



Statement of Basis

Construction Permit

**Northern Lights Ethanol, LLC d/b/a
POET Biorefining –Big Stone City**

Big Stone City, South Dakota

Table of Contents

	Page
1.0 Background	1
1.1 Existing Equipment	1
1.2 Proposed Changes	5
2.0 New Source Performance Standards	5
2.1 Standards Applicable to Storage Tanks	5
2.2 Standards for Synthetic Organic Chemical Manufacturing	6
2.3 Other Applicable New Source Performance Standards	7
3.0 New Source Review	7
4.0 Prevention of Significant Deterioration	7
4.1 Potential Emissions	8
<i>4.1.1 Potential Emissions – Storage Tanks</i>	<i>8</i>
<i>4.1.2 Potential Emissions – Centrifuges</i>	<i>9</i>
<i>4.1.3 Potential Emissions – Super Heaters and Vaporizers</i>	<i>10</i>
4.2 Potential Emission Summary	10
4.3 Prevention of Significant Deterioration Summary	11
5.0 National Emission Standards for Hazardous Air Pollutants	11
6.0 Maximum Achievable Control Technology Standards	11
6.1 Potential Hazardous Air Pollutant Emissions	11
7.0 State Requirements	12
7.1 State Visible Emission Limits	13
7.2 State Emission Limits	13
7.3 Performance Tests	13
7.4 Title V Air Quality Operating Permit Revision	13
8.0 Recommendation	13

1.0 Background

On July 3, 2001, the South Dakota Department of Environment and Natural Resources (DENR) issued a Title V air quality operating permit to Northern Lights Ethanol, LLC d/b/a POET Biorefining –Big Stone City (Northern Lights Ethanol) for an ethanol production facility near Big Stone City, South Dakota. The facility was permitted to produce 62 million gallons of undenatured ethanol per year and dried distiller grains and solubles (DDGS) as a saleable byproduct. After a modification in June 2002, which increased the production rate to 80 million gallons of undenatured ethanol per year, the Title V air quality operating permit was renewed on September 8, 2006.

The following revisions were made to the Title V air quality operating permit:

1. On April 10, 2007, DENR issued a minor permit amendment for the installation of two grain storage bins and associated equipment;
2. On October 30, 2007, DENR issued a minor permit amendment to revise the amount of paved roads and parking lots required to be paved;
3. On February 2, 2009, DENR issued a minor permit amendment to remove the sulfur dioxide testing requirements for the regenerative thermal oxidizer and correct the plant wide carbon monoxide limit; and
4. On March 19, 2009, DENR issued a modification to route the fluid bed cooler exhaust to the regenerative thermal oxidizer for air pollution control during normal operation and allow the regenerative thermal oxidizer to be bypassed for 100 hours per year. Several other changes were made during the modification.

On February 18, 2012, DENR issued Northern Lights Ethanol a renewed Title V Operating Permit. This permit was amended on December 31, 2012 in order to remove hourly limitations associated with the boilers (Unit #12 and #13) when being fired by natural gas. The following revisions were made to the Title V air quality operating permit:

1. February 24, 2014 – Minor Amendment to make the following changes:
 - a. Update descriptions for Units #2 to include in the description “grain” instead of “corn”, in order to be consistent with the other permitted units.
 - b. Remove the fugitive opacity limit for the grain storage bins required by NSPS Subpart DD.
 - c. Changing the permit conditions in regards to NSPS subpart Kb to end the 30-day notification requirement for external visual inspections
 - d. Reclassify boilers under MACT subpart JJJJJ as gas fired boilers.
2. August 29, 2014 – Administrative Amendment to change permit contact, facility contact and responsible official.
3. May 19, 2016 – Modification to add boiler #3 and a fifth fermenter to the Title V permit from Construction Permit #28.0502-29-01C.

1.1 Existing Equipment

Table 1-1 provides a list of the units presently permitted which was taken from the current Title

V air quality operating permit as amended on May 19, 2016.

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

Unit	Description	Maximum Operating Rate	Control Device
#1	Grain receiving, grain transfer via enclosed conveyor belt systems, and storage bin loading. Trucks and railcars transport grain to the ethanol plant and dump grain into receiving pits located in a partially enclosed building. Elevator legs transport the grain from the receiving pit to grain storage bins.	Transfer rate equals 840 tons of grain per hour Permanent grain storage capacity is 2,810,000 bushels	Baghouse
	Dried distiller grain and solubles load out by truck or railcar.	220 tons of dried distiller grain and solubles per hour	
#2	Grain cleaning, grain transfer, and surge bin loading. The grain is transferred from the grain storage bins to a grain cleaner. The cleaned grain is transferred to a surge bin.	140 tons of grain per hour	Baghouse
#4	Fermentation system. Ethanol is produced from the fermentation process. The fermentation process consists of four fermentation tanks and the liquid beer is stored in a beer well.	165 tons of mash per hour	Wet scrubber. The owner or operator shall route the exhaust gases from the wet scrubber to the regenerative thermal oxidizer associated with Unit #6, except as allowed under the terms of this permit.
	Distillation process. The distillation process distills the liquid beer from the fermentation process. The distillation process consists of the beer stripper, rectifier, side stripper, molecular sieve, and evaporator.	34,026 gallons of beer per hour	
#6	Dryer system – Two ICM dried distiller grains and solubles dryers operated in parallel and a ring dryer operated in series with the two ICM dryers. The two ICM dryers include an ICM multi-cyclone to collect product. The ring dryer includes a Barr-Rosin multi-cyclone to collect product. All three dryers are fired with natural gas.	30 tons of dried distiller grains and solubles per hour. The two ICM dryers rated at 55 million Btus per hour per dryer. The ring dryer rated at 60 million Btus per hour.	Seven chambered regenerative thermal oxidizer
	Seven centrifuges used to separate the thin stillage and solids fractions	Five at 25 tons per hour and two at 50 tons per hour.	

Unit	Description	Maximum Operating Rate	Control Device
	of the wet distiller grain.		
	Exhaust gases from Unit #4 and #26.	See applicable unit	
	Seven chambered regenerative thermal oxidizer fired with natural gas	42 million Btus per hour	
#7	Dried distiller grains and solubles receiver system.	30 tons per hour	MAC baghouse
#8	Dried distiller grains and solubles silo loading process.	27 tons per hour	MAC baghouse
#9	Industrial cooling tower #1 – 3 cell towers	18,000 gallons per minute	Not applicable
#10	Boiler #1 – 2001 Johnston steam boiler, Model #PFTS2000-3G150S, fired with natural gas and diesel.	81 million Btus per hour heat input.	Low NO _x burner
#11	Boiler #2 – 2001 Johnston steam boiler, Model #PFTS2000-3G150S, fired with natural gas and diesel.	81 million Btus per hour heat input.	Low NO _x burner
#15	Tank #1 – 2001 aboveground ethanol storage tank.	180,000 gallons	Internal floating roof
#16	Tank #2 – 2001 aboveground ethanol storage tank.	180,000 gallons	Internal floating roof
#17	Tank #3 – 2001 aboveground denatured ethanol storage tank.	1,000,000 gallons	Internal floating roof
#18	Tank #4 – 2001 aboveground denatured ethanol storage tank.	1,000,000 gallons	Internal floating roof
#19	Tank #5 – 2001 aboveground denaturant (gasoline) storage tank.	65,000 gallons	Internal floating roof
#20	Submerged truck loading rack	39,000 gallons of denatured ethanol per hour.	Air-assisted flare. The owner or operator shall route the exhaust gases from the truck loading rack to the flare, except as allowed under the terms of this permit.
	Air-assisted flare	6.4 million Btus per hour heat input	
#21	Rail car loading rack	150,000 gallons of denatured ethanol per hour.	The owner or operator shall route the exhaust gases from the rail car loading

Unit	Description	Maximum Operating Rate	Control Device
			rack to the flare associated with Unit #20, except as allowed under the terms of this permit.
#22	Hammer mill #1	22 tons per hour	Baghouse
#23	Hammer mill #2	22 tons per hour	Baghouse
#24	Hammer mill #3	22 tons per hour	Baghouse
#25	Hammer mill #4	22 tons per hour	Baghouse
#26	Five fermenters.	Fermenters - 165 tons of mash per hour.	Wet scrubber. The owner or operator shall route the exhaust gases from the wet scrubber to the regenerative thermal oxidizer associated with Unit #6, except as allowed under the terms of this permit.
	Distillation system consisting of beer stripper, rectifier, side stripper, two molecular sieves, and evaporators.	74,490 gallons of beer per hour.	
#27	Hammer mill #5	22 tons per hour	Baghouse
#28	Hammer mill #6	22 tons per hour	Baghouse
#29	Fluid bed cooler for the dried distiller grains and solubles.	30 tons of dried distiller grains and solubles per hour	Baghouse. The owner or operator shall route the exhaust gases from the baghouse to the ring dryer associated with Unit #6, except as allowed under the terms of this permit.
#30	Dried distiller grains and solubles silo.	3,000 ton capacity. Loading rate of 27 tons per hour.	Baghouse
#31	Industrial cooling tower #2 – 3 cell towers	18,000 gallons per minute	Not applicable
#32	Boiler #3 fired with natural gas	81 million Btus per hour	Low NOx burner

1.2 Proposed Changes

On May 4, 2016, Northern Lights Ethanol submitted an air quality construction permit to construct and operate the following:

1. A new 2,000,000 gallon ethanol storage tank;
2. Repurpose Unit #16 from an ethanol storage to a denaturant storage tank;
3. Include a scenario that allows the centrifuge emissions to vent directly to the atmosphere when the regenerative thermal oxidizer is down; and
4. Correct the maximum capacity description for the centrifuges.

Northern Lights Ethanol is requesting the maximum capacity of the centrifuges in the existing permit be changed from: “Seven centrifuges used to separate the thin stillage and solids fractions of the wet distiller grain. Five at 25 tons per hour and two at 50 tons per hour”, to “Seven centrifuges used to separate the thin stillage and solids fractions of the wet distiller grain. Five at 150 gallons per minute and two at 300 gallons per minute.” Northern Lights Ethanol is not requesting an increase in production.

On June 6, 2016, Northern Lights Ethanol submitted updated calculations for the centrifuges emissions and is proposing to convert the two existing shell and tube heat exchangers used as a vaporizer in the distillation processes associated with Units #4 and #26 to super heaters and install two kettle style vaporizers. The kettle style vaporizers will be part of the current distillation process in Units #4 and #26. Although the kettle style vaporizers are not emission units in and of themselves, their installation will require installation of additional valves, connections, relief valves, and flow meters which are defined as “Equipment in VOC service” in 40 CFR 60, Subpart VV.

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 the proposed changes for this facility. The following may be applicable.

2.1 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.

The proposed storage tanks will be constructed after July 23, 1984, the capacity of the tank is greater than 19,913 gallons, and will contain “volatile organic liquids”. Therefore the new storage tank is applicable to Kb and the construction permit will contain permit conditions for new storage tank.

It has already been determined in previous reviews Unit #16 is applicable to this subpart. Therefore, changing the liquid stored in the tank does not change the applicability or the federal requirements.

2.2 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.

In previous reviews it has been determined Northern Lights Ethanol is applicable to Subpart VV and not Subpart VVa. However, Northern Lights Ethanol requested DENR require and include the Subpart VVa requirements into their permits. Therefore, the proposed construction will also be applicable to Subpart VVa. It is possible for a facility to trigger applicability to VVa, by making certain modifications to the facility. This is based on capital expenditure. In order to trigger the change a percentage of the cost of the facilities replacement cost must be met by the capital expenditures for the project.

The capital expenditure is based on the pumps, valves and connections used to fill the storage tank and to install the two kettle style vaporizers. The capital expenditure for these items would be very small compared to the cost of replacing all of the pumps, valves, connections, etc. throughout the entire plant.

Therefore, Northern Lights Ethanol will not trigger applicability to VVa due to this project. Since, Northern Lights Ethanol is voluntarily complying with VVa, the proposed construction will be required to comply with VVa for any new pumps valves, connections, etc., required to connect the new storage tank and install the two kettle style vaporizers to the facility.

2.3 Other Applicable New Source Performance Standards

DENR reviewed the other New Source Performance Standards and determined there are no other standards applicable to Northern Lights Ethanol's proposed construction.

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. Northern Lights Ethanol is located near Big Stone City, South Dakota, which is in attainment or unclassifiable for all the criteria air pollutants regulated under the Clean Air Act. Therefore, Northern Lights Ethanol 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) recently published and implemented a final rule that no longer lists ethanol plants as a chemical manufacturing plant. Therefore, Northern Lights Ethanol 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.

On June 23, 2014, the Supreme Court of the United States issued a ruling that the EPA could not require facilities to obtain a PSD permit based solely on greenhouse gas emissions. The Supreme Court of the United States ruling states that in order for a PSD evaluation for greenhouse gas to occur, a facility must trigger one of the major source thresholds for another regulated pollutant before a greenhouse gas emission can be considered under the PSD permitting program. This ruling applies to both new PSD sources as well as major source modifications.

4.1 Potential Emissions

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.

Potential emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming that each unit operates every hour of every day of the year (8,760 hours).

4.1.1 Potential Emissions – Storage Tanks

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.

Northern Lights Ethanol has a production limit for undenatured ethanol of 88 million gallons. The worst case scenario would be all the ethanol produced would go through the new storage tank. Therefore, the potential emission calculations will be based on 88 million gallons of ethanol going through the storage tank.

Northern Lights Ethanol indicated in the application the worst case scenario for the repurposed denaturant storage tank would be all the denaturant would go through Unit #16. Table 4.1 summarizes the potential volatile organic compound emissions from the additional storage tank, repurposed tank and components.

Table 4.1 – Storage Tank Potential Emissions

Unit	Individual Tank Capacity (gallons)	Net throughput (gallons)	VOC Emissions (tons per year)
#16 – Repurposed	180,000	5,293,800	0.86
#33 - Ethanol	2,000,000	88,000,000	0.21
Equipment Leaks ¹	-	-	2.1

¹ – Includes addition of components associated with the new storage tank.

4.1.2 Potential Emissions – Centrifuges

Northern Lights Ethanol is requesting a scenario when the regenerative thermal oxidizer is down, to allow the emissions from the seven centrifuges to vent directly to the atmosphere. Northern Lights Ethanol has accepted a short term limit of 3.3 pounds per hour for all seven centrifuges. Table 4.2 displays the short term limit for the seven centrifuges.

Table 4.2 – Centrifuge Short Term Limit (pounds per hour)

Description	VOC Short Term Limit
Seven Centrifuges	3.3

Equation 4-1 and Table 4.2 were used to calculate the potential emissions for the centrifuges operating 8,760 hours per year. Table 4.3 displays the potential emissions from the centrifuges.

Equation 4-1 – Centrifuge Potential Emissions (tons per year)

$$\text{Potential emissions} \frac{\text{tons}}{\text{year}} = \frac{\text{Emission Rate} \frac{\text{pounds}}{\text{hour}} \times 8,760 \text{ hours}}{2000 \frac{\text{pounds}}{\text{ton}}}$$

Table 4.3 – Centrifuge Potential Emissions (tons per year)

Description	VOC
Seven Centrifuges	14.5

Northern Lights Ethanol has requested an operational limit of 500 hours to vent the centrifuges to ambient air when the regenerative thermal oxidizer is not in operation. Equation 4-2 and Table 4.2 were used to calculate the potential emissions for the time the regenerative thermal oxidizer is not operating. Table 4.4 displays the potential emissions for the time the regenerative thermal oxidizer is not in operation.

Equation 4-2 – Centrifuge Potential Emissions (tons per year)

$$\text{Potential emissions} \frac{\text{tons}}{\text{year}} = \frac{\text{Emission Rate} \frac{\text{pounds}}{\text{hour}} \times 500 \text{ hours}}{2000 \frac{\text{pounds}}{\text{ton}}}$$

Table 4.4 – Controlled Centrifuge Potential Emissions (tons per year)

Description	VOC
Seven Centrifuges	0.8

4.1.3 Potential Emissions – Super Heaters and Vaporizers

Northern Lights Ethanol is proposing to convert the two existing shell and tube heat exchangers to super heaters and install two kettle style vaporizers in the distillation process associated with Units #4 and #26. The potential emissions from the super heater and vaporizers will be fugitive volatile organic compounds from leaks in the connections and components. Northern Lights Ethanol provided the emission rate for leaking components and is displayed in Table 4.5.

Table 4.5 – Potential Emission Rate (pounds per hour)

Description	VOC Emission Rate
Super Heaters and Vaporizers¹ (Evaporation System)	3.47

¹ - Includes all components and connections associated with proposed construction.

Equation 4-1 and the emission rate from Table 4.5 were used to calculate the potential emissions from the super heater and vaporizers. The potential emissions are displayed in Table 4.6.

Table 4.6 – Potential Emissions from the Proposed construction (tons per year)

Description	VOC
Super Heaters and Vaporizers (Evaporation System)	15.2

Northern Lights Ethanol voluntarily complies with 40 CFR Part 60 Subpart VVa, which requires the facility to monitor for leaks utilizing the Leak detection and repair (LDAR) to minimize leaking components and connections. Northern Lights Ethanol provided in the application the emission rate for the proposed construction utilizing the LDAR monitoring and the emission rate is displayed in Table 4.7.

Table 4.7–Potential Emission Rate Utilizing LDAR (pounds per hour)

Description	VOC Emission Rate
Super Heaters and Vaporizers (Evaporation System)	0.29

Equation 4-1 and the emission rate from Table 4.7 were used to calculate the potential emissions from the super heater and vaporizers. The potential emissions are displayed in Table 4.8.

Table 4.8 – Potential Emissions from the Proposed construction (tons per year)

Description	VOC
Super Heaters and Vaporizers (Evaporation System)	1.3

4.2 Potential Emission Summary

Unit #16 currently stores ethanol and the potential emissions are 0.34 tons per year. Therefore, DENR will show the increase of potential emissions from Unit #16 storing denaturant. Table 4.9 summarizes the potential emissions for the existing operation and the proposed construction.

Table 4.9 –Potential Volatile Organic Compound Emissions (tons per year)

Description	PM10	SO ₂	NO _x	CO	VOC
Existing Facility¹	79	95	118	114	97
Unit # 16 -Increase	-	-	-		0.5
Unit #33	-	-	-		0.2
Seven Centrifuges	-	-	-	-	0.8
Equipment Leaks					2.1
Super Heaters and Vaporizers (Evaporation System)	-	-	-	-	1.3
New Total	79	95	118	114	102

¹ –Emissions from the Statement of Basis for Construction Permit #28.0502-29-01C;

4.3 Prevention of Significant Deterioration Summary

Based on the potential emissions in Table 4.9, Northern Light Ethanol is still capable of operating in compliance with the existing short term limits. Northern Lights Ethanol is capable of meeting the plant wide limits to maintain actual air emissions below the major source threshold under the PSD program. Therefore, the proposed construction is not applicable to the PSD program. Based on the US Supreme Court’s decision and because Northern Lights Ethanol is not applicable to the PSD program, a review for greenhouse gas emissions is not warranted or required.

5.0 National Emission Standards for Hazardous Air Pollutants

DENR reviewed 40 CFR Part 61 to determine the applicability to Northern Lights Ethanol to any of the subparts and determined there are not any that are applicable to the proposed construction.

6.0 Maximum Achievable Control Technology Standards

6.1 Potential Hazardous Air Pollutant 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.

According to EPA’s Original List of Hazardous Air Pollutants, ethanol (aka ethyl alcohol) is not

considered a hazardous air pollutant; therefore, the addition of the ethanol storage tank and components of the storage tank will not increase the potential hazardous air pollutant emissions.

Northern Lights Ethanol did not include the calculations for the potential hazardous air pollutant emissions for Unit #16 when storing denaturant. Therefore, DENR will assume the potential hazardous air pollutants emissions will be the same as the potential volatile organic compound emissions.

Northern Lights Ethanol submitted calculations for the potential hazardous air pollutant emissions for the centrifuges. The emission rate for the potential hazardous air pollutants emissions is 0.05 pounds per hour and Equation 4-2 was used to calculation the potential emissions. Table 6.1 displays the potential hazardous air pollutant emissions.

Northern Lights Ethanol submitted calculations for the potential hazardous air pollutant emissions for the super heater and two vaporizers. Certain hazardous air pollutants are also volatile organic compounds (with the exception of heavy metals). Since there is no given information about the composition of the volatile organic compound emissions, all 1.3 tons will be assumed to be hazardous air pollutant emissions. Table 6.1 displays the potential hazardous air pollutant emission from the super heater and two vaporizers.

Table 6.1 – Potential Hazardous Air Pollutant emissions (tons/year)

Description	Total HAP
Existing Facility¹	7.5
Unit #16 - Increase	0.5
Seven Centrifuges	0.01
Super Heater and Two Vaporizers (Evaporation System)	1.3
Total	9.3

¹ – Emissions from the Statement of Basis for Construction Permit #28.0502-29-01C.

The potential to emit is less than 10 tons of a single hazardous air pollutant, and has the potential to emit less than 25 tons of any combination of hazardous air pollutants. Therefore, Northern Lights Ethanol is still considered an area source for hazardous air pollutants.

DENR reviewed applicable Maximum Achievable Control Technology Standards and determined that none are applicable to the proposed construction.

7.0 State Requirements

Northern Lights Ethanol’s existing operation is covered under a Title V air quality operating permit. In accordance with ARSD 74:36:20:01, a construction permit is required for all modifications to an existing source. The proposed construction has the potential to increase the actual emissions of the facility and is considered a modification. Therefore, Northern Lights Ethanol is required to obtain a construction permit for the proposed construction.

7.1 State Visible Emission Limits

ARSD 74:36:12:01 establishes a visible emission limit of 20 percent opacity for each unit.

7.2 State Emission Limits

The proposed construction is not applicable to the state's particulate or sulfur dioxide limits.

7.3 Performance Tests

Northern Lights Ethanol has accepted short term limits and an hourly operational limit for 500 hours for the seven centrifuges venting to the atmosphere. Therefore, DENR will require stack testing to show compliance with the short term limit.

Northern Lights Ethanol indicated in an email that five of the centrifuges emissions are routed to one common header and the other two centrifuges emissions are routed to a separate common header. Therefore, Northern Lights Ethanol can stack test the seven centrifuges with one of following options:

1. Stack test all seven centrifuges individually;
2. Stack test both of the individual headers; or
3. Route all seven centrifuges to a common header and Stack Test the common header.

7.4 Title V Air Quality Operating Permit Revision

Northern Lights Ethanol is required to operate within the requirements stipulated in the Title V air quality operating permit. Northern Lights Ethanol will be required to submit a revision to the Title V air quality operating permit to include the changes detailed in the construction permit.

8.0 Recommendation

Based on the information submitted in the construction permit application, DENR recommends conditional approval of a construction permit for the proposed construction. Northern Lights Ethanol is required to construct and operate within the requirements stipulated in the following regulations:

1. ARSD 74:36:06 – Regulated Air Pollutant Emissions;
2. ARSD 74:36:07 – New Source Performance Standards;
3. ARSD 74:36:12 – Control of Visible Emissions; and
4. ARSD 74:36:20 – Construction Permits for New Sources and Modifications.

Any questions pertaining to this permit recommendation should be directed to Earl Berg, Engineer I.