
METHOD 2B PATHWAY

CALIFORNIA LOW CARBON FUEL STANDARD

GENERAL INFORMATION

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- Appendix A: Columbus, NE - Dry Mill Air Construction Permit
- Appendix B: Columbus, NE - Cogen Air Construction Permit
- Appendix C: CA-GREET Electronic Files

BACKGROUND

Archer Daniels Midland Company (ADM) has constructed two new dry mill facilities. One facility is located in Columbus, Nebraska and the other facility is located in Cedar Rapids, IA. Both facilities are located adjacent to an ADM corn wet mill and a combined heat and power plant. Combined heat and power is also commonly referred to as cogeneration. These “sister” dry mill facilities also have similar design and operational characteristics. However, the Cedar Rapids, IA facility does have some differences from Columbus such as fuels combusted in the cogeneration. As a result, this submission only addresses the Columbus, NE dry mill at this time. Based on communications with CARB, this application will be updated to include the Cedar Rapids, IA facility in the near future.

These plants have three unique processes for dry mills, which form the basis for the new pathway request and these include the use of advanced process technology and heat integration for reduced process energy, solid fuel fired cogeneration, and specifically co-firing of biomass. Additional information is provided for each of these in this application.

Due to these factors, there is not a current pathway that accurately describes these new dry mills. There isn't a pathway for any dry mill that uses coal and/or cogeneration and the energy requirements used to establish the current pathways are significantly different than these new facilities. Therefore, the Method 2B application requests a new pathway for these processes.

This revised submission adjusts a couple process input parameters, primarily the overall energy for fuel ethanol production and the energy share percents. The changes are based on a discrepancy identified in the original documentation used for the analysis and actual operational data. These changes are to the input values only. The lowered energy requirement coupled with the higher coal percentage offset each other resulting in negligible change to the overall carbon intensity. In all cases the values are less than the original case, however, ADM is not requesting any change in the pathway values.

This document has the **trade secret / confidential information** redacted. The information reported under the contact information in this application should be used if there are questions concerning it.

ADM DRY GRIND ETHANOL PROCESS DESCRIPTION

Utilizing the dry-grind method of ethanol production, processors can produce about 2.7 gallons of ethanol from a bushel of corn. Continued improvements to process will move this number closer to 2.8 in near future. But current plant design energy numbers are based on the 2.7 to be conservative. Overall the ADM dry mill process operation is similar to those reviewed by CARB for the other ethanol pathways with the exceptions noted below which includes the heat recovery systems for distillation/dehydration, evaporation, and co-product drying. A process flow diagram that generally corresponds to the process steps below is attached as Figure 3. This figure also identifies the major combustion sources (i.e., dryers, flare, RTO) in the dry mill by the fuel input labels which are all natural gas. Typical natural gas usage for the dry mill is shown in Figure 4. Combustion sources for the Cogeneration facility are discussed under that section.

CORN MILLING

In the ADM facility the entire corn kernel is ground into a coarse flour, then slurried with water to form a "mash." The mash is then cooked, treated with enzymes, fermented and distilled. Products of the dry-grind process include distillers grains and ethanol.

STARCH CONVERSION

Corn endosperm starch cannot be utilized directly by yeast. It must first be broken down into simple sugars prior to fermentation. In order to accomplish this conversion, enzymes are added to the mash during cooking. The first step in breaking down the starch molecule utilizes an alpha-amylase enzyme and steam (gelatinization and liquefaction). The next step involves adding gluco-amylase enzymes at a lower temperature to produce smaller fermentable sugars (saccharification). ADM utilizes continuous cooking which is generally more energy efficient as the flash steam can be used as heat source directly in the process from this unit operation. Discharge from this steam heated source is also heat recovered via a series of heat exchangers to minimize steam usage.

FERMENTATION

After starch conversion has been initiated, the mash is transferred to fermenters where yeast (*Saccharomyces cerevisia*) is added to the converted corn endosperm starch to produce ethanol.

ADM utilizes a continuous fermentation system in order to minimize hardware and water usage which in turn reduces the overall plant evaporation and distillation energy requirements.

DISTILLATION AND DEHYDRATION

Distillation is the process of separating the ethanol from the solids and water in the mash. Conventional distillation/rectification methods can produce 95% pure (190 proof) ethanol. In the ADM design there is a reduction in energy in running the rectifier and utilizing the addition of pressurized 3 bed molecular sieve system. [REDACTED] The rate of this undenatured Ethanol is [REDACTED] gallons per hour. Condensing this [REDACTED] BTU/hr. When you divide this BTU/hr number by production non-denatured gallons per hour you get [REDACTED] BTU/gallon undenatured ETOH energy savings utilizing this improved molecular sieve system with heat recovery system. The anhydrous ethanol is then blended with about approximately 2% denaturant (such as gasoline) to render it undrinkable and thus not subject to beverage alcohol tax.

STILLAGE PROCESSING

The solid and liquid fraction remaining after distillation is referred to as “stillage”. Stillage includes the fiber, oil and protein components of the grain, as well as the non-fermented starch. The “thin stillage” is separated from the insoluble solid fraction using centrifuges. The thin stillage is then sent to evaporators to remove excess water. In the ADM design this is 3 different reboiler systems.

1. Steam reboiler system
2. Waste heat from Dryer (process steam)
[REDACTED]
4. Stillage (Dedert design) MVR (mechanical vapor recompression) primary evaporation <http://www.dedert.com/evaporator.htm>
5. This preconcentrated evaporator is then concentrated to final DS target by HPD MVR (mechanical vapor recompression) evaporation system.



FIGURE 1 Stillage evaporation system including falling film evaporator train and high solids concentration system
(reference: <http://www.hpdsystems.com/en/industries/industrysolutions/ethanolbiofuels/>)

Published and Documented MVR Evaporation Benefits:

- Steam and overall energy consumption was significantly reduced compared to conventional steam heated evaporator systems with the same capacity.
- Cooling water requirements were reduced
- The main vacuum system for the evaporator system was reduced in horsepower, capacity and size compared to one required without use of a MVR
- Higher condensate temperatures provide additional steam savings by providing hot water (185-190 F) source for use in the process.

After evaporation, the thick, viscous syrup is mixed back with the solids to create a feed product known as Wet Distillers Grains with Solubles (WDGS).

FEED PRODUCTS FROM STILLAGE PROCESSING

WDGS, containing 65% moisture, can be used directly as a feed product. In fact, it is often favored by dairy and beef feeders because cattle seem to prefer the moist texture. However, WDGS has a shelf life of only one to two weeks. To increase shelf life and lower transportation costs, WDGS is usually dried to 10 to 12% moisture to produce a product known as Dried Distillers Grain with Solubles (DDGS). Drying distillers grains is energy-intensive, consuming about one-third of the energy requirements of the entire dry-grind plant. With recent technology improvement and closed loop superheated steam dryers this energy is recovered [REDACTED] area to displace traditional steam from boilers or Cogeneration in the case for the Columbus facility.

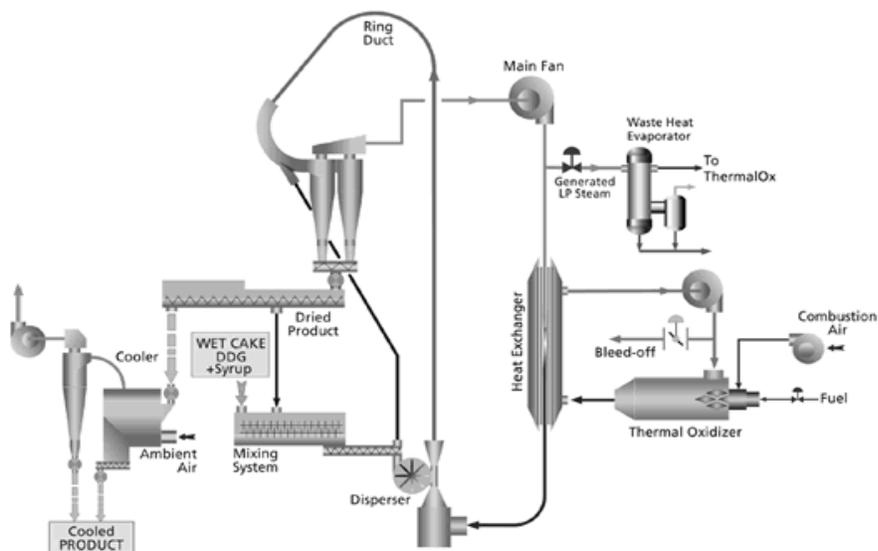
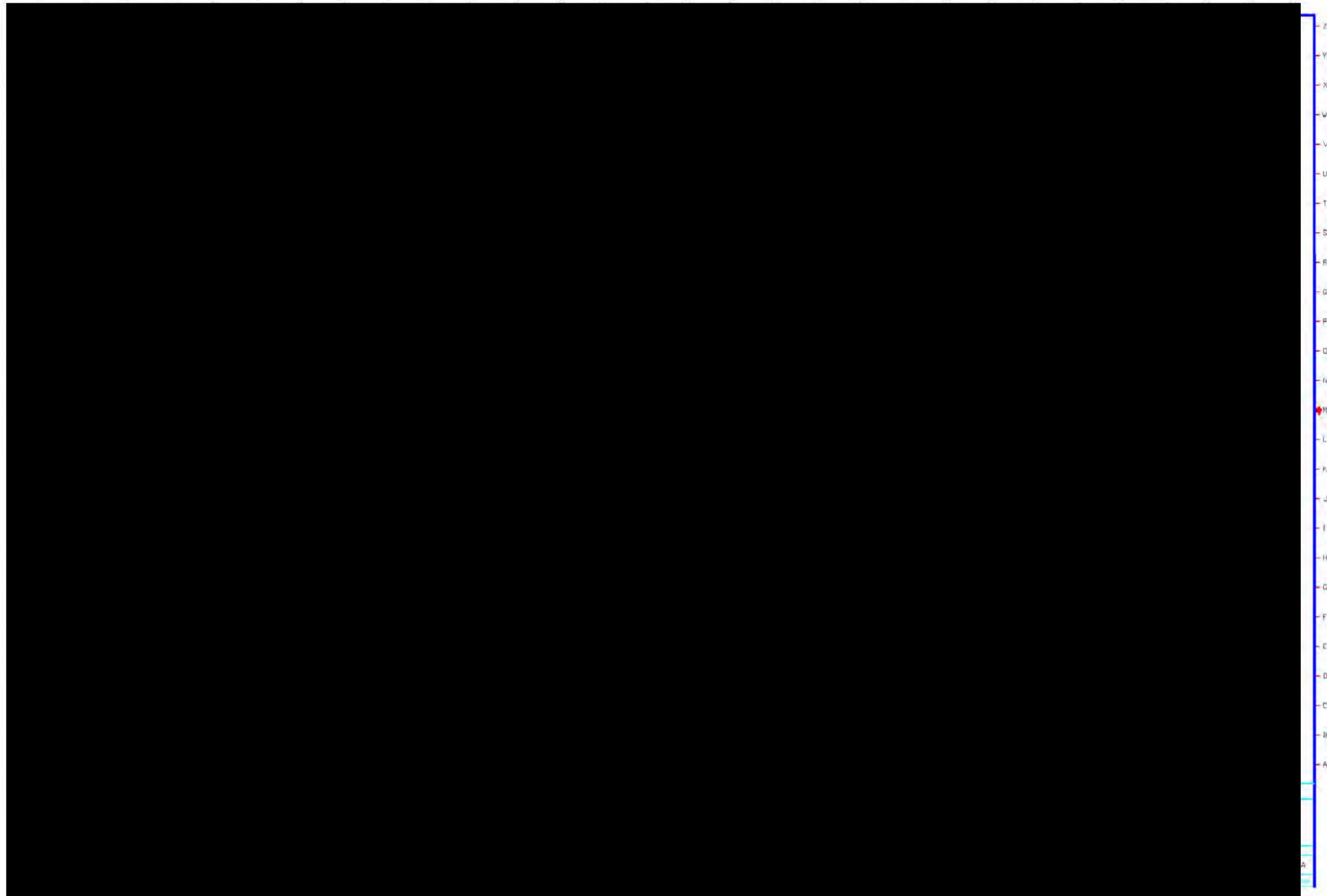


FIGURE 2 Indirect-fired SSD dryer – ring (reference: http://www.barrrosin.com/applications/solids_drying.asp)

This is an important breakthrough as producing a uniform, stable, high-quality feed co-product is essential to the profitability of the plant. The Columbus NE facility has the advantage of a very well developed, local wet feed market for cattle. Design for the Columbus, NE facility is yearly average moisture of [REDACTED]. Steam from the feed dryers is condensed in reboilers [REDACTED]. At a [REDACTED] Wet Bulb (or higher based on recent information) this condensed approximately [REDACTED] % of steam from this source according to process instrumentation and Aspen model validation. Or in energy terms we generate [REDACTED] lb/hr steam at [REDACTED] psig. Condensate from reboilers would be [REDACTED] lb/hr or [REDACTED] BTU/hr recovered to process. When you divide this BTU/hr number by production non-denatured gallons per hour you get [REDACTED] BTU/gallon undenatured ETOH energy savings utilizing this improved drying technology. This range of BTU per gallon is substantiated in the article at the following link. http://www.usda.gov/oce/reports/energy/2008Ethanol_June_final.pdf

DRY MILL PROCESS FLOW DIAGRAM



ADM DRY MILL ENERGY BTU PER GALLON CALCULATION

In reviewing the USDA model for Dry Grind ETOH it is clear from this model that the Dryer steam is not recovered and hence accounts for the majority of the difference between the ADM design and the results presented in this effort. In the USDA model Ethanol final product is condensed on the regeneration stream from a molecular sieve. ADM uses this heat to directly displace steam in distillation reboilers and is able to preheat the same purge stream at the same time. It is able to accomplish this because of the difference in evaporation types. ADM utilizes a Mechanical Vapor Recompression (MVR) evaporator whereas the USDA utilized a less capital intensive and operationally intensive multi-effect evaporator. The difference of the two approaches is that ADM has a much higher temperature condensate to be used back in the process. This excess heat allows the ethanol final product to reduce the BTU/gallon ethanol number as detailed below. Contrasting the USDA model to ADM's more capital intensive facilities, suggests that ADM has installed and utilizes several additional heat recovery heat exchangers beyond the USDA more basic design.

The typical Midwest ethanol dry mill analyzed in CA Greet uses 36,000 BTU/Gallon which is also consistent with the USDA model for dry mill ethanol plants. These plants do not incorporate the dryer steam heat recovery or the distillation/dehydration heat recovery. Subtracting the energy savings associated with these technologies results in a value equivalent to the ADM design value.

| | | |
|--|------------|---------|
| Typical Midwest Dry Mill | 36,000 | btu/gal |
| Dryer Heat Recovery | [REDACTED] | btu/gal |
| <u>Distillation/Dehydrations Heat Recovery</u> | [REDACTED] | btu/gal |
| Typical Midwest Dry Mill w/ADM Heat Recovery | [REDACTED] | btu/gal |
| | | |
| ADM Dry Mill Design Value (facility gate) | [REDACTED] | btu/gal |

Due to the heat recovery integration, particularly the heat from the dryer system, there is minimal difference in the overall plant energy demand whether wet or dry feed is produced. The reason for this is the steam produced in the closed-loop dryers is displacing steam required from the coal boilers. The closed-loop dryer natural gas burners have a higher efficiency than the coal fired cogeneration boilers. As summarized below there is only a [REDACTED] btu/lbs steam or about [REDACTED] difference between distillation steam supplied by the cogeneration boilers versus steam generated from the dryers.

Cogeneration Steam BTU required/lb Steam in [REDACTED]
 [REDACTED] % Cogeneration Efficiency
 970 BTU/lb water condensed

1293.33 Required Coal BTU's for 970 BTU/lb steam

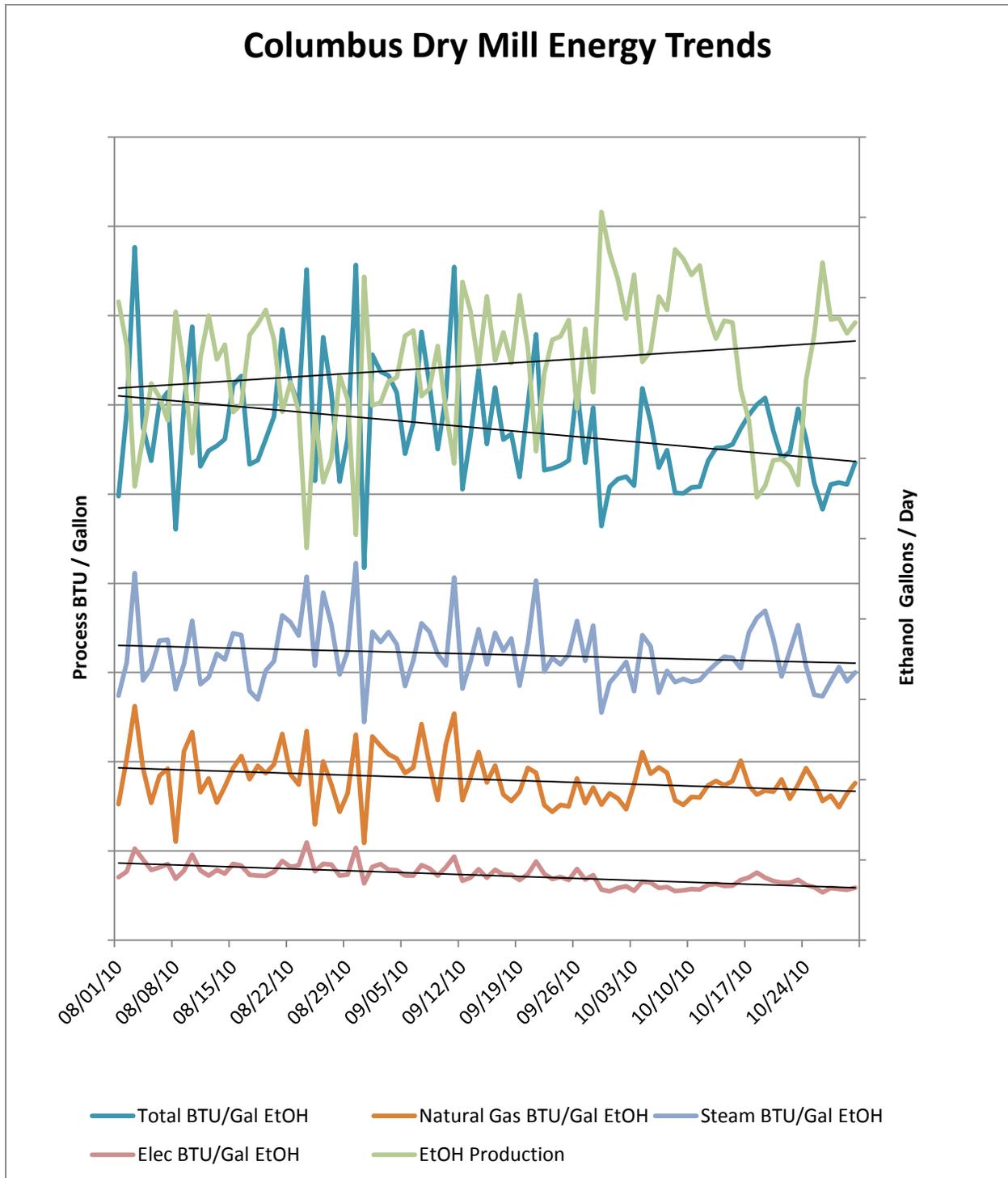
[REDACTED] % Dryer Efficiency
 [REDACTED] BTU/lb Water Evaporator in Dryer
 [REDACTED] Percent that can be condensed in [REDACTED] Wet Bulb (worst case)
 Equivalent BTU input required per usable lb steam in [REDACTED] via Dryer steam
 [REDACTED] Discharge

████████ Difference in BTU/lb steam ██████████

ADM produces different feed products and is continually working with customers to develop new blends to meet their needs. These products include Distillers Dry Grain Solubles, 40 DS Modified, 60 DS Modified, Corn Condensed Distillers Solubles and a modified blend with wet mill wet feed called Golden Synergy. The type of feed product produced varies at any given time based on market demand, equipment operations and other issues which many times cannot be controlled by the facility. Market demand and moisture tolerances can also vary depending on the time of year. Because of the interdependency of operations for feed and ethanol production, minimal difference in energy required to produce the different feed products, the ability to obtain an accurate energy split between feed products and market variability, ADM does not differentiate in energy for each product.

Figure 4 represents the most recent snapshot of energy tracking for the facility. As indicated by the trend line, the energy usage continues to improve as the facility continues through the start-up process. As the ethanol production rate increases, there is a corresponding decrease in energy per gallon. This is due to the increased efficiencies of operating at a higher rate. As the start-up issues are addressed the production rate will continue to increase and stabilize.

FIGURE 4 Columbus Dry Mill Energy Tracking



COGENERATION / COMBINED HEAT AND POWER

Cogeneration (COGEN) or combined heat and power (CHP) plants allow a simultaneous production of electricity and useful thermal energy (steam) using a single source of primary energy (natural gas, coal, biomass) and offers significant efficiency improvements over separately producing same amounts of electric and thermal energy. Figure 5 below describes the efficiency improvements for a COGEN plant in comparison to individual heat and power plants.

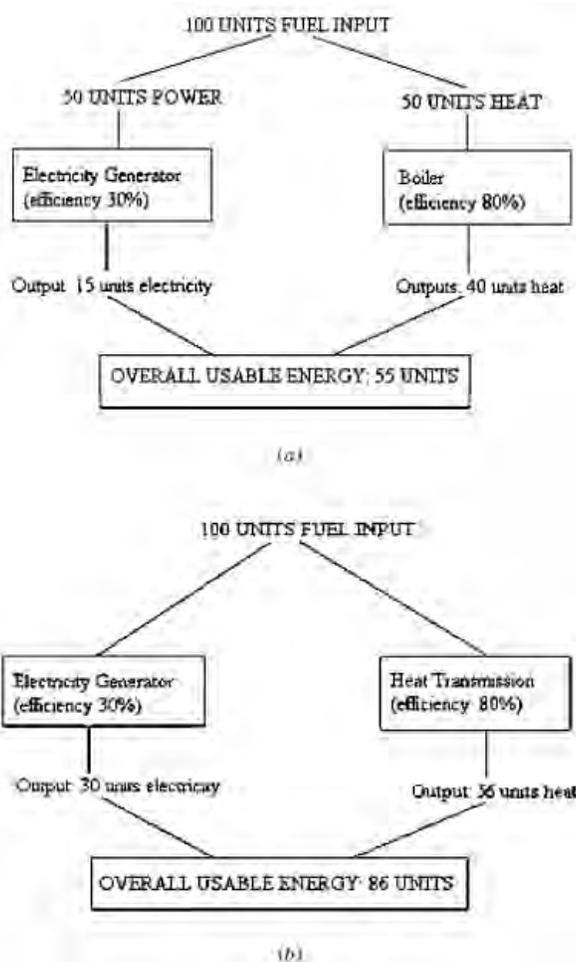


FIGURE 5 COGEN Efficiency Improvements: (a) Separate heat and power system with 100 units fuel inputs; (b) Combined heat and power (COGEN) system with 100 units fuel inputs. (1)

Such a plant offers excellent synergies for large chemical plants with multiple production facilities (e.g. Combined Petroleum Refinery & Petrochemical Complex). ADM's operations in Columbus, NE can be considered analogous to a Petroleum Complex, with a Wet Mill and Dry Mill co-located on the same site.

In such an operation, steam and electricity generation can be optimized to meet process energy demands from various onsite plants and at the same time, it provides COGEN the flexibility to meet these demands without sacrificing optimal performance.

The cogeneration (COGEN) plant at Columbus, NE serves the dry and wet mill operations. The steam produced from the COGEN is capable of supplying the needs for the Dry mill and Wet mill. However, COGEN electricity is solely consumed by the dry mill and any additional electricity that may need to be purchased would be for the wet mill.

The Columbus COGEN plant is comprised of two high-pressure circulating fluidized bed (CFB) boilers with a single backpressure turbine generator. The CFB boilers are currently fueled by North Antelope Rochelle mine coal, which is located in the Powder River Basin (PRB) region of United States. These boilers are designed and permitted to co-fire up to 20% biomass with coal. While no co-firing has been done so far in Columbus, dried biomass from the onsite process wastewater treatment plant, agricultural seeds and corn stover have been co-fired in Cedar Rapids COGEN, without any difference in its performance.

The combination of high-pressure boilers and backpressure turbines are proven to provide significant efficiency improvements and cost savings over conventional low pressure boilers (2). Columbus COGEN operation in its current operation has an overall efficiency of approximately

■ .

Columbus COGEN operation is working to increase the co-firing of biomass fuels such as agricultural seeds, dried waste biomass, and other sources of biomass, which will further reduce CO₂ emissions from cogeneration of steam and electricity, because of the carbon-neutral nature of such biomass sources. It is important to note that seed being burnt in COGEN is generally end of year inventory of unsold seed or out of specification which historically has been managed through incineration.

^a COGEN Efficiency = (Dry Mill Steam BTU+Dry Mill Electric BTU+Wet Mill Steam BTU)/(Coal BTU+Dry Mill Condensate Return BTU+Wet Mill Condensate Return+Make-up water BTU)

CA-GREET MODEL SCENARIOS

Table 1 lists the user design inputs that were changed in CA-GREET for ADM pathway Midwest, Dry Mill, Dryer Closed-loop Enhanced Heat Recovery, Cogeneration – Coal and the biomass pathways. All other parameters are unchanged for the proposed sub-pathway including raw materials, ethanol energy content and land use change.

TABLE 1 User design inputs for CA-GREET and ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP ENHANCED HEAT RECOVERY, COGENERATION - COAL

| CA-GREET Worksheet | Cell Reference | Input | Units | CA-GREET Value | ADM Pathway 1 Value |
|--------------------|----------------|--|------------|----------------------------|----------------------------|
| Inputs | B4 | Target Year of Simulation | | 2010 | 2010 |
| Fuel_Prod_TS | C271 | EtOH Yield of Corn Dry Mill EtOH Plant | gal/bushel | 2.72 | 2.70 |
| Inputs | C244, D244 | Share of corn ethanol plant types | % | 85% dry mill, 15% wet mill | 100% dry mill, 0% wet mill |
| Fuel_Prod_TS | K271 | Total ethanol energy use (undenatured) | BTU/gal | 36,000 | [REDACTED] |
| Inputs | C247 | Electricity share of process fuel | % | 10.2% | 0% |
| Fuel_Prod_TS | S271 | Share of Coal in total process fuels | % | 20% | Base: 70.52% |
| | | | | | 5% Biomass: 64.36% |
| | | | | | 10% Biomass: 58.19% |
| | | | | | 15% Biomass: 52.02% |
| Inputs | C255 | Share of NG as Process Fuel | % | 100% | 29.48% |
| Inputs | C256 | Share of Coal as Process Fuel | % | 0% | Base: 70.52% |
| | | | | | 5% Biomass: 64.36% |
| | | | | | 10% Biomass: 58.19% |
| | | | | | 15% Biomass: 52.02% |

| CA-GREET Worksheet | Cell Reference | Input | Units | CA-GREET Value | ADM Pathway 1 Value |
|--------------------|----------------|--|------------------------------|----------------|---------------------|
| Inputs | E255 | Biomass as Process Fuel | % | | Base: 0% |
| | | | | | 5% Biomass: 5% |
| | | | | | 10% Biomass: 10% |
| | | | | | 15% Biomass: 15% |
| Inputs | C262 | Share of Biomass used as process fuel: Corn Stover | % | 100% | 100% |
| EtOH | C101 | DGS Yield | bone-dry lb. per gallon EtOH | 5.34 | 5.87 |
| Regional LT | H192 | Midwest – Coal LHV | BTU/short -ton | 19,546,300 | 16,497,700 |
| Regional LT | H193 | Midwest – Coal HHV | BTU/short -ton | 20,608,570 | 17,366,000 |
| Regional LT | H194 | Midwest – Coal Carbon Content | % wt | 63.7% | 47.8% |
| Regional LT | H195 | Midwest – S ratio | ppm by wt | 11,100 | 4,000 |

TABLE 2 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP ENHANCED HEAT RECOVERY, COGENERATION - COAL

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | ██████ | ██████ |
| Fossil fuels | 176,104 | 176,193 | ██████ | ██████ |
| Coal | 25,091 | 25,104 | ██████ | ██████ |
| Natural gas | 85,581 | 85,624 | ██████ | ██████ |

| | | | | |
|---|--------------|----------------------|--------|--------|
| Petroleum | 65,433 | 65,466 | █ | █ |
| VOC | 16.214 | 16 | 54.214 | 70 |
| CO | 146.284 | 146.358 | 29.958 | 176 |
| NOx | 70.852 | 70.888 | 92.264 | 163 |
| PM10 | 7.807 | 7.811 | 80.164 | 88 |
| PM2.5 | 4.059 | 4.061 | 26.278 | 30 |
| SOx | 32.609 | 32.626 | 53.306 | 86 |
| CH4 | 16.826 | 16.834 | 47.449 | 64 |
| N2O | 40.366 | 40.386 | 0.255 | 41 |
| CO2 | 14,567 | 14,574 | 33,961 | 48,535 |
| GHG Emissions | | 27,030 | 35,223 | 62,253 |
| Total Direct Emissions | 59.00 | g CO2/MJ EtOH | | |
| Land Use Change | 30 | g CO2/MJ EtOH | | |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | 0.8 | g CO2/MJ EtOH | | |
| Total Carbon Intensity | 89.80 | g CO2/MJ EtOH | | |

TABLE 3 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP ENHANCED HEAT RECOVERY, COGENERATION – COAL AND 5% BIOMASS

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | | |
| Fossil fuels | 176,104 | 176,193 | | |
| Coal | 25,091 | 25,104 | | |
| Natural gas | 85,581 | 85,624 | | |
| Petroleum | 65,433 | 65,466 | | |
| VOC | 16.214 | 16 | 54.206 | 70 |
| CO | 146.284 | 146.358 | 30.114 | 176 |
| NOx | 70.852 | 70.888 | 91.345 | 162 |
| PM10 | 7.807 | 7.811 | 74.594 | 82 |
| PM2.5 | 4.059 | 4.061 | 24.430 | 28 |
| SOx | 32.609 | 32.626 | 49.047 | 82 |
| CH4 | 16.826 | 16.834 | 44.913 | 62 |
| N2O | 40.366 | 40.386 | 0.515 | 41 |
| CO2 | 14,567 | 14,574 | 31,892 | 46,466 |
| GHG Emissions | | 27,030 | 33,168 | 60,198 |
| Total Direct Emissions | | 57.06 | | |
| Land Use Change | | 30 | | |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | | 0.8 | | |
| Total Carbon Intensity | | 87.86 | | g CO2/MJ EtOH |

TABLE 4 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP ENHANCED HEAT RECOVERY, COGENERATION – COAL AND 10% BIOMASS

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | | |
| Fossil fuels | 176,104 | 176,193 | | |
| Coal | 25,091 | 25,104 | | |
| Natural gas | 85,581 | 85,624 | | |
| Petroleum | 65,433 | 65,466 | | |
| VOC | 16.214 | 16 | 54.199 | 70 |
| CO | 146.284 | 146.358 | 30.270 | 177 |
| NOx | 70.852 | 70.888 | 90.425 | 161 |
| PM10 | 7.807 | 7.811 | 69.023 | 77 |
| PM2.5 | 4.059 | 4.061 | 22.582 | 27 |
| SOx | 32.609 | 32.626 | 44.789 | 77 |
| CH4 | 16.826 | 16.834 | 42.376 | 59 |
| N2O | 40.366 | 40.386 | 0.775 | 41 |
| CO2 | 14,567 | 14,574 | 29,822 | 44,396 |
| GHG Emissions | | 27,030 | 31,113 | 58,143 |
| Total Direct Emissions | | 55.11 | | g CO2/MJ EtOH |
| Land Use Change | | 30 | | g CO2/MJ EtOH |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | | 0.8 | | g CO2/MJ EtOH |
| Total Carbon Intensity | | 85.91 | | g CO2/MJ EtOH |

TABLE 5 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP ENHANCED HEAT RECOVERY, COGENERATION – COAL AND 15% BIOMASS

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | | |
| Fossil fuels | 176,104 | 176,193 | | |
| Coal | 25,091 | 25,104 | | |
| Natural gas | 85,581 | 85,624 | | |
| Petroleum | 65,433 | 65,466 | | |
| VOC | 16.214 | 16 | 54.191 | 70 |
| CO | 146.284 | 146.358 | 30.426 | 177 |
| NOx | 70.852 | 70.888 | 89.506 | 160 |
| PM10 | 7.807 | 7.811 | 63.452 | 71 |
| PM2.5 | 4.059 | 4.061 | 20.735 | 25 |
| SOx | 32.609 | 32.626 | 40.531 | 73 |
| CH4 | 16.826 | 16.834 | 39.840 | 57 |
| N2O | 40.366 | 40.386 | 1.035 | 41 |
| CO2 | 14,567 | 14,574 | 27,753 | 42,327 |
| GHG Emissions | | 27,030 | 29,057 | 56,088 |
| Total Direct Emissions | | 53.16 | | |
| Land Use Change | | 30 | | |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | | 0.8 | | |
| Total Carbon Intensity | | 83.96 | | g CO2/MJ EtOH |

Table 6 lists the user design inputs that were changed in CA-GREET for ADM pathway Midwest, Dry Mill, Dryer Closed-loop Heat Recovery, Cogeneration – Coal and the biomass pathways. All other parameters are unchanged for the proposed sub-pathway including raw materials, ethanol energy content and land use change.

TABLE 6 User design inputs for CA-GREET and ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP HEAT RECOVERY, COGENERATION – COAL AND BIOMASS PATHWAYS

| CA-GREET Worksheet | Cell Reference | Input | Units | CA-GREET Value | ADM Pathway 1 Value |
|--------------------|----------------|--|------------|----------------------------|---|
| Inputs | B4 | Target Year of Simulation | | 2010 | 2010 |
| Fuel_Prod_TS | C271 | EtOH Yield of Corn Dry Mill EtOH Plant | gal/bushel | 2.72 | 2.70 |
| Inputs | C244, D244 | Share of corn ethanol plant types | % | 85% dry mill, 15% wet mill | 100% dry mill, 0% wet mill |
| Fuel_Prod_TS | K271 | Total ethanol energy use (undenatured) | BTU/gal | 36,000 | ██████████ |
| Inputs | C247 | Electricity share of process fuel | % | 10.2% | 0% |
| Fuel_Prod_TS | S271 | Share of Coal in total process fuels | % | 20% | Base: 71% 5% Biomass: 65.15% 10% Biomass: 59.29% 15% Biomass: 53.44% |
| Inputs | C255 | Share of NG as Process Fuel | % | 100% | 29.00% |
| Inputs | C256 | Share of Coal as Process Fuel | % | 0% | Base: 71% 5% Biomass: 65.15% 10% Biomass: 59.29% 15% Biomass: 53.44% |
| Inputs | E255 | Biomass as | % | | Base: 0% |

| CA-GREET Worksheet | Cell Reference | Input | Units | CA-GREET Value | ADM Pathway 1 Value |
|--------------------|----------------|--|------------------------------|----------------|---------------------|
| | | Process Fuel | | | 5% Biomass: 5% |
| | | | | | 10% Biomass: 10% |
| | | | | | 15% Biomass: 15% |
| Inputs | C262 | Share of Biomass used as process fuel: Corn Stover | % | 100% | 100% |
| EtOH | C101 | DGS Yield | bone-dry lb. per gallon EtOH | 5.34 | 5.87 |
| Regional LT | H192 | Midwest – Coal LHV | BTU/short-ton | 19,546,300 | 16,497,700 |
| Regional LT | H193 | Midwest – Coal HHV | BTU/short-ton | 20,608,570 | 17,366,000 |
| Regional LT | H194 | Midwest – Coal Carbon Content | % wt | 63.7% | 47.8% |
| Regional LT | H195 | Midwest – S ratio | ppm by wt | 11,100 | 4,000 |

TABLE 7 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP HEAT RECOVERY, COGENERATION - COAL

Outputs:

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | ██████ | ██████ |
| Fossil fuels | 176,104 | 176,193 | ██████ | ██████ |
| Coal | 25,091 | 25,104 | ██████ | ██████ |

| | | | | |
|----------------------|---------|---------|--------|--------|
| Natural gas | 85,581 | 85,624 | ██████ | ██████ |
| Petroleum | 65,433 | 65,466 | ██████ | ██████ |
| VOC | 16,214 | 16 | 54.340 | 71 |
| CO | 146,284 | 146,358 | 30.309 | 177 |
| NOx | 70,852 | 70,888 | 94.276 | 165 |
| PM10 | 7,807 | 7,811 | 83.132 | 91 |
| PM2.5 | 4,059 | 4,061 | 27.298 | 31 |
| SOx | 32,609 | 32,626 | 55.602 | 88 |
| CH4 | 16,826 | 16,834 | 49.081 | 66 |
| N2O | 40,366 | 40,386 | 0.262 | 41 |
| CO2 | 14,567 | 14,574 | 35,172 | 49,746 |
| GHG Emissions | | 27,030 | 36,477 | 63,507 |

| | | |
|---|--------------|----------------------|
| Total Direct Emissions | 60.19 | g CO2/MJ EtOH |
| Land Use Change | 30 | g CO2/MJ EtOH |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | 0.8 | g CO2/MJ EtOH |
| Total Carbon Intensity | 90.99 | g CO2/MJ EtOH |

TABLE 8 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP HEAT RECOVERY, COGENERATION – COAL AND 5% BIOMASS

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | | |
| Fossil fuels | 176,104 | 176,193 | | |
| Coal | 25,091 | 25,104 | | |
| Natural gas | 85,581 | 85,624 | | |
| Petroleum | 65,433 | 65,466 | | |
| VOC | 16.214 | 16 | 54.333 | 71 |
| CO | 146.284 | 146.358 | 31.062 | 177 |
| NOx | 70.852 | 70.888 | 93.372 | 164 |
| PM10 | 7.807 | 7.811 | 77.654 | 85 |
| PM2.5 | 4.059 | 4.061 | 25.481 | 30 |
| SOx | 32.609 | 32.626 | 51.414 | 84 |
| CH4 | 16.826 | 16.834 | 46.587 | 63 |
| N2O | 40.366 | 40.386 | 0.518 | 41 |
| CO2 | 14,567 | 14,574 | 33,137 | 47,711 |
| GHG Emissions | | 27,030 | 34,456 | 61,486 |

| | | |
|---|--------------|----------------------|
| Total Direct Emissions | 58.28 | g CO2/MJ EtOH |
| Land Use Change | 30 | g CO2/MJ EtOH |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | 0.8 | g CO2/MJ EtOH |
| Total Carbon Intensity | 89.08 | g CO2/MJ EtOH |

TABLE 9 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP HEAT RECOVERY, COGENERATION – COAL AND 10% BIOMASS

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | | |
| Fossil fuels | 176,104 | 176,193 | | |
| Coal | 25,091 | 25,104 | | |
| Natural gas | 85,581 | 85,624 | | |
| Petroleum | 65,433 | 65,466 | | |
| VOC | 16.214 | 16 | 54.325 | 71 |
| CO | 146.284 | 146.358 | 31.216 | 178 |
| NOx | 70.852 | 70.888 | 92.466 | 163 |
| PM10 | 7.807 | 7.811 | 72.166 | 80 |
| PM2.5 | 4.059 | 4.061 | 23.660 | 28 |
| SOx | 32.609 | 32.626 | 47.220 | 80 |
| CH4 | 16.826 | 16.834 | 44.088 | 61 |
| N2O | 40.366 | 40.386 | 0.774 | 41 |
| CO2 | 14,567 | 14,574 | 31,099 | 45,673 |
| GHG Emissions | | 27,030 | 32,431 | 59,461 |
| Total Direct Emissions | | 56.36 | | g CO2/MJ EtOH |
| Land Use Change | | 30 | | g CO2/MJ EtOH |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | | 0.8 | | g CO2/MJ EtOH |
| Total Carbon Intensity | | | 87.16 | g CO2/MJ EtOH |

TABLE 10 Total Well to Tank (WTT) emissions for Dry Milling Corn Ethanol production under ADM Pathway MIDWEST, DRY MILL, DRYER CLOSED-LOOP HEAT RECOVERY, COGENERATION – COAL AND 15% BIOMASS

| Results are specified as BTU or grams per MMBTU of Ethanol | Corn Ethanol: Dry Milling Ethanol | | | Total WTT (well to tank) results |
|--|-----------------------------------|---------------------|---------|----------------------------------|
| | Corn w/o loss factor | Corn w/ loss factor | Ethanol | |
| Loss factor | | | 1.001 | |
| Total energy | 181,068 | 181,159 | | |
| Fossil fuels | 176,104 | 176,193 | | |
| Coal | 25,091 | 25,104 | | |
| Natural gas | 85,581 | 85,624 | | |
| Petroleum | 65,433 | 65,466 | | |
| VOC | 16.214 | 16 | 54.318 | 71 |
| CO | 146.284 | 146.358 | 31.370 | 178 |
| NOx | 70.852 | 70.888 | 91.561 | 162 |
| PM10 | 7.807 | 7.811 | 66.687 | 74 |
| PM2.5 | 4.059 | 4.061 | 21.843 | 26 |
| SOx | 32.609 | 32.626 | 43.032 | 76 |
| CH4 | 16.826 | 16.834 | 41.594 | 58 |
| N2O | 40.366 | 40.386 | 1.030 | 41 |
| CO2 | 14,567 | 14,574 | 29,063 | 43,638 |
| GHG Emissions | | 27,030 | 30,419 | 57,449 |

| | | |
|---|--------------|----------------------|
| Total Direct Emissions | 54.44 | g CO2/MJ EtOH |
| Land Use Change | 30 | g CO2/MJ EtOH |
| Denaturant (CARBOB blended at 2% with anhydrous EtOH) | 0.8 | g CO2/MJ EtOH |
| Total Carbon Intensity | 85.24 | g CO2/MJ EtOH |

Appendix A

Columbus, NE – Dry Mill Air Permit



Dave Heineman
Governor

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Michael J. Linder

Director

Suite 400, The Atrium

1200 'N' Street

P.O. Box 98922

Lincoln, Nebraska 68509-8922

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website: www.deq.state.ne.us

AIR QUALITY CONSTRUCTION PERMIT PREVENTION OF SIGNIFICANT DETERIORATION

PERMIT NUMBER: CP07-0061

Facility Name: Archer Daniels Midland Company
(Dry Mill)

NDEQ Facility ID#: 39285

Mailing Address:

3000 East 8th Street

Columbus, Nebraska 68601-9073

Facility Location:

3000 East 8th Street

Columbus, Platte County, Nebraska 68601

Project Description: Permit revision for an ethanol manufacturing plant producing approximately 400 million gallons of denatured ethanol annually

Standard Industrial Classification (SIC) Code: 2869, Industrial Organic Chemicals

SIGNIFICANT PERMIT REVISION to permit: CP06-0005 issued October 20, 2006 (superseded)

This construction permit supersedes permit CP06-0005 and approves revisions to air quality permit CP06-0005 as identified in the air quality construction permit application #07-0061 received August 27, 2007, including any supporting information received prior to issuance of this permit. Additional details of the permit revisions, including changes in estimated pollutant emissions caused by the revisions, can be found in the accompanying Fact Sheet.

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of this permit revision and the thirty (30) day period allowed for comments has elapsed.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Title 129 – Nebraska Air Quality Regulations as amended August 18, 2008.

Date

8-26-2009

Jay D. Ringenberg,

Deputy Director of Programs

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ABBREVIATIONS, SYMBOLS, and UNITS OF MEASURE

| | | | |
|------------------|--|-------------------|--|
| AP-42 | Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources | NO ₂ | Nitrogen Dioxide |
| BACT | Best Available Control Technology | NO _x | Nitrogen Oxides |
| bhp | Brake Horsepower | NSPS | New Source Performance Standard |
| BMP | Best Management Practice | NSR | New Source Review |
| btu | British Thermal Unit | PAL | Plant-wide Applicability Limit |
| bu | Bushel | Pb | Lead (chemical abbreviation) |
| CAA | Clean Air Act | PbR | Permit-by-Rule |
| CE | Control Equipment | PEMS | Parametric Emissions Monitoring System |
| CEM | Continuous Emissions Monitor | PM | Particulate Matter |
| CEMS | Continuous Emissions Monitoring System | PM ₁₀ | Particulate Matter with and aerodynamic diameter equal to or less than 10 microns |
| cf | Cubic feet | PM _{2.5} | Particulate Matter with and aerodynamic diameter equal to or less than 2.5 microns |
| CFR | Code of Federal Regulations | ppb | Parts per Billion |
| CO | Carbon Monoxide | ppm | Parts per Million |
| CO ₂ | Carbon Dioxide | ppmv | Parts per Million by volume |
| CP | Construction Permit | ppmvd | Parts per Million by volume, dry basis |
| DGS | Distiller's Grains with Solubles | PSD | Prevention of Significant Deterioration |
| DDGS | Dry Distillers Grains with Solubles | PTE | Potential to Emit |
| dscf | Dry Standard Cubic Feet | RVP | Reid Vapor Pressure |
| dscfm | Dry Standard Cubic Feet per Minute | RATA | Relative Accuracy Test Audit |
| EMIS | Emergency Management Information System | RMP | Risk Management Plan |
| EPA | Environmental Protection Agency | RTO | Regenerative Thermal Oxidizer |
| EQC | Environmental Quality Council | scf | Standard Cubic Feet |
| EP | Emission Point | SIC | Standard Industrial Classification |
| ESP | Electrostatic Precipitator | SIP | State Implementation Plan |
| EU | Emission Unit | SO ₂ | Sulfur Dioxide |
| FID | Facility Identification Number | SO _x | Sulfur Oxides |
| FDCP | Fugitive Dust Control Plan | TDS | Total Dissolved Solids |
| FGR | Flue Gas Recirculation | TO | Thermal Oxidizer |
| FIP | Federal Implementation Plan | TO/HRSG | Thermal Oxidizer with Heat Recovery Steam Generator |
| FR | Federal Register | tpy | Tons per year |
| ft | Feet | TRS | Total Reduced Sulfur |
| FTIR | Fourier Transform Infrared | TSP | Total Suspended Particulate Matter |
| H ₂ S | Hydrogen Sulfide | ULNB | Ultra Low NO _x Burner |
| HAP | Hazardous Air Pollutant | UST | Underground Storage Tank |
| hp | Horsepower | UTM | Universal Transverse Mercator |
| hr | Hour | VHAP | Volatile Hazardous Air Pollutant |
| LDAR | Leak Detection and Repair | VMT | Vehicle Miles Traveled |
| LNB | Low NO _x Burner | VOC | Volatile Organic Compound |
| MACT | Maximum Achievable Control Technology | WDGS | Wet Distiller's Grains with Solubles |
| Mgal | One Thousand gallons | | |
| MMBtu | One Million British Thermal Units | | |
| MMscf | One Million Standard Cubic Feet | | |
| MSDS | Material Safety Data Sheet | | |
| MW | Megawatt | | |
| NAAQS | National Ambient Air Quality Standards | | |
| NDEQ | Nebraska Department of Environmental Quality | | |
| NESHAP | National Emission Standards for Hazardous Air Pollutants | | |

I. GENERAL CONDITIONS

- (A) This permit is not transferable to another source or location. {Chapter 17}
- (B) Holding of this permit does not relieve the owner or operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. Any permit noncompliance shall constitute a violation of the Nebraska Environmental Protection Act and the Federal Clean Air Act, and is grounds for enforcement action or permit revocation. {Chapter 41 & Chapter 17, Section 011}
- (C) Application for review of plans or advice furnished by the Director will not relieve the owner or operator of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. {Chapter 37}
- (D) Any owner or operator who failed to submit any relevant facts or who submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. If the owner or operator wishes to make changes at the source that will result in change(s) to values, specifications, and/or locations of emission points that were indicated in the permit application (or other supplemental information provided by the owner or operator and reviewed by the NDEQ in issuance of this permit), the owner or operator must receive approval from the NDEQ before the change(s) can be made. In addition, any modification which may result in an adverse change to the air quality impacts predicted by atmospheric dispersion modeling (such as changes in stack parameters or increases in emission rates, potential emissions, or actual emissions) shall have prior approval from the NDEQ. The owner or operator shall provide all necessary information to verify that there are no substantive changes affecting the basis upon which this permit was issued. Information may include, but not be limited to, additional engineering, modeling and ambient air quality studies. {Chapter 17, Section 006, 007, & 008}
- (E) Approval to construct, reconstruct and/or modify the source will become invalid if a continuous program of construction is not commenced within 18 months after the date of issuance of the construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. {Chapter 17, Section 012}
- (F) The owner/operator of the source shall provide the following notifications to the NDEQ:
- (1) The date construction, reconstruction or modification commenced as defined in Chapter 1, Section 031. Notification shall be postmarked no later than 30 days after such date and include a summary description of whether the requirement was met through: {Chapter 17, Section 012}
- (a) Initiating physical on-site construction activities of a permanent nature that meet the definition of “begin actual construction”, or
- (b) Entering into binding agreements or contractual obligations. If this option is used, the notice shall also include a brief summary of each binding agreement or contractual obligation entered into, the date of the agreement or contract, and why it cannot be cancelled or modified without substantial loss to the owner or operator.

-
- (2) The date of initial startup of operations postmarked within 15 days after such date. {Chapter 7, Section 002.03}
- (G) The owner or operator shall allow the NDEQ, EPA or an authorized representative, upon presentation of credentials to: {Neb. Rev. Statute §81-1504}
- (1) Enter upon the owner or operator's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;
- (2) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;
- (3) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;
- (4) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.
- (H) When requested by the NDEQ, the owner or operator shall submit completed emission inventory forms for the preceding year to the NDEQ by March 31 of each year. {Chapter 6}
- (I) Open fires are prohibited except as allowed by Chapter 30.
- (J) Particulate Matter – General Requirements: {Chapter 32}
- (1) The owner or operator shall not cause or permit the handling, transporting or storage of any material in a manner, which allows particulate matter to become airborne in such quantities and concentrations that it remains visible in the ambient air beyond the property line.
- (2) The owner or operator shall not cause or permit the construction, use, repair or demolition of a building, its appurtenances, a road, a driveway, or an open area without applying all reasonable measures to prevent particulate matter from becoming airborne and remaining visible beyond the property line. Such measures include, but not limited to, paving or frequent cleaning of roads, driveways and parking lots; application of dust-free surfaces; application of water; and planting and maintenance of vegetative ground cover.
- (K) If and when the Director declares an air pollution episode as defined in Chapter 38, Sections 003.01B, 003.01C, or 003.01D, the owner or operator shall immediately take all required actions listed in Title 129, Appendix I until the Director declares the air pollution episode terminated.
- (L) This permit may be revised (reopened and reissued) or revoked for cause in accordance with Title 129 and Title 115, Rules of Practice and Procedure. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Chapter 15, Section 006}
- (1) A determination by the Director, or the Administrator of EPA that:
-

-
- (a) the permit must be revised to ensure compliance with the applicable requirements;
 - (b) the permit contains a material mistake or that inaccurate statements were made in the emissions standards or other terms or conditions of the permit.
- (2) The existence at the source of unresolved noncompliance with applicable requirements or a term or condition of the permit, and refusal of the owner or operator to agree to an enforceable schedule of compliance to resolve the noncompliance;
 - (3) The submittal by the owner or operator of false, incomplete, or misleading information to the NDEQ or EPA;
 - (4) A determination by the Director that the source or activity endangers human health or the environment and that the danger cannot be removed by a revision of the permit; or
 - (5) The failure of the owner or operator to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the EPA.

II. SPECIFIC CONDITIONS

- (A) Recordkeeping: Records of all measurements, results, inspections, and observations as required to ensure compliance with all applicable requirements shall be maintained on-site as follows:
 - (1) All calculations and records required throughout this permit shall be completed no later than the fifteenth (15th) day of each calendar month and shall include all information through the previous calendar month, unless otherwise specified in this permit.
 - (2) All records required throughout this permit shall be kept for a minimum of five years and shall be clear and readily accessible to Department representatives, unless otherwise specified in this permit.
 - (3) Copies of all notifications, reports, test results, and plans.
 - (4) Calibration records for all operating parameter monitoring equipment.
 - (5) Operation and Maintenance manuals detailing proper operation and maintenance of all permitted emission units, required control equipment, and required monitoring equipment shall be kept for the life of the equipment.
 - (6) Records documenting equipment failures, malfunctions, or other variations, including date and time of occurrence, remedial action taken, and when corrections were made to each piece of permitted equipment, required control equipment, and required monitoring equipment.
- (B) All permitted emission units, control equipment, and monitoring equipment shall be properly installed, operated, and maintained.
- (C) Any emissions due to malfunctions, unplanned shutdowns, and ensuing start-ups that are, or may be, in excess of applicable emission limits shall be reported to the NDEQ in accordance with Chapter 35, Section 005.

- (D) The performance tests required in the permit shall be completed and submitted to the NDEQ as follows: {Chapter 34}
- (1) Performance tests shall be conducted while operating at full capacity within sixty (60) days after reaching the maximum capacity, but not more than 180 days after the start-up of operations of each unit, unless otherwise specified by the NDEQ.
 - (2) Testing shall be conducted according to the methodologies found in Title 129, Chapter 34, Section 002, or other NDEQ approved methodologies.
 - (3) Performance tests shall be conducted for a minimum of three (3) one hour runs unless another run time is specified by the applicable Subpart or as deemed appropriate by the NDEQ.
 - (4) The owner or operator of a source shall provide the NDEQ at least thirty (30) days written notice prior to testing to afford the NDEQ an opportunity to have an observer present. The owner or operator shall also provide the NDEQ with an emissions testing protocol at least thirty (30) days prior to testing.
 - (5) The owner or operator shall monitor the operating parameters for process and control equipment during the performance testing required in the permit.
 - (6) A written copy of the test results signed by the person conducting the test shall be provided to the NDEQ within forty-five (45) days of completion of the test and will, at a minimum, contain the following items:
 - (a) A description of the source's operating parameters (i.e. production rates, firing rates of combustion equipment, fuel usage, etc.), control equipment parameters (i.e. baghouse fan speeds, scrubber liquid flow rates, etc.), and ambient conditions (i.e. weather conditions, etc.) during testing.
 - (b) Copies of all data sheets from the test run(s).
 - (c) A description and explanation of any erroneous data or unusual circumstance(s) and the cause for such situation.
 - (d) A final conclusion section describing the outcome of the testing.
- (E) The following conditions apply to the verification of NAAQS modeling analysis: {Chapter 4}
- (1) The stack dimensions of the following emission points shall be constructed as indicated below:

| Emission Point ID# | Emission Point Name | Minimum Stack Height (m) | Stack Exit Point Maximum Inside Diameter (m) |
|--------------------|---|--------------------------|--|
| DM01 | Dry Mill Receiving Baghouse | 44.99 | 1.40 |
| DM04 | Grain Conveying, Milling, and Classification Vent | 48.01 | 1.80 |
| DM04A | Flour Conveyor Baghouse | 34.99 | 0.50 |

| Emission Point ID# | Emission Point Name | Minimum Stack Height (m) | Stack Exit Point Maximum Inside Diameter (m) |
|--------------------|---------------------------------|--------------------------|--|
| DM10 | Byproduct Conveying Baghouse | 45 | 0.6 |
| DM11 | Byproduct Storage Baghouse | 45 | 0.5 |
| DM12 | Byproduct Loadout Baghouse | 30 | 0.6 |
| DM39 | Degermination Scrubber | 85 | 2.1 |
| DM05 | Fermentation RTO | 30.5 | 1.7 |
| DM09 | Denatured Ethanol Loadout Flare | 11 | 0.6 |
| DM07A | Natural Gas Fired DDGS Dryer #1 | 65 | 1.2 |
| DM07B | Natural Gas Fired DDGS Dryer #2 | 65 | 1.2 |
| DM07C | Natural Gas Fired DDGS Dryer #3 | 65 | 1.2 |
| DM07D | Natural Gas Fired DDGS Dryer #4 | 65 | 1.2 |
| DM07E | Natural Gas Fired DDGS Dryer #5 | 65 | 1.2 |
| DM07F | Natural Gas Fired DDGS Dryer #6 | 65 | 1.2 |
| DM07G | Natural Gas Fired DDGS Dryer #7 | 65 | 1.2 |
| DM07H | Natural Gas Fired DDGS Dryer #8 | 65 | 1.2 |
| DM08A | DDGS Cooling Baghouse #1 | 45 | 1.3 |
| DM08B | DDGS Cooling Baghouse #2 | 45 | 1.3 |
| DM08C | DDGS Cooling Baghouse #3 | 45 | 1.3 |
| DM13-20C | Dry Mill Cooling Tower | 13.7 | 12.5 |

A site survey (using 1422' MSL as basis for ground level to measure stack heights), or similar documentation containing the as-built stack dimensions, shall be maintained on-site and kept for the life of the source. If stack dimensions do not comply with the table above, the owner or operator shall notify the NDEQ prior to start-up of any emission unit and, if requested, submit a revised air dispersion modeling analysis to the NDEQ to ensure that the source will not interfere with the attainment or maintenance of the ambient air quality standards in Chapter 4.

- (2) The owner or operator shall sufficiently restrict public access to the source at the ambient air boundary relied upon in the air dispersion modeling analysis for the NAAQS compliance demonstration. The vertices of the boundary shall be located at the coordinates indicated below:

| Fence-line Vertex ID# | UTM X (m) | UTM Y (m) |
|-----------------------|-----------|-----------|
| NW | 642,005 | 4,586,995 |
| NE | 643,500 | 4,587,040 |
| SE | 643,558 | 4,584,725 |
| SW-1 | 642,488 | 4,585,260 |
| SW-2 | 642,475 | 4,585,980 |
| SW-3 | 642,023 | 4,585,995 |

A site survey, or similar documentation containing the locations of the boundary vertices, shall be maintained on-site and kept for the life of the source. If the boundary dimensions do not comply with the table above, the owner or operator shall notify the NDEQ prior to start-up of any emission unit and, if requested, submit a revised air dispersion modeling analysis to the NDEQ to ensure that the source will not interfere with the attainment or maintenance of the ambient air quality standards in Chapter 4.

III.(A) Specific Conditions for Grain Receiving and Processing

- (1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

| Emission Point ID# | Required Control Equipment ID# and Control Equipment Description | Emission Unit Description |
|--------------------|--|---------------------------------|
| DM01 | DM01: Dry Mill Receiving Baghouse | EU-DM01A: Rail Unloading |
| | | EU-DM01B: Truck Unloading |
| DM04 | DM04: Grain Conveying and Milling Baghouse | EU-DM04-1: Grain Conveying |
| | | EU-DM04-2: Grain Cleaning |
| | | EU-DM04-3: Hammermilling |
| | | EU-DM04-4: Grain Classification |
| DM04A | DM04A: Flour Conveyor Baghouse | EU-DM04A: Flour Conveyor |

- (2) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Initial performance testing, if required, shall be conducted in accordance with Specific Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Initial Performance Testing Required (Yes/No) |
|--------------------|---------------------|-----------------|-----------------------------|------------------------|---|
| DM01 | PM/PM ₁₀ | 0.004 gr/dscf | 3-hr or test method average | Chapter 19 | Yes |
| DM04 | PM/PM ₁₀ | 0.004 gr/dscf | 3-hr or test method average | Chapter 19 | Yes |
| DM04A | PM/PM ₁₀ | 0.004 gr/dscf | 3-hr or test method average | Chapter 19 | Yes |

- (3) Operational and Monitoring Requirements and Limitations

- (a) Emissions from the emission units identified in Condition III.(A)(1) shall be controlled by pollution control equipment as follows: EU-DM01A and EU-DM01B shall be controlled by DM01; EU-DM04-1, EU-DM04-2, EU-DM04-3, EU-DM04-4 shall be controlled by DM04; and EU-DM04A shall be controlled by DM04A. {Chapters 19 and 20}
- (b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapters 19 and 20}
- (i) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.
- (ii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.

- (iii) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.
 - (iv) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.
 - (v) The owner or operator shall maintain an on-site inventory of spare bags of each type used to ensure rapid replacement in the event of bag failure.
- (c) Grain receiving operations, by truck, identified in Condition III.(A)(1) shall be located inside a building and all hopper bottom trucks shall utilize choke feed practices during receipt of grain. Grain receiving operations, by rail, identified in Condition III.(A)(1) shall be located inside a building that is fitted with plastic strip curtains on the entrances and exits. {Chapters 19 and 20}

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The affected facilities associated with the following emission points are subject to the NSPSs listed below: DM01, DM04, and DM04A.

| Applicable Standard | Title | Rule Citation |
|---------------------|--------------------|--|
| NSPS, Subpart A | General Provisions | Chapter 18, Sec. 001.01 40 CFR 60.1 |
| NSPS, Subpart DD | Grain Elevators | Chapter 18, Sec. 001.19 40 CFR 60.300 |

(5) Reporting and Recordkeeping Requirements:

- (a) Records documenting the date, time, and pressure differential reading for each day the associated baghouse is in operation.
- (b) Filter replacement records including the date the filter replacement occurred and the type of filter installed.
- (c) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.
- (d) For affected facilities subject to NSPS, Subpart DD, notifications and record keeping as required by 40 CFR 60.7.

III.(B) Specific Conditions for Degermination

- (1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table:

| Emission Point ID# | Required Control Equipment ID# and Control Equipment Description | Emission Unit Description |
|--------------------|--|---------------------------|
| DM39 | DM39: Degermination Wet Scrubber | EU-DM39A: Germ Dryer #1 |
| | | EU-DM39B: Germ Dryer #2 |
| | | EU-DM39C: Germ Dryer #3 |
| | | EU-DM39D: Germ Dryer #4 |
| | | EU-DM39E: Germ Cooler #1 |
| | | EU-DM39F: Germ Cooler #2 |

- (2) Emission Limitations and Testing Requirements:

- (a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Initial performance testing, if required, shall be conducted in accordance with Specific Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Initial Performance Testing Required (Yes/No) |
|--------------------|---------------------|---|--|------------------------|---|
| DM39 | PM/PM ₁₀ | 10.24 lb/hr | 3-hr or test method average | Chapter 19 | Yes |
| | SO ₂ | 11.92 lb/hr | 3-hr or test method average | Chapter 19 | Yes |
| | VOC | 6.18 lb/hr ^[1] | 3-hr or test method average | Chapter 19 | Yes |
| | HAP | 50% Control Efficiency or 20.0 ppmvd for combined HAPs ^[2] | Speciation and Quantification of HAP composition at inlet and outlet | Chapter 27 | Yes |

^[1]Expressed as mass of VOC

^[2]Limitation shall be complied with in accordance with Specific Conditions III.(B)(2)(b) and III.(B)(2)(c).

- (b) A weighted average of the control efficiency for the combined HAPs shall be calculated using the following equation:

$$Efficiency = \left(1 - \frac{\sum C}{\sum U}\right) \times 100$$

Where: Efficiency = the combined HAP control efficiency

C = the controlled (outlet) individual HAP emission rates

U = the uncontrolled (inlet) individual HAP emission rates

- (c) If the HAP limitation cannot be achieved, ADM shall submit a revised HAP BACT analysis and a significant construction permit revision request to the Department within

forty-five (45) days of submitting the test results to the Department. The HAP limitation may be subject to revisions after the opportunity for public comment.

(3) Operational and Monitoring Requirements and Limitations

- (a) Emissions from the emission units identified in Condition III.(B)(1) shall be controlled by pollution control equipment as follows: EU-DM39A and EU-DM39B shall be controlled by DM39. {Chapters 19}
- (b) Operation and maintenance of each scrubber shall be in accordance with the following requirements: {Chapters 19 and 27}
 - (i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation.
 - (ii) The scrubber shall be equipped with devices capable of continuously monitoring operating parameters including, at a minimum, the scrubbing liquid temperature, scrubbing liquid flow rate, and pressure differential. Operating parameter readings shall be recorded at least once each day the scrubber is in operation.
 - (iii) All monitored operating parameters of the scrubber shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used providing the facility can justify that better emissions control is being achieved. Normal operating parameters, or operating parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.
 - (iv) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(B)(1).

(5) Reporting and Recordkeeping Requirements:

- (a) Records documenting the date, time, temperature and flow rate of scrubbing liquid, and the pressure differential reading for each day the associated scrubber is in operation.
- (b) Records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation.

III.(C) Specific Conditions for Fermentation, Distillation, and Nitrogen Stripping

(1) Permitted Emission Points:

- (a) The source is permitted to construct the emission points and associated emission units identified in the following table:

| Emission Point ID# | Required Control Equipment ID# and Description | Emission Unit Description |
|-----------------------------------|---|---|
| DM05 | DM05: Fermentation RTO | EU-DM05G: Two Slurry Mix Tanks |
| | | EU-DM05H: Two Pre-Cook Tanks |
| | | EU-DM05I: Two Barometric Condensers |
| | | EU-DM05J: Ten Liquefaction Tanks |
| | | EU-DM05K: Two Evaporator Feed Tanks |
| | | EU-DM05L: Two Decanter (Centrifuge) Feed Tanks |
| | | EU-DM05M: Centrate Tank |
| | | EU-DM05N: Six Evaporators |
| | | EU-DM05O: One CDS (30% DS Product) Tank |
| | | EU-DM05P: One Waste Water Transfer Tank |
| | | EU-DM05Q: One Evaporator (Contaminate) Condensate Tank |
| | | EU-DM05R: Seven Temper Tanks |
| | | EU-DM05S: Three Grind Tanks |
| | | EU-DM05T: One Recycle Tank |
| | | EU-DM05U: One Evaporator Product Tank |
| | | EU-DM05V: One Process Water Tank |
| | | EU-DM05F: Nitrogen Stripper Scrubber |
| | | DM05D/E: Distillation and Dehydration Vent Gas Scrubber |
| DM05B/C: CO ₂ Scrubber | | |
| EU-DM05A: Propagators | | |
| DM05D/E ⁽¹⁾ | DM05D/E: Distillation and Dehydration Vent Gas Scrubber | EU-DM05D: Distillation Equipment |
| | | EU-DM05E: Dehydration Equipment |
| DM05B/C ⁽¹⁾ | DM05B/C: CO ₂ Scrubber | EU-DM05B: Fermentation Tanks |
| | | EU-DM05C: Two Beerwells |

⁽¹⁾ Emissions from DM05D/E: Distillation and Dehydration Vent Gas Scrubber and DM05B/C: CO₂ Scrubber are required to be controlled by DM05: Fermentation RTO.

- (b) The source is permitted to construct the following emissions unit identified in the following table at the maximum capacity and using the fuel types listed:

| Emission Point ID# | Emission Unit ID# and Description | Maximum Capacity (MMBtu/hr) | Permitted Fuel Types |
|--------------------|-----------------------------------|-----------------------------|----------------------|
| DM05 | DM05: Fermentation RTO | 18.0 | Natural Gas |

(2) Emission Limitations and Testing Requirements:

- (a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Initial performance testing, if required, shall be conducted in accordance with Specific Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Initial Performance Testing Required (Yes/No) |
|--------------------|-----------------|---|---|------------------------|---|
| DM05 | SO ₂ | 2.91 lb/hr | 3-one hour test runs or test method average | Chapter 19 | Yes |
| | VOC | 98% Control Efficiency or 10 ppmv as VOC ^[1] | 3-one hour test runs or test method average | Chapter 19 | Yes |
| | VOC | 8.4 lb/hr ^[2] | 3-one hour test runs or test method average | Chapter 19 | Yes |

^[1] Control Efficiency as measured across the RTO (DM05); or concentration as measured at RTO exhaust

^[2] Expressed as mass of VOC

- (b) Emissions limitations and testing requirements in accordance with NESHAP, Subpart FFFF.

(3) Operational and Monitoring Requirements and Limitations

- (a) Emissions from the emission units identified in Condition III.(C)(1) shall be controlled by pollution control equipment as follows: EU-DM05B and C shall be controlled by DM05B/C, EU-DM05D and E shall be controlled by DM05D/E, and EU-DM05A, DM05B/C, DM05D/E, and EU-DM05F though EU-DM05V shall be controlled by DM05. {Chapters 19 and 27}

- (b) Operation and maintenance of each scrubber shall be in accordance with the following requirements: {Chapters 19 and 27}

- (i) The scrubber shall be operated and be controlling emissions at all times when the associated emission units are in operation.
- (ii) The scrubber shall be equipped with devices capable of continuously monitoring operating parameters including, at a minimum, the scrubbing liquid temperature, scrubbing liquid flow rate, and pressure differential. Operating parameter readings shall be recorded at least once each day the scrubber is in operation.
- (iii) All monitored operating parameters of the scrubber shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used providing the facility can justify that better emissions control is being achieved. Normal operating parameters, or operating parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.

- (iv) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.
- (c) Operation and maintenance of each RTO shall be in accordance with the following requirements {Chapters 19, 27, and 28}:
 - (i) The RTO shall be operated and be controlling emissions at all times when the associated emission units are in operation.
 - (ii) The RTO shall be equipped with a device capable of continuously monitoring and recording the temperature of the thermal oxidation combustion chamber(s).
 - (iii) All monitored operating parameters of the RTO shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used provided the owner or operator can justify that better emissions control is being achieved. Prior to compliance being demonstrated the combustion chamber temperature shall not be operated below 1,400 degrees Fahrenheit. Combustion chamber temperature shall be averaged hourly from a minimum of one cycle of sampling, analyzing, and data recording for each successive fifteen minute period. Normal operating parameters, or operating parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.
 - (iv) Observations at least once each day during daylight hours of RTO operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(4) Applicable NSPS, NESHAP, and MACT Requirements:

The following emission units are subject to the NESHAPs listed below: DM05J, DM05K, DM05L, DM05M, DM05N, DM05O, DM05P, DM05Q, DM05R, DM05S, DM05T, DM05U, DM05V, DM05F, DM05D/E, DM05B/C, and DM05A.

| Applicable Standard | Title | Rule Citation |
|----------------------|--|---|
| NESHAP, Subpart A | General Provisions | Chapter 28, Sec. 001.01 Requirements Begin at 40 CFR 63.1 |
| NESHAP, Subpart FFFF | Miscellaneous Organic Chemical Manufacturing (MON) | Chapter 28, Sec. 001.78 Requirements Begin at 40 CFR 63.2430 |

(5) Reporting and Recordkeeping Requirements:

- (a) Records documenting the date, time, temperature and flow rate of scrubbing liquid, and the pressure differential reading for each day the associated scrubber is in operation.

- (b) Records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation.
- (c) Records documenting the date, time, and hourly-average temperatures for each day the associated RTO is in operation.
- (d) Records documenting the date, time, observations, and corrective actions taken for each day the associated RTO is in operation.
- (e) Reporting and recordkeeping as required by 40 CFR 63.2430.

III.(D) Specific Conditions for Organic Liquid Process and Storage Tanks

- (1) Permitted Emission Points: The source is permitted to construct the storage and process tanks identified in the following table at the capacities and for the storage of the products listed:

| Emission Point ID# & Tank ID# | Maximum Storage Capacity (gallons) | Product Stored in Tank |
|--|---|-------------------------------------|
| DM40 ^[1] | 500,000 | Alcohol Reclaim - Denatured Ethanol |
| DM41 | 500,000 | 200 Proof Day Tank #1 |
| DM42 | 500,000 | 200 Proof Day Tank #2 |
| DM43 ^[1] | 500,000 | Alcohol QC Tank - Denatured Ethanol |
| DM44 ^[1] | 2,000,000 | Denatured Ethanol Storage #1 |
| DM45 ^[1] | 2,000,000 | Denatured Ethanol Storage #2 |
| DM46 ^[1] | 2,000,000 | Denatured Ethanol Storage #3 |
| DM47 | 8,225 | Corrosion Inhibitor |
| DM48 ^[1] | 500,000 | Denaturant Storage |
| DM54 | 100,000 | 190 Proof Tank |

^[1] Subject to Subpart Kb

- (2) Emission Limitations and Testing Requirements:

Refer to NSPS, Subpart Kb and NESHAP, Subpart FFFF for any specific emission limitations and testing requirements that may apply to the tanks listed above, as appropriate.

- (3) Operational and Monitoring Requirements and Limitations:

- (a) The corrosion inhibitor tank (DM47) shall be installed with a fixed roof and use submerged loading when transferring corrosion inhibitor into the tank. {Chapters 19 and 27}
- (b) Tanks DM41, DM42, and DM54 shall each be equipped with a fixed roof in combination with an internal floating roof, in accordance with the specifications in 40 CFR 60.112b(a)(1). {Chapters 19 and 27}
- (c) Tanks DM41, DM42, and DM54 are subject to the inspection requirements as described in 40 CFR 60.113b(a). {Chapter 27}
- (d) Tanks DM40, DM43, DM44, DM45, DM46, and DM48 are subject to all applicable requirements of NSPS, Subpart Kb. {Chapter 18}
- (e) The process tanks (DM41, DM42, and DM54) shall not have any direct product loadout capability/operations. All process tanks must loadout to additional processing equipment, other process tanks, or to the storage tanks at the facility.

(4) Applicable NSPS, NESHAP, and MACT Standards:

The following standards apply to DM40, DM43, DM44, DM45, DM46, and DM48:

| Applicable Standard | Title | Rule Citation |
|---------------------|---|--|
| NSPS, Subpart A | General Provisions | Chapter 18, Sec. <u>001.01</u> 40 CFR 60.1 |
| NSPS, Subpart Kb | Volatile Organic Liquid Storage Vessels (Including Liquid Storage Vessels) | Chapter 18, Sec. <u>001.62</u> 40 CFR 60.110b |

The following standards apply to DM40, DM41, DM42, DM43, DM44, DM45, DM46, DM47, DM48, and DM54:

| Applicable Standard | Title | Rule Citation |
|----------------------|--|--|
| NESHAP, Subpart A | General Provisions | Chapter 28, Sec. <u>001.01</u> Requirements Begin at 40 CFR 63.1 |
| NESHAP, Subpart FFFF | Miscellaneous Organic Chemical Manufacturing (MON) | Chapter 28, Sec. <u>001.78</u> Requirements Begin at 40 CFR 63.2430 |

(5) Reporting and Recordkeeping Requirements:

(a) The following apply to EU's DM40, DM43, DM44, DM45, DM46, and DM48:

- (i) Notifications and record keeping as required by 40 CFR 60.7.
- (ii) Reporting and recordkeeping as required by 40 CFR 60.115b.

(b) The following requirements apply to DM41, DM42, and DM54:

Records of inspections conducted in accordance with Condition III.(D)(3)(c).

(c) The following apply to EU's DM40, DM41, DM42, DM43, DM44, DM45, DM46, DM47, DM48, and DM54:

Reporting and recordkeeping as required by 40 CFR 63.2430.

III.(E) Specific Conditions for Ethanol Loadout

- (1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacity and using the fuel types listed:

| Emission Point ID# | Control Equipment ID# and Description | Emission Unit (EU) ID# and Description | Maximum Capacity | Permitted Fuel Type |
|--------------------|---------------------------------------|--|------------------------------|--|
| DM09A | DM09A: Ethanol Loadout Flare #1 | EU-DM09: Rail Loadout | 720,000 gallons/hour loadout | Denatured Ethanol Vapors and Natural Gas |
| DM09B | DM09B: Ethanol Loadout Flare #2 | | | |

- (2) Emission Limitations and Testing Requirements:

Refer to NESHAP, Subpart FFFF for any emission limitations and testing requirements that may apply to DM09A and DM09B.

- (3) Operational and Monitoring Requirements and Limitations:

- (a) The source shall use submerged or bottom loading when transferring liquid product from the storage tanks to tanker trucks and railcars. {Chapters 19 and 27}
- (b) Truck and rail loadout of liquid product from EU-DM09 shall be controlled by a closed vapor recovery system with an enclosed flare at all times liquid product loadout is occurring. {Chapters 19 and 27}
- (c) When ethanol loadout is occurring, a flame shall be present at the flare. The facility must install an appropriate safety device or flame monitoring system to ensure that truck and rail loadout cannot occur without the presence of a flame. {Chapters 19 and 27}

- (4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards apply to DM09:

| Applicable Standard | Title | Rule Citation |
|----------------------|--|--|
| NESHAP, Subpart A | General Provisions | Chapter 28, Sec. <u>001.01</u> Requirements Begin at 40 CFR 63.1 |
| NESHAP, Subpart FFFF | Miscellaneous Organic Chemical Manufacturing (MON) | Chapter 28, Sec. <u>001.78</u> Requirements Begin at 40 CFR 63.2430 |

- (5) Reporting and Recordkeeping Requirements:

- (a) Reporting and recordkeeping as required by 40 CFR 63.2430.

III.(F) Specific Conditions for Feed Production

(1) Permitted Emission Points:

(a) The source is permitted to construct the emission points and associated emission units identified in the following table:

| Emission Point ID# | Required Control Equipment ID# and Description | Emission Unit ID# and Description |
|---------------------------|---|--|
| DM07A | DM07A: Natural Gas Combustor #1 | EU-DM07A: DDGS Dryer #1 |
| DM07B | DM07B: Natural Gas Combustor #2 | EU-DM07B: DDGS Dryer #2 |
| DM07C | DM07C: Natural Gas Combustor #3 | EU-DM07C: DDGS Dryer #3 |
| DM07D | DM07D: Natural Gas Combustor #4 | EU-DM07D: DDGS Dryer #4 |
| DM07E | DM07E: Natural Gas Combustor #5 | EU-DM07E: DDGS Dryer #5 |
| DM07F | DM07F: Natural Gas Combustor #6 | EU-DM07F: DDGS Dryer #6 |
| DM07G | DM07G: Natural Gas Combustor #7 | EU-DM07G: DDGS Dryer #7 |
| DM07H | DM07H: Natural Gas Combustor #8 | EU-DM07H: DDGS Dryer #8 |
| DM08A | DM08A: DDGS Cooling Baghouse #1 | EU-DM08A: DDGS Cooler #1 |
| DM08B | DM08B: DDGS Cooling Baghouse #2 | EU-DM08B: DDGS Cooler #2 |
| DM08C | DM08C: DDGS Cooling Baghouse #3 | EU-DM08C: DDGS Cooler #3 |
| DM10 | DM10: Feed/Germ Conveying Baghouse | EU-DM10: Feed/Germ Conveyor |
| DM11 | DM11: Feed/Germ Storage Baghouse | EU-DM11: Feed/Germ Storage |
| DM12 | DM12: Feed/Germ Loadout Baghouse | EU-DM12: Feed/Germ Loadout |

(b) The source is permitted to construct the following emission units identified in the following table at the capacities and using the fuel types listed:

| Emission Point ID# | Emission Unit ID# and Description | Capacity (MMBtu/hr) | Permitted Fuel Types |
|---------------------------|--|----------------------------|-----------------------------|
| DM07A | DM07A: Natural Gas Combustor #1 | 93.7 | Natural Gas |
| DM07B | DM07B: Natural Gas Combustor #2 | 93.7 | Natural Gas |
| DM07C | DM07C: Natural Gas Combustor #3 | 93.7 | Natural Gas |
| DM07D | DM07D: Natural Gas Combustor #4 | 93.7 | Natural Gas |
| DM07E | DM07E: Natural Gas Combustor #5 | 93.7 | Natural Gas |
| DM07F | DM07F: Natural Gas Combustor #6 | 93.7 | Natural Gas |
| DM07G | DM07G: Natural Gas Combustor #7 | 93.7 | Natural Gas |
| DM07H | DM07H: Natural Gas Combustor #8 | 93.7 | Natural Gas |

(2) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Initial performance testing, if required, shall be conducted in accordance with Specific Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limits per Emission Point | Averaging Period | Basis for Permit Limit | Initial Performance Testing Required (Yes/No) |
|--|-------------------------|-------------------------------------|--|-------------------------------|---|
| DM07A DM07B DM07C DM07D DM07E DM07F DM07G DM07H | PM/PM ₁₀ | 2.80 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| | SO _x | 0.37 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| | NO _x | 0.04 lb/MMBtu | 3-hour or test method average | Chapter 19 | Yes |
| | CO | 0.11 lb/MMBtu | 3-hour or test method average | Chapter 19 | Yes |
| | VOC | 5.16 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| | HAP | N/A | Speciation and Quantification of HAP composition at outlet | Chapter 27 | Yes |
| | DM08A DM08B DM08C | PM/PM ₁₀ | 0.004 gr/dscf | 3-hour or test method average | Chapter 19 |
| SO _x | | 4.49 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| VOC | | 12.89 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| HAP | | N/A | Speciation and Quantification of HAP composition at outlet | Chapter 27 | Yes |
| DM10 DM11 DM12 | PM/PM ₁₀ | 0.004 gr/dscf | 3-hour or test method average | Chapter 19 | Yes |
| | HAP | N/A | 3-hour or test method average | Chapter 27 | Yes |
| DM10 | VOC | 1.43 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| DM11 | VOC | 1.15 lb/hr | 3-hour or test method average | Chapter 19 | Yes |
| DM12 | VOC | 1.43 lb/hr | 3-hour or test method average | Chapter 19 | Yes |

(3) Operational and Monitoring Requirements and Limitations:

- (a) Emissions from EU-DM07A shall be controlled by DM07A, EU-DM07B shall be controlled by DM07B, EU-DM07C shall be controlled by DM07C, EU-DM07D shall be controlled by DM07D, EU-DM07E shall be controlled by DM07E, EU-DM07F shall be controlled by DM07F, EU-DM07G shall be controlled by DM07G, and EU-DM07H shall be controlled by DM07H. The emissions from EU-DM08A shall be controlled by DM08A, EU-DM08B shall be controlled by DM08B, EU-DM08C shall be controlled by DM08C, EU-DM10 shall be controlled by DM10, EU-DM11 shall be controlled by DM11, and EU-DM12 shall be controlled by DM12.

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- (b) Operation and maintenance of each combustor (DM07A, DM07B, DM07C, DM07D, DM07E, DM07F, DM07G, and DM07H) shall be in accordance with the following requirements: {Chapter 19}
- (1) The combustor shall be operated and be controlling emissions at all times when the associated emission units are in operation.
 - (2) The combustor shall be equipped with a device capable of continuously monitoring and recording the temperature of the thermal oxidation combustion chamber(s).
 - (3) All monitored operating parameters of the combustor shall be maintained at the levels recorded during the most recent performance test that demonstrated compliance with the permitted emissions limits. Alternative levels may be used provided the owner or operator can justify that better emissions control is being achieved. Prior to compliance being demonstrated, the combustion chamber temperature shall not be operated below 1,500 degrees Fahrenheit. Combustion chamber temperature shall be averaged hourly from a minimum of one cycle of sampling, analyzing, and data recording for each successive fifteen minute period. Normal operating parameters, or operating parameter ranges, that demonstrate compliance with the permitted emissions limits, with appropriate averaging periods shall be submitted with the source's operating permit application.
 - (4) Observations at least once each day during daylight hours of combustor operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.
- (c) Operation and maintenance of each baghouse shall be in accordance with the following requirements: {Chapter 19}
- (1) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.
 - (2) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating.
 - (3) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.
 - (4) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.
 - (5) The owner or operator shall maintain an on-site inventory of spare bags of each type used to ensure rapid replacement in the event of bag failure.
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(4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards apply to the Natural Gas Combustors (DM07A, DM07B, DM07C, DM07D, DM07E, DM07F, DM07G, and DM07H):

| Applicable Standard | Title | Rule Citation |
|----------------------------|---|---|
| NSPS, Subpart A | General Provisions | Chapter 18, Sec. <u>001.01</u> 40 CFR 60.1 |
| NSPS, Subpart Dc | Small Industrial, Commercial, Institutional Steam Generation Units | Chapter 18, Sec. <u>001.52</u> 40 CFR 60.40c |

(5) Reporting and Recordkeeping Requirements:

- (a) Records documenting the date, time, and hourly-average temperatures for each day the associated combustor is in operation.
- (b) Records documenting the date, time, observations, and corrective actions taken for each day the associated combustor is in operation.
- (c) Records documenting the date, time, and pressure differential reading for each day the associated baghouse is in operation.
- (d) Filter replacement records including the date the filter replacement occurred and the type of filter installed.
- (e) Records documenting the date, time, observations, and corrective actions taken for each day the associated baghouse is in operation.
- (f) Notifications and record keeping as required by 40 CFR 60.7
- (g) Reporting and recordkeeping as required by 40 CFR 60.48c

III.(G) Specific Conditions for Emergency Equipment

- (1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission units identified in the following table at the capacities and using the fuel types listed:

| Emission Point ID# | Emission Unit ID# and Description | Capacity (HP) | Permitted Fuel Type |
|---------------------------|--|----------------------|----------------------------|
| DM50A | EU-DM50A: Fire Water Pump Engine #1 | 460 | Diesel Fuel |
| DM50B | EU-DM50B: Fire Water Pump Engine #2 | 460 | Diesel Fuel |
| DM50C | EU-DM50C: Fire Water Pump Engine #3 | 460 | Diesel Fuel |
| DM50D | EU-DM50D: Fire Water Pump Engine #4 | 460 | Diesel Fuel |
| DM51 | EU-DM51: Emergency Generator #1 | 134 | Diesel Fuel |
| DM52 | EU-DM52: Emergency Generator #2 | 201 | Diesel Fuel |
| DM53A | EU-DM53A: Emergency Generator #3 | 804 | Diesel Fuel |
| DM53B | EU-DM53B: Emergency Generator #4 | 804 | Diesel Fuel |

- (2) Emission Limitations and Testing Requirements:

Refer to NSPS, Subpart IIII and NESHAP, Subpart ZZZZ for emission limitations and testing requirements that apply to the emergency fire water pump engines and generators.

- (3) Operational and Monitoring Requirements and Limitations:

- (a) Emission Units DM50A, DM50B, DM50C, DM50D, DM51, DM52, DM53A, and DM53B shall each be limited to 500 operating hours per any period of twelve (12) consecutive calendar months. At no time during the first eleven (11) months after start-up shall each engine's total operating hours exceed 500 hours. {Chapter 19}
- (b) Each emergency fire water pump engine and emergency generator shall be equipped with a non-resettable hour meter to record the operating hours.
- (c) The sulfur content of the diesel fuel combusted in the emergency equipment shall not exceed 0.05% by weight. {Chapters 18, 19, and 24}

- (4) Applicable NSPS, NESHAP, and MACT Requirements:

The following standards may apply to the emergency fire water pump engines and emergency generators:

| Applicable Standard | Title | Rule Citation |
|----------------------------|--|--|
| NSPS, Subpart A | General Provisions | Chapter 18, Sec. <u>001.01</u> 40 CFR 60.1 |
| NSPS, Subpart IIII | Stationary Compression Ignition Internal Combustion Engines | Chapter 18, Sec. <u>001.76</u> 40 CFR 60.4200 |
| NESHAP, Subpart A | General Provisions | Chapter 28, Sec. <u>001.01</u> 40 CFR 63.1 |

| Applicable Standard | Title | Rule Citation |
|----------------------|--|---|
| NESHAP, Subpart ZZZZ | Stationary Reciprocating Internal Combustion Engines | Chapter 28, Sec. 001.88 40 CFR 63.6580 |

(5) Reporting and Recordkeeping Requirements:

- (a) Fuel receipts for the diesel fuel from the supplier for the fuel combusted in the fire pump engines and generators. Fuel receipts shall state the sulfur content, by weight, in the distillate fuel.
- (b) Hours of operation for the emergency generator and the emergency firewater pump engine for each calendar month and for each period of 12 consecutive calendar months.
- (c) Notifications and recordkeeping as required by 40 CFR 60.7.
- (d) Recordkeeping as required by 40 CFR 60.4214.
- (e) Initial notification requirements of 40 CFR 63.6645(d) and reporting in accordance with 40 CFR 63.6640(e) and 40 CFR 63.6645(d), as applicable.

III.(H) Specific Conditions for Equipment Leaks (DM91):

(1) Permitted Emission Points:

Each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange, or other connector in VOC service and any device or system considered an “affected facility” by NSPS, Subpart VV and/or NESHAP, Subpart FFFF located throughout the ethanol plant.

(2) Emission Limitations and Testing Requirements:

Emission limitations and testing requirements as established by 40 CFR 60 Subpart VV and 40 CFR 63 Subpart FFFF.

(3) Operational and Monitoring Requirements and Limitations:

Operational and Monitoring Requirements and Limitations as established by 40 CFR 60 Subpart VV and 40 CFR 63 Subpart FFFF.

(4) Applicable NSPS, NESHAP, and MACT Standards

| Applicable Standard | Title | Rule Citation |
|----------------------|---|--|
| NSPS, Subpart A | General Provisions | Chapter 18, Sec. <u>001.01</u> 40 CFR 60.1 |
| NSPS, Subpart VV | Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry | Chapter 18, Sec. <u>001.14</u> 40 CFR 60.480 |
| NESHAP, Subpart A | General Provisions | Chapter 28, Sec. <u>001.01</u> Requirements Begin at 40 CFR 63.1 |
| NESHAP, Subpart FFFF | Miscellaneous Organic Chemical Manufacturing (MON) | Chapter 28, Sec. <u>001.78</u> Requirements Begin at 40 CFR 63.2430 |

(5) Reporting and Recordkeeping Requirements:

- (a) Notifications and record keeping as required by 40 CFR 60.7.
- (b) Record keeping and reporting as required by 40 CFR 60.486 and 40 CFR 60.487.
- (c) Reporting and recordkeeping as required by 40 CFR 63.2430.
- (d) Records including the date in which leak detection testing occurred, which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested, and name of the individual who conducted the testing.
- (e) The owner or operator shall submit a semi-annual leak detection and repair report every six (6) calendar months to the Department. The initial semi-annual report shall be submitted beginning six (6) months after the initial startup date [60.487(a)]. Subsequent reports for each six (6) calendar month reporting period shall be submitted within 45 days

following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the following items:

- (i) Date and time testing occurred;
- (ii) Name of individual who conducted the testing; and
- (iii) Additional information required to be reported to the Department in accordance with 40 CFR 60.480.

III.(I) Specific Conditions for the Cooling Towers (FS-05)

- (1) Permitted Emission Points: The source is permitted to construct the emission points and associated emission unit identified in the following table with the number of cooling tower cells and at the circulation rate listed:

| Emission Point ID# | Emission Unit Description | Number of Cooling Tower Cells | Maximum Circulation Rate (gal/hr) |
|-------------------------------------|--------------------------------|-------------------------------|-----------------------------------|
| DM13 thru DM20, DM20A, DM20B, DM20C | Dry Mill Ethanol Cooling Tower | 11 | 9,900,000 |

- (2) Emission Limitations and Testing Requirements:

The cooling towers identified above are not subject to any emissions limitations. Testing shall be conducted to ensure compliance with the TDS limitation established and is discussed below.

- (3) Operational and Monitoring Requirements and Limitations:

- (a) Drift loss from each cooling tower listed in Condition III.(I)(1) shall be limited to 0.0005 percent. Verification of drift loss shall be by manufacturer's guarantee. Manufacturer's drift loss guarantee shall be kept on site and readily available to Department representatives, upon request, for the life of the unit. {Chapter 19}
- (b) TDS concentration of the cooling water in each cooling tower pool of the Dry Mill Ethanol Cooling Tower shall not exceed 3,000 ppm. A representative TDS sample shall be collected and tested from each cooling tower pool a minimum of once per calendar month. The test method used to determine TDS concentration shall be in accordance with an EPA approved method and be documented. {Chapter 19}

- (4) Applicable NSPS, NESHAP, and MACT Requirements:

| Applicable Standard | Title | Rule Citation |
|----------------------|--|---|
| NESHAP, Subpart A | General Provisions | Chapter 28, Sec. 001.01 Requirements Begin at 40 CFR 63.1 |
| NESHAP, Subpart FFFF | Miscellaneous Organic Chemical Manufacturing (MON) | Chapter 28, Sec. 001.78 Requirements Begin at 40 CFR 63.2430 |

- (5) Reporting and Recordkeeping Requirements:

- (a) TDS concentration in cooling water for each pool for each sampling event and test method used.
- (b) Reporting and recordkeeping as required by 40 CFR 63.2430.

III.(J) Specific Conditions for Haul Roads (DM90)

- (1) Permitted Emission Points: All on-site haul roads with production-related truck traffic shall be paved. The paved haul roads shall comply with the following conditions. {Chapters 19, 20, and 32}

- (2) Emission Limitations and Testing Requirements:
 - (a) The haul road silt loading shall not exceed 3.0 g/m². {Chapter 19}

- (3) Operational and Monitoring Requirements and Limitations:
 - (a) The owner or operator shall develop, maintain, and implement a Fugitive Dust Control Plan (FDCP) to control emissions from haul roads to comply with General Condition I.(J) and Condition III.(J)(2)(a). At a minimum, the requirements of the plan shall include that all paved haul roads shall be cleaned, using a vacuum sweeper, a minimum of three (3) times per week unless weather events are deemed not to warrant such cleaning.

 - (b) For each day of operation, the owner or operator shall conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and leaving plant property. Implementation of fugitive dust control shall be taken upon observation of visible fugitive emissions leaving plant property or more frequency in accordance with the FDCP. Documentation of all corrective actions and daily surveys shall be maintained in a log that shall accompany the FDCP.

- (4) Applicable NSPS, NESHAP, and MACT Requirements:

At this time the Department has not identified any NSPS, NESHAP, or MACT requirements that apply to the emission points or emission units listed in Condition III.(J)(1).

- (5) Reporting and Recordkeeping Requirements:
 - (a) The FDCP shall be kept onsite and a copy shall be submitted to the NDEQ within thirty (30) days after initial startup of operations.

 - (b) Records documenting use of fugitive dust control measures on haul roads.

 - (c) Records of haul road visible emissions checks taken daily during operation and a description of corrective action taken, if needed.

 - (d) Records documenting when silt load testing was completed and the results of each testing.

Appendix B
Columbus, NE – Cogen Air Permit



Dave Heineman
Governor

STATE OF NEBRASKA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Michael J. Linder

Director
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Lincoln, Nebraska 68509-8922
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CONSTRUCTION PERMIT

PERMIT NUMBER: CPM02-0006

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

Archer Daniels Midland Company (ADM)
3000 East 8th Street
Columbus, Nebraska 68601-9073

FOR THE SPECIFIC MODIFICATION OF:

A Wet Corn Milling and Ethanol Production Facility

TO BE LOCATED AT

3000 East 8th Street
Columbus, Nebraska 68601-9073

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of this proposed modification of an air contaminant source and the thirty (30) day period allowed for comments has elapsed. This Construction Permit approves the proposed construction of two new coal-fired boilers and support equipment, one new natural gas-fired boiler, and modification of the existing gluten flash dryer #2 and the fluid bed germ dryer. In addition, this Construction Permit approves the construction of new control equipment for several existing sources, places new and/or revised emission limits on existing equipment, and supersedes all previous construction permits issued for this source. The operations covered by this permit consists of a facility that manufactures ethanol (primary SIC 2046, secondary SIC 2869), starches, high fructose corn syrup, and animal feed products utilizing the wet milling process.

This permit may contain abbreviations and symbols of units of measure, which are defined in 40 CFR Part 60.3. Other abbreviations may include, but are not limited to, the following: Ammonia (NH₃), Best Available Control Technology (BACT), Boiler Operating Day (BOD), Circulating Fluidized Bed Boiler (CFB Boiler), Carbon Monoxide (CO), Chemical Abstract Service Number (CAS #), Code of Federal Regulations (CFR), Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources (AP-42), Construction Permit (CP), Continuous Emissions Monitor System (CEMs), Continuous Opacity Monitoring System (COMS), Factor Information and Retrieval System (FIRE), Hazardous Air Pollutant (HAP), Hydrochloric acid (HCl), Hydrofluoric acid (HF), Hydrogen Sulfide (H₂S), Lead Compounds (Pb), Lowest Achievable Emission Rate (LAER), Maximum Achievable Control Technology (MACT), Mechanical Recompression (MR), Mercury Compounds (Hg), Million British Thermal Units (MMBtu), National Ambient Air Quality Standards (NAAQS), New Source Performance

Standards (NSPS), Nitrogen Oxides (NO_x), Office of Management and Budget (OMB), Operating Permit (OP), Particulate Matter (PM), Particulate Matter less than or equal to 10 micrometers (PM₁₀), Parts per million (ppm), Parts per million dry volume (ppmdv) Pounds per Hour (lbs/hr), Prevention of Significant Deterioration (PSD), Rotary Vacuum Filter (RVF), Selective Non-catalytic Reduction (SNCR), Stack/Vent (SV), Sulfur Dioxide (SO₂), Sulfuric Acid (H₂SO₄), Total Dissolved Solids (TDS), Total Reduced Sulfur (TRS), Total Selected Metal (TSM), Volatile Organic Compounds (VOC).

This permit is issued with the following conditions under the authority of Title 129 - Nebraska Air Quality Regulations as amended March 14, 2006:

General Conditions

- I. This permit is not transferable to another source or location. (Title 129, Chapter 17)
- II. Holding of this permit does not relieve the owner/operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. Any permit noncompliance shall constitute a violation of the Nebraska Environmental Protection Act and the Federal Clean Air Act, and is grounds for enforcement action or permit revocation. {Title 129, Chapter 41 & Chapter 17, Section 011}
- III. Application for review of plans or advice furnished by the Director will not relieve the source of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. {Title 129, Chapter 37}
- IV. Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. If the source wishes to make changes at the facility that will result in change(s) to values, specifications, and/or locations of emission points that were indicated in the permit application (or other supplemental information provided by the applicant and reviewed by the Department in issuance of this permit), the source must receive approval from the Department before the change(s) can be made. In addition, any modification which may result in an adverse change to the air quality impacts predicted by atmospheric dispersion modeling (such as changes in stack parameters or increases in emission rates, potential emissions, or actual emissions) shall have prior approval from the Department. The source shall provide all necessary information to verify that there are no substantive changes affecting the basis upon which this permit was issued. Information may include, but not be limited to, additional engineering, modeling and ambient air quality studies. {Title 129, Chapter 17, Section 006, 007, & 008}
- V. Approval to construct, reconstruct and/or modify the source will become invalid if a continuous program of construction is not commenced within 18 months after the date of issuance of the construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. {Title 129, Chapter 17, Section 012}
- VI. The owner/operator of the source shall provide a notification to the Department of the date of construction, reconstruction or modification commenced, postmarked no later than 30 days after such date, and of the actual date of initial startup of operation, postmarked within 15 days after such date. {Title 129, Chapter 17, Section 012}

- VII. The permittee shall allow the Department, EPA or an authorized representative, upon presentation of credentials to: {Neb. Rev. Statute §81-1504}
- (A) Enter upon the permittee's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (B) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (C) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;
 - (D) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.
- VIII. When requested by the Department, the permittee shall submit completed emission inventory forms for the preceding year to the Department by March 31 of each year. {Title 129, Chapter 6}
- IX. Open fires are prohibited except as allowed by Title 129, Chapter 30.
- X. Particulate Matter – General Requirements: {Title 129, Chapter 32}
- (A) The permittee shall not cause or permit the handling, transporting or storage of any material in a manner, which allows particulate matter to become airborne in such quantities and concentrations that it remains visible in the ambient air beyond the property line.
 - (B) The permittee shall not cause or permit the construction, use, repair or demolition of a building, its appurtenances, a road, a driveway, or an open area without applying all reasonable measures to prevent particulate matter from becoming airborne and remaining visible beyond the property line. Such measures include, but not limited to, paving or frequent cleaning of roads, driveways and parking lots; application of dust-free surfaces; application of water; and planting and maintenance of vegetative ground cover.
- XI. If and when the Director declares an air pollution episode as defined in Title 129, Chapter 38, Sections 003.01B, 003.01C, or 003.01D, the source shall immediately take all required actions listed in Title 129, Appendix I until the Director declares the air pollution episode terminated.
- XII. This permit may be revised (reopened and reissued) or revoked for cause in accordance with Title 129 and Title 115, Rules of Practice and Procedure. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Title 129, Chapter 15, Section 006}
- (A) A determination by the Director, or the Administrator of EPA that:
 - (1) the permit must be revised to ensure compliance with the applicable requirements;

- (2) the permit contains a material mistake or that inaccurate statements were made in the emissions standards or other terms or conditions of the permit.
- (B) The existence at the facility of unresolved noncompliance with applicable requirements or a term or condition of the permit, and refusal of the permittee to agree to an enforceable schedule of compliance to resolve the noncompliance;
- (C) The submittal by the permittee of false, incomplete, or misleading information to the Department or EPA;
- (D) A determination by the Director that the permitted facility or activity endangers human health or the environment and that the danger cannot be removed by a revision of the permit; or
- (E) The failure of the permittee to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the EPA.

Specific Conditions

XIII. Specific terms and conditions of this permit:

- (A) The following conditions apply to: GRAIN HANDLING AND PROCESSING OPERATIONS:
- (1) The grain handling and processing equipment shall consist of the emission points and control devices presented in Table 1:

Table 1. Grain Handling and Processing Equipment

| Emission Unit ID | SV # | Equipment Description | Add-on control device |
|------------------|------|--|-----------------------|
| EU1-1 | 1 | Corn Receiving (East Truck Unloading Pits #1 and #2) | Baghouse |
| EU1-2 | 2 | Corn Receiving (West Truck Unloading Pits #3 and #4) | Baghouse |
| EU2-3 | 3 | Corn Cleaner/Fines Bin | Baghouse |
| EU2-4 | 4 | Corn Cleaner | Baghouse |
| EU2-42 | 42 | Corn Fines Transfer | Baghouse |
| EU1-54 | 54 | Corn Silo #1 | Baghouse |
| EU1-55 | 55 | Corn Silo #2 | Baghouse |
| EU1-56 | 56 | Corn Silo #3 | Baghouse |
| EU1-57 | 57 | Corn Silo #4 | Baghouse |
| EU1-58 | 58 | Corn Silo #5 | Baghouse |
| EU1-59 | 59 | Corn Silo #6 | Baghouse |
| EU1-60 | 60 | Corn Silo #7 | Baghouse |
| EU1-61 | 61 | Corn Silo #8 | Baghouse |
| EU14-71 | 71 | Rail Corn Receiving, Storage, and Handling | Baghouse |

| Emission Unit ID | SV # | Equipment Description | Add-on control device |
|-------------------------|-------------|------------------------------|------------------------------|
| EU14-72 | 72 | Corn Storage Bin 9A | Baghouse |
| EU14-73 | 73 | Corn Storage Bin 9B | Baghouse |
| EU14-74 | 74 | Corn Storage Bin 10A | Baghouse |
| EU14-75 | 75 | Corn Storage Bin 10B | Baghouse |
| EU14-76 | 76 | Corn Storage Bin 11A | Baghouse |
| EU14-77 | 77 | Corn Storage Bin 11B | Baghouse |
| EU14-78 | 78 | Corn Storage Bin 12A | Baghouse |
| EU14-79 | 79 | Corn Storage Bin 12B | Baghouse |
| EU14-80 | 80 | Corn Storage Bin 13A | Baghouse |
| EU14-81 | 81 | Corn Storage Bin 13B | Baghouse |
| EU14-82 | 82 | Corn Storage Bin 14A | Baghouse |
| EU14-83 | 83 | Corn Storage Bin 14B | Baghouse |
| EU14-84 | 84 | Corn Storage Bin 15A | Baghouse |
| EU14-85 | 85 | Corn Storage Bin 15B | Baghouse |
| EU14-86 | 86 | Corn Storage Bin 16A | Baghouse |
| EU14-87 | 87 | Corn Storage Bin 16B | Baghouse |
| EU14-88 | 88 | Corn Storage Bin 17A | Baghouse |
| EU14-89 | 89 | Corn Storage Bin 17B | Baghouse |
| EU14-105 | 105 | Rail Corn Silo #1 | Baghouse |
| EU14-106 | 106 | Rail Corn Silo #2 | Baghouse |

- (2) The grain handling and processing equipment shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the grain handling and processing equipment shall be kept on site and readily available to Department representatives. {Title 129, Chapters 19 and 20}
- (3) The operation of each dry dust collector (baghouse) shall be in accordance with the following requirements: {Title 129, Chapters 19 and 20}
- (a) The dry dust collectors shall be operated whenever the associated emission units are in operation.
- (b) The dry dust collectors shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the dry dust collectors shall be kept on site and readily available to Department representatives.
- (c) The dry dust collectors for EU1-1, EU1-2, EU2-3, EU2-4, EU2-42, EU14-71, EU14-105, and EU14-106 shall be equipped with an operational pressure differential indicator. The pressure differential indicator readings shall be recorded at least once each day that the associated dry dust collector is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the pressure

differential indicator shall be kept on site and readily available to Department representatives.

- (d) Dry dust collector filter bags/cartridges are to be inspected and/or replaced according to the operation and maintenance manual or more frequently as indicated by pressure differential indicator readings or other indication of unit failure.
 - (e) Routine observations (at least once each day during daylight hours of dry dust collector operation) shall be conducted for dry dust collectors stacks SV# 1 – 4, 42, 71, 105 and 106 to determine whether there are visible emissions from the stack, leaks, noise, atypical pressure differential readings, or other indications, which may necessitate corrective action. Corrective action shall be taken immediately if necessary. For the bin vent dust collector stacks (SV# 54-61 and 72-89) routine observations (at least once weekly) shall be conducted and recorded to determine whether there are excessive visible emissions from the vents, or other indications of poor performance (e.g. material build-up on vents) requiring corrective action. Corrective action shall be taken immediately if necessary.
 - (f) Collected waste material from the dry dust collectors shall be handled, transported, and stored in a manner that ensures compliance with Condition X.
 - (g) The source shall maintain on-site an inventory of spare bags/cartridges of each type used to ensure rapid replacement in the event of bag/cartridge failure.
- (4) The PM and PM₁₀ emissions from the grain handling and processing baghouses shall not exceed the emission limits in Table 2 (3-hour or test method average). {Title 129, Chapters 4, 19, and 20}

Table 2. Grain Handling and Processing Emission Limits

| SV # | Equipment Description | PM/PM ₁₀ limitation (lbs/hr) |
|------|--|---|
| 1 | Corn Receiving (East Truck Unloading Pits #1 and #2) | 0.52 |
| 2 | Corn Receiving (West Truck Unloading Pits #3 and #4) | 0.52 |
| 3 | Corn Cleaner/Fines Bin | 0.10 |
| 4 | Corn Cleaner | 0.52 |
| 42 | Corn Fines Transfer | 0.04 |
| 54 | Corn Silo #1 | 0.16 |
| 55 | Corn Silo #2 | 0.16 |
| 56 | Corn Silo #3 | 0.16 |
| 57 | Corn Silo #4 | 0.21 |
| 58 | Corn Silo #5 | 0.21 |
| 59 | Corn Silo #6 | 0.21 |

| SV # | Equipment Description | PM/PM ₁₀ limitation (lbs/hr) |
|------|--|---|
| 60 | Corn Silo #7 | 0.21 |
| 61 | Corn Silo #8 | 0.21 |
| 71 | Rail Corn Receiving, Storage, and Handling | 0.82 |
| 72 | Corn Storage Bin 9A | 0.02 |
| 73 | Corn Storage Bin 9B | 0.02 |
| 74 | Corn Storage Bin 10A | 0.02 |
| 75 | Corn Storage Bin 10B | 0.02 |
| 76 | Corn Storage Bin 11A | 0.02 |
| 77 | Corn Storage Bin 11B | 0.02 |
| 78 | Corn Storage Bin 12A | 0.02 |
| 79 | Corn Storage Bin 12B | 0.02 |
| 80 | Corn Storage Bin 13A | 0.02 |
| 81 | Corn Storage Bin 13B | 0.02 |
| 82 | Corn Storage Bin 14A | 0.02 |
| 83 | Corn Storage Bin 14B | 0.02 |
| 84 | Corn Storage Bin 15A | 0.02 |
| 85 | Corn Storage Bin 15B | 0.02 |
| 86 | Corn Storage Bin 16A | 0.02 |
| 87 | Corn Storage Bin 16B | 0.02 |
| 88 | Corn Storage Bin 17A | 0.02 |
| 89 | Corn Storage Bin 17B | 0.02 |
| 105 | Rail Corn Silo #1 | 0.39 |
| 106 | Rail Corn Silo #2 | 0.90 |

- (5) The New Source Performance Standards for Grain Elevators, Subpart DD {Title 129, Chapter 18, Section 001.19} apply to the rail corn receiving, storage, and handling equipment (EU14-71) and the corn cleaner (EU2-4). These requirements include but are not limited to the following: {40 CFR, Part 60, Subpart DD}
- (a) Any grain handling operations other than grain dryers shall not emit particulate matter in excess of 0.023 g/dscm (0.01 gr/dscf) and shall not exhibit greater than 0% opacity.
 - (b) Fugitive particulate matter emissions from railcar unloading shall not exhibit greater than 5% opacity.
 - (c) Testing to determine the compliance with the limitations in Conditions XIII.(A)(5)(a) and (b) shall be in accordance with 40 CFR 60.303.
- (6) In order to demonstrate compliance with Condition XIII.(A)(4), the source shall conduct performance tests as specified in Table 3. The performance test shall be conducted in accordance with Condition XIII.(V). {Title 129, Chapter 34}

Table 3. Grain Handling and Processing Test Requirements

| SV # | Equipment Description | PM/PM ₁₀ Test Required |
|-------|--|-----------------------------------|
| 1 | Corn Receiving (East Truck Unloading Pits #1 and #2) | No |
| 2 | Corn Receiving (West Truck Unloading Pits #3 and #4) | No |
| 3 | Corn Cleaner/Fines Bin | Yes ¹ |
| 4 | Corn Cleaner | No |
| 42 | Corn Fines Transfer | Yes ¹ |
| 54-56 | Corn Silo #1-3 | No |
| 57-61 | Corn Silo #4-8 | No |
| 71 | Rail Corn Receiving, Storage, and Handling | No |
| 72-89 | Corn Storage Bins 9A, 9B, 10A, 10B, 11A, 11B, 12A, 12B, 13A, 13B, 14A, 14B, 15A, 15B, 16A, 16B, 17A, and 17B | No |
| 105 | Rail Corn Silo #1 | Yes ² |
| 106 | Rail Corn Silo #2 | Yes ² |

¹ Initial performance testing is required for SV#3 and 42; however, only one of the two sources must be tested if the first performance test demonstrates compliance. If the test indicates non-compliance, the other emission point shall be tested to independently verify compliance.

² Initial performance testing is required for SV#105 and 106; however, only one of the two sources must be tested if the first performance test demonstrates compliance. If the test indicates non-compliance, the other emission point shall be tested to independently verify compliance.

- (7) Fugitive emissions from the railcar unloading stations shall be further reduced by choke loading the receiving pits. Additionally, the railcar unloading stations shall be partially enclosed by a roof and two (2) sidewalls. {Title 129, Chapters 4 and 19}

(B) The following conditions apply to MILLHOUSE/FEEDHOUSE OPERATIONS:

- (1) A ventilation system must be used to aspirate the wet corn milling and feedhouse equipment (EU3-5), the stillage/steepwater evaporators (EU12-69 and EU12-70) and the gluten RVFs (EU6-66, EU6-67, and EU6-68). The emissions captured by the ventilation system shall be controlled by the millhouse scrubber system, consisting of two wet scrubbers that vent through a common stack (SV-5). {Title 129, Chapters 4 and 19}
- (2) The operation of the millhouse scrubber system shall be in accordance with the following requirements: {Title 129, Chapters 19 and 27}
 - (a) Both scrubbers shall be operated at all times when the associated emission units are in operation.
 - (b) The scrubbers shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of

the scrubbers shall be kept on site and readily available to Department representatives.

- (c) The scrubbers shall be equipped with indicators of scrubbing liquid flow rate, pH, and pressure differential. Operating parameter readings shall be recorded at least once each day the scrubbers are in operation. The indicators shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the operating parameter indicators shall be kept on site and readily available to Department representatives.
 - (d) Routine observations (at least once each day of scrubber operation) shall be conducted to determine whether there are leaks, noise, atypical operating parameters (e.g., scrubbing liquid flow rate), or other indications that may necessitate corrective action.
- (3) The emissions from the millhouse scrubber system stack (SV-5) shall not exceed the following emission limits (3-hour or test method average). {Title 129, Chapters 4 and 19}
- (a) 3.89 pounds per hour PM/PM₁₀.
 - (b) 6.75 pounds per hour SO₂.
- (4) VOC emissions entering the millhouse scrubber system shall be reduced by 95%, or to a level of 20 ppmvd. {Title 129, Chapter 27 and Consent Decree (United States v. ADM, No. 03-CV-2066 (C.D. Illinois))}
- (5) In order to demonstrate compliance with Conditions XIII.(B)(3) and (B)(4) and to verify assumptions used in the permit application, the source shall conduct a performance test for PM, PM₁₀, SO₂, HAPs, and VOC, on stack SV-5. The performance test shall determine the VOC control efficiency of the millhouse scrubber system. The performance test shall be conducted in accordance with Condition XIII.(V) and shall include speciation and quantification of the HAP composition of the emissions. VOC emissions shall be expressed as total mass of VOC. {Title 129, Chapter 34}
- (C) The following conditions apply to: FIBER DEWATERING
- (1) The emissions from the fiber dewatering vent (SV-43) shall not exceed the following emission limits (3-hour or test method average). {Title 129, Chapters 4 and 19}
- (a) 0.627 pounds per hour PM/PM₁₀
 - (b) 4.06 pounds per hour SO₂
 - (c) 1.52 pounds per hour VOC

- (2) In order to demonstrate compliance with Condition XIII.(C)(1) and to verify assumptions used in the permit application, the source shall conduct a performance test for PM, PM₁₀, SO₂, VOC, and HAPs on vent SV-43. The performance test shall be conducted in accordance with Condition XIII.(V) and shall include speciation and quantification of the HAP composition of the emissions. VOC emissions shall be expressed as total mass of VOC. {Title 129, Chapter 34}
- (3) The dewatering equipment shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the dewatering equipment shall be kept on site and readily available to Department representatives.
- (D) The following conditions apply to: PRODUCT DRYING OPERATIONS (GERM, GLUTEN, STARCH):
- (1) The product drying equipment shall consist of the emission points and control devices presented in Table 4: {Title 129, Chapters 19, and 27}

Table 4. Product Drying Equipment

| Emission Unit ID | SV # | Equipment Description | Dryer Heat Input (MMBtu/hr) | Add-on control device |
|------------------------------|------|-----------------------------|-----------------------------|--|
| EU4-6 | 6 | Starch Dryer # 1 | NA – steam heated | Wet Scrubber |
| EU5-7A, EU5-7B, EU5-7C | 7 | Germ Dryers # 1-3 | NA – steam heated | Wet Scrubber |
| EU5-8 | 8 | Fluidized Bed Germ Dryer #1 | 55 | Wet Scrubber, Low-NO _x burner |
| EU6-16 | 16 | Gluten Flash Dryer # 1 | 55 | Wet Scrubber, Low-NO _x burner |
| EU6-18 | 18 | Gluten Flash Dryer # 2 | 65 | Wet Scrubber, Low-NO _x burner |
| EU4-45 | 45 | Starch Dryer # 2 | NA – steam heated | Wet Scrubber |

- (2) The Gluten Flash Dryer # 1 shall only combust natural gas or natural gas combined with biogas from the wastewater treatment plant. The Gluten Flash Dryer # 2 and the Fluidized Bed Germ Dryer #1 shall burn natural gas only. {Title 129, Chapters 4 & 19}
- (3) The product drying equipment shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the product drying equipment shall be kept on site and readily available to Department representatives. {Title 129, Chapters 4 and 19}

- (4) Emissions from the product drying operations shall not exceed the emission limits in Table 5 (3-hour or test method average). {Title 129, Chapters 4, 19, and 27}

Table 5. Product Drying Emission Limits

| SV # | Equipment Description | PM limitation (lb/hr) | PM ₁₀ limitation (lb/hr) | NO _x limitation (lb/hr) | SO ₂ limitation (lb/hr) | CO limitation (lb/hr) | VOC limitation (lb/hr) |
|------|-----------------------------|-----------------------|-------------------------------------|------------------------------------|------------------------------------|-----------------------|---|
| 6 | Starch Dryer # 1 | 3.03 | 3.03 | | | | |
| 7 | Germ Dryer #1-3 | 7.81 | 3.82 | | 8.5 | | 95% control efficiency or 20 ppmvd ² |
| 8 | Fluidized Bed Germ Dryer #1 | 3.0 | 3.0 | 3.3 | 0.51 | 4.02 | 1.5 |
| 16 | Gluten Flash Dryer # 1 | 3.34 ¹ | 8.0 | 4.35 | 6.6 | 15.2 | 22.8 |
| 18 | Gluten Flash Dryer # 2 | 9.85 | 4.5 | 3.9 | 2.4 | 4.74 | 22.2 |
| 45 | Starch Dryer # 2 | 3.03 | 3.03 | | | | |

¹ Filterable only.

² Consent Decree (United States v. ADM, No. 03-CV-2066 (C.D. Illinois)).

- (5) The operation of each scrubber identified in Condition XIII.(D)(1) shall be in accordance with the following requirements: {Title 129, Chapters 19 and 27}
- (a) The scrubbers shall be operated at all times when the associated emission units are in operation.
 - (b) The scrubbers shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the scrubbers shall be kept on site and readily available to Department representatives.
 - (c) The scrubbers shall be equipped with indicators of scrubbing liquid flow rate, pH (except the Starch Dryer scrubbers), and scrubber pressure differential. Operating parameter readings shall be recorded at least once each day the scrubbers are in operation. The indicators shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the operating parameter indicators shall be kept on site and readily available to Department representatives.
 - (d) Routine observations (at least once each day of scrubber operation) shall be conducted to determine whether there are leaks, noise, atypical

operating parameters (e.g., scrubbing liquid flow rate), or other indications that may necessitate corrective action.

- (6) In order to demonstrate compliance with Condition XIII.(D)(4), the source shall conduct performance tests as specified in Table 6. The performance test shall be conducted in accordance with Condition XIII.(V) and shall include speciation and quantification of the HAP composition of the emissions. VOC emissions shall be expressed as total mass of VOC. {Title 129, Chapter 34}

Table 6. Product Drying Test Requirements

| SV # | Equipment Description | PM Test Required | PM ₁₀ Test Required | NO _x Test Required | SO ₂ Test Required | CO Test Required | VOC/HAP Test Required |
|------|-----------------------------|------------------|--------------------------------|-------------------------------|-------------------------------|------------------|-----------------------|
| 6 | Starch Dryer # 1 | No | No | No | No | No | No |
| 7 | Germ Dryer #1, 2, and 3 | Yes | Yes | No | Yes | No | Yes |
| 8 | Fluidized Bed Germ Dryer #1 | Yes | Yes | Yes | Yes | Yes | Yes |
| 16 | Gluten Flash Dryer # 1 | Yes | Yes | Yes | Yes | Yes | Yes |
| 18 | Gluten Flash Dryer # 2 | Yes | Yes | Yes | Yes | Yes | Yes |
| 45 | Starch Dryer # 2 | No | No | No | No | No | No |

- (E) The following conditions apply to: GERM, GLUTEN, AND STARCH COOLING AND STORAGE OPERATIONS:

- (1) The germ and gluten cooling and storage and starch storage equipment consists of the emission points and control devices presented in Table 7: {Title 129, Chapter 19}

Table 7. Germ, Gluten, and Starch Cooling and Storage Equipment

| Emission Unit ID | SV # | Equipment Description | Add-on control device |
|------------------|------|-------------------------|-----------------------|
| EU5-9A | 9 | Germ Cooler # 1 | Baghouse |
| EU5-9B | | Germ Cooler # 2 | Baghouse |
| EU5-9C | | Germ Cooler # 3 | Baghouse |
| EU5-12 | 12 | Germ Cooler # 4 | Baghouse |
| EU6-17 | 17 | Gluten Cooler # 1 | Baghouse |
| EU6-19 | 19 | Gluten Cooler # 2 | Baghouse |
| EU4-20 | 20 | Starch Storage Bin # 11 | Baghouse |
| EU4-21 | 21 | Starch Storage Bin # 12 | Baghouse |
| EU4-22 | 22 | Starch Storage Bin # 9 | Baghouse |
| EU4-23 | 23 | Starch Storage Bin # 10 | Baghouse |
| EU5-24 | 24 | Gluten Storage Bin # 7 | Baghouse |
| EU5-25 | 25 | Gluten Storage Bin # 8 | Baghouse |

| Emission Unit ID | SV # | Equipment Description | Add-on control device |
|-------------------------|-------------|------------------------------|------------------------------|
| EU5-26 | 26 | Gluten Storage Bin # 5 | Baghouse |
| EU5-27 | 27 | Gluten Storage Bin # 6 | Baghouse |
| EU6-28 | 28 | Germ Storage Bin # 3 | Baghouse |
| EU6-29 | 29 | Germ Storage Bin # 4 | Baghouse |
| EU6-30 | 30 | Germ Storage Bin # 1 | Baghouse |
| EU6-31 | 31 | Germ Storage Bin # 2 | Baghouse |
| EU6-44 | 44 | Gluten Recycle | Baghouse |
| EU4-46 | 46 | Starch Bin #13 | Baghouse |
| EU4-47 | 47 | Starch Bin #14 | Baghouse |
| EU4-48 | 48 | Starch Dryer Loadout | Baghouse |

- (2) The equipment identified in Condition XIII.(E)(1) shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the germ, gluten, and starch cooling and storage equipment shall be kept on site and readily available to Department representatives.
- (3) The operation of each dry dust collector (baghouse) shall be in accordance with the following requirements: {Title 129, Chapter 19}
- (a) The dry dust collectors shall be operated whenever the associated emission units are in operation.
 - (b) The dry dust collectors shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the dry dust collectors shall be kept on site and readily available to Department representatives.
 - (c) Each dry dust collector shall be equipped with an operational pressure differential indicator. The pressure differential indicator readings shall be recorded at least once each day that the associated dry dust collector is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the pressure differential indicator shall be kept on site and readily available to Department representatives.
 - (d) Dry dust collector filter bags/cartridges are to be inspected and/or replaced according to the operation and maintenance manual or more frequently as indicated by pressure differential indicator readings or other indication of unit failure.
 - (e) Routine observations (at least once each day during daylight hours of dry dust collector operation) shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, atypical pressure differential readings, or other indications, which may necessitate

corrective action. Corrective action shall be taken immediately if necessary.

- (f) Collected waste material from the dry dust collectors shall be handled, transported, and stored in a manner that ensures compliance with Condition X.
 - (g) The source shall maintain on-site an inventory of spare bags/cartridges of each type used to ensure rapid replacement in the event of bag/cartridge failure.
- (4) Emissions from the germ, gluten, and starch cooling and storage operations shall not exceed the emission limits in Table 8 (3- hour or test method average). {Title 129, Chapters 4 and 19}

Table 8. Germ, Gluten, and Starch Cooling and Storage Emission Limits

| SV # | Equipment Description | PM/PM ₁₀ (lbs/hr) | VOC (lb/hr) |
|------|--|---------------------------------|----------------|
| 9 | Germ Cooler # 1-3 | 2.04 | 5.1 |
| 12 | Germ Cooler # 4 | 1.55 | 6.5 |
| 17 | Gluten Cooler # 1 | 1.25 | 2.08 |
| 19 | Gluten Cooler #2 | 1.58 | 2.62 |
| 20 | Starch Storage Bin # 11 | 0.03 | |
| 21 | Starch Storage Bin # 12 | 0.03 | |
| 22 | Starch Storage Bin # 9 (Off-Spec Starch) | 0.03 | |
| 23 | Starch Storage Bin # 10 | 0.03 | |
| 24 | Gluten Storage Bin # 7 | 0.03 | |
| 25 | Gluten Storage Bin # 8 | 0.03 | |
| 26 | Gluten Storage Bin # 5 | 0.03 | |
| 27 | Gluten Storage Bin # 6 | 0.03 | |
| 28 | Gluten Storage Bin # 3 | 0.03 | |
| 29 | Gluten Storage Bin # 4 | 0.03 | |
| 30 | Gluten Storage Bin # 1 | 0.03 | |
| 31 | Gluten Storage Bin # 2 | 0.03 | |
| 44 | Gluten Recycle | 0.11 | 0.2 |
| 46 | Starch Bin #13 | 0.06 | |
| 47 | Starch Bin #14 | 0.06 | |
| 48 | Starch Dryer Loadout | 0.11 | |

- (5) In order to demonstrate compliance with Condition XIII.(E)(4) and to verify assumptions used in the permit application, the source shall conduct performance tests as specified in the Table 9. The performance test shall be conducted in accordance with Condition XIII.(V) and shall include speciation and quantification of the HAP composition of the emissions. VOC emissions shall be expressed as total mass of VOC. {Title 129, Chapter 34}

Table 9. Germ, Gluten, and Starch Cooling and Storage Test Requirements

| SV # | Equipment Description | PM/PM ₁₀ Test Required | VOC/HAP Test Required |
|------|--|-----------------------------------|-----------------------|
| 9 | Germ Cooler # 1-3 | Yes | Yes |
| 12 | Germ Cooler # 4 | Yes ¹ | Yes ¹ |
| 17 | Gluten Cooler # 1 | Yes | Yes |
| 19 | Gluten Cooler #2 | Yes ² | Yes ² |
| 20 | Starch Storage Bin # 11 | No | No |
| 21 | Starch Storage Bin # 12 | No | No |
| 22 | Starch Storage Bin # 9 (Off-Spec Starch) | No | No |
| 23 | Starch Storage Bin # 10 | No | No |
| 24 | Gluten Storage Bin # 7 | No | No |
| 25 | Gluten Storage Bin # 8 | No | No |
| 26 | Gluten Storage Bin # 5 | No | No |
| 27 | Gluten Storage Bin # 6 | No | No |
| 28 | Germ Storage Bin # 3 | No | No |
| 29 | Germ Storage Bin # 4 | No | No |
| 30 | Germ Storage Bin # 1 | No | No |
| 31 | Germ Storage Bin # 2 | No | No |
| 44 | Gluten Recycle | Yes ² | Yes ² |
| 46 | Starch Bin #13 | No | No |
| 47 | Starch Bin #14 | No | No |
| 48 | Starch Dryer Loadout | No | No |

¹ Initial performance testing is required for SV#9 and 12; however, only SV#9 must be tested if the performance test demonstrates compliance. If the test indicates non-compliance, the other emission point shall be tested to independently verify compliance.

² Initial performance testing is required for SV#17, 19 and 44; however, only SV#17 must be tested if the performance test demonstrates compliance. If the test indicates non-compliance, the other emission points shall be tested to independently verify compliance.

(F) The following conditions apply to: FERMENTATION AND DISTILLATION OPERATIONS

- (1) VOC and HAP emissions from the fermentation and distillation operations shall be controlled by three scrubbers (EU7-32, EU7-33, and EU7-34). {Title 129, Chapters 19 and 27}
- (2) The operation of the scrubbers shall be in accordance with the following requirements: {Title 129, Chapters 19 and 27}
 - (a) The scrubbers shall be operated at all times when the associated emission units are in operation.
 - (b) The scrubbers shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of

the scrubbers shall be kept on site and readily available to Department representatives.

- (c) The scrubbers shall be equipped with indicators of scrubbing liquid flow rate and pressure differential. Operating parameter readings shall be recorded at least once each day the scrubbers are in operation. The indicators shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the operating parameter indicators shall be kept on site and readily available to Department representatives.
 - (d) Routine observations (at least once each day of scrubber operation) shall be conducted to determine whether there are leaks, noise, atypical operating parameters (e.g., scrubbing liquid flow rate), or other indications that may necessitate corrective action.
- (3) The total emissions from the scrubber stacks (SV #32, 33, and 34) shall not exceed the following emission limits (3-hour or test method average). {Title 129, Chapters 19}
- (a) 2.5 lbs/hr SO₂
 - (b) 13.5 lbs/hr VOC
- (4) The scrubbers shall each have a minimum control efficiency of 65 percent for combined HAPs or shall have a HAP exhaust concentration of 20 ppmvd or less, and shall each have a minimum control efficiency of 95 percent for VOCs or shall have a VOC exhaust concentration of 20 ppmvd or less. {Title 129, Chapter 27; Consent Decree No. 03-CV-2066}
- (a) A weighted average of the control efficiency for the combined HAPs shall be calculated using the following formula:

$$\text{Efficiency} = \left(1 - \left(\frac{\sum C}{\sum U} \right) \right) * 100$$

Where: Efficiency = the combined HAP control efficiency
C = the controlled (outlet) individual HAP emission rates (lbs/hr)
U = the uncontrolled (inlet) individual HAP emission rates (lbs/hr)

- (b) Following HAP efficiency testing, ADM shall submit a revised BACT analysis with the results if 65% reduction or 20 ppmvd is not achieved.

- (c) If the scrubbers are unable to achieve a control efficiency of 65 percent or 20 ppmvd for combined HAPs, the limit may be subject to revisions after the opportunity for public comment.
- (5) In order to demonstrate compliance with Condition XIII.(F)(3) and to verify the assumptions used in the permit application, the source shall conduct a performance test for SO₂, VOC, and HAP on the CO₂ scrubber stacks (SV #32, 33, and 34). In addition, the performance test shall determine the VOC and HAP control efficiency of the scrubbers to demonstrate compliance with Condition XIII.(F)(4). The performance test shall be conducted in accordance with Condition XIII.(V) and shall include speciation and quantification of the HAP composition of the emissions. VOC emissions shall be expressed as total mass of VOC. {Title 129, Chapter 34}
- (G) The following conditions apply to: STORAGE TANKS
 - (1) The storage tanks consist of the internal floating-roof vertical aboveground tanks presented in Table 10: {Title 129, Chapters 18, 19, and 27}

Table 10. Storage Tanks

| Emission Unit ID | Equipment Description | Capacity (gallons) |
|-------------------------|------------------------------|---------------------------|
| EU7-TK01 | Day Tank A, ethanol | 100,000 |
| EU7-TK02 | Day Tank B, ethanol | 100,000 |
| EU7-TK03 | Rerun Tank, ethanol | 34,000 |
| EU7-TK04 | Day Tank C, ethanol | 100,000 |
| EU7-TK05 | Denaturant Tank | 42,420 |
| EU7-TK06 | Denatured Ethanol Tank | 2,000,000 |
| EU7-TK07 | Corrosion Inhibitor Tank | 3,800 |
| EU7-TK08 | Denaturant Tank | 100,000 |

- (2) The requirements of the NSPS for Volatile Organic Liquid Storage Vessels in 40 CFR 60, Subparts A and Kb {Title 129, Chapter 18, Sections 001.01 and 001.62} apply to storage tanks EU-TK05, EU-TK06, and EU-TK08. The requirements include, but are not limited to, the following: {Title 129, Chapters 18 and 27}
 - (a) The tanks shall each be equipped with an internal floating roof, in accordance with the specifications in 40 CFR 60.112b(a)(1).
 - (b) The tanks shall each be visibly inspected and repaired in accordance with testing and procedures per 40 CFR 60.113b(a).
 - (c) The owner or operator of the affected tanks shall report and keep records as described in 40 CFR 60.115b – Reporting and recordkeeping requirements and in 40 CFR 60.116b – Monitoring of operations.

- (3) The requirements of Conditions XIII.(G)(2)(a-b) apply to storage tank EU-TK01, EU-TK02, EU-TK03, and EU-TK04. {Title 129, Chapter 27}
- (H) The following condition applies to: LIQUID PRODUCT LOADOUT
- (1) The source shall use submerged and/or bottom fill loading when transferring liquid product from the storage tanks to tanker railcar or tanker truck. {Title 129, Chapters 19 and 27}
 - (2) Truck and railcar loadout of liquid product shall be controlled by a closed vapor recovery system with a flare (EU7-90) at all times liquid product loadout is occurring. {Title 129, Chapters 19 and 27}
 - (a) The vapor recovery system and flare shall be properly designed, installed, operated and maintained in order to capture the vapor generated during product loadout. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the vapor recovery system and flare shall be kept on site and readily available to Department representatives.
 - (b) When liquid loadout is occurring, a flame shall be present at the flare. The facility must install an appropriate safety device or flame monitoring system to ensure that loadout cannot occur without the presence of a flame. The safety device or flame monitoring system shall be properly installed, operated, calibrated and maintained. Manufacturer's documentation shall be kept on site and readily available to Department representatives.
- (I) The following conditions apply to REFINERY CARBON FURNACES #1 and #2:
- (1) Carbon furnaces #1 (EU8-35) and #2 (EU8-36) shall burn natural gas only, and shall be equipped with afterburners. The furnaces shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the furnaces shall be kept on site and readily available to Department representatives.
 - (2) The emissions from each carbon furnace shall first be combusted by an afterburner and further controlled by a venturi wet scrubber with impingement trays. {Title 129, Chapters 19 and 27}
 - (3) The operation of each scrubber shall be in accordance with the following requirements: {Title 129, Chapters 19 and 27}
 - (a) The scrubbers shall be operated at all times when the associated emission units are in operation.
 - (b) The scrubbers shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of

the scrubbers shall be kept on site and readily available to Department representatives.

- (c) The scrubbers shall be equipped with indicators of scrubbing liquid flow rate, pH, and scrubber pressure differential. Operating parameter readings shall be recorded at least once each day the scrubbers are in operation. The indicators shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the operating parameter indicators shall be kept on site and readily available to Department representatives.
 - (d) Routine observations (at least once each day of scrubber operation) shall be conducted to determine whether there are leaks, noise, atypical operating parameters (e.g., scrubbing liquid flow rate), or other indications that may necessitate corrective action.
- (4) The total emissions from the wet scrubber for carbon furnace #1 stack (SV-35) shall not exceed the following emission limits (3-hour or test method averaged). {Title 129, Chapters 4, 19, and 27}
- (a) 1.88 pounds per hour PM
 - (b) 1.00 pounds per hour PM₁₀
 - (c) 3.38 pounds per hour NO_x
 - (d) 2.0 pounds per hour SO₂
 - (e) 7.63 pounds per hour CO
 - (f) 2.7 pounds per hour VOC
- (5) The total emissions from the wet scrubber for carbon furnace #2 stack (SV-36) shall not exceed the following emission limits (3-hour or test method average) {Title 129, Chapters 4, 19, and 27}:
- (a) 3.14 pounds per hour PM
 - (b) 1.50 pounds per hour PM₁₀
 - (c) 5.64 pounds per hour NO_x
 - (d) 3.3 pounds per hour SO₂
 - (e) 8.14 pounds per hour CO
 - (f) 3.8 pounds per hour VOC

(J) The following condition applies to: BOILERS # 1, 2, 3, 4, and 5

- (1) Only natural gas shall be burned as fuel in Boiler #1 (EU9-38), Boiler #2 (EU9-39), Boiler #3 (EU9-40), Boiler #4 (EU9-41), and Boiler #5 (EU9-98). {Title 129, Chapters 4 and 19}
- (2) On or before April 30, 2006, the existing burner in Boiler #1 (EU9-38) shall be replaced with a low-NO_x burner. Upon completion of this replacement, NO_x emissions from Boiler #1 shall meet the limits presented in Condition XIII.(J)(3). (Consent Decree (United States v. ADM, No. 03-CV-2066 (C.D. Illinois)))
- (3) The total emissions from the boiler stacks shall not exceed the emission limits in Table 11 (3-hour or test method average). {Title 129, Chapters 4 and 19}

Table 11. Boilers #1, 2, 3, 4, and 5 Emission Limits

| Emission Unit ID | SV# | Boiler # | NO _x (lb/MMBtu) | CO (lb/hr) |
|------------------|-----|----------|----------------------------|------------|
| EU9-38 | 38 | 1 | 0.2 0.06 ^a | |
| EU9-39 | 39 | 2 | 0.074 | |
| EU9-40 | 40 | 3 | 0.074 ^b | |
| EU9-41 | 40 | 4 | 0.074 ^b | |
| EU9-42 | 98 | 5 | 0.036 | 23.6 |

^a Boiler #1 subject to 0.06 (lb/MMBtu) NO_x limit upon completion of installation of the low-NO_x burner required by Condition XIII.(J)(2).

^b These boilers share a common stack and a single CEMS. The emission limits are total for both boilers.

- (4) The NSPS for Industrial-Commercial-Institutional Steam Generating Units, Subpart Db {Title 129, Chapter 18, Section 001.22} apply to Boilers # 1 thru #5 (EU9-38, 9-39, 9-40, 9-41, and 9-98}. The requirements include, but are not limited to, the following:
 - (a) NO_x emissions shall not exceed 0.1 lbs/MMBtu (30-day rolling average). This emission limit applies at all times including periods of startup, shutdown or malfunction.
 - (b) Performance and compliance testing shall be conducted in accordance with Title 129, Chapter 18, NSPS, Section 001.01 General Provisions, and as required by 40 CFR 60.46b(e) and Condition XIII.(V).
 - (c) The source shall install, calibrate, maintain, and operate a CEMS or approved alternative in accordance with the Subpart for each boiler measuring the NO_x emissions. Boilers #3 (EU9-40) and #4 (EU9-41) share a common stack and shall use a single CEMS.
 - (d) The Requirements for Performance Specifications 2 - Specifications and Test Procedures for SO₂ and NO_x Continuous Emission Monitoring

Systems in Stationary Sources found in 40 CFR 60 Appendix B shall be followed for the CEMS required under the Condition XIII.(J)(4)(c).

- (e) Quality assurance for the CEMS required under the Condition XIII.(J)(4)(c) shall be conducted according to the requirements of 40 CFR 60 Appendix F. The report of the Relative Accuracy Test Audit required by the 40 CFR 60 Appendix F or a similar procedure shall be submitted to the Department within 45 days of completion of the test.
 - (f) The source shall record and maintain records of the amount of natural gas combusted during each day in each boiler unless EPA Region VII approves an alternative record-keeping frequency. {40 CFR 60.49b(d)}
 - (g) The source shall submit notification of the date of construction, anticipated startup, and actual startup, as provided by Title 40 CFR 60.7. {40 CFR 60.49b(a)}
- (5) The requirements of the NESHAP for Commercial, Industrial, and Institutional Boilers and Process Heaters in 40 CFR 63, Subpart DDDDD {Title 129, Chapter 28, Section 001.90} apply to the existing natural gas fired Boilers #1 through #4 (EU9-38, EU9-39, EU9-40, and EU9-41). These boilers comprise the affected source for the existing large gaseous fuel subcategory. Pursuant to 40 CFR 63.7506(b)(1) and 40 CFR 63.7545(c), the source submitted an Initial Notification containing the information specified in 40 CFR 63.9(b)(2) on March 10, 2005. {Title 129, Chapters 27 and 28}
- (6) The requirements of the NESHAP for Commercial, Industrial, and Institutional Boilers and Process Heaters in 40 CFR 63, Subpart DDDDD {Title 129, Chapter 28, Section 001.90} apply to the new natural gas fired Boiler #5 (EU9-98). This boiler is considered a new gaseous fuel unit and shall comply with the requirements in this subpart upon startup of this boiler. The requirements include, but are not limited to, the following:
- (a) The emission limits and work practice standards pursuant to 40 CFR 63.7500.
 - (b) The testing, compliance, and monitoring requirements pursuant to 40 CFR 63.7505-63.7541.
 - (c) The notification, reporting, and recordkeeping requirements pursuant to 40 CFR 63.7545-63.7560.
- (K) The following conditions apply to: CFB BOILERS EU9-1A and EU9-1B
- (1) Only coal and alternative fuel blends (coal mixed with up to 20% by weight biomass, petroleum coke, or tire-derived fuel) shall be burned in the CFB boilers (EU9-1A and EU9-1B). {Title 129, Chapters 4 and 19}
 - (2) Emissions from the CFB boilers shall be controlled by limestone injection, ammonia injection (SNCR), and two fabric filter baghouses (one for each

boiler), exhausting through individual flues of a single stack (SV-COGEN1).
{Title 129, Chapters 4, 19, and 27}

- (3) The operation of the dry dust collectors (baghouses) shall be in accordance with the following requirements: {Title 129, Chapters 4 and 19}
 - (a) The dry dust collectors shall be operated whenever the associated emission units are in operation.
 - (b) The dry dust collectors shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the dry dust collectors shall be kept on site and readily available to Department representatives.
 - (c) The dry dust collectors shall be equipped with an operational pressure differential indicator. The pressure differential indicator readings shall be recorded at least once each day that the associated dry dust collector is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the pressure differential indicator shall be kept on site and readily available to Department representatives.
 - (d) Dry dust collector filter bags/cartridges are to be inspected and/or replaced according to the operation and maintenance manual, or more frequently as indicated by pressure differential indicator readings or other indication of unit failure.
 - (e) Routine observations (at least once each day during daylight hours of dry dust collector operation) shall be conducted to determine whether there are leaks, noise, atypical pressure differential readings, or other indications, which may necessitate corrective action. Corrective action shall be taken immediately if necessary.
 - (f) Collected waste material from the dry dust collectors shall be handled, transported, and stored in a manner that ensures compliance with Condition X.
 - (g) The source shall maintain on-site an inventory of spare bags/cartridges of each type used to ensure rapid replacement in the event of bag/cartridge failure.
- (4) The total emissions from the CFB boilers stack (SV-COGEN1) shall not exceed the emission limits in Table 12. {Title 129, Chapter 4, 19, and 27}

Table 12. CFB Boiler Emission Limits

| Pollutant / Parameter | Limit | Averaging Period |
|---|--------------------|--|
| PM (filterable only) | 0.015 lb/MMBtu | Average of 3 runs |
| PM ₁₀ (filterable and condensable) | 0.025 lb/MMBtu | Average of 3 runs |
| VOC | 0.007 lb/MMBtu | Average of 3 runs |
| F (as HF) | 0.0012 lb/MMBtu | Average of 3 runs |
| H ₂ SO ₄ | 0.01 lb/MMBtu | Average of 3 runs |
| NO _x | 0.07 lb/MMBtu | 30-day rolling average excluding period of "cold startup" ¹ |
| Pb | 0.0002 lb/MMBtu | Average of 3 runs |
| SO ₂ | 0.11-0.20 lb/MMBtu | 30-day rolling average ^{2,3} |
| SO ₂ | 3,750 lbs/hr | 3-hour average (NAAQS) |
| CO | 0.1 lb/MMBtu | 30-day rolling average ² |
| CO | 150 lbs/hr | 3 hour average |

¹ A cold startup period is defined as that period of time when a coal-fired cogen boiler is proceeding to increase the temperature in the lower combustor from less than 400°F to at least 1500°F. This period shall last no more than 48 hours and NO_x emissions data from this period shall be excluded when determining compliance with the limits established. Ammonia injection shall begin as soon as the lower combustor temperature reaches 1500°F and the cold startup period will end at this time. All data from cold startup periods after the first 48 hours, or while ammonia is injected in the boiler, will be included in determining compliance with the optimized limit.

² Excludes periods of start-up and shutdown.

³ 30-day rolling average SO₂ limit will vary depending on fuel sulfur content.

- (5) The Permittee shall not discharge or cause the discharge of SO₂ from the CFB boilers to the atmosphere in excess of the following:

A calculated emission limit, on a 30-day rolling average, as set forth below, for any BOD:

$$\frac{0.20A + 0.11B + 0.10C_1 + \dots + 0.10C_n}{30} \text{ lb/MMBtu heat input}$$

Where:

A = Number of BODs, during 30 BODs prior to the calculation, when the uncontrolled SO₂ emission potential of the combusted fuel was 2.0 lb/MMBtu or greater based on daily as-fired fuel sulfur analysis.

B = Number of BODs, during 30 BODs prior to the calculation, when the uncontrolled SO₂ emission potential of the combusted fuel was 1.1 lb/MMBtu or less based on daily as-fired fuel sulfur analysis.

C(1) = Uncontrolled SO₂ emission potential of the combusted fuel for each BOD, during 30 BODs prior to the calculation, when the uncontrolled SO₂ emission potential of the combusted fuel was greater than 1.1 lb/MMBtu and less than 2.0 lb/MMBtu.

C(n) = Each additional BOD when the uncontrolled SO₂ emission potential of the combusted coal was greater than 1.1 lb/MMBtu and less than 2.0 lb/MMBtu.

BOD = Boiler Operating Day is a day when the boiler operates at least 1 hour, not including periods of startup and shutdown.

For purposes of determining the applicable SO₂ emission limit, the uncontrolled SO₂ emission potential of the coal, on a 30-day rolling average, shall be based on daily as-fired fuel samples obtained during a period of 30 BODs. Any BOD that does not have valid sulfur analysis results shall be considered a BOD where the uncontrolled SO₂ emission potential was less than 1.1 lb/MMBtu (B).

(6) In order to demonstrate compliance with Condition XIII.(K)(4) and to verify the assumptions used in the permit application, the source shall conduct a performance test for each boiler for the pollutants listed in Condition XIII.(K)(4), except as described in Condition XIII.(K)(7)(c) for NO_x, SO₂, and CO. The performance test shall be performed in accordance with Condition XIII.(V). The performance test for PM, PM₁₀, and VOC shall be completed within 180 days after first combusting each fuel blend. VOC emissions shall be expressed as total mass of VOC. The performance test for F (as HF), H₂SO₄, and Pb shall be completed with the worst-case fuel for these pollutants as determined by fuel analysis. Compliance with the NO_x, SO₂, and CO limits in Condition XIII(K)(4) shall be demonstrated using CEMS data as required by Condition XIII(K)(7)(c). {Title 129, Chapter 34}

(7) The NSPS for Industrial-Commercial-Institutional Steam Generating Units, Subpart Db {Title 129, Chapter 18, Section 001.22} apply to boilers EU9-1A and EU9-1B, exhausting through stack (SV-COGEN1). The requirements include, but are not limited to, the following: {40 CFR 60.40b}

(a) Emissions from the CFB boilers shall not exceed the emission limits in Table 13. Compliance with the PM, NO_x, and SO₂ limits shall be demonstrated by compliance with Condition XIII.(K)(4).

Table 13. CFB Boiler NSPS Limits

| Pollutant /Parameter | Limit | Averaging Period |
|----------------------|---|-----------------------------|
| NO _x | 0.20 lb/MMBtu | 30-day rolling ¹ |
| SO ₂ | 1.2 lb/MMBtu and 92% reduction or 0.20 lb/MMBtu | 30-day rolling ¹ |
| Opacity | 20 % (27 % for one 6-minute period per hour) | 6-minute |
| PM (filterable only) | 0.03 lb/MMBtu | Average of 3 runs |

¹ Includes periods of start-up, shutdown, and malfunction.

- (b) Performance and compliance testing shall be conducted in accordance with Title 129, Chapter 18, NSPS, Section 001.01 General Provisions, and as required by 40 CFR 60.45b(c), 60.46b(d), 60.46b(e), and Condition XIII.(V).
 - (c) The source shall install, calibrate, maintain, and operate a CEMS or approved alternative for each boiler in accordance with the Subpart for measuring SO₂, CO, and NO_x emissions, and a COMS for measuring opacity.
 - (d) The Requirements for Performance Specification 2 - Specifications and Test Procedures for SO₂ and NO_x Continuous Emission Monitoring Systems in Stationary Sources, and Performance Specification 4 – Specifications and Test Procedures for CO Continuous Emission Monitoring Systems in Stationary Sources found in 40 CFR 60 Appendix B, shall be followed for each CEMS required under Condition XIII.(K)(7)(c).
 - (e) Quality Assurance for the continuous emissions monitoring systems required under the Condition XIII.(K)(7)(c) shall be conducted according to the requirements of 40 CFR 60 Appendix F. The report of the Relative Accuracy Test Audit required by the 40 CFR 60 Appendix F or a similar procedure shall be submitted to the Department within 45 days of completion of the test.
 - (f) The source shall record and maintain records of the amount of coal, biomass, petroleum coke, and TDF combusted during each day in each boiler unless EPA Region VII approves an alternative record-keeping frequency. {40 CFR 60.49b(d)}
 - (g) The source shall submit notification of the date of construction, anticipated startup, and actual startup, as provided by Title 40 CFR 60.7. {40 CFR 60.49b(a)}
- (8) The requirements of the NESHAP for Commercial, Industrial, and Institutional Boilers and Process Heaters in 40 CFR 63, Subpart DDDDD {Title 129, Chapter 28, Section 001.90} apply to boilers EU9-1A and EU9-1B, exhausting through stack (SV-COGEN1). These boilers comprise the affected source for the new large solid fuel subcategory and shall comply with the requirements in this subpart upon startup of these units. The requirements include, but are not limited to, the following:
- (a) The emission limits and work practice standards pursuant to 40 CFR 63.7500.
 - (b) The testing, compliance, and monitoring requirements pursuant to 40 CFR 63.7505-63.7541.

(c) The notification, reporting, and recordkeeping requirements pursuant to 40 CFR 63.7545-63.7560.

(L) The following conditions apply to: COAL, FLY ASH, BED ASH, AND LIMESTONE HANDLING, STORAGE, AND TRANSPORT OPERATIONS:

(1) PM and PM₁₀ emissions from all coal, fly ash, bed ash and limestone handling, storage, and transport equipment shall be controlled by the control equipment presented in Table 14: {Title 129, Chapters 4 and 19}

Table 14. Coal, Ash, and Limestone Handling Equipment

| Emission Unit ID | SV # | Equipment Description | Add-on control device |
|-------------------------|-------------|--|------------------------------|
| EU9-2 | COGEN2 | Rotary Car Dumper/Truck Dump Building Unit 1 | Baghouse |
| EU9-3 | COGEN3 | Rotary Car Dumper/Truck Dump Building Unit 2 | Baghouse |
| EU9-4 | COGEN4 | Coal Storage Dome/Reclaim Tunnel | Baghouse |
| EU9-5 | COGEN5 | Crusher Tower | Baghouse |
| EU9-6 | COGEN6 | Powerhouse Bunker Bay | Baghouse |
| EU9-7 | COGEN7 | Fly Ash Transfer/Storage Unit 1 | Baghouse |
| EU9-8 | COGEN8 | Fly Ash Transfer/Storage Unit 2 | Baghouse |
| EU9-9 | COGEN9 | Bottom Ash Collection Unit 1 | Baghouse |
| EU9-10 | COGEN10 | Bottom Ash Collection Unit 2 | Baghouse |
| EU9-11 | COGEN11 | Bottom Ash Transfer/Storage Unit 1 | Baghouse |
| EU9-12 | COGEN12 | Bottom Ash Transfer/Storage Unit 2 | Baghouse |
| EU9-13 | COGEN13 | Limestone Storage Unit 1 | Baghouse |
| EU9-14 | COGEN14 | Limestone Storage Unit 2 | Baghouse |
| EU9-15 | COGEN15 | Limestone Transfer Unit 1 | Baghouse |
| EU9-16 | COGEN16 | Limestone Transfer Unit 2 | Baghouse |

- (2) The operation of each dry dust collector (baghouse) identified in Condition XIII.(L)(1) shall be in accordance with the following requirements: {Title 129, Chapters 4 and 19}
- (a) The dry dust collectors shall be operated whenever the associated emission units are in operation.
 - (b) The dry dust collectors shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the dry dust collectors shall be kept on site and readily available to Department representatives.
 - (c) Each dry dust collectors shall be equipped with an operational pressure differential indicator. The pressure differential indicator readings shall be recorded at least once each day that the associated dry dust collector

is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the pressure differential indicator shall be kept on site and readily available to Department representatives.

- (d) Dry dust collector filter bags/cartridges are to be inspected and/or replaced according to the operation and maintenance manual, or more frequently as indicated by pressure differential indicator readings or other indication of unit failure.
 - (e) Routine observations (at least once each day during daylight hours of dry dust collector operation) shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, atypical pressure differential readings, or other indications, which may necessitate corrective action. Corrective action shall be taken immediately if necessary.
 - (f) Collected waste material from the dry dust collectors shall be handled, transported, and stored in a manner that ensures compliance with Condition X.
 - (g) The source shall maintain on-site an inventory of spare bags/cartridges of each type used to ensure rapid replacement in the event of bag/cartridge failure.
- (3) The emissions from the coal, fly ash, bed ash and limestone handling, storage, and transport operations shall not exceed the following emission limits in Table 15 (3- hour or test method average). {Title 129, Chapters 4 and 19}

Table 15. Coal, Ash, and Limestone Handling Emission Limits

| SV # | Equipment Description | PM/PM ₁₀ emissions (lb/hr) |
|---------|--|---------------------------------------|
| COGEN2 | Rotary Car Dumper/Truck Dump Building Unit 1 | 0.71 |
| COGEN3 | Rotary Car Dumper/Truck Dump Building Unit 2 | 0.71 |
| COGEN4 | Coal Storage Dome/Reclaim Tunnel | 0.68 |
| COGEN5 | Crusher Tower | 0.51 |
| COGEN6 | Powerhouse Bunker Bay | 0.55 |
| COGEN7 | Fly Ash Transfer/Storage Unit 1 | 0.24 |
| COGEN8 | Fly Ash Transfer/Storage Unit 2 | 0.24 |
| COGEN9 | Bottom Ash Collection Unit 1 | 0.08 |
| COGEN10 | Bottom Ash Collection Unit 2 | 0.08 |
| COGEN11 | Bottom Ash Transfer/Storage Unit 1 | 0.08 |
| COGEN12 | Bottom Ash Transfer/Storage Unit 2 | 0.08 |
| COGEN13 | Limestone Storage Unit 1 | 0.21 |

| SV # | Equipment Description | PM/PM ₁₀ emissions (lb/hr) |
|---------|---------------------------|---------------------------------------|
| COGEN14 | Limestone Storage Unit 2 | 0.21 |
| COGEN15 | Limestone Transfer Unit 1 | 0.21 |
| COGEN16 | Limestone Transfer Unit 2 | 0.21 |

- (4) In order to demonstrate compliance with Condition XIII.(L)(3), the source shall conduct a performance test for PM and PM₁₀ on each of the Stacks/vents (SV) listed in Condition XIII.(L)(3) as specified in Table 16. The performance test shall be conducted in accordance with Condition XIII.(V). {Title 129, Chapter 34}

Table 16. Coal, Ash, and Limestone Handling Test Requirements

| SV # | Equipment Description | PM/PM ₁₀ Testing Required |
|---------|--|--------------------------------------|
| COGEN2 | Rotary Car Dumper/Truck Dump Building Unit 1 | Yes ¹ |
| COGEN3 | Rotary Car Dumper/Truck Dump Building Unit 2 | Yes ¹ |
| COGEN4 | Coal Storage Dome/Reclaim Tunnel | Yes ¹ |
| COGEN5 | Crusher Tower | Yes ¹ |
| COGEN6 | Powerhouse Bunker Bay | Yes ¹ |
| COGEN7 | Fly Ash Transfer/Storage Unit 1 | Yes ² |
| COGEN8 | Fly Ash Transfer/Storage Unit 2 | Yes ² |
| COGEN9 | Bottom Ash Collection Unit 1 | Yes ² |
| COGEN10 | Bottom Ash Collection Unit 2 | Yes ² |
| COGEN11 | Bottom Ash Transfer/Storage Unit 1 | Yes ² |
| COGEN12 | Bottom Ash Transfer/Storage Unit 2 | Yes ² |
| COGEN13 | Limestone Storage Unit 1 | Yes ³ |
| COGEN14 | Limestone Storage Unit 2 | Yes ³ |
| COGEN15 | Limestone Transfer Unit 1 | Yes ³ |
| COGEN16 | Limestone Transfer Unit 2 | Yes ³ |

¹ Initial performance testing is required for SV#COGEN2, COGEN3, COGEN4, COGEN5, and COGEN6; however, only COGEN2 must be tested if the performance test demonstrates compliance. If the test indicates non-compliance, the other emission points shall be tested to independently verify compliance.

² Initial performance testing is required for SV#COGEN7, COGEN8, COGEN9, COGEN 10, COGEN11 and COGEN12; however, only COGEN7 must be tested if the performance test demonstrates compliance. If the test indicates non-compliance, the other emission points shall be tested to independently verify compliance.

³ Initial performance testing is required for SV#COGEN13, COGEN14, COGEN15, and COGEN16; however, only COGEN13 must be tested if the performance test demonstrates compliance. If the test indicates non-compliance, the other emission points shall be tested to independently verify compliance.

- (5) The requirements of the NSPS for Coal Preparation Plants in 40 CFR 60, Subparts A and Y {Title 129, Chapter 18, Sections 001.01 and 001.08} apply to

all thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems operations at this facility (EU9-4, EU9-5, and EU9-6). These requirements include, but are not limited to, the following:

- (a) Opacity of visible emissions from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system shall not exhibit 20 percent opacity or greater. {40 CFR 60.252(c)}
- (b) The opacity of the coal processing and conveying equipment, coal storage system, and coal transfer and loading system shall be measured within 90 days of start-up to demonstrate compliance with the opacity limit given in Condition XIII.(L)(5)(a). Compliance Method 9 specified in 40 CFR 60.11 shall be used to measure opacity {40 CFR 60.254(b)(2)}.

(M) The following conditions apply to: COOLING TOWERS

- (1) The four cooling towers (EU13-E1-6, EU13-F1-3, EU9-17-18, and EU9-19-22) shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the cooling towers shall be kept on site and readily available to Department representatives. {Title 129, Chapters 4 and 19}
- (2) The drift loss for EU13-E1-6 and EU13-F1-3 shall not exceed 0.008 percent. The drift loss for EU9-17-18 and EU9-19-22 shall not exceed 0.0005 percent. Verification of drift loss will be by manufacturer's guarantee. Manufacturer's drift loss guarantee shall be kept on site and readily available to Department representatives, upon request. {Title 129, Chapters 4 and 19}
- (3) The TDS concentration in the cooling water shall not exceed 2,500 ppm for any single sampling event. A TDS sample shall be collected from each cooling tower and tested at a minimum of once per calendar month. {Title 129, Chapters 4 and 19}

(N) The following conditions apply to: EQUIPMENT LEAKS

- (1) The requirements of the NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry in 40 CFR, Subparts A and VV {Title 129, Chapter 18, Sections 001.01 and 001.14} apply to all affected equipment. The requirements include, but are not limited to, the following:
 - (a) Equipment subject to 40 CFR 60 Subpart VV shall be each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service and any devices or systems required by Subpart VV. {40 CFR 60.481}
 - (b) Compliance with NSPS, Subpart VV shall be demonstrated for all equipment within 180 days of initial startup. {40 CFR 60.482-1}

- (c) Test methods and procedures shall be consistent with the requirements found in 40 CFR 60.485. The methods include:
 - (i) Method 21 shall be used to determine the presence of leaking sources. {40 CFR 60.485(b)(1)}
 - (ii) Method 21 shall be used to determine the background level. {40 CFR 60.485(c)(2)}
 - (iii) Procedures that conform to the general methods in ASTM E-260, E-168, E-169 (incorporated by reference – see § 60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment. {40 CFR 60.485(d)(1)}
 - (iv) Standard reference texts or ASTM D-2879 (incorporated by reference – see § 60.17) shall be used to determine the vapor pressure of the components in the liquid in the light liquid service. {40 CFR 60.485(e)(1)}
- (d) The owner or operator shall report and keep records as described in 40 CFR 60.487 – Reporting requirements and in 40 CFR 60.486 – Recordkeeping requirements. Each owner or operator shall submit semiannual reports to the Department beginning six months after the initial startup date.
- (e) Emissions shall be controlled by the Leak Detection and Repair Program as defined in 40 CFR 60.482-1 through 60.482-10.

(O) The following conditions apply to: HAUL ROADS

- (1) All on-site haul roads with production-related truck traffic shall be paved. The paved haul roads shall comply with the following conditions: {Title 129, Chapters 19 and 32}
 - (a) The owner or operator shall develop, maintain, and implement a Truck Traffic Fugitive Control Strategy and Monitoring Plan to control emissions from haul roads to comply with Condition X. At a minimum, the requirements of the Plan shall include the following: {Title 129, Chapters 19 and 32}
 - (i) All paved haul roads shall be cleaned, using a vacuum sweeper, a minimum of three (3) times per week unless weather events are deemed not to warrant such cleaning.
 - (ii) For each day of operation, the owner or operator shall conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and leaving plant property.

- (iii) Documentation of all fugitive dust control measures implemented, any weather events deemed not to warrant road cleaning, and daily surveys shall be maintained in a log.

(P) The following conditions apply to: EMERGENCY EQUIPMENT

- (1) The emergency fire water-pump engines 1, 2, 3 and 4 (EU-95, EU-96, EU-107, and EU-108), the emergency generator SCU (EU-97), and the emergency generator warehouse 1 (EU-99) shall not exceed 400 operating hours per any period twelve (12) consecutive calendar months each. At no time during the first eleven (11) calendar months after the permit issuance date shall the sum of all the previous months' operating hours exceed 400 hours for each piece of listed emergency equipment. {Title 129, Chapters 4, 19, and 27}
- (2) Only diesel fuel (# 1 and # 2) shall be combusted in the emergency equipment. {Title 129, Chapters 4, 19, 20 and 24}
- (3) The emergency equipment shall be equipped with hour meters to record the operating hours to determine compliance with Condition XIII.(P)(1). The hour meters shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the hour meters shall be kept on site and readily available to Department representatives. {Title 129, Chapter 19}

(Q) The following conditions apply to: WASTEWATER TREATMENT

- (1) Biogas generated from the anaerobic digesters shall be collected and combusted in the anaerobic digester biogas flare (EU10-41) or in Gluten Flash Dryer #1 (EU6-16).
- (2) The biogas flare shall not exceed 2,190 operating hours per any period twelve (12) consecutive calendar months. At no time during the first eleven (11) calendar months after permit issuance shall the sum of all the previous months' operating hours exceed 2,190 hours. The pilot for the flare may operate continuously. {Title 129, Chapter 19}
- (3) The biogas flare shall be equipped with an hour meter or equivalent tracking system to record the operating hours to determine compliance with Condition XIII.(Q)(2). The hour meter shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the hour meter shall be kept on site and readily available to Department representatives. {Title 129, Chapter 19}
- (4) The biogas flare shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the wastewater treatment tanks and flare shall be kept on site and readily available to Department representatives.

- (R) The following conditions apply to: SODA ASH RECEIVING AND HCl STORAGE AND RECEIVING
- (1) HCl emissions from the HCl storage tanks shall be controlled by the acid gas scrubber (EU8-91). PM emissions from Soda Ash Receiving (EU8-63) shall be controlled by a wet scrubber. {Title 129, Chapters 19 and 27}
 - (2) The operation of the scrubbers shall be in accordance with the following requirements: {Title 129, Chapter 27}
 - (a) The scrubbers shall be operated at all times when the material unloading is occurring.
 - (b) The scrubbers shall be properly designed, installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the scrubber shall be kept on site and readily available to Department representatives.
 - (c) The scrubbers shall be equipped with indicators of scrubbing liquid flow rate and pressure differential. Operating parameter readings shall be recorded at least once each day the scrubbers are in operation. The indicators shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the operating parameter indicators shall be kept on site and readily available to Department representatives.
 - (d) Routine observations (at least once each day of scrubber operation) shall be conducted to determine whether there are leaks, noise, atypical operating parameters (e.g., scrubbing liquid flow rate), or other indications that may necessitate corrective action.
 - (3) PM and PM₁₀ emissions from the Soda Ash Receiving scrubber vent (SV-63) shall not exceed 0.085 lbs/hr (3-hour or test method average). {Title 129, Chapter 19}
 - (4) In order to demonstrate compliance with Condition XIII.(R)(3), the source shall conduct a performance test for PM and PM₁₀ on SV-63. The performance test shall be conducted in accordance with Condition XIII.(V). {Title 129, Chapter 34}
- (S) The following conditions apply to the LIME SILO BIN VENT:
- (1) PM and PM₁₀ emissions from the lime silo bin (EU13-62) shall be captured and controlled by the lime silo bin baghouse. {Title 129, Chapters 4 and 19}
 - (2) The operation of the dry dust collector (baghouse) shall be in accordance with the following requirements: {Title 129, Chapters 4 and 19}

- (a) The dry dust collector shall be operated whenever the associated emission units are in operation.
 - (b) The dry dust collector shall be properly installed, operated and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the dry dust collector shall be kept on site and readily available to Department representatives.
 - (c) The dry dust collector shall be equipped with an operational pressure differential indicator. The pressure differential indicator readings shall be recorded at least once each day that the associated dry dust collector is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the pressure differential indicator shall be kept on site and readily available to Department representatives.
 - (d) Dry dust collector filter bags/cartridges are to be inspected and/or replaced according to the operation and maintenance manual, or more frequently as indicated by pressure differential indicator readings or other indication of unit failure.
 - (e) Routine observations (at least once each day during daylight hours of dry dust collector operation) shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, atypical pressure differential readings, or other indications, which may necessitate corrective action. Corrective action shall be taken immediately if necessary.
 - (f) Collected waste material from the dry dust collectors shall be handled, transported, and stored in a manner that ensures compliance with Condition X.
 - (g) The source shall maintain on-site an inventory of spare bags/cartridges of each type used to ensure rapid replacement in the event of bag/cartridge failure.
- (3) The PM and PM₁₀ emissions from the lime silo bin baghouse vent (SV-62) shall not exceed 0.13 pounds per hour (3-hour or test method average). {Title 129, Chapters 4, 19, and 20}.
 - (4) In order to demonstrate compliance with Condition XIII.(S)(3), the source shall conduct a performance test for PM and PM₁₀ on the lime silo bin baghouse vent (SV-62). The performance test shall be conducted in accordance with Condition XIII.(V). {Title 129, Chapter 34}
- (T) The requirements of the NESHAP for Miscellaneous Organic Chemical Manufacturing in 40 CFR 63, Subpart FFFF {Title 129, Chapter 28, Section 001.78} apply to the miscellaneous organic chemical manufacturing process units at this source (including all

storage tanks, transfer stations, pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems used in the ethanol manufacturing process). The requirements include, but are not limited to, the following:

- (1) The emission limits, work practice standards, and compliance requirements pursuant to 40 CFR 63.2450-63.2490.
 - (2) The notification, reporting, and recordkeeping requirements pursuant to 40 CFR 63.2515-63.2525.
- (U) The following conditions apply to the verification of the NAAQS modeling analysis {Title 129, Chapters 4 and 19}
- (1) Stack heights shall not be less than the heights above ground level presented in Table 17 (ground level basis of 1422 feet above sea level): {Title 129, Chapters 4 and 19}

Table 17. Stack Height Requirements

| Equipment Description | SV # | Minimum Stack Height (m) |
|--|-------------|---------------------------------|
| Corn Receiving (East Truck Unloading Pits #1 and #2) | 1 | 50 |
| Corn Receiving (West Truck Unloading Pits #3 and #4) | 2 | 50 |
| Coal-fired boiler # 1 and 2 | COGEN1 | 90 |
| Germ Cooler # 1, 2, and 3 | 9 | 65 |
| Germ Cooler # 4 | 12 | 65 |
| Gluten Cooler # 1 and 2 | 17 | 65 |
| Gluten Recycle | 44 | 27.99 |
| Corn Cleaner | 4 | 43.71 |
| Millhouse/Feedhouse | 5 | 41.68 |
| Starch Dryer # 1 | 6 | 65 |
| Germ Dryer # 1-3 | 7 | 65 |
| Fluidized Bed Germ Dryer #1 | 8 | 65 |
| Gluten Flash Dryer # 1 | 16 | 65 |
| Gluten Flash Dryer # 2 | 18 | 65 |
| Biogas Flare | 41 | 25 |
| Fiber Dewatering | 43 | 40 |
| Starch Dryer #2 | 45 | 33.52 |
| Boiler #5 | 98 | 38.25 |
| Rotary Car Dumper/Truck Dump Building Unit 1 | COGEN2 | 25 |
| Rotary Car Dumper/Truck Dump Building Unit 2 | COGEN3 | 25 |
| Coal Storage Dome/Reclaim Tunnel | COGEN4 | 25 |
| Crusher Tower | COGEN5 | 25 |
| Powerhouse Bunker Bay | COGEN6 | 40 |

| Equipment Description | SV # | Minimum Stack Height (m) |
|------------------------------------|-------------|---------------------------------|
| Fly Ash Transfer/Storage Unit 1 | COGEN7 | 25 |
| Fly Ash Transfer/Storage Unit 2 | COGEN8 | 25 |
| Bottom Ash Collection Unit 1 | COGEN9 | 15 |
| Bottom Ash Collection Unit 2 | COGEN10 | 15 |
| Bottom Ash Transfer/Storage Unit 1 | COGEN11 | 20 |
| Bottom Ash Transfer/Storage Unit 2 | COGEN12 | 20 |
| Limestone Storage Unit 1 | COGEN13 | 25 |
| Limestone Storage Unit 2 | COGEN14 | 25 |
| Limestone Transfer Unit 1 | COGEN15 | 20 |
| Limestone Transfer Unit 2 | COGEN16 | 20 |
| EU9-17-18 | COGEN17 | 10 |
| EU9-19-22 | COGEN19 | 13 |

- (2) The source shall sufficiently restrict public access to the facility at the ambient air boundary relied upon in the modeling analysis for the NAAQS compliance demonstration. An ambient air restriction plan detailing the measures for restricting public access (such as fencing) shall be submitted to the Department within 120 days of permit issuance.
 - (3) A site survey or similar documentation demonstrating compliance with the stack height limitations per Condition XIII.(U)(1) shall be kept on site and readily available to Department representatives within 365 days after the permit issuance date; or for any new or modified emission unit constructed after this date, within 180 days following start-up of the new or modified emission unit.
 - (4) A site survey or similar documentation demonstrating compliance with the restricted public access provisions of Condition XIII.(U)(2) shall be kept on site and readily available to Department representatives within 180 days after the permit issuance date. The site survey or similar documentation shall provide sufficient detail to verify that an ambient air restriction plan has been fully implemented.
- (V) The performance tests required in the permit must be completed and submitted to the Department as follows: {Title 129, Chapter 34, Section 001}
- (1) Unless otherwise specified in this permit, the performance tests shall be conducted while operating at full capacity within 60 days after reaching the maximum capacity but not more than 180 days after the start up of operations.
 - (2) Testing methods shall be from 40 CFR 60 Appendix A, or other method approved by the NDEQ.
 - (3) An emissions testing protocol shall be submitted to the Department at least 45 days prior to testing.

- (4) The owner or operator of a source shall provide the Department 30 days notice prior to testing to afford the Department an opportunity to have an observer present.
- (5) The source shall monitor the operating parameters for process and control equipment during the performance testing required in the permit (e.g., production rate, liquid flow rate and pressure differential during testing of the scrubber). The operating parameters shall be submitted with the test results.
- (6) A certified written copy of the test results signed by the person conducting the test shall be provided to the Department within 45 days of completion of the test.

(W) The following conditions apply to: MONITORING AND RELATED RECORDKEEPING AND REPORTING REQUIREMENTS

Records of all limits, measurements, results, inspections, and observations listed in Conditions XIII.(A) through XIII.(V), as required to ensure compliance with this permit shall be maintained. Calculations and records shall be completed no later than the last day of each calendar month through the previous calendar month. Records shall be kept on-site for a minimum of five years, unless otherwise specified in this permit. These records shall be clear and readily accessible to Department representatives and shall include the following:

- (1) Inspection and maintenance records for each baghouse dust collector as identified in, and to demonstrate compliance with, Conditions XIII.(A)(3), (E)(3), (K)(3), (L)(2) and (S)(2). These records shall include the following:
 - (a) Records documenting when routine observations were performed with a description, including operating parameters (e.g., pressure differential readings) and any atypical observations.
 - (b) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action conducted.
 - (c) Filter replacement records including number of replaced filters, type, and date of filter installation.
 - (d) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.
- (2) Inspection and maintenance records each scrubber as identified in, and to demonstrate compliance with, Conditions XIII.(B)(2), (D)(5), (F)(2), (I)(3) and (R)(2). These records shall include the following:
 - (a) Records documenting when routine observations were performed with a description, including operating parameters (e.g., pressure differential readings, scrubbing flow rates) and any atypical observations.

- (b) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed.
 - (c) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.
- (3) As designated in Title 129, Chapter 18, Section 001.62, Volatile Organic Liquid Storage Vessels (including petroleum storage vessels) – Subpart Kb, Reporting and Recordkeeping Requirements {40 CFR 60.115b}, records to demonstrate compliance with Condition XIII.(G)(2).
- (4) Operation and maintenance record for the vapor recovery system, flare, and safety device or flame monitoring system for the liquid product loadout stations, to demonstrate compliance with Condition XIII.(H)(2), shall include the following:
 - (a) Records documenting when routine maintenance and preventive actions were conducted with a description of the maintenance and/or preventive action conducted.
 - (b) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.
- (5) The date when the burner in boiler #1 was replaced, and the manufacturer's documentation of the replacement burner to demonstrate compliance with Condition XIII.(J)(2).
- (6) As designated in Title 129, Chapter 18, Section 001.22, Industrial-Commercial-Institutional Steam Generating Units –Subpart Db, Recordkeeping Requirements {40 CFR 60.49b}, records to demonstrate compliance with Conditions XIII.(J)(4) and (K)(7).
- (7) Fuel receipts for natural gas, diesel, coal, petroleum coke, and TDF from the suppliers to demonstrate compliance with Conditions XIII.(J)(4)(f), (K)(7)(f), and (P)(2).
- (8) As designated in Title 129, Chapter 28, Section 001.90, Commercial, Industrial, and Institutional Boilers and Process Heaters – Subpart DDDDD, Recordkeeping Requirements {40 CFR 63.7555}, records to demonstrate compliance with Conditions XIII.(J)(5), (J)(6) and (K)(8).
- (9) Operation and maintenance records for each cooling tower, to demonstrate compliance with Condition XIII.(M)(1), shall include the following:
 - (a) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed.

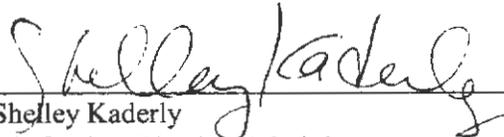
- (b) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.
- (10) Manufacturer's drift loss guarantee to demonstrate compliance with Condition XIII.(M)(2). This record shall be kept for the life of the equipment.
- (11) TDS concentration in cooling water for each sampling event to demonstrate compliance with Condition XIII.(M)(3).
- (12) As designated in Title 129, Chapter 18, Section 001.14, Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry – Subpart VV, Recordkeeping Requirements {40 CFR 60.486}, records to demonstrate compliance with Condition XIII.(N)(1).
- (13) Records documenting use of fugitive dust control measures on haul roads, such as when water spraying is applied, to demonstrate compliance with Conditions X. and XIII.(O)(1)(a).
- (14) Record of haul road visible emissions checks taken daily during operation and a description of corrective action taken to demonstrate compliance with Condition XIII.(O)(1)(b).
- (15) Hours of operation for each piece of emergency equipment for each calendar month and for each period of twelve (12) consecutive calendar months to show compliance with Condition XIII.(P)(1).
- (16) Hours of operation for the biogas flare for each calendar month and for each period of twelve (12) consecutive calendar months to show compliance with Condition XIII.(Q)(2).
- (17) Operation and maintenance records for the wastewater treatment tanks and biogas flare to demonstrate compliance with Condition XIII.(Q)(4), which shall include the following:
 - (a) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed.
 - (b) Records documenting equipment failures, malfunctions, or other variations, including time of occurrence, remedial action taken, and when corrections were made.
- (18) As designated in Title 129, Chapter 28, Section 001.78, National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing – Subpart FFFF, Recordkeeping Requirements {40 CFR 63.2430}, records to demonstrate compliance with Condition XIII.(T).

- (19) Site survey or similar documentation demonstrating compliance with the stack height limitations per Condition XIII.(U)(1) and the restricted public access provisions per Condition XIII.(U)(2). These records shall be kept for the life of the equipment.
- (20) Calibration records for all operating parameter monitoring equipment.
- (21) Copies of all notifications, reports, plans, and test results submitted to the Department.
- (22) Manufacturer's operation and maintenance manual, or its equivalent regarding design, installation, operation, and maintenance for all permitted equipment. These records shall be kept for the life of the equipment.

The undersigned issues this document on behalf of the Director in accordance with Title 129 – Nebraska Air Quality Regulations.

8/4/06

Date



Shelley Kaderly
Air Quality Division Administrator

Appendix C
CA-GREET Electronic Files

References:

(1) Demirbas, Ayhan. 2005. New Opportunities Resulting from Cogeneration Systems Based on Biomass Gasification. *Energy Sources* 27, no. 10: 941-948.

(2) Industrial Technologies Program. 2004. Consider Installing High Pressure Boilers with Backpressure Turbine-Generators. Steam Tip Sheet #22. <http://www.nrel.gov/docs/fy04osti/36924.pdf>.