1 pounds per ton to 1.0 pound per hour;
- Revise the volatile organic compound limit for Unit #22 from 1600 pounds per million gallons to 40.0 pounds per hour;
- Revise the volatile organic compound limit for Unit #24 from 0.1 pounds per ton to 2.40 pounds per hour;
- Revise the nitrogen oxide limit for Unit #2 from 0.1 pounds per million Btus heat input to 5.0 pounds per hour;
- Revise the nitrogen oxide limit for Unit #3 from 0.1 pounds per million Btus heat input to 5.0 pounds per hour;
- Revise the nitrogen oxide limit for Unit #23 from 18.9 pounds per hour to 30.0 pounds per hour;
- Revise the carbon monoxide limit for Unit #2 limit from 0.08 pounds per million Btus to 5.0 pounds per hour; and
- Revise the carbon monoxide limit for Unit #3 from 7.3 pounds per ton to 30.0 pounds per hour.

Table 4-2 identifies ABE’s potential emissions considering the existing enforceable short term limits and ABE’s requested changes to those existing limits based on the August 2013 application.

Table 4-2: ABE Potential Emissions (tons per year) based on request¹

Unit	Description	TSP	PM ₁₀	SO ₂	NO _x	VOC	CO
#1	Hammer milling #1	7.0	7.0				
#2	Boiler	4.4	4.4		21.9	4.4	21.9
#3	Distillers grain dryer	35.0	35.0	8.8	21.9	175.2	131.4
#4	Fermentation/distillation					175.2	
#6	Grain Cooling	7.0	7.0			4.4	
#21	Hammer milling #2	1.8	1.8				
#22	Fermentation					175.2	
#23	Distillers grain dryer	8.3	8.3	37.2	131.4	16.2	89.4
#24	Grain Cooling	3.9	3.9			10.5	
#25	Distillers grain shipping	0.9	0.9				
Total		68	68	46	175	561	243

¹ Based on August 2013 application.

The August 2013 application requested short term VOC limits in excess of 250 tons per year for volatile organic compounds. If the facility would choose to move forward with the permit application, ABE would be subject to Prevention of Significant of Deterioration Permit (PSD). In a

letter dated September 27, 2013, ABE stated that they believe with the long term limit of 238 tons of VOC per 12-month rolling period in Chapter 7.11, along with stringent testing, monitoring, recordkeeping and reporting requirements that those items will effectively limit the potential emission to less than PSD major source thresholds. ABE would like to remain a minor source of VOC emissions and request that DENR process the permit application as a PSD minor source for VOC emissions. ABE stated that since there is no National Ambient Air Quality Standard (NAAQS) for VOC emissions and given the NAAQS for Ozone (for which VOC emissions can be a precursor), there may not be a need to have short term limits set on an hourly basis. ABE does not believe short term limits are necessary for their facility due to the absence of any applicable regulations that would dictate short term limits. The facility thinks having a higher short term limit, while enforcing the 238 ton per year would provide them the needed operational flexibility.

The applicability for the PSD program is based on the term potential to emit. Potential to emit is the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant including air pollution control equipment and restrictions on hours of operation or on the type or amount material combusted, stored or process shall be treated as part of its design if the limitations or the effect it would have on emissions is federally enforceable.

The 238 tons per year limitation is not considered sufficient by itself to be enforceable. In *United States versus Louisiana-Pacific Corporation*, the court stated permit conditions containing limits in tons per year should be not be considered in determining “potential to emit” because these blanket emission limits did not reflect the type of permit conditions which restricted operations or production such as limits on hours of operation, fuel consumption, or final product. In EPA guidance, EPA notes a permit should contain a short term emission limit (in addition to the annual emission limit) consistent with the compliance period or parameter in the applicable test method for determining compliance. In the early 2000s, DENR and EPA discussed the types of emission limits needed to limit the potential to emit in South Dakota’s permits for ethanol plants. It was agreed upon a short term limit that corresponded to the long term limit was required in the permit to make the potential limit enforceable and allow the ethanol plant to forgo a PSD review. In November 2002, EPA confirmed in writing this agreement and noted if DENR did not contain the agreed upon conditions, EPA would consider objecting to the permit. DENR recommends short term limits are required to limit ABE’s potential to emit.

Also in the letter dated September 27, 2013, ABE noted if DENR considered short term limits were still required, ABE requested a combined hourly limit of 47 pounds per hour for five systems (Units #3, #4, #22, #23, and #24). Each one of these systems are separate operations, with separate control devices and a separate emission point (i.e. stack). Therefore, DENR does not consider a combined hourly limit appropriate to limit the potential to emit and recommends each system has its own separate short term limit.

DENR does not establish the short term limit at 100% of the major source threshold but establishes it at 95% instead. Therefore, the long term limits will be set at 238 tons per 12-month rolling period.

On October 23, 2014, ABE submitted comments proposing to remove the short term volatile organic compound emission limit and hourly operational limit for Unit #3. Historically, Unit #3's operation has had an hours per year limit or a tons per year limit and a short term emission limit in pounds per hour or pounds per ton. These limits along with the others established in the permit were used to maintain ABE's emissions below the PSD thresholds which allowed the facility to forgo a PSD review. ABE states that EPA Test Methods 18 and 25a show that the total volatile organic compound emissions to be around 18.0 pounds per hour, which is less than the 40.0 pounds per hour short term emission limit in the current Title V air quality permit. Therefore, ABE proposed to remove short term limits and allow 8,760 operational hours per 12-month rolling total for Unit #3.

As noted previously, DENR recommends short term emission limits be maintained. DENR considered ABE's request to remove the operational limit. However, removal of the operational limit would allow the facilities potential carbon monoxide emissions to be greater than 250 tons per year. ABE and DENR discussed this issue and ABE requested the following changes to the short term emission limits:

- Revise the short term volatile organic compound limit for Unit #2 from 1.0 pounds per hour to 0.5 pounds per hour (requested December 2014);
- Revise the short term volatile organic compound limit for Unit #3 from 40.0 pounds per hour to 35.0 pounds per hour while increasing allowable operation to 7,492 hours per year (requested December 2014);
- Revise previous request to revise the short term volatile organic compound limit for Unit #3 from 40.0 pounds per hour to 30.0 pounds per hour while increasing allowable operation to 8,760 hours per year (requested December 2014);
- Revise the short term volatile organic compound limit for Unit #4 from 40.0 pounds per hour to 4.9 pounds per hour (requested December 2014);
- Revise the short term volatile organic compound limit for Unit #22 from 40.0 pounds per hour to 5.0 pounds per hour (requested December 2014);
- Revise the short term volatile organic compound limit for Unit #23 from 3.7 pounds per hour to 3.0 pounds per hour (requested December 2014);
- Revise the short term nitrogen oxide limit for Unit #3 from 5.0 pounds per hour to 15.0 pounds per hour (requested December 2014);
- Revise the short term carbon monoxide limits for Unit #3 from 30.0 pounds per hour to 20.0 pounds per hour (requested December 2014);
- Revise the short term carbon monoxide limit for Unit #23 from 20.0 pounds per hour to 25.0 pounds per hour (requested December 2014);
- Revise previous request to revise the carbon monoxide limit for Unit #23 from 25.0 pounds per hour to 20.0 pounds per hour (requested December 2014); and
- Revise previous request to revise the volatile organic compound limit for Unit #3 from 30.0 pounds per hour to 28.0 pounds per hour (requested December 2014).

4.3 Current Operational Limits

ABE currently has operational limits that combined with the short term limits restrict the facility's potential emissions to less than 250 tons per year for the criteria air pollutants. The following is a list of those operational limits:

- May not produce more than 11 million gallons of undenatured ethanol from the fermentation and distillation process associated with Unit #4 during any 12-month rolling period;
- May not produce more than 50 million gallons of undenatured ethanol from the fermentation processes associated with Unit #22 during any 12-month rolling period;
- May not process more than 116,780 tons of grain during any 12-month rolling period through Unit #12, #13 #14, and #15;
- May not process more than 500,000 tons of grain during any 12-month rolling period through Unit #21;
- May not produce more than 12,000 tons of dried distiller grain and solubles through Unit #3 during any 12-month rolling period;
- May not produce more than 162,218 tons of dried distiller grain and solubles through Unit #23 during any 12-month rolling period;
- May not load out by truck more than 6,000,000 gallons of denatured ethanol during any 12-month rolling period. This limit no longer applies once the flare is operational on Unit #27; and
- Pave all haul roads and parking lots associated with the new ethanol plant at Heartland Grain Fuels' new ethanol production facility.

4.4 Requested Changes to Operational Limits

ABE has requested the operational limits be removed from the existing permit.

Several of the operational limits were associated with units (i.e. pounds per gallon, pounds per ton) of the emission limits. Since ABE has requested these limits be revised to pounds per hour, several of the operational limits are no longer needed to limit the potential to emit. To limit the potential to emit from these operations and DENR's review was based on an ethanol plant that could produce 61 million gallons of undenatured ethanol per year. DENR recommends these operational limits be maintained. With revising the volatile organic compound hourly limit to 28.0 pounds per hour for Unit #3, the previous operational limit of 12,000 tons of dried distiller gain and solubles will need to be converted to 8,760 hours per year. ABE has several operational systems (e.g. tanks, valves, etc.) included in the existing permit that emit volatile organic compounds and do not have a short term limits. Miscellaneous tanks that were previously permitted as part of Units #4 and #23 were routed through the wet scrubbers; however, ABE proposed to vent the miscellaneous tanks to the ambient air which has the potential to emit volatile organic compounds that will be included in the facility's total potential emissions. These systems have work practice standards instead of a short term pounds per hour limit. In addition to the operational limits, the permit will still require monitoring and recordkeeping to verify compliance with these operational limits.

4.5 Potential to Emit Based on the Revised Limitation

Table 4-3 identifies the short term limits recommended by DENR considering the limits in the existing permit, ABE's requested changes, and maintaining enforceable conditions to allow ABE to maintain its minor source status under the PSD program.

Table 4-3 – ABE's Short Term Emission Limits

Unit	Description	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOC	CO
		(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)	(lbs/hr)
#1	Hammer milling #1	1.6	1.6				
#2	Boiler	1.0	1.0		5.0	1.0	5.0
#3	Distillers grain dryer	8.0	8.0	2.0	15.0	28.0	20.0
#4	Fermentation/distillation					4.9	
#6	Grain Cooling	1.6	1.6			1.0	
#21	Hammer milling #2	0.8	0.8				
#22	Fermentation					5.0	
#23	Distillers grain dryer	1.9	1.9	8.5	30.0	3.0	25.0
#24	Grain Cooling	0.9	0.9			2.4	
#25	DDGS shipping	0.2	0.2				

Potential emissions were calculated using the short term limits in Table 4-3 assuming that every piece of equipment would be in operation 24 hours a day and 365 days a year, except where noted, and would result in the worst case potential emissions even if used as a backup fuel source.

Table 4-4- Current Controlled Potential Emissions (tons per year)

Unit	TSP	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOC	CO
#1 ¹	7.0	7.0	7.0				
#2 ¹	4.4	4.4	4.4	0.1	21.9	4.4	21.9
#3 ¹	35.0	35.0	35.0	8.8	65.7	122.6	87.6
#4 ¹						21.5	
Process Tanks⁴						0.0	
#6 ¹	7.0	7.0	7.0			4.4	
DDGS Loadout #1	0.3	0.1	0.1				
#8 ²	2.0	1.4	0.8				
#11 ²	0.1	0.1	0.1	0.1	1.0	0.1	0.2
#21 ¹	3.5	3.5	3.5				
#22 ¹						21.9	
#23 ¹	8.3	8.3	8.3	37.2	131.4	13.1	87.6
Process Tanks⁵						0.4	
#24 ¹	3.9	3.9	3.9			10.5	
#25 ¹	0.9	0.9	0.9				
#26 ²	7.4	5.2	3.1				

Unit	TSP	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOC	CO
#27 ³					3.7	0.6	20.1
#28 ³						9.5	
#29 ²	0.1	0.1	0.1	0.1	2.3	0.2	0.5
#30 ²					1.9	1.5	10.4
#31 - #37 ² (Tanks)						2.4	
Tanks ^{2,6}						0.4	
#38 ^{2,7}						0.9	
#39 ^{2,8}						1.0	
#40 ^{2,9}						4.1	
#41 ^{2,10}						4.6	
#42 ^{2,11}	0.2	0.1	0.0			2.1	
Facility Equipment Leaks ²						11.6	
Totals	80	77	74	46	206	238	228

¹ – Potential emissions based on short term limits and operational limits;

² – From application;

³ – From application except updated factor for denaturant portion of calculation (i.e. 3.99 pounds per 1000 gallons);

⁴ - Miscellaneous process tanks (vacuum tank vent and slurry tank vent) previously permitted as part of Unit #4;

⁵ - Miscellaneous process tanks (syrup tank vent, whole stillage tank vent, and thin stillage tank vent) previously permitted as part of Unit #23;

⁶ - Tanks 801, 802, 805, 806, 807, and 808;

⁷ – Liquefaction Tank #1 and #2 vents previously part of miscellaneous process tanks as part of Unit #4;

⁸ - CIP Tank vent previously part of miscellaneous process tanks as part of Unit #4;

⁹ - Liquefaction tank vent part of miscellaneous process tanks as part of Unit #23;

¹⁰ - Cook water tank vent part of miscellaneous process tanks as part of Unit #23; and

¹¹ - Wet Distillers Grain with Solubles (WDGS) Storage/Loadout #1 and #2 in application, but only one loadout pad.

4.6 Compliance with Short Term Limits

Table 4-4 provides a summary of the most recent stack test for the applicable permitted units and pollutant.

Table 4-4 – Summary of Stack Test Results

Unit	Pollutant	Stack Test Results	Methods
#1	PM	0.43 pounds per hour	EPA Method 5
#2	PM	0.0008 pounds per million Btu	EPA Method 5
	VOC	0.0004 pounds per million Btu	EPA Method 18
	NO _x	0.1 pounds per million Btu	EPA Method 7E
	CO	0.01 pounds per million Btu	EPA Method 10
#3	PM	0.635 pounds per hour	EPA Method 5
	SO ₂	<0.1 pounds per hour	
	NO _x	0.6 pounds per hour	EPA Method 7E
	CO	3.3 pounds per hour	EPA Method 10

Unit	Pollutant	Stack Test Results	Methods
	VOC	8.2 pounds per hour	EPA Method 18, 25A scaled
#4	VOC	< 2, 117 pounds per million gallons	EPA Method 207 EPA Method 18
#6	PM	0.54 pounds per ton of product	EPA Method 5
	VOC	0.031 pounds per hour	EPA Method 18
#21	PM	0.045 pounds per hour	EPA Method 5
#22	VOC	<498 pounds per million gallons	EPA Method 207 EPA Method 18
#23	PM	0.96 pounds per hour	EPA Method 5
	SO ₂	0.5 pounds per hour	
	NO _x	12.0 pounds per hour	EPA Method 7E
	CO	0.1 pounds per hour	EPA Method 10
	VOC	< 1.451 pounds per hour	EPA Method 18
#24	PM	0.54 pounds per hour	EPA Method 5
	VOC	1.28 pounds per hour	EPA Method 18
#25	PM	0.036 pounds per hour	EPA Method 10

Table 4-5 provides a comparison of the short term limits to the most recent stack test results.

Table 4-5 – Comparison of Stack Test Results to Revised Short Term Limits

Unit	Pollutant	Short Term	Stack Test	In Compliance
#1	PM	1.6 pounds per hour	0.43 pounds per hour	Yes
#2	PM	1.0 pounds per hour	0.03 pounds per hour	Yes
	VOC	0.5 pounds per hour	0.01 pounds per hour	Yes
	NO _x	5.0 pounds per hour	3.1 pounds per hour	Yes
	CO	5.0 pounds per hour	0.03 pounds per hour	Yes
#3	PM	8.0 pounds per hour	0.635 pounds per hour	Yes
	SO ₂	2.0 pounds per hour	<0.1 pounds per hour	Yes
	NO _x	15.0 pounds per hour	0.6 pounds per hour	Yes
	CO	20.0 pounds per hour	3.5 pounds per hour	Yes
	VOC	28.0 pounds per hour	8.2 pounds per hour	Yes
#4	VOC	4.9 pounds per hour	2.3 pounds per hour	Yes
#6	PM	1.6 pounds per hour	0.1 pounds per hour	Yes
	VOC	1.0 pound per hour	0.031 pounds per hour	Yes
#21	PM	0.8 pounds per hour	0.045 pounds per hour	Yes
#22	VOC	5.0 pounds per hour	1.3 pounds per hour	Yes
#23	PM	1.9 pounds per hour	0.96 pounds per hour	Yes
	SO ₂	8.5 pounds per hour	0.5 pounds per hour	Yes
	NO _x	30.0 pounds per hour	12.0 pounds per hour	Yes
	CO	20.0 pounds per hour	0.1 pounds per hour	Yes
	VOC	3.0 pounds per hour	< 1.451 pounds per hour	Yes
#24	PM	0.9 pounds per hour	0.54 pounds per hour	Yes
	VOC	2.4 pounds per hour	1.28 pounds per hour	Yes

Unit	Pollutant	Short Term	Stack Test	In Compliance
#25	PM	0.2 pounds per hour	0.036 pounds per hour	Yes

The stack test results indicate ABE is capable of meeting the revised short term limits.

4.7 PSD Summary

ABE’s potential criteria pollutant emissions, considering the enforceable limitations are less than 250 tons per year. Therefore, ABE is considered a minor source and is not applicable to the PSD program. Based on the US Supreme Court’s decision and because ABE is not applicable to the PSD program, a review for greenhouse gas emissions are not warranted or required.

ABE has requested several changes to the short term limits and operational limits, DENR recommends these limits be included in a construction permit and will be transferred to the Title V permit as it is being renewed.

4.8 Request for Greenhouse Gas Limits

As noted in section 1.2 of the statement of basis, ABE has requested emission limits be included on its greenhouse gas emissions. However, based on the US Supreme Court decision, DENR does not recommend including this limitation in the permit.

5.0 National Emission Standards for Hazardous Air Pollutants

DENR reviewed 40 CFR Part 61 to determine the applicability to this facility to any of the subparts and determined the following may be applicable.

5.1 Standards for Benzene Waste Operations

Previously, DENR considered a few ethanol plants applicable to 40 CFR, Part 61, Subpart FF. The applicability was primarily based on ethanol plants being considered a chemical processing plant based on its Standard Industrial Classification Code 2869 – Industrial Organic Chemicals – Not Elsewhere Classified.

In a May 1, 2007, federal register notice, EPA finalized a rule that identified ethanol plants were not considered chemical processing plants. Therefore, a more detailed review of applicability to this rule will be conducted. The May 1, 2007, federal register notice finalizes proposed changes to the definition of “major emitting facility” in the Prevention of Significant Deterioration (PSD), Nonattainment New Source Review (NSR) and Title V air quality operating permit regulations in regards to what facilities are considered a chemical processing facility. This notice identifies the change does not affect applicability for other clean air act requirements. In particular EPA notes on page 24067 that “The applicability of differing rules is standard-specific and determinations were made under individual rulemakings and will not be changed under this rulemaking. There is no directive for the applicability to be the same across CAA programs and

standards and applicability determinations need to be determined on a case-by-case, or standard-by-standard, basis.”

However, EPA does note two specific items in this rule making: 1) On page 24063, EPA specified that it “did not believe that the term “chemical process plant” is subject to a “plain meaning interpretation.” There is not a universally accepted definition of chemical process, and accepted definitions differ depending on whether you view the term from a purely scientific sense or from an engineering sense, or for economic purposes.”; and 2) EPA specifies several new source performance standards and national emission standards for hazardous air pollutants that were potentially applicable to an ethanol plant. However, 40 CFR, Part 61, Subpart FF – National Emission Standard for Benzene Waste Operations, was not one of the listed standards that were considered potentially applicable to an ethanol plant.

The provisions 40 CFR, Part 61, Subpart FF – National Emission Standard for Benzene Waste Operations, applies to chemical manufacturing plants, coke byproduct recover plants, and petroleum refineries. Chemical manufacturing means any facility engaged in the production of chemicals by chemical, thermal, physical, or biological processes for use as a product, co-product, by-product, or intermediate including but not limit to industrial organic chemicals, organic pesticide products, pharmaceutical preparations, paint and allied products, fertilizers, and agricultural chemicals. Examples of chemical manufacturing plants include facilities at which process units are operated to produce one or more of the following chemicals: benzenesulfonic acid, benzene, chlorobenzene, cumene, cyclohexane, ethylene, ethylbenzene, hydroquinone, linear alkylbenzene, nitrobenzene, resorcinol, sulfolane, or styrene.

Ethanol is a chemical that is produced by a biological process (fermentation). However, ethanol is not one of the listed chemicals specified by definition. Therefore, just by the definition does not appear to be conclusive. So a more detailed review of the background of the rule is necessary.

In EPA’s September 14, 1989, federal register proposed rulemaking notice, EPA stated that “Although EPA’s analyses focus on chemical plants, petroleum refineries, coke by-product recovery plants, and commercial TSDF’s, any standards placed on benzene waste operations would be applicable to any waste containing benzene.” In EPA’s December 15, 1989, federal register proposed rule clarification notice, EPA stated that “The proposed rule is intended to apply only to benzene wastes from chemical plants, petroleum refineries, coke by-product recovery plants, and commercial hazardous waste treatment, storage, and disposal facilities. Coverage of these industry categories is consistent with the background information used as the basis for the proposed rule”. In addition, in EPA’s March 5, 1992, federal register proposed rule notice, EPA state that “In the analysis performed to support the development of subpart FF, EPA determined that the NESHAP risk protection goals could be exceeded if benzene emissions from benzene waste operations were not controlled. Rather than require all facilities to install controls, EPA structured the applicability criteria of the rule in a way that would identify that subset of facilities where controls were needed.” The preambles indicate EPA intended for all benzene waste streams at all chemical manufacturing facilities to be covered by this regulation.

However, this doesn't specify what is considered a waste or a benzene waste stream. In accordance with 40 CFR § 61.341, waste is defined as "any material resulting from industrial, commercial, mining, or agricultural operations that is discarded or is being accumulated, stored or physically, chemically, thermally, or biologically treated prior to being discarded, recycled or discharged." In accordance with 40 CFR § 61.341, waste stream is defined as "the waste generated by the particular process unit, product tank, or waste management unit.... Examples of a waste stream include process wastewater, product tank drawdown, sludge and slop oil removed from waste management units, and landfill leachate."

The ethanol production process does not produce benzene. To transport the ethanol, ethanol plants are required by the United States Bureau of Alcohol, Tobacco, Firearms and Explosives to add gasoline to its product. The purchased gasoline may contain small quantities of benzene. 100% ethanol and gasoline are initially stored in separate storage tanks. The 100% ethanol and gasoline are mixed together generally at a ratio of 19 to 1 (i.e. 95% ethanol and 5% gasoline) to produce denatured ethanol and are stored in a storage tank. The denatured ethanol is then loaded into railcars or trucks to be shipped offsite.

As noted in the March 7, 1990, federal register, the sources of benzene waste the rule was based on at chemical plants are as follows: "Wastes that contain benzene are generated from raw materials, intermediates, and products that contain benzene at ... chemical plants that use or produce benzene... Certain chemical plants use benzene as a raw material or produce it as a product or as a co-product or by-product in processes that involve direct-contact with steam or cooling water. These processes generate wastewater, sludge, and organic liquid wastes that contain benzene." Based on the summary on the sources of benzene waste, ethanol plants do not meet the identified sources.

Gasoline or denatured ethanol, which includes amounts of benzene, would not be considered to meet this NESHAP's definition of waste until it is "discarded". For this to occur at an ethanol plant there would need to be a leak or a spill of the storage tanks or pipes between the tanks and loading racks. Upon collection of the gasoline or denatured ethanol from a spill, the material would then be classified as "remediation waste." However, remediation wastes are excluded from a facility's total annual benzene (TAB) calculation by this NESHAP to encourage facilities with a TAB less than 10 megagrams (10 tons) per year to undertake voluntary remediation actions.

The leak or spill of a storage tank would be maintained within a confined area. The leak or spill could then come into contact with rainwater to form an aqueous waste stream. However as noted in 40 CFR § 61.341, a stormwater waste stream is exempt from the standard. In addition as noted in the March 7, 1990, federal register, "Benzene in stormwater would result on an intermittent basis when spills or leaks are entrained by rainwater that falls at the facility. Existing regulations related to spills under both the CWA and RCRA should minimize the amount of benzene available for entrainment by storm water runoff. Because of this and considering that storm water runoff waste streams occur intermittently, EPA believes that on an annual average basis, benzene emissions from storm water will not contribute significantly to overall risk due to benzene emissions at a facility. Therefore, segregated storm water runoff is specifically excluded from today's benzene rule."

Even though ABE may be considered a chemical plant under this rule because of its standard industrial classification code, ABE is not applicable to this standard because of the following reasons:

1. ABE does not produce a chemical as listed in the rule;
2. ABE does not produce a waste stream identified in the rule making for chemical plants that rule was designed to cover;
3. ABE potential benzene waste is either specifically exempt from the rule or is exempt from inclusion in the TAB calculation to determine if controls are necessary; and
4. EPA did not identify this regulation as being applicable in other rule makings or in its enforcement documents for ethanol plants.

The existing Title V permit has language referencing this subpart. Since the subpart does not apply, this language will be removed from the permit.

5.2 Other NESHAP Standards

DENR reviewed the other national emission standards for hazardous air pollutants and determined there are no other standards applicable to ABE.

6.0 Maximum Achievable Control Technology Standards

6.1 Potential HAP Emissions

The federal Maximum Achievable Control Technology Standards are applicable to both major and area sources of hazardous air pollutants. A major source of hazardous air pollutants is defined as having the potential to emit 10 tons or more per year of a single hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An area source is a source that is not a major source of hazardous air pollutants.

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

Table 6-1 provides a summary of potential emission using emission factors from stack test results for hazardous air pollutants while most other emission factors are from EPA's AP-42. The only exception to EPA's AP-42 is Unit #28 where the MSDS for ethanol and Tanks 4.09D Program was used and for the tanks emission where emissions were based upon VOC emissions.

Table 6-1 – Summary of Stack Test Results

Date	Unit	Pollutant	Results	Total
Aug. 2013	#23	Acetaldehyde	<0.161 pounds per hour	0.71 tons per year
		Acrolein	<0.192 pounds per hour	0.84 tons per year
		Methanol	<0.047 pounds per hour	0.21 tons per year
		Formaldehyde	<0.023 pounds per hour	0.10 tons per year
Jan. 2013	#4	Acetaldehyde	1.08 pounds per hour	4.73 tons per year
		Acrolein	0.013 pounds per hour	0.06 tons per year
		Methanol	0.020 pounds per hour	0.09 tons per year
		Formaldehyde	0.007 pounds per hour	0.03 tons per year
	#22	Acetaldehyde	0.38 pounds per hour	1.66 tons per year
		Acrolein	0.03 pounds per hour	0.13 tons per year
		Methanol	0.06 pounds per hour	0.26 tons per year
		Formaldehyde	0.007 pounds per hour	0.03 tons per year
Feb. 2008	#6	Acetaldehyde	0.01 pounds per hour	0.04 tons per year
		Acrolein	0.00 pounds per hour	0.00 tons per year
		Methanol	0.01 pounds per hour	0.04 tons per year
		Formaldehyde	0.00 pounds per hour	0.00 tons per year
July 2008	#24	Acetaldehyde	0.52 pounds per hour	2.28 tons per year
		Acrolein	0.03 pounds per hour	0.13 tons per year
		Methanol	0.16 pounds per hour	0.70 tons per year
		Formaldehyde	0.04 pounds per hour	0.18 tons per year

ABE accepted operational limits to ensure their potential to emit does not exceed the major source threshold under the Title V air quality operating permit program for hazardous air pollutants. Table 6-2 provides a summary of hazardous air pollutant emissions based on the stack test results in Table 6-1 and those included in the application, using the stack test results that generate the greatest emissions, assuming the units operate 8,760 hours per year.

Table 6-2 – Potential Controlled Emissions for Hazardous Air Pollutants (tons per year)

Unit	Acetaldehyde	Acrolein	Methanol	Formaldehyde	Total
#4	4.73	0.06	0.09	0.03	4.9
#6	0.04	0.00	0.04	0.00	0.1
#9	0.00	0.00	0.00	0.00	0.0
#11	0.00	0.00	0.00	0.00	0.0
#22	1.68	0.13	0.26	0.03	2.1
#23	0.71	0.84	0.21	0.10	1.9
#24	2.28	0.13	0.70	0.18	3.3
#28	0.00	0.03	0.00	0.00	0.0
#29	0.00	0.00	0.00	0.00	0.0
#38	0.03	0.01	0.01	0.00	0.1
#39	-	-	-	-	-
#40 ²	0.14	0.05	0.03	0.00	0.2
#42 ²	-	-	-	-	-

Unit	Acetaldehyde	Acrolein	Methanol	Formaldehyde	Total
WDGS Loadout	0.03	0.00	0.01	0.06	0.1
Equipment Leaks	0.00	0.00	0.00	0.15	0.2
Total	10	1	1	1	13

1-HAPs for both Unit #38 and Unit #39.

2-HAPs for both Unit #40 and Unit #41.

Based on Table 6-2, ABE is considered an area source of hazardous air pollutants. ABE uses additives to reduce hazardous air pollutant emissions. Therefore, the use of these additives will need to be established from the most recent performance test that demonstrates compliance and monitored to ensure ABE does not exceed its plant wide hazardous air pollutant emission limits.

DENR reviewed the Maximum Achievable Control Technology Standards and determined the following may be applicable to ABE as an area source of hazardous air pollutants.

6.2 Industrial Process Cooling Towers

The national emission standard for industrial process cooling towers in 40 CFR Part 63 Subpart Q prohibits the use of chromium based water treatment chemicals in industrial process cooling towers. In accordance with 40 CFR § 63.400, this subpart is only applicable to major sources of hazardous air pollutants. ABE is considered an area source of hazardous air pollutants and not subject to this subpart.

The existing Title V permit has language referencing this subpart. Since the subpart does not apply, this language will be removed from the permit.

6.3 Chemical Processing Plants

On November 10, 2003, EPA finalized the maximum achievable control technology standard under 40 CFR Part 63, Subpart FFFF. This rule applies to the following chemical processing plants:

1. Those facilities that produce chemicals classified using the 1987 Standard Industrial Classification Manual of a code indicated by 282, 283, 284, 285, 286, 287, 289, or 386; and
2. Those facilities that are a major source of hazardous air pollutants. A major source of hazardous air pollutants has the potential to emit 10 tons of a single hazardous air pollutant and/or 25 tons of all hazardous air pollutants;

ABE's Standard Industrial Classification code is 2869, which falls underneath the code of 286. ABE's uncontrolled hazardous air pollutant emissions make ABE a major source of hazardous air pollutants. ABE is operating control equipment that reduces the hazardous air pollutant emissions. ABE has requested the use of control equipment be made enforceable. Taking into account the enforceable limitations applicable to the wet scrubbers, thermal oxidizers, etc. Therefore, ABE is considered an area source and not applicable to this MACT standard.

6.4 Industrial, Commercial, and Institutional Boilers and Process Heaters

40 CFR Part 63, Subpart DDDDD establishes national emission and operating limits for hazardous air pollutants emitted from industrial, commercial, and institutional boilers and process heaters located at a major source of hazardous air pollutant emissions. Due to emission and operational limits, ABE is considered an area source of hazardous air pollutants and not subject to this subpart.

6.5 Area Source for Industrial, Commercial and Institutional Boilers

On March 21, 2011, EPA finalized the MACT standard under 40 CFR Part 63, Subpart JJJJJ. This rule applies to all new or existing industrial, commercial, and institutional boilers located at an area source of hazardous air pollutants. An existing boiler is defined as a boiler where construction or reconstruction occurred prior to June 4, 2010.

ABE operates a thermal oxidizer/heat recovery boiler system (Unit #23) constructed in 2007. The system is rated at 105 million Btus per hour and fired with natural gas only. ABE also operates a boiler (Unit #2) constructed in 1991 that is fired on natural gas and distillate oil. Unit #2 only burns distillate oil during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. In accordance with 40 CFR § 63.11195, a gas-fired boiler is exempt from the requirements of this subpart. A gas-fired boiler is defined as "...any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel." Gaseous fuels include natural gas. Therefore, Unit #23 is not subject to this subpart provided natural gas is the only fuel burned in the thermal oxidizer/heat recovery boiler system. Unit #2 is not subject to this subpart since the unit burns natural gas and distillate oil only during periods defined above.

6.6 Chemical Manufacturing Area Sources

On October 29, 2009, EPA finalized the MACT standard under 40 CFR Part 63, Subpart VVVVVV. This rule applies to all new or existing chemical manufacturing process units located at an area source of hazardous air pollutants that meet the following:

1. The chemical manufacturing process unit uses as feedstock, generates as byproducts, or produces as products any of the hazardous air pollutants listed in Table 1 of the subpart;
2. The chemical manufacturing process unit is located at an area source of hazardous air pollutants; and
3. The hazardous air pollutants listed in the Table of the subpart are present in the feedstock or generated or produced in the chemical manufacturing process unit and present in process fluid, at concentrations greater than 0.1 percent for carcinogens, as defined by the Occupational Safety and Health Administration at 29 CFR § 1910.1200(d)(4), and greater than 1.0 percent for non-carcinogens.

A chemical manufacturing process unit includes all process vessels, equipment, and activities necessary to operate a chemical manufacturing process that produces a material or a family of

materials described by North American Industry Classification System (NAICS) code 325. A chemical manufacturing process unit consists of one or more unit operations and any associated recovery devices. It also includes each storage tank, transfer operation, surge control vessel, and bottoms receiver associated with the production of such NAICS code 325 materials. NAICS code 325193 – Ethyl Alcohol Manufacturing, is comprised primarily in manufacturing denatured alcohol and non-potable ethyl alcohol, ethanol, or grain alcohol. An existing chemical manufacturing process unit is defined as a chemical manufacturing facility where construction or reconstruction occurred prior to October 6, 2008.

ABE's operations were constructed in 2007 and produces non-potable ethanol. ABE is considered an existing area source and produces acetaldehyde as a byproduct during its operations, which is considered a carcinogenic. Subpart VVVVVV requires that concentration of carcinogenic compounds be equal to or less than 0.1 percent.

On August 21, 2013, ABE submitted documentation of testing of acetaldehyde in their stack tests and using industry standards, they show their process concentrations are less than 0.653 parts per million which is less than 0.1%. Therefore, this subpart is not applicable to ABE.

6.7 Non-Gasoline Organic Liquids Distribution

On November 10, 2003, EPA finalized this MACT standard under 40 CFR Part 63. This rule applies to the following chemical processing plants

3. Those facilities that produce chemicals classified using the 1987 Standard Industrial Classification Manual of a code indicated by 282, 283, 284, 285, 286, 287, 289, or 386; and
4. Those facilities that are a major source of hazardous air pollutants. A major source of hazardous air pollutants has the potential to emit 10 tons of a single hazardous air pollutant and/or 25 tons of all hazardous air pollutants.

ABE's Standard Industrial Classification code is 2869, which falls underneath the code of 286. ABE's current permit has an emission limitation that requires ABE to maintain its hazardous air pollutant emissions less than the major source thresholds. Therefore, ABE is not applicable to this MACT standard.

6.8 Other MACT Standards

DENR reviewed the other Maximum Achievable Control Technology Standards and determined there are no other standards applicable to ABE.

6.9 ABE Requested MACT Standard Changes

As noted in section 1.2 of the statement of basis, ABE requested the applicable MACT Standard language be removed from the permit and replaced with a general incorporation by reference language. DENR reviewed this request and recommends the applicable MACT Standard language be included in the permit. By including the language into the permit, the owner and operator, the general public and DENR are aware of the requirements ABE must meet to be in

compliance. In addition, DENR's experience indicates a higher compliance rate for those owner or operators that have the federal standards outlined in the permit instead of just referencing the federal standard.

Instead of including the federal standards throughout the permit, DENR recommends including the federal standards in their own individual Chapter in the permit. Several of the Standards have been updated since the previous permit was issued and will be updated to correspond to the current federal standard adopted in South Dakota's regulations.

7.0 State Requirements

7.1 State Particulate Emission Limits

ARSD 74:36:06:02(1) and 74:36:06:03(1), establish state emission limits for total suspended particulate matter. In addition, ARSD 74:36:12:01 establishes a visible emission limit of 20 percent opacity for each unit.

In accordance with ARSD 74:36:06:01, a unit that must comply with a total suspended particulate matter emission limit under the New Source Performance Standards, Maximum Achievable Control Technology Standards, the Acid Rain Program, or the Prevention of Significant Deterioration Program is exempt from having to meet the state's total suspended particulate matter emission limits.

In accordance with ARSD 74:36:06:02(1)(a), a fuel burning unit with heat input value less than 10 million Btus per hour may not exceed 0.6 pounds of particulate emissions per million Btu of heat input. Based on the heat input capacities of the permitted units, Unit #11 and Unit #29 are applicable to the state total suspended particulate matter emission limit.

In accordance with ARSD 74:36:06:02(1)(b), a fuel burning unit with a heat input equal to or greater than 10 million Btus per hour heat input may not exceed the particulate emissions rate determined by Equation 7-1.

Equation 7-1 – Particulate Emissions Limit for Fuel Burning Units

$$E_{TSP} = 0.811 \times H^{-0.131}$$

Where:

- E_{TSP} = emission rate, in pounds per million Btu heat input, and
- H = heat input, in million Btus per hour.

Using the maximum heat input value for the unit in Equation 7-1 results in a particulate matter emission limit listed in Table 7-1.

Table 7-1 – Total Suspended Particulate Matter Emission Limit for Fuel Burning Units

Unit	Maximum Operating Rate	Emission Limit
#2	31.38 million Btus per hour	0.5 pounds per million Btu
#11	0.91 million Btus per hour	0.6 pounds per million Btu
#29	2.06 million Btus per hour	0.6 pounds per million Btu

The particulate emission limits for process units are derived from ARSD 74:36:06:03(1). Equation 7-2, taken from ARSD 74:36:06:03(1)(a), is used to calculate the state limit of particulate emissions for each process unit with operating rates less than or equal to 30 tons per hour.

Equation 7-2 – State Particulate Emission Limit for Process Units ≤ 30 tons per hour

$$E_{TSP} = 4.10 \times P^{0.67}$$

Where:

- E_{TSP} = Emission limit for total suspended particulate matter, in pounds per hour; and
- P = Design process rate, in tons per hour.

Equation 7-3, taken from ARSD 74:36:06:03(1)(b), is used to calculate the state limit of particulate emissions for each process unit with operating rates greater than 30 tons per hour. The state particulate emission limits are summarized in Table 7-2.

Equation 7-3 – State Particulate Emission Limit for Process Units > 30 tons per hour

$$E_{TSP} = (55.0 \times P^{0.11}) - 40$$

Where:

- E_{TSP} = Emission limit for total suspended particulate matter, in pounds per hour; and
- P = Design process rate, in tons per hour.

Table 7-2 – Total Suspended Particulate Matter Emission Limit for Processes

Unit	Maximum Process Rate	Emission Limit
#1	39.6 tons per hour (combined for two hammermills)	42.4 pounds per hour
#3	4 tons per hour	10.4 pounds per hour
#6	4 tons per hour	10.4 pounds per hour
#21	67.2 tons per hour	47.4 pounds per hour
#23	18 tons per hour	28.4 pounds per hour
#24	23 tons per hour	33.5 pounds per hour
#25	400 tons per hour	66.3 pounds per hour

Table 7-3 provides a comparison of the state emission limit to the most recent stack test results to determine if the units are in compliance with the state emission limits.

Table 7-3 – State Total Suspended Particulate Matter Limit Compared to Stack Test Results

Unit	State Emission Limit	Stack Test Results	In Compliance
#1 ¹	42.4 pounds per hour	0.43 pounds per hour	Yes
#2 ¹	0.5 pounds per hour	0.03 pounds per hour	Yes
#3 ²	10.4 pounds per hour	0.64 pounds per hour	Yes

Unit	State Emission Limit	Stack Test Results	In Compliance
#6 ¹	10.4 pounds per hour	0.10 pounds per hour	Yes
#21 ²	47.4 pounds per hour	0.05 pounds per hour	Yes
#23 ²	28.4 pounds per hour	0.96 pounds per hour	Yes
#24 ¹	33.5 pounds per hour	0.54 pounds per hour	Yes
#25 ²	66.3 pounds per hour	0.04 pounds per hour	Yes

¹ - From July 2008 Stack Test

² - From February 2008 Stack Test

In addition, the particulate emissions from the flares (Unit #27 and Unit #30) are produced from fuel burning equipment that would not be included in the permit if the equipment was not a control device. The flares are required to meet the requirements in 40 CFR Part 60.18.

7.2 State Sulfur Dioxide Emission Limits

In accordance with ARSD 74:36:06:02(2) and ARSD 74:36:06:03(2), the permitted units may not emit sulfur dioxide emissions to the ambient air in an amount greater than three pounds of sulfur dioxide per million Btus of heat input.

Unit #2 is fired with natural gas and distillate oil. Unit #3 and Unit #23 are both fired with natural gas. Units #11 and #29 are fired with distillate oil.

Table 7-4 – Sulfur Dioxide Emission Limit for Fuel Burning Units

Unit	Maximum Operating Rate	Emission Limit
#2	31.38 million Btus per hour	3.0 pounds per million Btus of heat input
#3	25 million Btus per hour	3.0 pounds per million Btus of heat input
#11	0.91 million Btus per hour	3.0 pounds per million Btus of heat input
#23	45 million Btus per hour (distillers grain dryer) + 105 million Btus per hour (thermal oxidizer/heat recovery boiler)	3.0 pounds per million Btus of heat input
#29	2.06 million Btus per hour	3.0 pounds per million Btus of heat input

7.3 Performance Tests

ABE requested limits be placed on the facility's operation that would limit the potential to emit to allow the facility to forgo a PSD review and permit. The permit will contain a facility limit of 238 tons per year for particulate matter, nitrogen oxide, volatile organic compounds, and carbon monoxide for the existing operations and the new operations. ABE was required in the Title V air quality operating permit to conduct performance tests to prove compliance with the permitted short-term limits. Table 7-4 summarizes the applicable test results. ABE conducted all of the performance tests identified in the existing Title V air quality operating permit.

Table 7-4 – Comparison of Stack Test Results to Short Term Limits

Unit	Pollutant	Short Term	Stack Test		Percentage of Short Term
			Date	Results	
#1	PM ₁₀	1.6 pounds per hour	07/09/08	0.43 pounds per hour	26.9%
#2	NO _x	5.0 pounds per hour		3.1 pounds per hour	62.0%
	CO	5.0 pounds per hour		0.03 pounds per hour	0.6%
	VOC	0.5 pounds per hour		0.01 pounds per hour	1.0%
	PM ₁₀	1.0 pounds per hour		0.03 pounds per hour	3.0%
#6	PM ₁₀	1.6 pounds per hour		0.1 pounds per hour	6.3%
#24	PM ₁₀	0.9 pounds per hour	0.54 pounds per hour	60.0%	
#4	VOC	4.9 pounds per hour	02/01/13	2.3 pounds per hour	46.7%
#22	VOC	5.0 pounds per hour		1.3 pounds per hour	8.9%
#3	PM	8.0 pounds per hour	02/12/08	0.635 pounds per hour	7.9%
	SO ₂	2.0 pounds per hour		<0.1 pounds per hour	5.0%
	NO _x	15.0 pounds per hour		0.6 pounds per hour	12.0%
	CO	20.0 pounds per hour		3.5 pounds per hour	11.7%
	VOC	28.0 pounds per hour		8.2 pounds per hour	20.5%
#23	PM	1.9 pounds per hour	0.96 pounds per hour	50.5%	
	SO ₂	8.5 pounds per hour	0.5 pounds per hour	5.9%	
	NO _x	30.0 pounds per hour	12.0 pounds per hour	40.0%	
	CO	20.0 pounds per hour	0.1 pounds per hour	0.5%	
	VOC	3.0 pounds per hour	<0.3 pounds per hour	8.1%	
#6	VOC	1.0 pounds per hour	0.03 pounds per hour	3.0%	
#24	VOC	2.4 pounds per hour	1.28 pounds per hour	53.3%	
#21	PM	0.8 pounds per hour	0.045 pounds per hour	5.6%	
#25	PM	0.2 pounds per hour	0.036 pounds per hour	18.0%	

EPA approved a methodology to determine compliance with volatile organic compound (VOC) emission limits in a consent decree with other ethanol plants. DENR is recommending the following permit language be included in the permit renewal regarding stack testing requirements for volatile organic compounds:

1. Required Test Methods. The owner or operator shall conduct all volatile organic compound mass emission performance tests in accordance with 40 CFR Part 51, Appendix M, Method 207 and 40 CFR Part 60, Appendix A, Method 18;
2. Treatment of 2,3-Butanediol. Due to difficulties associated with appropriate method detection limit, 2,3-Butanediol will be sampled through the chromatography column approximately 2.5 times faster than the maximum allowable sampling rate for the other volatile organic compound in the sampling program (e.g. acetaldehyde, acrolein, and ethyl acetate). This requirement applies only if the Method 207 results indicate that 2,3-Butanediol should be sampled as part of the Method 18 testing;
3. Treatment of Non-Detects. When summing analytes per Method 18, non-detect data will be included in the total volatile organic compound mass as one half of the compound method detection limit; except that, if all three performance test runs result in a non-

detect measurement and the method detection limit is less than or equal to 1.0 part per million by volume on a dry basis, then all such non-detect data will be treated as zero.

ABE requested limits to be placed on the facility's operation that would limit the potential to emit to allow the facility to forgo a PSD review and permit. The permit will contain a facility limit of 238 tons per year for particulate matter, sulfur dioxide, nitrogen oxide, volatile organic compounds, and carbon monoxide.

Based on the stack testing dates, DENR will require that ABE complete the following performance tests on the listed units for the specified air pollutant:

1. Unit #3 and #23 for nitrogen oxides;
2. Unit #3 and #23 for carbon monoxide;
3. Unit #3, #4, #6, #22, #23, and #24 for volatile organic compounds; and
4. Unit #3, #4, #6, #22, #23, and #24 for hazardous air pollutants.

The permit will contain language of requirements of performance testing. No other performance tests are required at this time; however, the permit will contain language that allows DENR to require a stack test if it believes it is warranted at a later date.

By completing the required performance stack tests within 3-5 years of issuance of this permit, current performance stack test data would then be readily available for the next renewal application.

7.4 Compliance Assurance Monitoring

ABE in the past was not subject to compliance assurance monitoring because federally enforceable permit conditions maintained actual air emissions below the major source threshold under the Title V air quality operating permit program. ABE was considered a minor source but required to obtain a Title V air quality operating permit because it was subject to federal New Source Performance Standards and Maximum Achievable Control Technology Standards. Since ABE has requested its operational limits maintain air emissions below the major source threshold of 250 tons per year under the Prevention of Significant Deterioration program, compliance assurance monitoring may be applicable.

Compliance assurance monitoring is applicable to permit applications received on or after April 20, 1998, from a major source applying for a Title V air quality operating permit. ABE's application was received after April 20, 1998. Therefore, compliance assurance monitoring is applicable to any unit that meets the following criteria:

1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
2. The unit uses a control device to achieve compliance with any such emission limit or standard; and
3. The unit has potential uncontrolled emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

40 CFR § 64.1 defines a control device as equipment other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. A control device does not include passive control measures that act to prevent pollutants from forming, such as the use of seals, lids, or roofs to prevent the release of pollutants, use of low-polluting fuel or feedstock, or the use of combustion or other process design features or characteristics.

The floating roofs on the storage tanks are not considered control devices. The systems that use a control device and may be applicable to compliance assurance monitoring are Unit #21, #24, and #25, which all use a baghouse to control particulate matter emissions, and Unit #4 and #22, which use a wet scrubber. Unit #23 uses a thermal oxidizer and Unit #27 and #30 both use a flare to control volatile organic compound emissions.

ABE calculated a theoretical uncontrolled emission rate for these systems. Based on the application, Unit #21, #23, #25, #27 and #30 do not have the potential to emit uncontrolled emissions greater than 100 tons per year. Therefore, these sources are not applicable to compliance assurance monitoring.

The fermentation systems (Unit #4 and #22) are currently subject to a volatile organic compound emission limit and are controlled by a wet scrubber. Compliance assurance monitoring is based on establishing a flow rate and chemical injection rates that demonstrates compliance and continuously monitoring those rates. In accordance with the permit, if ABE intends to modify the water flow rates below the rates demonstrated during the latest stack test, ABE will conduct a new performance test to demonstrate compliance with the short-term volatile organic compound emission limit at the lower flow.

Compliance with the thermal oxidizers and boilers heat recovery system (Unit #23) is based on the temperature which is established during the most recent stack performance test and continuously monitored.

As noted in section 1.2 of the statement of basis, ABE requested a new Chapter be included referencing the monitoring in the permit meets the requirements of compliance assurance monitoring. Instead of adding a new Chapter, DENR recommends referencing the compliance assurance monitoring regulations for the applicable systems.

7.5 Periodic Monitoring

Periodic monitoring is required for each emission unit that is subject to an applicable requirement at a source subject to the Title V air quality operating permit program. The permitted units at this facility are required to meet opacity, particulate matter, sulfur dioxide, nitrogen oxide, volatile organic compound, carbon monoxide, hazardous air pollutants, operational limits, and limits applicable to the New Source Performance Standards and Maximum Achievable Control Technology Standards. Periodic monitoring will be based on the following:

1. Periodic monitoring for opacity will be based on periodic visible emission readings or evaluations. Periodic monitoring of particulate matter emissions will consist of visible emission readings and proper operation and maintenance of all pollution control devices.
2. Periodic monitoring of sulfur dioxide emissions for units burning natural gas is not required based on the sulfur content in pipeline quality natural gas.
3. Periodic monitoring of the nitrogen oxide emission limit will be based on periodic testing.
4. Periodic monitoring of the carbon monoxide emission limits will be based on good combustion practices.
5. Periodic monitoring of volatile organic compound emission limits will be based on recordkeeping, reporting, and leak checks in accordance with the New Source Performance Standards.
6. Periodic monitoring for the flares will be based upon the work practice requirements in 40 CFR § 60.18. DENR considers the requirements in 40 CFR § 60.18 to be sufficient to meet the periodic monitoring requirements.

Periodic monitoring of the operational limit shall be based on recordkeeping and reporting requirements. The applicable limits in the New Source Performance Standards and Maximum Achievable Control Technology Standards will be based on the requirements in the applicable standard.

ABE has requested the flare operational requirements be removed from the permit. ABE's application indicates the flare will achieve 98 percent efficiency. To make this requirement enforceable some form of limitation is required. DENR uses work practice standards in 40 CFR § 60.18 to meet this requirement.

7.6 Air Fees

Sources subject to the Title V air quality operating permit program are subject to an annual air quality fee. The fee consists of an administrative fee and a per ton fee based on the actual tons per year of pollutant emitted. The pollutants charged for are particulate matter, sulfur dioxides, nitrogen oxides, volatile organic compounds, and hazardous air pollutants. The actual emissions are calculated by DENR based on operational information provided by the source.

7.7 Other Changes Requested

Besides the changes noted in previous sections, ABE requested additional changes that clarify or update the existing information described in the permit. DENR agreed to make the following changes requested by ABE because they would generally be considered an administrative change or the requirements were no longer applicable. In some instances, DENR agreed to make the change, but revised the suggested language:

1. Revise the contact information for the permit, facility and responsible official;
2. Revise the "Type of Operation" description;
3. Revise the operational rates and Tank ID's in Table 1-1 of the existing permit;
4. Remove permit condition 6.4: Initial startup notification;

5. Permit condition 7.1: Visibility limit: visibility limit applicability;
6. Permit condition 19.2: Monitoring temperature for Unit #23: Remove monitoring the temperature of exhaust applicability to the regenerative thermal oxidizer;
7. Permit condition 19.6: Monitoring sulfur content: Remove distillate oil record requirements to certify sulfur content;
8. Remove permit condition 19.8: Monitoring natural gas consumption in Unit #23;
9. Remove Unit #9, Unit, #10, Unit #16, and Tank - 803;
10. Description change for Unit #23: miscellaneous tanks include one slurry tank, not two and there are only three centrifuges at the plant, not five;
11. Revise description of Unit #6 and Unit #24: The equipment is not considered a drum;
12. Define specifically which units are applicable to visible emissions monitoring in permit condition 5.2; and
13. Update Table 1-1 for Unit #30 which was a typographical error in the draft originally sent to ABE for review.

DENR did not agree to make the following changes requested by ABE because they changed general template language that has been agreed upon by several different entities, removed language that is required by a corresponding regulation, changed the meaning of the requirement, or was duplicative in nature.

1. Remove the sentence referring to the Secretary forwarding written notice of permit changes to EPA in condition 3.1;
2. Add additional language to permit condition 4.1: Permit Effective;
3. Add additional language to permit condition 4.3: Permit Expiration;
4. Change template language by adding additional language in sections 5.1: Recordkeeping;
5. Remove template language in permit condition 6.2: Signatory requirements;
6. Remove template language in permit condition 6.3: Certification statement;
7. Permit condition 6.10: Annual compliance certification: Remove standard permit language;
8. Permit condition 6.11: Reporting permit violations: change template language;
9. Permit condition 7.2: Visibility exceedances: change template language;
10. Remove permit condition 7.27: Minimizing emissions;
11. Revise language by adding a definition of when an exception to the permit condition would apply for permit condition 10.4: Monitoring water flow rate for Unit #4 and Unit #22;
12. Revise language by adding a definition of when an exception to the permit condition would apply for permit condition 10.5: Monitoring temperature for Unit #23;
13. Remove permit condition 9.7; and
14. Use potential emission calculations for natural gas only for Unit #2.

7.8 Insignificant Activities

ABE submitted a list of insignificant activities with the application to DENR. ABE considers the following activities to be insignificant:

1. Grain and DDGS Fugitives.

2. AB1 Wet DGS Storage/Loadout.
3. AB2 Wet DGS Storage/Loadout.
4. AB1 Process Tank Vents (Vacuum Tank, Slurry Tank, CIP Return Tank, Liquefaction Tank #1, #2, Yeast Propagator)
5. AB2 Process Tank Vents (Liquefaction Tank, Whole Stillage Tank, Thin Stillage Tank, Syrup Tank, Cook Water Tank).
6. Indirect Gas Fired Heaters.
7. Temporary grain storage piles.

A unit may not be considered an insignificant activity if a state or federal limit is applicable to the unit. If a unit is applicable to a federal standard such as a New Source Performance Standard, (Chapter 2.0) or a Maximum Achievable Technology Standard (Chapter 6.0), those units may not be considered insignificant activities. If a unit is applicable a state limit such as a limit to allow a facility to forgo a Title V permit or a Prevention of Significant Deterioration Permit which include the long term 12-month rolling facility limit, those units which contribute to the facility limit may not be considered insignificant activities.

However, a strict interpretation would require every system that emits very small amounts would need to be included in the permit. Since the limitation is based on tons per year, DENR includes those units that have the potential to emit 1 ton per year (0.5 tons will round to 1) or more in the permit.

The following units have the potential to emit 0 tons (emissions round to zero) per year and will not be included in the permit. Even though the units are not included in the permit, the emissions from the units still contribute to the facility 12-month rolling total limit:

1. Grain and DDGS Fugitives.
2. AB1 Process Tank Vents (Vacuum Tank, Slurry Tank, Yeast Propagator)
5. AB2 Process Tank Vents (Whole Stillage Tank, Thin Stillage Tank, and Syrup Tank).
6. Indirect Gas Fired Heaters.
7. Temporary grain storage piles.

8.0 Recommendation

Any source operating in South Dakota that meets the definition of a major source for any criteria pollutant is required to obtain a Title V air quality operating permit. A major source is defined as having the potential to emit greater than 100 tons per year of a criteria pollutant or greater than or equal to 10 tons per year of a single hazardous air pollutant, or greater than or equal to 25 tons per year of a combination of hazardous air pollutants. In addition, sources subject to federal New Source Performance Standards or national emission standards for hazardous air pollutants must obtain a Title V air quality operating permit, unless otherwise noted in the state or federal rule.

ABE's potential emissions are greater than the major source threshold for criteria air pollutants and subject to several New Source Performance Standards and Maximum Achievable Control Technology Standards. Therefore, ABE is required to obtain a Title V air quality operating permit.

Based on the above findings, ABE is required to operate within the requirements stipulated in the following regulations:

1. ARSD 74:36:05 – Operating Permits for Part 70 Sources;
2. ARSD 74:36:06 – Regulated Air Pollutant Emissions;
3. ARSD 74:36:07 – New Source Performance Standards;
4. ARSD 74:36:08 – National Emission Standards for Hazardous Air Pollutants;
5. ARSD 74:36:11 – Stack Performance Testing;
6. ARSD 74:36:12 – Control of Visible Emissions;
7. ARSD 74:36:13 - Continuous emission monitoring systems; and
8. SDCL 34A-1-58.1 - Air pollution control program fees.

Based on the information submitted in the air quality permit application, DENR recommends conditional approval to renew ABE's Title V air quality operating permit. Any questions pertaining to this permit recommendation should be directed to Ashley Brakke, Engineer II, South Dakota Department of Environment and Natural Resources – Air Quality Program.